

RESPONSIBILITY, CHALLENGE AND SUPPORT IN TEACHERS' LIFE-LONG PROFESSIONAL DEVELOPMENT

ATEE 2010 ANNUAL CONFERENCE
PROCEEDINGS



Editors:
György Mészáros,
Iván Falus

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Introduction

This volume includes the Proceedings of the 35th annual conference of the Association for Teacher Education in Europe. The Conference was held in Budapest, Hungary from 26th to 30th August and was organized by the Association of Hungarian Teacher Educators, Eötvös Loránd University (Budapest) and Eszterházy Károly College (Eger).

The topic of the conference was 'Responsibility, Challenge and Support in Teachers' Life-long Professional Development'. Educational policies in the past 20 years have focused on improving the quality of education through improving the quality of teaching. Research evidence shows that to achieve this goal, initial teacher education, teacher induction and in-service teacher education should form a continuous, coordinated process, providing an ideal context for teachers' life-long professional development. Life-long development is a must for the profession, if we consider the enormous challenges schools and teachers are facing today: such as the continuously changing social context, the phenomena of 'glocalization', the rising of new technologies, etc. Moreover, with decentralization, the autonomy of schools is increasing, which means that teachers are being made to take more and more responsibility for the content, the organization, the monitoring and the evaluation of the learning process going on in their classrooms. In addition, teachers are expected to contribute to the process of the curriculum reform and educational innovation. What is more, by continuously monitoring and evaluating their own performances, they are expected to recognize and then address their professional development needs. These are all huge challenges the teaching profession has never had to confront before.

The papers in this volume tackle these challenges, trying to explore the nature of teachers' professional development more deeply, and to offer some educational answers on the basis of research evidence. A wide variety of issues are treated by different papers: the challenge of climate change, the cyberspace and the new technologies; personal traits and teacher profession, methods and processes to support teachers' development; initial teacher education for life-long learning; schools as sites of teachers' development.

The volume includes the papers presented in one of the preconference workshops (on climate change), in different Research Development Centers (RDCs) of the Conference which are the following: Research Observatory; Vocational and Adult Education; Inclusion and Special Needs; Culture, Language and Citizenship; Science and Mathematics Education; Curricula in Teacher Education; Teacher Education and Information Technology; Professional Development of Teachers; Professional Development of Teacher Educators; and In-Service Learning and the Development of Practice. In addition, one poster presentation is included. All the papers in the present volume have been reviewed and

accepted by the chairs of the RDC sessions, who are internationally acknowledged experts in the field of education.

The editors would like to express their gratitude to the Academic and Organizing Committee of the Conference, to the Association of Hungarian Teacher Educators, to Eötvös Loránd University, Eszterházy Károly College and to the Municipality of the City of Budapest.

The Editors

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APROPOS CLIMATE CHANGE

Climate Change in Education

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Abstract

Combating climate change needs both political commitments and climate conscious citizens. In this paper we give some theory and concrete examples on climate change education in schools according to our experience gained during the 20 years of our civil organization, Energia Klub. The paper starts with answering the question: How to reach climate friendly actions and lifestyle? Activity of the Energia Klub is briefly introduced focusing on key aspects related to the title of the paper: Topics within climate change, and their integration into the school curricula. Educational materials issued by us are also briefly introduced. The paper is terminated with some general ideas on how to teach climate change in order to reach to mind and heart of the pupils of different ages.

Keywords: *climate change, energy efficiency, renewable energy, methodology.*

How to reach climate-friendly actions and lifestyle?

According to international experiences and a survey carried out in Hungary (Frantz et al., 2005; Andacs and Takacs-Santa 2007) there is no evident correlation between having knowledge on the precious facts of climate change and the willingness to take climate friendly actions. Though Bulkeley (2000) says deeper knowledge leads more often to actions, but the confused and imprecise knowledge does not stop people acting against climate change. Leopold (1949) says that a sense of connectedness to nature is an important component of resolving environmental problems. The modern sense of self is object-like, separated from and above the rest of the natural world. This approach makes it easier for people to harm nature without feeling the distress. So if the sense of connectedness with nature is high harming the nature potentially create bad feelings. (Roszak 1995).

The close relation with nature increases empathy towards plants and animals and more helping will occur. Shultz (2000) demonstrates that it really works. He asked college students

to take the perspective of an animal being harmed by human actions, such as an oil spill. In comparison to a control group of students who were not asked to take this perspective, the above mentioned students expressed greater concern for the well being of the animal.

The results of the Hungarian survey show that 16-18 year old secondary school pupils of Tatabanya believe climate change is a serious global problem, but it is less serious in their home town. Most of them were aware of people's major role in climate change, but the real causes, possible impacts and steps to be taken against climate change were mostly unknown among them.

Energia Klub

Energia Klub is a value driven ThinkandDo tank organisation, active for 20 years and rooting in the environmental movement in Hungary. Energia Klub's aim is to make energy producers, users and political decision-makers regard energy in a different way, therefore our field of activities are climate change, energy efficiency, renewable energy sources, conventional energy sources, energy policy. Energia Klub provides general awareness raising activities for households, municipalities and decision makers as well as educates teachers, environmental educators about climate change.

Topics within climate change

The several educational materials developed by Energia Klub in the last more than ten years concentrate on the following subtopics connected to climate change:

- Concrete facts on climate change; like graphs and numbers on climate data, global and local temperature changes, changes of precipitation distribution and historical trend of CO₂ emission.
- Explanation of the causes and impacts/effects of climate change; green house effect and the predicted impacts of climate change; sea level rise, melting of ice, changed local weather, concrete examples of possible changes in Hungary, more floods, desertification etc.
- Explanation the environmental aspects of energy consumption and energy production - as playing huge role in CO₂ emission - show the way from the primary energy resource to the electric devices.
- Solutions on energy related issues; how energy efficiency can be implemented in the reality and what is the relevance of the renewable energy sources.

Integration into the curricula

Willing to integrate climate change in the school curriculum the question occurs: whose duty is to talk about it? School divides knowledge into subjects; climate change has connections to many subjects, so it is difficult to squeeze climate change as an extra topic. Traditionally it is discussed in the framework of nature sciences (physics, biology, chemistry, geography). Why not to include into math, history, literature, languages and art lessons too?

We collected some ideas how to integrate the topic of climate into non-traditional subjects:

- Math – calculation with climate data, electricity, gas consumption data, understanding and creating graphs
- English – climate change, renewable energy resources as a theme
- History – the history of CO₂ and human activities, changes of energy sources used
- (Visual) art – creating pictures of an ideal future, visualizing problems and solutions
- Drama – simulation games on problems and solutions (climate conferences, building a new wind turbine next to the village)

Educational materials

Energia Klub developed and published the following educational materials:

“*Where is energy?*” is a 200 pages booklet, incl. lesson descriptions for teachers, hand outs, collection of experiments and games for 10-14 years pupils. The booklet deals with the concept of energy, available energy resources (both renewable and non renewable), saving energy at home, travelling, waste management. For each lesson it is indicated which subjects can be connected with.

We developed so called *background materials* about climate change. It contains four thematic posters. they are also available in print and interactive online version as well. Two posters show the same landscape; one of them presents energy production by fossil fuels, the other shows renewable solutions. The third poster demonstrates a semi-detached house, where in one part people are wasting energy but in the other part people live environmentally friendly, and save energy. The fourth poster is a map of the earth, indicated where and what are the impacts of climate change – sea level rise, floods, desertification, hurricanes, melting ice on the poles and icebergs.

As overhead projectors are still often used in Hungarian schools we developed 14 overhead slides about climate change. It is the visual representation of the importance of the atmosphere, CO₂ circulation in equilibrium and non-equilibrium, the natural green house effect, increased green house effect, impacts of climate change, what we can do to combat climate change.

“Check it out!” is a handbook for 10-14 years pupils and a teachers’ guide. It is based on a project work, actively involves the pupils in to the learning process. In the first lesson it is made by letters written by children from several countries of the world (from Canada to Bangladesh).

Pupils can discover and understand the global consequences of the changing climate. In the second lesson the connection between climate change and energy consumption is explained. In the third lesson pupils investigate the school, how energy is used, how green the school is. In the last lesson pupils shall find out ways how to show the results of the investigation and explain the topic for others. The teachers guide gives background information for each lesson and helps to use the handbook.

How to teach climate change?

Due to the increasing interest in educational materials about climate change we are developing a new publication involving previous experiences of ours and the Carl Rogers Person-Centred school’s. We will target several age groups, not only the 10-14 years old generation as done before but publish a handbook for teachers in kindergarten, primary and secondary school. Primary school is divided for three parts, the age groups of 7-8, 9-10 and 10-14 years, so the tasks fit the best for the children’s development.

We involved the Carl Rogers School in the material development as they are using pedagogical methods that fit the most to address environmental issues. To support teacher’s work of course we have to tell what to teach and also how to teach. The Rogers school teaches in projects, which help the pupils to deeper understand and discover certain topics, realise its connectivity to other previously learned information, and it always reflects to the pupils’ life.

Based on empiric experiences, researches and discussions with active teachers the material follows these principles:

- Lesson descriptions use cooperative learning methods
- Use lot of drama methods to increase empathy with the environment
- Discovers individuals connection to the issues (energy, climate, the broader world)

- Facilitate and activate what children can do, gives space to solve problem
- Connects the topic to the reality, how it is done in the school or at home, how does it effect the children's life
- Helps teachers work (age group, subjects, competence areas are indicated, gives well explained descriptions and easy to copy working sheets)

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www.energiaklub.hu/hu/ismeretek/oktatas/: Educational materials available in Hungarian:

www.energiaklub.hu/en/hirek/education/: Educational materials available in English:

Apropos Climate change! Energy Efficiency in Buildings

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Abstract

Urgent action is needed to terminate the ongoing global warming. The paper introduces the energy and carbon saving potential of the building sector to limit the greenhouse gas emission. Risk of the lock-in effect is also mentioned which means just partial, short-payback period measures leaving much of mitigation potential of the houses unused. Long-term energy efficiency plans should be prepared and performed, such as e.g. the 'passive house' concept. The co-benefits of energy efficiency may also support these efforts. Energy efficiency is starting to reach the schools, as well. Some good examples for this are cited at the end of the study.

Keywords: *climate change, mitigation, energy efficiency, buildings, lock-in effect*

Urgent action is needed

Climate change is a reality that will probably shape global energy policies during most part of the 21st century. As average temperatures increase and the first impacts of climate change are felt, a wide array of actions at all levels has been started to prevent

Stabilizing global mean temperatures requires a stabilization of GHG concentrations in the atmosphere, and therefore GHG emissions would need to peak at a certain point in the century and decline thereafter. However, the the lower the target stabilisation level limit, the earlier global emissions have to peak. In that way, it has been estimated that limiting the increase of temperatures to 3.2-4°C requires emissions to peak by 2020-2060, whereas staying in the range of 2.8-3.2°C requires global emissions to peak by 2000-2020. However, limiting global mean temperature increases to 2-2.4°C above pre-industrial levels, the threshold currently assumed as a target for avoiding the unmanageable impacts of climate

change, would require global emissions to peak by 2000-2015, and then fall to about -50 to -85% of 2000 levels by 2050 (IPCC, 2007).

The energy and carbon saving potential of the buildings sector

According to the IPCC's last assessment report on mitigation of the climate change, the buildings sector is particularly important in any climate stabilization policy because it is responsible for one third of the total global CO₂ emissions (33% in 2004 once electricity use emissions were accounted for) and provides opportunities for substantial CO₂ emissions reductions that can be realized through an already existing range of technologies, practices and systems of energy efficiency in buildings. Moreover, a sizeable portion of those reductions (29% of the 2020 global emissions baseline) could be achieved through measures with net negative costs when their life-cycle energy savings are compared with the (usually high) initial investment. In the economies in transition of CEE, the available technologies would allow a cut of between 13% and 27% of the 2020 emissions baseline at less than 0 € (tCO₂eq)⁻¹ cost (IPCC 2007). For Hungary, Novikova (2008) identified a wide range of energy efficiency options for cost-effective mitigation whose application in the residential sector could result in a reduction of about a 29% of the sectoral baseline CO₂ emissions in 2025.

Avoiding the *lock-in* effect

The lock-in effect occurs when a buildings energy efficiency retrofit implements only partial, short-payback period measures based on improving specific components of the building structure (e.g., windows, insulation, etc.). In that way, a substantial fraction of the energy and carbon savings potential of the building is *locked-in* because when a building underwent a renovation it is very cost-inefficient, particularly because of the transition costs (e.g., reach consensus between owners, nuisances caused to dwellers during the works, etc.), to revisit it again soon to exploit the remaining, non-captured potential.

To avoid wasting the energy and carbon saving potential of buildings, state of the art designs, materials and technologies need to be applied. Such is the case of the *passive house* concept (Schnieders and Hermelink 2006; Audenaert et al. 2008) that allows reducing the energy consumption of a building for heating to 15 kWh m⁻² year⁻¹ in residential buildings (30 kWh m⁻² year⁻¹ in public buildings) by extensive insulation, ensuring the air-tightness of the building, and installing a heat recovery ventilation system. In Hungary, it has been estimated that if suboptimal renovations continue to be supported from the State, this will

result in a 45% of the CO₂ emissions in 2010 still emitted by Hungarian buildings after the whole building stock has been turned over.

The co-benefits of energy efficiency in buildings

In addition to climate change mitigation, there are many reasons and motivations to believe that a core part of the solution to the global energy and climate challenges lies in reducing energy consumption of buildings while keeping or increasing the provision of energy services: low-energy buildings provide better living and working environments, reduce regional air pollution levels, have net positive employment impacts, enhance the energy security of fossil fuel-dependant importing nations, etc. These various elements are referred to as co-benefits, ancillary benefits or non-energy benefits.

The identification and estimation of the economic value of the co-benefits of energy efficiency – especially in the residential sector, where substantial opportunities for cheap GHG emissions reduction exist – carries an important message to decision-makers and may eventually lead to a new way of approaching to climate change mitigation.

Energy efficiency at school

Primary and secondary education can provide pupils the basic knowledge and skills about climate change and energy saving. In addition to this, schools occupy buildings whose energy consumption can be greatly reduced. By doing so, its environmental conditions and performance can be enhanced, and a number of co-benefits can be identified in this respect. As reported by Kats (2006), *green* schools in the US have lower energy and water costs, improved teacher retention and smaller health-related financial costs. The avoided financial costs related to these co-benefits would save enough money in an average school – if built *green* – to pay for an additional full-time teacher (Kats, 2006).

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Everyday Adaptation to Weather: Better to Know Than to Sorrow

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Abstract

The role of meteorology: to avoid or at least reduce damage caused by weather catastrophes. This professional activity requires continuous operation data collection, data transmission with a side activity of deriving climate data, worldwide. The weather forecasts, depending on their time ahead are Now-casting, Short-, Medium- and Extended-range forecasts stating the future weather conditions from a few hours up to 30 days. Behind this time-frame, Long-range forecasting and Climate forecasting provide deviations from climate values, and variations of climate, itself. These forecasts serve for weather information in the everyday life, but often as weather warnings, as well. The paper also refers the various channels of disseminating weather forecasts and warnings to the general public, recommending to be informed in this aspect of our everyday life. The paper is closing by description of the tragic story of the severe thunderstorm in Budapest on August 20, 2006, as an example for the importance of everyday adaptation to weather. Safety measures of the state administration, as well, as by the Meteorological Service, made the next year's similar weather on the same day of the year much less problematic.

Keywords: *meteorology, weather, forecasting, thunderstorm.*

Foreword

“Since humankind evolved on earth the activities of men and women have been affected by the vagaries of the weather. The fundamental tasks of providing food, clothes and shelter were carried out within the dictates of the local climate, and with the hope that the following day would bring “good” weather – “good” could mean rain to germinate seeds, sun to ripen crops, wind to fill the sails, or a variety of other weather conditions. The weather needs changed from one season to another but, living closely with nature, mankind knew what weather was needed, and knew to take advantage when that weather occurred. What they

did not, and could not know, was how that weather would change over the coming days.”
(WMO/No.1354)

The science of meteorology has developed so much that we can now answer, with a reasonable degree of confidence, how the weather will change and develop over the coming week. But trying to define “good” weather is to invite more questions than answers. Many of us now live in an urbanised world, and as a result of that, we are increasingly unable to read the signs of nature. As science has developed a greater understanding of weather and climate, it is important to enable society to take full advantage of the knowledge we now possess. Extreme environmental events can have a catastrophic impact on society. Events such as tropical cyclones, heavy storms, floods, droughts, cold spells and heat-waves – all have the potential to cause enormous destruction and loss of life. Their economic effects can also be long-lasting; one such event can set back the economic development of a small nation by many years, perhaps up to a decade.

The role of meteorology: to avoid or at least reduce damage caused by weather catastrophes

The basic task of meteorology is to provide weather forecasts, warnings and other information for public welfare and for the protection of life and property. Who are the users of weather and climate services?

- The general public, with its diverse needs and interests;
- People involved in economic activities, such as energy supply, transport, building and construction, farming, fishing, and recreational activities;
- Reporters, presenters and editors in the media;
- The natural hazards community, including people involved in managing, mitigating and handling hazards (media, governmental bodies, emergency managers, and non-governmental and volunteer organizations);
- Governmental authorities (high-level policy and decision makers).

In the next paragraph the short review of the weather forecasting process can be found.

Data collection

Making weather forecasts and warnings, depends on observed weather data. To meet data requirements, the national meteorological services establish, maintain and operate national weather observing networks which form a part of the Global Observing System. This is the

- Radar data: Radar images of severe weather systems have become an essential part of storm and tornado warnings. Radars track cloud systems, storms, hurricanes and typhoons. They are also used for rainfall estimations and wind speed and direction in severe thunderstorms.

Data transmission

After collection, weather data are rapidly transmitted to forecasting centres in the National Meteorological Services for quality control, plotting on weather charts and analysis. Following this work weather forecasting is then done.

Climate data

It is important that accurate climatic analyses are carried out since they form a basis upon which climate variability and change may be discerned. Re-analysis of old data records for this purpose becomes necessary from time to time.

Making the forecasts

Forecast Methods

Since the beginning of the Eighties the trends method has been used to make weather forecasts. This method involves using weather maps to determine the speed and direction of movement of air masses, fronts, pressure systems, and areas of clouds and precipitation. Using this information, the forecaster can predict where these weather features are likely to be in the near future. Nowadays numerical weather prediction (NWP) techniques are used in meteorology, based on increasing power of computers and a hierarchy of models (*Fig. 2*).

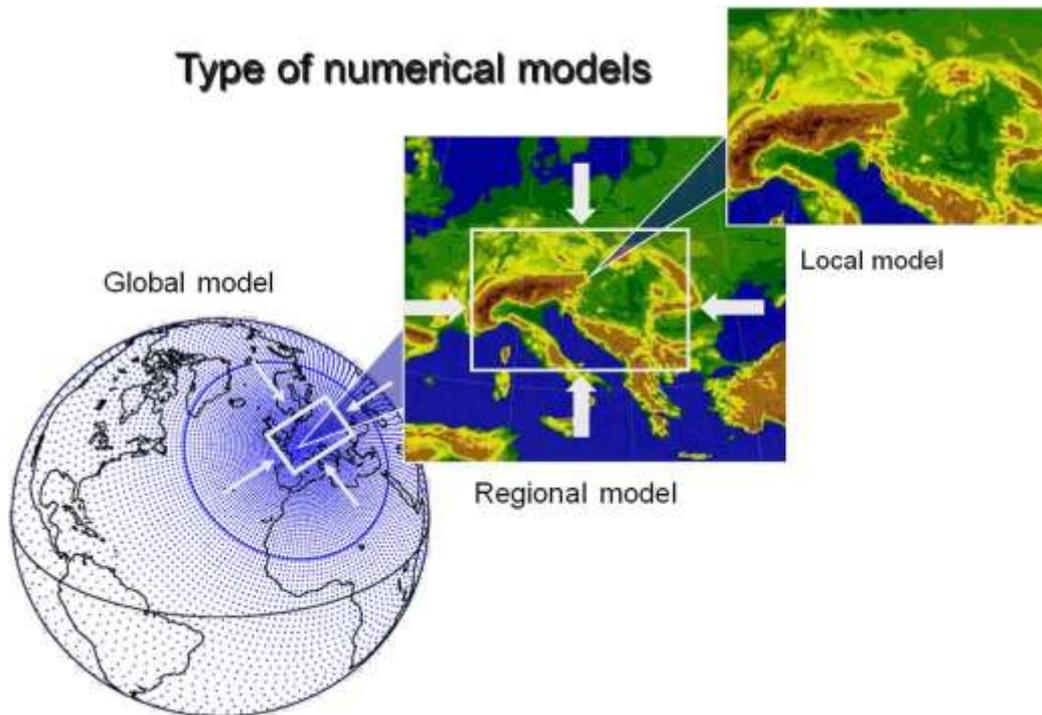


Figure 2. Types of numerical models: global, regional and local model.

Complex computer programs, also known as forecast models, run on supercomputers and provide predictions about many atmospheric parameters such as temperature, humidity, pressure, wind speed, wind direction and rainfall.

Forecasts are issued at almost every scale in terms of space (spatial coverage). They range from local predictions at the scale of a town through defined areas of several thousand square kilometres, up to global analyses. As the area becomes larger the forecasts become more general, whereas local forecasts have to be far more precise in their content.

How far ahead?

Weather forecasts are produced to cover a wide variety of timescales. Broadly speaking they can be divided into the following categories:

- *Nowcasting*: a description of current weather conditions and a 0 to 2 hour forecast of their likely behaviour (most often used to describe current severe weather events such as heavy rain, severe thunderstorms, tornadoes and hurricanes);
- *Short-range forecasting*: descriptions of weather conditions up to 72 hours ahead (often divided into very short-range, out to 12 hours and short-range from 12 to 72 hours);
- *Medium-range forecasting*: descriptions of weather conditions from 3 days up to ten 10 ahead;

- *Extended-range forecasting*: beyond ten days and up to 30 days, description of weather conditions, usually described as a departure from climate values for that period;
- *Long-range forecasting*: a description of average weather conditions as a departure from climate values for a defined period, often presented in the forms of monthly, three-month or seasonal outlooks;
- *Climate forecasting (beyond two years)*: predictions of any climatic variability.

Weather information in the everyday life

In our daily lives we want to know how the weather may affect decisions we have to make. It may be as simple as whether we need to take a raincoat or an umbrella, or whether there is a risk of encountering ice on the road when driving to work. What really matters is to know how conditions will impact us.

For all sorts of reasons, people want to know what kind of weather they are going to experience. In particular, they want warnings of high impact weather that will cause serious inconvenience or pose a risk to them or their possessions. Moreover, high impact conditions are defined entirely by the local weather: snowfall that, in southern England, can produce widespread chaos is regarded as a trivial matter in Montreal or Moscow. Similarly, a heavy storm in well drained countryside may be a welcome event but it may cause serious damage to property in an adjacent poorly-drained highly populated area.

One has to discriminate between:

- ***Weather Information System***: Such a system deals with the basic weather forecasts and
- ***Weather Warning System***: Such a system handles dangerous weather situations which can be connected with damage for persons and goods.

Weather warnings

Warnings are issued for the purpose of protecting life and property when a severe event occurs. They are based on the shortest-range forecasts, the so-called nowcasts. These are of immense value to people in their day to-day lives. For instance, they enable people to anticipate a variety of hazards associated with severe thunderstorms. To make a weather warning is the greatest challenge for meteorology. A weather forecast can never be 100% accurate. In the case of nowcasting, in local scale the behaviour of the atmosphere is chaotic.

So it is necessary to communicate forecast uncertainty to assist people to make more effective decisions. In presenting potentially hazardous conditions in terms of probabilities, it is very important to make the uncertainties understandable to the general public. This is not an easy process

Disseminating weather forecasts and warnings to the general public

Dissemination of weather forecasts and warnings to the general public and to specialized users is a primary function of meteorology. National meteorological services or private meteorological services can use the following type of media:

- *Radio*: Radio is a common and very effective means of disseminating weather forecasts and warnings, not only for daily weather forecasts for public convenience and comfort, but also as a handy mass medium in the event of severe weather disasters.
- *Television*: Television as a medium for dissemination of weather information is very popular, because it is a versatile tool for entertaining, educating and informing viewers.
- *Newspapers*: Newspapers provide routine weather forecasts and information through the use of text and graphics. They are very useful in disseminating long-range forecasts and climate outlooks. Newspapers also play an important role in public education. They are, however, less useful for the short-lived, fast-breaking weather events such as flash floods, tornadoes and severe thunderstorms.
- *Telephone*: In some National Meteorological Services, the public can call and speak directly to the staff but this may result in overloading of service lines at critical times. Additionally, weather messages recorded on automatic telephone answering devices are effective in reducing the number of telephone calls to office personnel.

- *Mobile and wireless:* The telephone paging system is another method that enables quick, simple messages or alarms about time-critical weather information. This may take the form of WAP or SMS.
- *The Internet:* The Internet is the most popular dissemination medium for weather forecasts nowadays. This is a versatile dissemination tool on which a meteorological service can display large amounts of information which can be easily updated. The information may include raw data, forecasts and warnings, satellite and radar pictures and educational information. The Internet allows meteorological services to display their information in an attractive format including highly visual graphics and animation, which attracts users and motivates them to consult it regularly. Where required, information is targeted to specific or specialized users who request specific forecasts by using a password.

Be informed! But, how?

As it was mentioned earlier, there are a lot of meteorological service providers around the world. Some of them put a huge range of meteorological information on the Internet. Beside the national meteorological services, there are also private services who provide correct information. But be careful! In many cases you can find meteorological websites which contain information without an official background and quality control. This information misleads the user, and in the case of weather warnings false information can cause a catastrophe.

People generally do not know which web pages contain accurate information. For this reason it is expedient to use the websites of the national meteorological services or the WMO coordinated cooperation. Here are some links, where you can find accurate, official weather information and warnings.

- *Weather information around the world:*
 - o Homepages of the national meteorological or hydro-meteorological services:
http://www.wmo.int/pages/members/members_en.html
 - o Collected official forecasts and climatological information from countries:
<http://worldweather.wmo.int/>
- In Hungary:
<http://www.met.hu>

- *Weather Warnings around the world:*
 - o METEOALARM Multiservice Meteorological Awareness System for Europe (Fig. 3):
<http://www.meteoalarm.eu/>
 - o Tropical cyclones and severe weather
<http://severe.worldweather.wmo.int/>

- In Hungary:
<http://www.met.hu/hunalarm/>



Figure 3. The METEOALARM website and the website of the Hungarian Meteorological Service provide official weather information for Europe and for Hungary.

The tragic story of the severe thunderstorm in budapest on august 20, 2006, as an example for the importance of everyday adaptation to weather

Finally here is the story of the Constitution Day on 20th August 2006, which shows how important it is to be informed about the weather and to be prepared to avoid dangerous situations.

A severe thunderstorm caught Budapest on 20th August 2006, wreaking havoc during the celebrations of the Constitution Day. Around 1.2 million spectators of the Constitution Day

fireworks were hit by storm and hail shortly after the show began at 21:00 local time. Heavy rain and wind-gusts over 120 km/h uprooted trees, smashed cars, windows and ripped tiles off rooftops. 5 people died and hundreds injured as a result of the fierce storm. The strongest wind gusts in the down town reached the speed of 116 km/h (32.3 m/s), 123 km/h, (34.1 m/s) at Lágymányos station (next to the Danube), and 82 km/h (22.6 m/s) speed at Budapest - Pestszentlőrinc station (in the outskirts of Budapest).

The Hungarian Meteorological Service (HMS) had forecasted the cold front days ahead. Also on the web-based warning system of HMS, which is available for everyone, the forecasters issued the red level warning in due time (*Fig. 4*). Additionally, on the day of the tragic weather event the forecasters sent several warnings to the Disaster Management Organization which is an official duty of HMS. On contractual basis the different partners of HMS have been also warned.

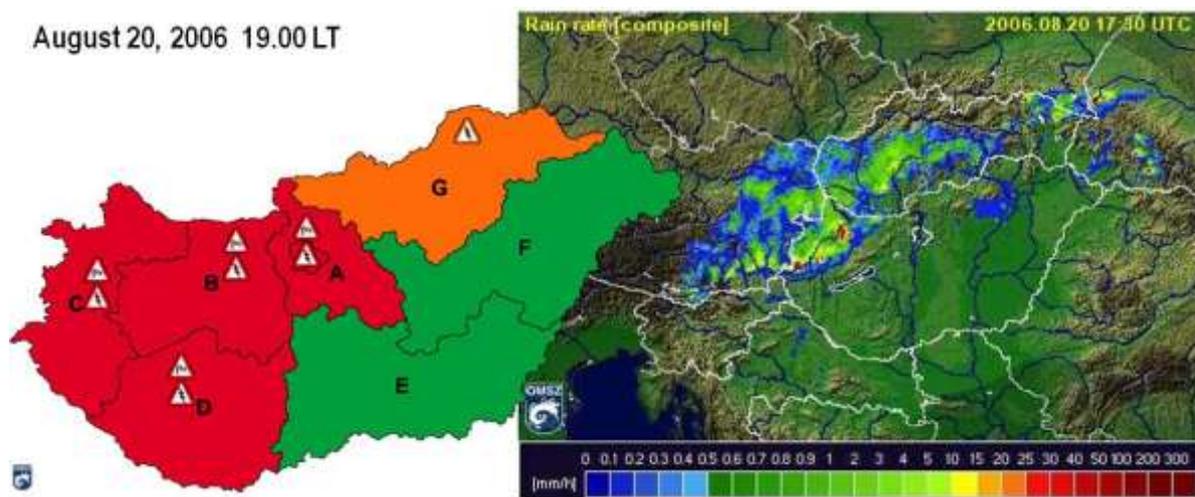


Figure 4. The red warning for Budapest region was issued at 7 PM, i.e. two hours before the beginning of the fireworks.

The forecast was good, the warning was issued in due time. Why wasn't the tragedy prevented? The reasons are as follows:

- Neither the state institutions responsible for the organization of the ceremonies, nor the organizers of the events requested weather forecasts and warnings from the Hungarian Meteorological Service..
- Therefore, the HMS was not able to send the warnings directly to those concerned.
- The organizer used the website of a Hungarian private service provider.

- This service provider issued wrong warning for that time: „there is not and there will not be dangerous weather situation during the next days”.
- People also did not pay attention to the meteorological information.
- They did not have enough knowledge about meteorological terminology and the possible effects of the meteorological events.

The circumstances of the catastrophe were first investigated by the state, and then examined in more detail by the Commissioner for Civil Rights. After the investigation some important measures were taken:

Administration, Contact

- According to the resolution passed by the government in October 2006, the HMS is a member of the Operative Staff, which is responsible for organizing the national and state festivities. The OT assembles for the entire day of the state festivities, thus the organizers responsible for the events receive meteorological information first-hand.
- From August 20, 2006 meteorological support is a compulsory part of the management plan for every state event.
- Outside of the Operative Staff, the organizers of the events are in contractual relationship with the Meteorological Service

Technical Developments at the HMS

- The renewal of the alarm system
- The aggravation of the criteria for warnings, in order to avoid confusion. The “red” warning is now only issued in the case of the most dangerous, rarely occurring weather events.
- The disclosure of new documents defining, explaining, and describing the effects of dangerous weather phenomena at the official web page of the HMS. (www.met.hu)
- The renewal of the web-based display of our alarm system, and the establishment of an alarm page which is accessible to everyone from the front page of met.hu (www.met.hu/hunalarm). Handouts were made containing information about the alarm system
- The continuous development of methodologies

The events of 20 August 2007

On 20 August 2007, albeit in different weather conditions, a storm of similar intensity hit Budapest during the festivities. This time the storm arrived earlier. The first weak thunderstorm reached the capital at 6 pm, while the second, which was similar in force to last year’s storm, hit at 6:30. The wind speed measured at the Lágymányos station (on the banks of the Danube) was 34 m/s, which is the same as last year.

The Hungarian Meteorological Service already forecasted the storm in the morning hours almost on the minute. The hundreds of thousands of people who took part in the events (air

parade, cultural programs, religious procession etc.) were informed of the weather conditions through screens and loud speakers. Thanks to the all-encompassing, carefully planned security measures nobody was hurt during the storm this year.

References

Weather, Climate and Water Services for everyone. WMO-No 1024 © 2007. World Meteorological Organization

WMO/No 1354: Public Weather Services – Strategy for Developing Public Education and Outreach PWS-14, WMO/No 1354

Climate Change In A Nutshell

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Abstract

Climate change is of concern even for the youngest generation. This fact may be a good starting point to emphasise some related aspects of science and of society. Our study presents the “mainstream” key statements about the climate change, “very likely” caused by the extra greenhouse gas emission due to anthropogenic activities. After listing the climate forcing factors, problems of detection and attribution are tackled. Based on success of simulating the global warming in the recent half century, the global climate projections are presented. Regional features of the global warming, also including projection of weather extremes establish the impacts of climate change, presented just briefly according to the main latitudinal belts. Finally possibilities of mitigation of climate change are presented which is often called “climate protection”.

Keywords: *climate change, regional projection, weather extremes, adaptation, mitigation*

Introduction

Climate change is an exciting scientific and practical challenge of our era. Acting today in this regards yields positive results for the next generation. This is why young generation should also be involved into these pieces of knowledge to motivate them for contributing to focused response of society in mitigation of the changes and in adaptation to them. In preparation of these tasks geography undertakes a key role from among education subjects.

Climate is popularly thought of as some sort of average weather and its fluctuations. More precisely, climate statistics are obtained by averaging weather over a period, long compared to the deterministic limit of predictability for atmospheric motions, which is about two weeks. The climate system is now recognised to also include the oceans, ice sheets, and land-surface properties because of the close interactions between these and the atmosphere.

Climate can vary from year to year, fluctuate on time scales of several years, or change on longer time scales. Detecting the effects of warming by the greenhouse gases requires establishing the occurrence of long-term change that is statistically significant compared to past climate normals. Climate statistics can be obtained by averaging data over a large number of years, e.g., 30 years of data are usually used to define "normals". However, since climate is always changing, there are no fixed normals such that the statistics will always depend on the averaging period.

Climate forcing factors

Changes in global climate are forced by various processes that change the flows of radiative energy within the system. Either the absorption of solar radiation or the trapping of long-wave radiation by atmospheric constituents may change. Possible reasons for change include:

- 1.) Change in solar irradiance or change in geometry of the Earth's orbit around the Sun.
- 2.) Change in fraction of energy reaching the surface vs. the top of the atmosphere.
- 3.) A change in the amount of outgoing (long-wave) energy at the top of the atmosphere.

These changes may occur due to both natural and man-made factors. The activity by which man can intervene in the atmospheric processes is changing the global energy balance of the atmosphere and the surface. This is possible in several processes.

Changes under headings 2.) and 3.), including both natural and man-made sources, may result from (i) Changes in the amount of long-wave radiation emitted by the surface and/or absorbed by various (the so called greenhouse-gases), cloudiness and H₂O in the atmosphere; (ii) Changes in atmospheric transparency resulting from either variations in the amount of volcanic and anthropogenic aerosol in the atmosphere, or variations in cloudiness. Changes in the forcing factors in the last 250 years are presented in *Figure 1*. The most important conclusion, namely that the radiation balance of the Earth has been perturbed mainly by the greenhouse gases with some other changes worth also studying.

The effect of carbon-dioxide alone is approximately as strong during these centuries than the whole effect of all factors. This means that the warming effect of the non-CO₂ greenhouse gases became fully compensated by direct and indirect effects of the aerosols. The direct effect of aerosols means back-scattering of solar energy to the outer space. The indirect effect means redistribution of the existing water content of the clouds from fewer large raindrops of larger diameter to increased number of smaller drops. The latter version created by the so called condensation nuclei, i.e. water solvable aerosols.

The greenhouse effect causes a general warming of the lower atmosphere and Earth's surface, and a compensating cooling of the upper stratosphere. The greenhouse gases of

natural origin constitute main factors of the earth's climate: in the absence of water vapour, carbon dioxide and methane a climate of 33 K colder would dominate on our planet.

Danger of the climate modification effect of human activity is enhanced by the fact that most of the greenhouse gases have very long residence time. So, even if mankind decides to stop immediately all the activities that enhance the atmospheric greenhouse effect posterity would experience the consequence of previous releases even over centuries.

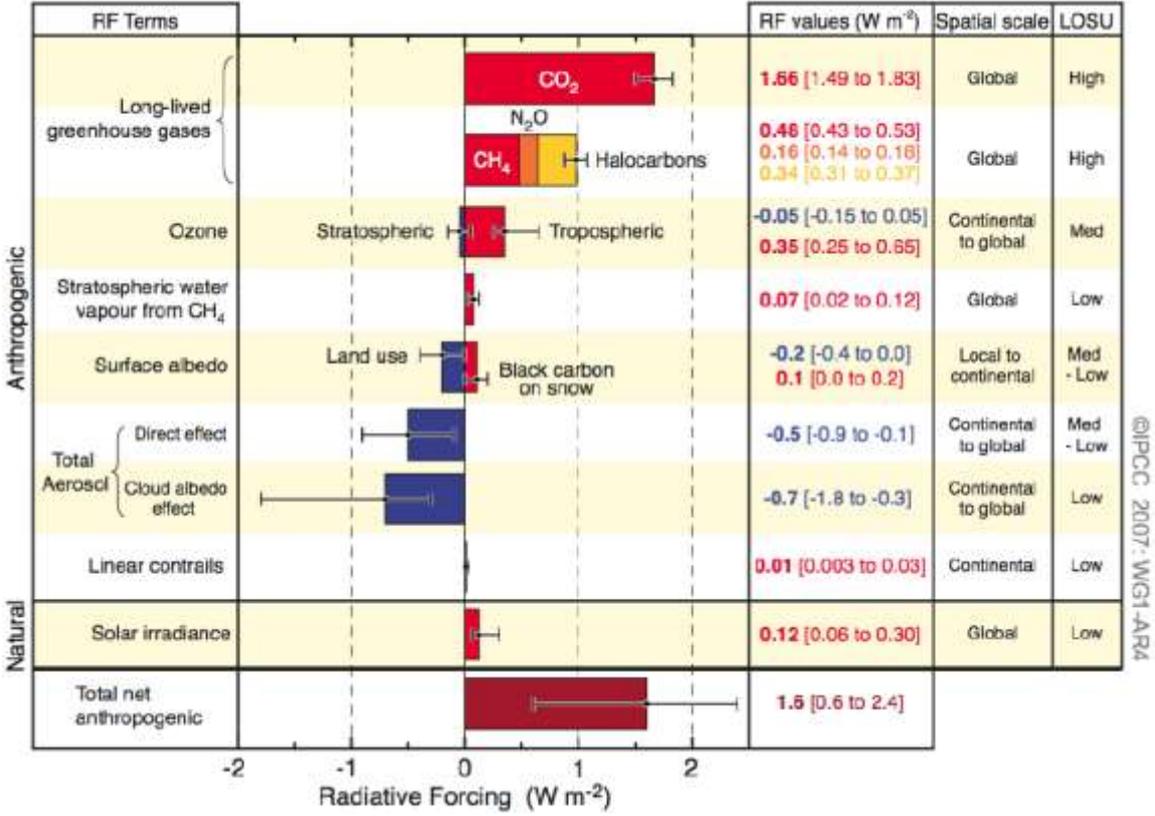


Figure 1. Global mean radiative forcing (RF) estimates and uncertainty ranges in 2005 for anthropogenic carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O) and other agents and mechanisms, together with the typical geographical extent (spatial scale) of the forcing and the assessed level of scientific understanding (LOSU). The net anthropogenic radiative forcing and its range are also shown. Volcanic aerosols contribute an additional natural forcing but are not included in this figure due to their episodic nature. (IPCC, 2007: Fig. 2.20)

The most important greenhouse gases and the data on their concentrations and lifetime are listed in *Table 1*. These gases generally absorb infrared radiation and thus contribute to the greenhouse effect of the atmosphere by reducing the amount of radiation emitted by the Earth's surface that escapes to the space. For this reason, such substances have come to be called 'greenhouse' gases.

Table 1. Present-day concentrations and Radiative forcing for the most important greenhouse gases. The changes since 1998 are also shown.

Species ^a	Concentrations ^b and their changes ^c		Radiative Forcing ^d	
	2005	Change since 1998	2005 ($W\ m^{-2}$)	Change since 1998 (%)
CO ₂	379 ± 0.65 ppm	+13 ppm	1.66	+13
CH ₄	1,774 ± 1.8 ppb	+11 ppb	0.48	-
N ₂ O	319 ± 0.12 ppb	+5 ppb	0.16	+11
	ppt	ppt		
CFC-11	251 ± 0.36	-13	0.063	-5
CFC-12	538 ± 0.18	+4	0.17	+1
CFC-113	79 ± 0.064	-4	0.024	-5
HCFC-22	169 ± 1.0	+38	0.033	+29

Climate change detection and attribution

Climate of the earth has never and nowhere been steady. Its changes can be always traced during the earth's history. For example, the study of paleoclimates shows a series of quasi-periodic variations and glacial periods returning at about 100 000-year intervals throughout the Quaternary era. These variations have been related to changes in orbital parameters that cause small changes in the amount of solar radiation received by the Earth.

Typical examples for these changes are the processes of repeated glaciations in the Quaternary, the period of the so called "Climatic Optimum", 5-6 thousands years ago that was warmer and more humid than the climate of these days, or the "Little Ice Age", that lasted for a few hundred years and ended about 1850. Historical changes have two common features: they were relatively slow and the processes were of natural origin in every case.

In the recent century the situation has very likely been changing. Besides the natural forces, human activity has been added to the climate determining factors. In a few decades it can

bring about changes of the present climate of such extent and rate that has not been experienced in the past one hundred thousand years.

There is a broad agreement among the scientific reconstructions of mean air temperatures over the Northern Hemisphere. All series show similar long term trends: warming from the start of the century to around 1940, cooling to the mid- 1960-s and early 1970-s, and warming thereafter.

However, the key question of the issue is if really the mankind is the responsible for the experienced global warming. *Figure 2* shows us the strongest argument for this statement, at least in the last 50 years. The observed series of the global mean temperature are successfully simulated by the interval of 14 global climate models reproducing the past changes under the influence of all known anthropogenic and natural climate forcing factors. But, if leaving out the anthropogenic ones, i.e. allowing just natural factors, like volcanic eruptions and solar activity to act, this kind of simulation clearly departs from the fact.

So, the warming of the recent half century could not happen without the anthropogenic factors. This statement can be erroneous in case of two parallel strong mistakes, only. The first error, in case, would be that scientist strongly overestimates the effects of greenhouse gases in their computations, whereas the second one is that the “true” reasons of the observed warming, are not known, at all. Probability of these two mistakes is assessed by the IPCC WG-I, (2007) as $\leq 10\%$. Until this unlikely combination becomes proven, the only smart decision is to get prepared to further warming, as it follows from the $\geq 90\%$ likelihood.

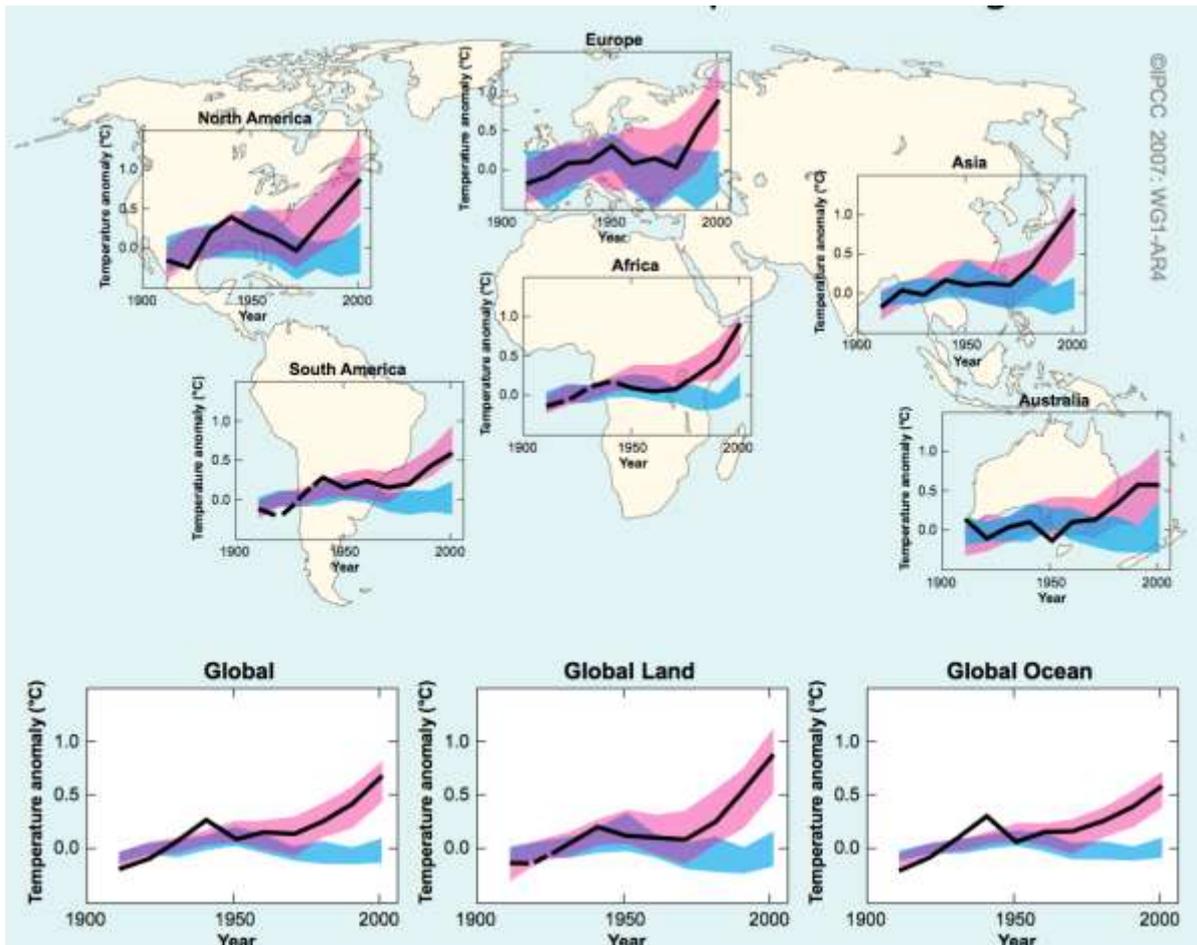


Figure 2. Comparison of observed continental- and global-scale changes in surface temperature with results simulated by climate models using natural and anthropogenic forcings. Decadal averages of observations are shown for the period 1906–2005 (black line) plotted against the centre of the decade and relative to the corresponding average for 1901–1950. Lines are dashed where spatial coverage is less than 50%. Blue shaded bands show the 5–95% range for 19 simulations from 5 climate models using only the natural forcings due to solar activity and volcanoes. Red shaded bands show the 5–95% range for 58 simulations by 14 climate models using both natural and anthropogenic factors. {IPCC, 2007: FAQ 9.2, Figure 1}

Global climate projections

Based on the success of past simulations, the climate models are also used to project the future climate. The expected global mean temperature depends on the emission scenarios driven by the trends of population, energy resources, economic growth, equity of the regions, etc. According to these computations (IPCC WG-I, 2007: Fig. 10.4 and 10.29), 1.1–6.4 K

warming is expected until 2100 compared to 1980-1999. Even if the atmospheric composition remained constant, the temperature would increase by ca. 0.5 K due to oceanic thermal inertia.

A few years ago the fear from a new ice-age was common following the famous Pentagon Report (Schwartz and Randall, 2003) and the fiction movie „The day after tomorrow” in 2004. But, even if the oceanic conveyor belt switched off totally, the consequence would not be a strong cooling, with significant glaciations, but an extremely contrasted temperature distribution between the continents and the ocean of the Northern Atlantic region (Wood et al., 2003). Hence, no scientific reason exists for considering a new ice age in connection with enhanced greenhouse effects.

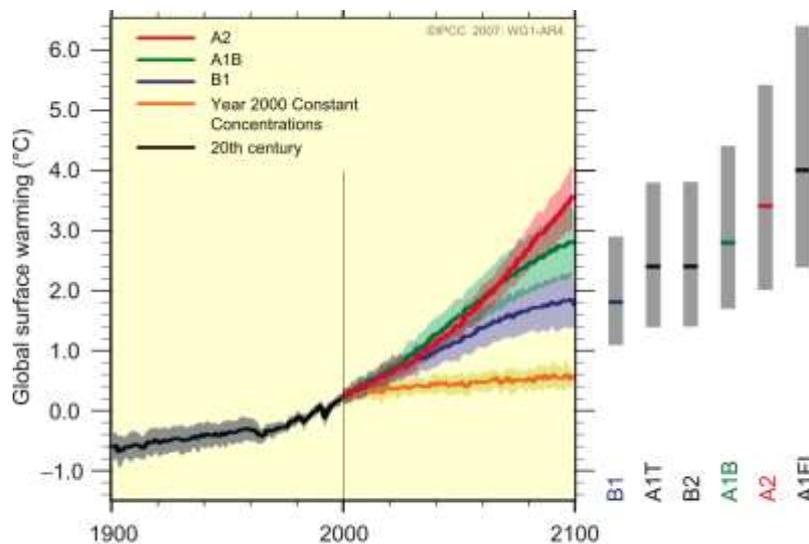


Figure 3. Projections of the global average temperature. The solid lanes of the figure show the establishment of the global surface average temperature. Lane before 2000 are the observed values with their uncertainty, also forming the reference period in 1980–1999. In the inner figure A2, A1B and B1 shows the future according to the scenarios. The columns to the right from this display indicate the uncertainty of the model estimates, i.e. deviation from the mean by +60 % and -40 %. (IPCC, 2007: Fig. SPM 5)

The most direct effect of the global temperature increase is the elevation of the sea level. In connection with the above global scenarios, its expected changes are presented in Figure 4, together with the observed sea level rise since the beginning of the 20th Century. The reasons of the sea level rise are: (i.) Thermal expansion of ocean waters. (ii.) Melting of smaller glaciers and ice caps. (iii.) Changes of melting and accumulation of the ice sheets of Greenland and Antarctica, but they tend to counterbalance each other.

Danger of the sea level rise is enhanced by the fact that it will probably not be stopped by the hopefully successful stabilisation of the air temperature. Hence, the temperature increase has already been detected in the upper 3 km layer of the oceans. The reason is that 80% of the radiation balance surplus is absorbed by the oceans. This warming together with the thawing of land ice has already caused 17 cm elevation of the sea level (IPCC, 2007).

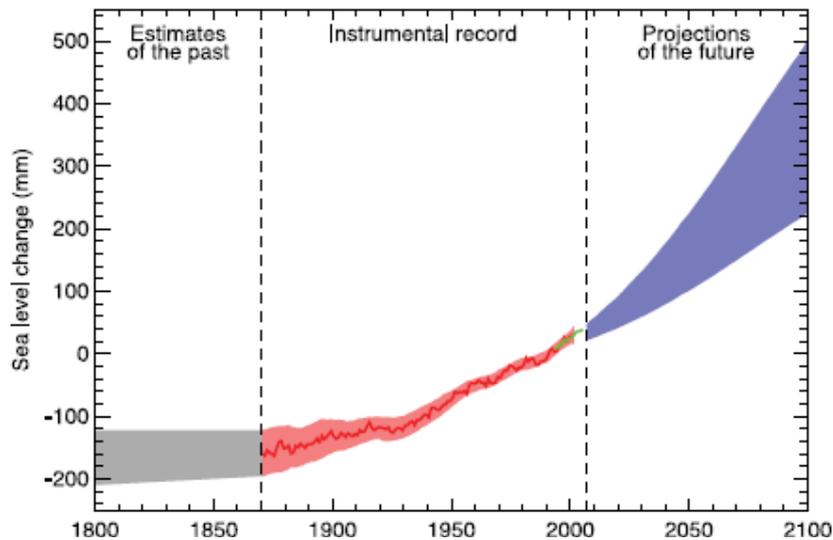


Figure 4. Observed sea level changes in the distant and recent past, together with projected changes due to the global warming, considering the (i.) and (ii.) reasons, as listed above.

Regional features of the global warming

As in case of the global climate projections, where the complexity of external forcing factors, internal feedbacks and also the lack of their full knowledge, there is no reality to speak about forecasts of first kind, as it is done e.g. in case of the everyday weather forecasts. Instead, forecasts of second kind or in other words, scenarios are edited to give any guidance in estimation of possible impacts of the changes or to outline the possible adaptation measures. In the recent IPCC Report (2007) Chapter 10 displays maps of changes of several climate variables. The model simulations are based on the mid-range (A1B) SRES scenario (Nakicenovic and Swart, 2000). The forecasted and control periods are 2080-2099 vs. 1980-1999. Majority of the models are new compared to the previous IPCC Report. In some cases, similar models of the same institute are used with differences in the resolution, or in parameterization of one single process.

In Figure 5 the average changes in cloudiness, sea-level pressure, runoff and soil-moisture content are presented for 2080-2099 compared to 1980-1999 according to the A1B scenario. The model-mean global mean projected warming between these periods is 2.7 K. Except the pressure changes, all fields are annual averages. The original figures are presented in colour. The signs in the figure are added by the authors for better understanding.

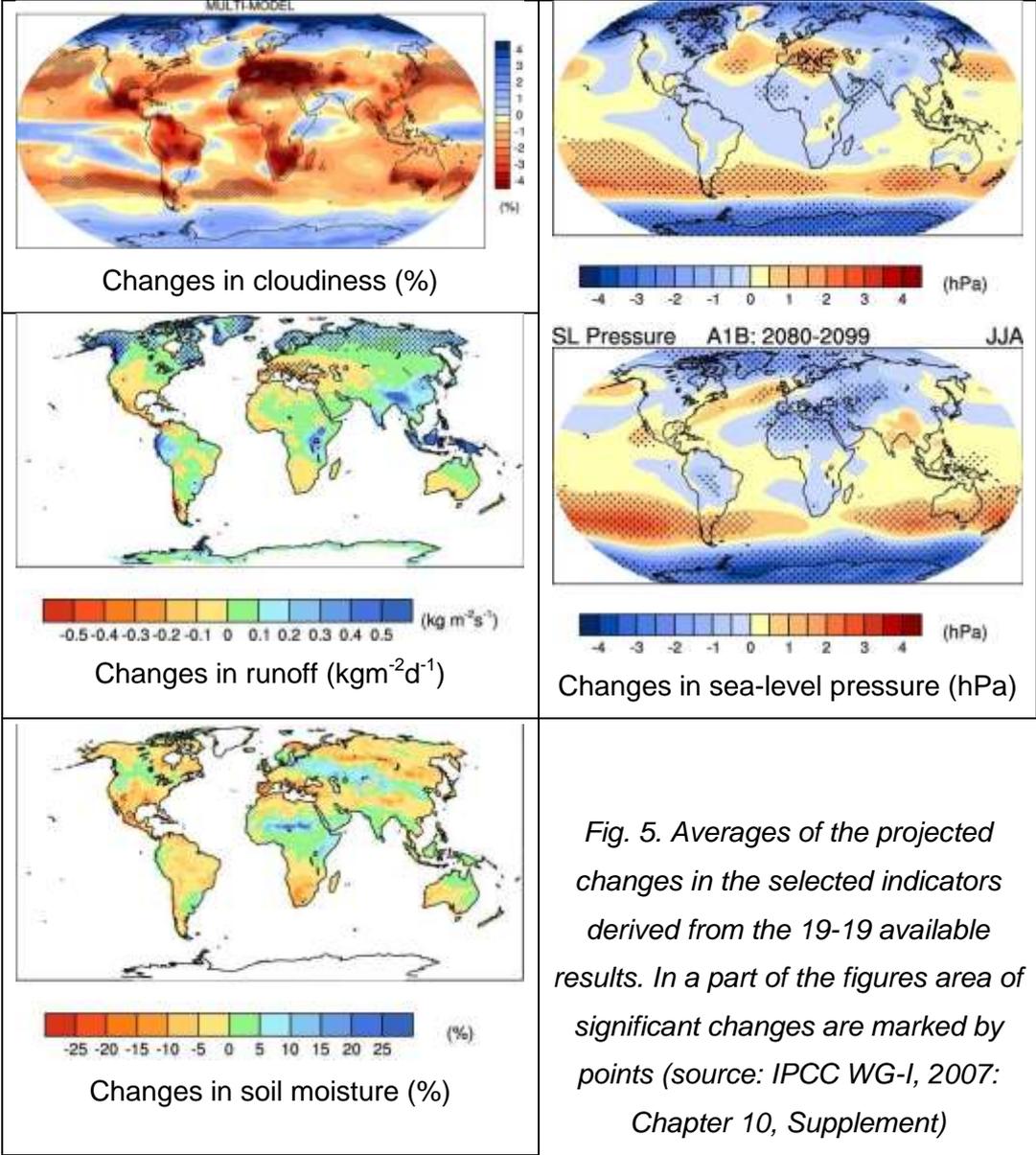


Fig. 5. Averages of the projected changes in the selected indicators derived from the 19-19 available results. In a part of the figures area of significant changes are marked by points (source: IPCC WG-I, 2007: Chapter 10, Supplement)

The projected changes in cloudiness exhibit rather simple structure: With the exclusion of a few smaller low-latitude areas, the cloudiness is decreasing between the ca. 60th latitudes of both Hemispheres with increasing cloudiness in the rest of the Globe. The less clouds at the low and intermediate latitudes mainly contribute to the greenhouse warming since majority of these sectors are of positive radiation balance (both at the surface and at the upper boundary of the atmosphere).

In these sectors the lower cloudiness supports the short-wave radiation income to larger extent than the also increased outgoing long-wave radiation. At the polar latitudes the more cloudiness also contributes to the warming allowing smaller part of the energy in the long-wave part of the spectrum than the blocked the short-wave component.

Patterns of changes in the sea-level pressure do not show so simple structure. As expected from the law of mass conservation, there is a territorial balance between increasing and decreasing sectors of sea-level pressure. For majority of Europe significant increase of the pressure indicate more frequent anticyclones in winter. At the same time, in summer the pressure is decreasing over almost the whole continent.

Patterns of changes in runoff are also patchy. Decrease of runoff is projected at the lower temperate latitudes with definite continentality, expressed in decrease in the western and increase in the eastern parts of both Eurasia and Northern America. This feature is hardly explainable with hydrological causes since the zonal differences are the opposite to the availability of moisture sources! Particularly in Europe a clear zonal structure with increase in the northern and decrease in the southern parts of the continent is also distinguishable.

Patterns of soil moisture changes are more or less of zonal structure with some tilt towards the lower latitudes in the middle of the continents. In Europe this means decrease of the soil moisture in majority of the area including Central Europe, as well.

The large characteristic sizes of the changes with identical signs in both hydrological patterns may be partly caused by the coarse resolution of the models and the averaging among the individual model outputs, as well.

Next, in *Figure 6* one can find the average modelled changes of temperature and precipitation for Europe in the extreme seasons, winter and summer. The warming has different patterns in winter and in summer with more similarity to the first one in annual mean. Strongest warming is expected in North-East Europe in winter and in the wide Mediterranean in summer. The latter peak is likely connected with the extra heat gained from the decreasing cloudiness (vs. with Fig. 5). For Hungary the annual mean warming is over 3 K which is slightly higher than the global mean change of temperature. The change in winter is similar to the annual one but in summer the expected warming is close to the 4 K.

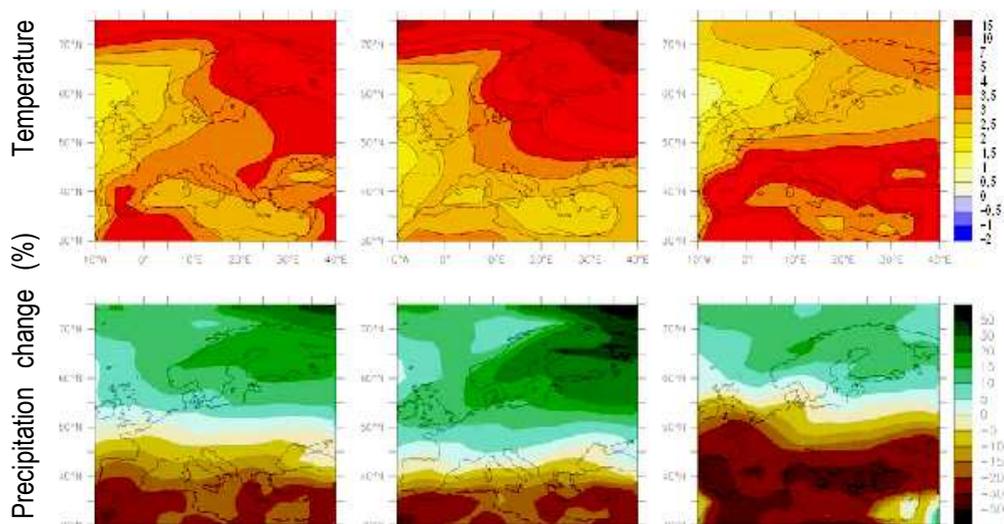


Figure 6. Model average changes of temperature and precipitation in Europe from the GCMs. Note the seasonal differences in the distribution of the changes. (IPCC, 2007, from Fig. 11.5)

Precipitation has a clear zero-line with a surplus in the northern and decrease in the southern part of the continent. The line is rather southward in winter parallel to precipitation increase in most of Europe. In summer, however, the zero-line is situated more northward with a slight dominance of areas with decreasing precipitation over Europe. The position of this line in the annual mean precipitation is closer to the winter position than to the summer one. For Hungary, the annual mean precipitation change is close to zero according to the model mean. More problematic is the intra-annual distribution with increase of the input side of water balance in winter but strong decrease in summer. This inequality, together with the increasing temperature, may contribute to the projected soil moisture decrease in Hungary.

Projection of weather extremes

Weather extremes are often quoted as rare, or intense event, but in some other cases those of high impacts. All three aspects are worth mentioning in education of the youngsters. By definition, the characteristics called “extreme weather” may vary from place to place.

Specific concern at the middle latitudes is caused by thunderstorms, tornadoes, hail, dust storms and smoke, fog and fire weather. These small-scale severe weather phenomena range from minutes to a few days at any location and typically cover spatial scales from hundreds of meters to hundreds of kilometres. These extremes are accompanied with further hydro-meteorological hazards, like floods, debris and mudslides, storm surges, wind, rain

and other severe storms, blizzards, lightning. They wash out roads and create health problems when flood water spills down hillsides. Power lines and fallen tree limbs can be dangerous by causing electric shock. Alternate heat sources used improperly can lead to injury from fire or carbon monoxide poisoning. The longer-term, precipitation- and temperature-driven set of extremities contains drought, wild-land fires, heat-waves, melting of permafrost and occurrence of snow avalanches, etc.

Ca. 90 % of the natural disasters are somehow related to weather, concerning their material harm. Only the volcanic eruptions and the earthquakes are free of atmospheric forcing factors. These weather damages destroy over 10 % of gross domestic product in the poorest countries of the world (WMO, 2006). This number is ca 2 % in the richest countries (In Hungary it is just 1 %, due to its favourable geographical location in this respect.).

Table 2. Recent trends, assessment of human influence on them, and projections of extreme weather events for which there is an observed 20th century trend. (IPCC, 2007: Tab. SPM-2)

Phenomenon ^a and direction of trend	Likelihood that trend occurred in late 20th century (typically post 1960)	Likelihood of a human contribution to observed trend ^b	Likelihood of future trends based on projections for 21st century using SRES scenarios
Warmer and fewer cold days and nights over most land areas	<i>Very likely^c</i>	<i>Likely^d</i>	<i>Virtually certain^d</i>
Warmer and more frequent hot days and nights over most land areas	<i>Very likely^e</i>	<i>Likely (nights)^d</i>	<i>Virtually certain^d</i>
Warm spells/heat waves. Frequency increases over most land areas	<i>Likely</i>	<i>More likely than not^f</i>	<i>Very likely</i>
Heavy precipitation events. Frequency (or proportion of total rainfall from heavy falls) increases over most areas	<i>Likely</i>	<i>More likely than not^f</i>	<i>Very likely</i>
Area affected by droughts increases	<i>Likely in many regions since 1970s</i>	<i>More likely than not</i>	<i>Likely</i>
Intense tropical cyclone activity increases	<i>Likely in some regions since 1970</i>	<i>More likely than not^f</i>	<i>Likely</i>
Increased incidence of extreme high sea level (excludes tsunamis) ^g	<i>Likely</i>	<i>More likely than not^{f,h}</i>	<i>Likelyⁱ</i>

It is often possible to predict the probability of severe weather events quite accurately, issuing warnings, or closing the endangered regions, temporarily. The teachers must know the local signs of danger and respect warnings or prohibitions to enter the endangered areas. It is also possible to enhance rational awareness of the pupils against weather events to discuss the events of the recent past with them, either personally experienced or reported by the media.

As it is seen in Table 2, there are several extremities frequency or severity of which definitely changes with the global warming. In many cases these changes are simple consequences of the shifts in statistical distribution yielding strong increase in the extremes falling to the direction of the shift. E.g. frequency of the warm extremes increases against the past threshold of the extremity.

The only paradox change is the parallel increase of case-by-case precipitation leading to increased frequency of heavy rainfall together with more frequent and severe droughts resulted from the increased frequency of dry (no precipitation) days. In some other cases little can be told on the empirical trends from the recent several decades. The statement “more likely than not” means only 2/3 of certainty, which is rather low confidence, compared to the common significance thresholds, 90 or 95, sometimes 99%.

The last two lines of Table 2 are connected to intensification of the tropical and temperate latitude cyclones. More exactly this is not a generally enhanced intensity but a change of the distribution: Frequency of the most intensive object may increase whereas no need for increase in frequency of moderate- or low-intensity objects is to be considered.

Impacts of climate change

Most of the living world characteristics, as well as many features of the social and economic life - including agricultural production or utilisation of energy - have been developed basically in alignment with the specific meteorological conditions, with climate of the environment. Changes in climate may, therefore, lead to difficulties in various fields.

The effects on oceanic and coastal areas pointed out that the consequences of sea-level rise generally outweigh the direct temperature effects of climatic change in these regions. The effects of sea-level rise include: erosion of beaches and coastal margins; land-use changes; pressure on natural wetlands; changes in frequency and severity of flooding; damage to port facilities and coastal structures; and damage to water management systems.

In the mid-latitude regions, the effects of climatic change on agriculture, water resources and soils were considered but it was concluded that the main effect would be on relatively unmanaged ecosystems. The upper bound climatic change scenario was estimated to have major effects, including forest dieback, beginning around the year 2000, while in the lower bound scenario such effects were not found to occur before 2100.

For example, the effects of climate change can be followed in the development of soils observed first of all in the Great Hungarian Plain (mostly in the Danube-Tisza interfluvium region, belonging to the most continental and arid regions of the country), as a consequence

of a few metres drop in annual mean groundwater level. A most serious aspect of the drying trend is the extremely reduced infiltration of water into the soils and recharge of groundwater. It was felt that climatic changes would probably worsen the current critical problems of the semi-arid tropics and that the major effects could be expected on: food availability; water availability; fuel-wood availability; human settlement; and unmanaged ecosystems. The major effects of climatic changes on the humid tropical regions would result from rising water levels along coasts and rivers and the changing spatial and temporal distribution of temperature and precipitation. Thus, the most vulnerable regions of the humid tropics would be the coastal and riverine regions and the upland regions of infertile soils.

For the high latitude regions the following effects were considered to be the most important: changes of the pack ice conditions; increased cloudiness and precipitation; and a slow disappearance of the permafrost. These changes would affect such factors as marine transportation, energy development, marine fisheries, agriculture, human settlement, northern ecosystems, and security issues.

Mitigation of climate change

Climate, one of the components of our natural environment with great probability faces changes unprecedented in the history of mankind as the consequence of human activity. Assuming the increase of the emissions of these gases at an unchanged rate, the risk of climate change accompanied by the regular increase of mean ground surface temperature becomes greater and greater. Rise of sea-level in the warmer climate, alteration of the extension of polar ice covers, displacement of the climate zones, as well as more adverse precipitation supply, that may occur in many regions of the Earth are warning that the present day generation should take steps to avoid the risk of climate change or to mitigate it, at least. Strategies for responding to a changing climate fall into two categories: adaptation strategies to adjust the environment or our ways of using it to reduce the consequences of a changing climate; and limitation (often called: mitigation) strategies to control or stop the growth of greenhouse-gas concentrations in the atmosphere.

Options for reducing the CO₂ emissions include: a reduction of fossil fuel use through increased end-use energy efficiency; replacement of fossil fuel combustion with alternative energy sources; a reversal of the current deforestation trend; a shift of the fossil fuel mix from high- to low-CO₂ emitting fuels; and disposal of CO₂ in the deep ocean.

Since the initiation of the Framework Convention on Climate Change (UN-FCCC, 1992), the limitation strategies are scientifically established and politically encouraged even in countries

with less economical potential. Besides this positive tendency, however, one has to realise, that in several small countries, even with solid scientific potential, the adaptation receives much lower priority. This is dangerous, because even the most successful efforts to limit the greenhouse effect can promise a decrease of the global warming trend to a sustainable value of about 0.1 K/decade, which in the best case can be achieved a few decades after the successful limitation of greenhouse-gas emissions. This means, that there is no reason to neglect the adaptation branch of the response options.

Considering the extremity in global scale, we should establish that there are so called tipping points (Lenton, et al., 2008), where our climate may exhibit irreversible changes (*Table 3*) Melting of the West Antarctic ice sheet, slow-down of the Atlantic thermohaline circulation and the El Niño – Southern Oscillation all may turn into a new state after 3 K of global warming. The Greenland ice-sheet starts melting after 1-2 K, the Arctic summer ice may melt even earlier

To avoid the 3 K warming the mankind must start decreasing its greenhouse gas emission by 2020, the latest. This can be established by considering the so called policy-scenarios with the conclusion that the concentration should be stopped at 445-490 or 495-535 ppm equivalent CO₂ concentrations. (This is a value when all greenhouse gases express the same forcing, as the CO₂ in the given concentration.) Since this is a very complex question, majority of the mitigation requests consider 2 K for the maximum allowed warming for the future.

Table 3. Selected tipping-points of climate that should be avoided by sharp reduction of greenhouse gas emission from ca. 2020, to avoid the last three jumps (Lenton, et al., 2008)

Tipping element	Feature of system, <i>F</i> (direction of change)	Control parameter(s), <i>p</i>	Critical value(s), [†] <i>p</i> _{crit}	Global warming ^{††}	Transition timescale, [†] <i>T</i>	Key impacts
Arctic summer sea-ice	Areal extent (-)	Local ΔT_{air} , ocean heat transport	Unidentified [§]	+0.5–2°C	≈ 10 yr (rapid)	Amplified warming, ecosystem change
Greenland ice sheet (GIS)	Ice volume (-)	Local ΔT_{air}	+≈ 3°C	+1–2°C	>300 yr (slow)	Sea level +2–7 m
West Antarctic ice sheet (WAIS)	Ice volume (-)	Local ΔT_{air} , or less ΔT_{ocean}	+≈ 5–8°C	+3–5°C	>300 yr (slow)	Sea level +5 m
Atlantic thermohaline circulation (THC)	Overturning (-)	Freshwater input to N Atlantic	+0.1–0.5 Sv	+3–5°C	≈ 100 yr (gradual)	Regional cooling, sea level, ITCZ shift
El Niño-Southern Oscillation (ENSO)	Amplitude (+)	Thermocline depth, sharpness in EEP	Unidentified [§]	+3–6°C	≈ 100 yr (gradual)	Drought in SE Asia and elsewhere

Emission of carbon dioxide is a product of four general components, each of them concentrating several scientific and technological challenges. They are the number of people on the Earth (*Pop*); the average well being of each humans (*GDP/capita*); the mean energy required to create one USD (*TPES/GDP*) and the mean CO₂ emission required to produce a unit amount of energy (*CO₂/TPES*):

$$CO_2 = Pop \times (GDP/capita) \times (TPES/GDP) \times (CO_2/TPES)$$

We all know that renewable energy is the most efficient way to reduce this last factor. But, as it is seen in *Figure 7*, it is inevitably necessary to enhance in the future, since the product of the first two components are increasing much faster than the already ongoing decrease of the third and fourth components. Though, it is also interesting, that the latter two components started to decrease far before climate, or even environmental awareness, just in consequence of the technological development.

Though, it is also interesting, that the latter two components started to decrease far before climate, or even environmental awareness, just in consequence of the technological development. On the other hand, no turning points of the increasing environmental concern can be clearly seen on these curves, either.

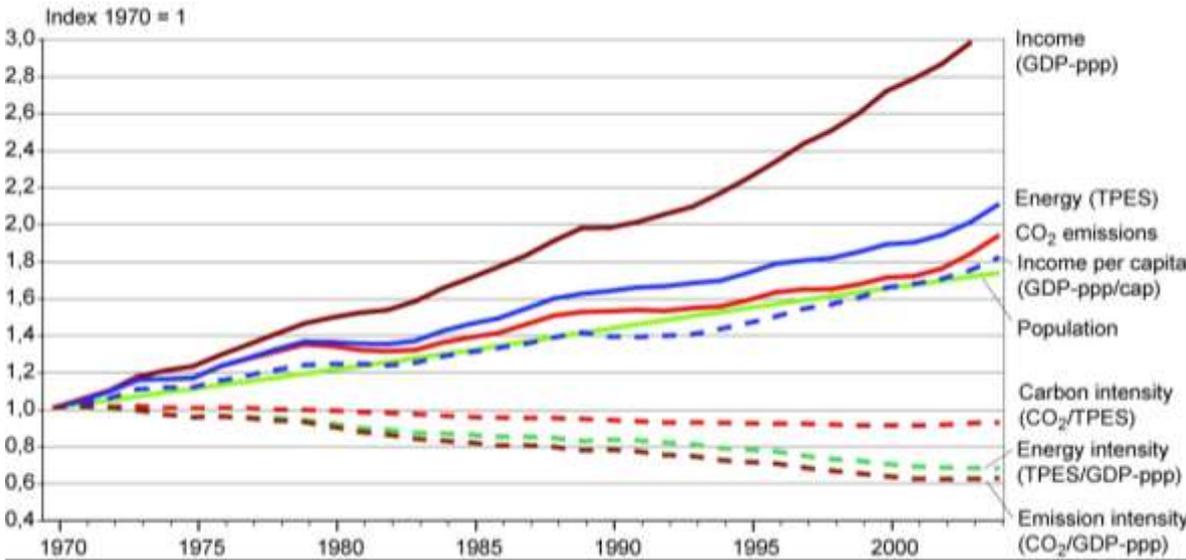


Figure 7. Relative intensity of energy use and CO₂ emissions, 1970-2004. (IPCC, WG-III, 2007: Fig. 1.5)

Finally, *Figure 8* indicates the relative importance of the possible tools to decrease greenhouse gas emission. From above downward, they are renewable energy sources, nuclear energy, carbon sequestration, forest sinks and non-carbon dioxide greenhouse gases. As we can see, no single solution exists, i.e. all tools are needed to achieve the stabilization!

In shorter range, until 2030, energy conservation and efficiency is the strongest potential component of the mitigation, together with the various possibilities of reducing the non-CO₂ greenhouse gases. Renewable energy sources take the third place in the comparison. The fossil fuel switch mean larger proportion of using natural gas than coal in the future since natural gas, and to smaller extent the oil produces less carbon-dioxide emission by providing the same amount of energy than coal. This is allowed by unification of hydrogen to oxygen, providi

For the longer term by 2100 the importance of non-CO₂ GHG reduction and fossil fule switch is decreasing with parallel forwarding of the renewables and the CCS technologies (i.e. CO₂-sequestration into the lithosphere). The relatively minor role of strengthening the forest sinks and application nuclear energy bear parallel environmental considerations, too.

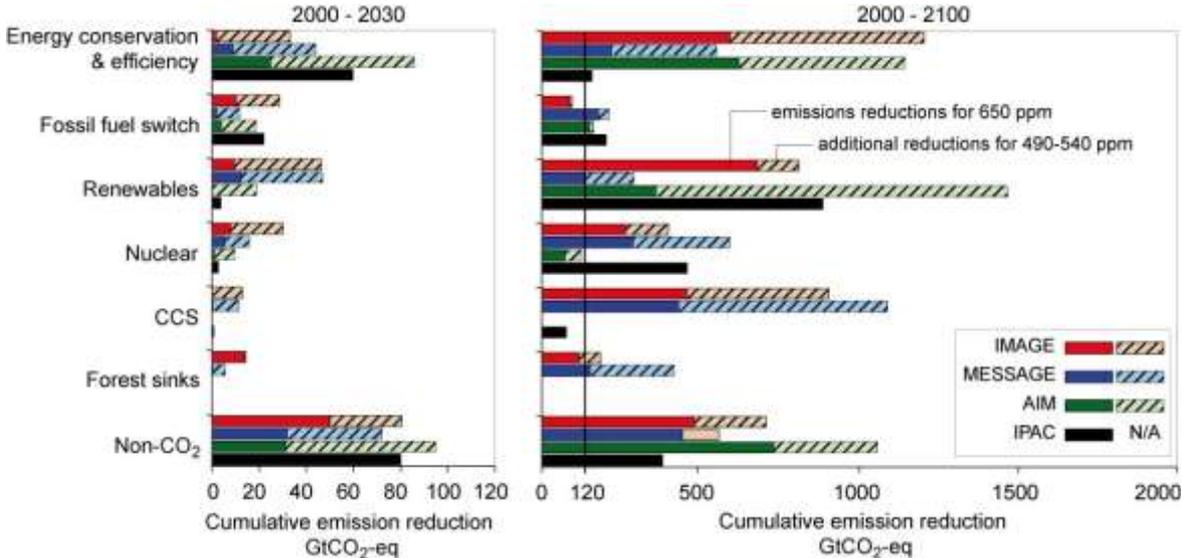


Figure 8. Cumulative emissions reductions for alternative mitigation measures for 2000 to 2030 (left-hand panel) and for 2000-2100 (right-hand panel). The figure shows illustrative scenarios from four different economical models aiming at the stabilization at 490-540 ppm CO₂-eq and levels of 650 ppm CO₂-eq, respectively. Dark bars denote reductions for a target of 650 ppm CO₂-eq and light bars the additional reductions to achieve 490-540 ppm CO₂-eq. CCS includes carbon capture and storage from biomass. Forest sinks include reducing emissions from deforestation. (IPCC WG-III, 2007: Fig 3.23)

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Moments of School Subjects Promoted by Climate Change

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Abstract

The study shows examples of using the climate change in teaching the selected phenomena, processes or problems of various school subjects of natural sciences, i.e. physics, chemistry, biology and geography. The structure of sections related to each of the four subjects is as follows. Objectives of each subject in public education are briefly characterized, together with giving the branches of the given subject. This is followed by a list of examples on how different phenomena of the given subjects can be emphasized by the climate related moments. Finally, a key figure reflecting broader relations of the given subject to climate are displayed and interpreted. The study ends with the special example of weathering which practically envelops all subjects of natural sciences.

Keywords: *climate change, physics, chemistry, biology, geography*

Introduction

Climate change is one of the key questions of our environment. The co-authors tried to consider how this fact can be utilized in education of sciences. In the allotted space we tackle four school subjects of natural sciences, i.e. physics, chemistry, biology and geography.

Physics enriched by the climate change

The primary aim of physics, as school subject, is to make the pupils acquainted with the laws of physics and to learn the basic knowledge of physics. As physics is one of the fundamental sciences, with its well-structured special principles, its important role is also to prepare and

establish the learning of the other natural sciences, as well. Formation of contemporary views in physics for the pupils may lead to understanding that all processes take place in space and need time. Physics covers wide scales from processes of the micro-world not seen by human eyes, towards the processes of stellar systems existing for milliards of years. Pupils are helped to know the most important materials in the environment, their structure, main characteristics, their changes in time and variability in space. They should be able to compare and organise them among each other. They should also be able to connect these pieces of knowledge with other sciences, e.g. chemistry or biology. (NCC 2007)

The main branches of physics as science are listed in Figure 1, together with their brief description and a few examples. All the seven branches are reflected in the school subject curricula to some extent, but the latter two are rather difficult to understand even in the secondary school.

This relates also to climate change which can only help to deepen the pupils' knowledge in the first five branches only. Table 1, below indicates a few possibilities to use climate related phenomena for this purpose. For example, melting and freezing, or the fast changes of temperature in the deserts are rather plausible processes, related to thermodynamics. Moreover, concern of our future environment and the recognition of the fact that its many problems are of planetary scale, make it possible to emphasise further planetary processes even if they are not closely related to the real causes of climate change.

Radiation is the key to the greenhouse effect. But, what is the engine of the radiation, at all: The hydrogen-helium transformation in the Sun? And, there is not only electromagnetic radiation, but also corpuscular ones. They also cause planetary-scale geophysical effects.

Name	Subjects	Examples
Mechanics	motion and its causes, interactions between objects	falling objects, friction, weight, spinning objects
Thermodynamics	heat and temperature	melting and freezing processes, engines, refrigerators
Vibrations and wave phenomena	specific types of repetitive motions	springs, pendulums, sound
Optics	light	mirrors, lenses, color, astronomy
Electromagnetism	electricity, magnetism, and light	electrical charge, circuitry, permanent magnets, electromagnets
Relativity	particles moving at any speed, including very high speeds	particle collisions, particle accelerators, nuclear energy
Quantum mechanics	behavior of submicroscopic particles	the atom and its parts

Figure 1. Branches of physics with their subjects and examples. <http://whs.wsd.wednet.edu/Faculty/Busse/MathHomePage/busseclasses/physics/studyguides/chapter1/ch1studyguide.html>

Table 1. Examples of physical phenomena related to climate with some explanations.

Phenomenon/process	Broader topic	Reason for emphasis	Relation to climate
Melting and freezing	Phase transitions	Melting of the ice caps, increase of the sea-level.	Global warming
Temperature and its changes	Thermal interactions	Desertification	Climate changes
Effect of heat on water bodies	Heat driven processes, heat expansion	Habitat changes of water-born species with the climate changes	Shifts of the belts during the climate changes
Tidal phenomena	Gravitational interaction, Kepler's laws, friction	Slowing/fastening of the Earth rotation	Shoving off Moon causes instability the rotation of the earth around its axis
Solar radiation	Interaction of the light with materials	Effect of the ultra-violet radiation on living organisms.	Diurnal changes in the climate zones

Origin of the Solar radiation (H, He)	Atomic physics	One of the climate forcing factors.	Effects of the radiation reaching the Earth surface.
Particulate radiation to the Earth surface	Magnetic interaction, effect of magnetic fields on translating charged particles	Defending role of the earth magnetic shield from high-energy particles	Changes in the spheres parallel to solar activity fluctuations (e.g. thickness of the thermosphere)
Natural radioactivity	Electromagnetic radiation	Radioactive radiations	Relation of Earth's internal heat and radioactivity.
Absorption by the atmosphere at various wave-lengths	Electromagnetic radiation, Burning	Greenhouse effect	Global warming
Space-born images	Artificial planets, meteorological satellites	Monitoring of the climate changes.	Changing climate zones.
Circulation of the atmosphere and oceans	Heat phenomena, transport of heat	Climate stabilising role of the streams.	Effect of the streams on local climates.
Rotation and revolution of the Earth	Rotation, revolution in circle	Constant nature of the Earth total spin.	Rotation of the seasons.

Physics is not only a key part of the environment but also the source of our technical development. For example, the artificial satellites are the key tools to apply physics to observe physics in our environment. Within that, however, circulation of the atmosphere and the oceans is one of the most complicated processes, which are often not easy even to monitor from the space.

Renewable forms of energy are one of the key solutions to achieve the above goal in the emission reduction. The teacher can demonstrate the origin and the main forms of renewable energy sources, giving the name of solar, wind- water-, biological and geothermal energy. Oceanic wave and sea-saw energy are also interesting since they are in the same phenomenon, but of different primary origin.

A part of the renewable energy comes directly from the Sun's Fusion. Another, main part comes indirectly through transformations in the atmosphere, as well as in the living biosphere. Another part of the energy comes from the Earth core, similarly to the fossil fuels. In this respect, oceanic sea-saw is of gravitational origin, whereas oceanic waves come simply from the wind energy, initiated by the solar fusion, at the beginning. So, renewable energy sources give the teacher a good opportunity to widen the thinking horizon of pupils.

Let us leave physics with a scheme of the greenhouse effect, also indicated that the main science in the whole climate change issue is physics. Without the greenhouse effect of the atmosphere, the Earth's surface was $-18\text{ }^{\circ}\text{C}$, so by more than thirty degrees lower than in reality. This natural greenhouse effect allows the life in our Planet. This is important to emphasise. There is a symbolic comparison of the greenhouse effect with the temperature of human body: if it is not as high as ca $36.5\text{ }^{\circ}\text{C}$ than the human body is suffering from cold. But if it is more than $37\text{ }^{\circ}\text{C}$, the fever starts, also threatening the body. This is the case with the anthropogenic greenhouse effect, as well, leading to overheating of our planet.

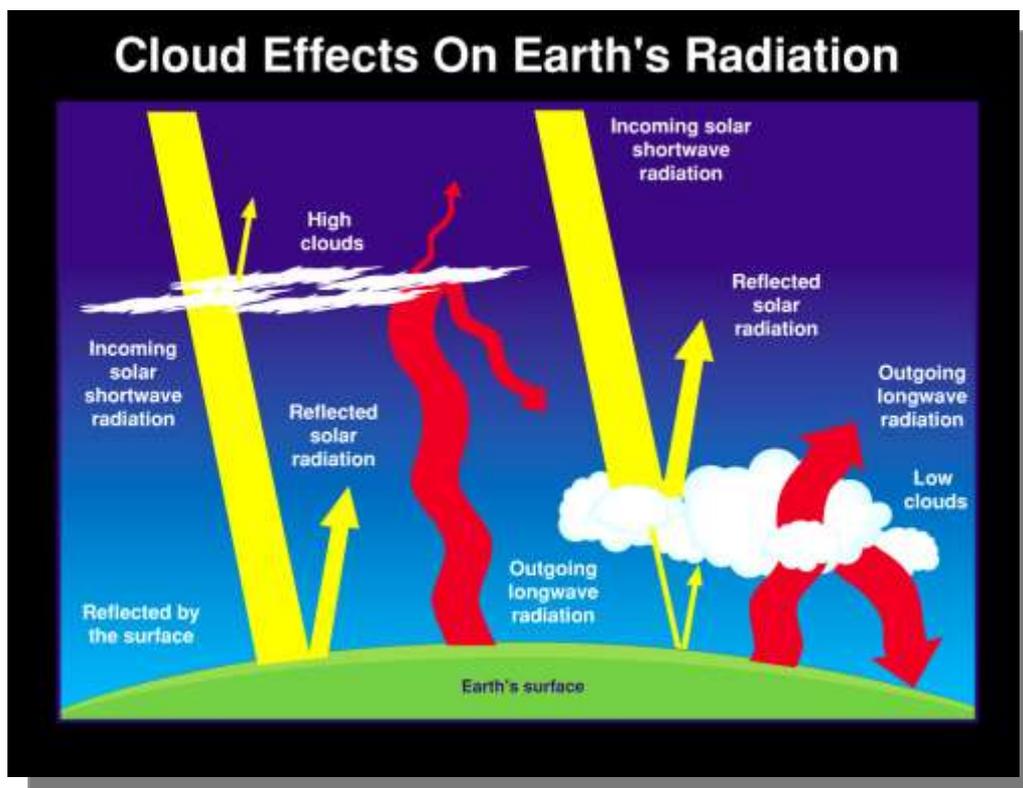


Figure 2. An example from the very heart of the greenhouse climate change: The effect of clouds on radiation balance. The origin of radiation in the different parts of the spectrum, physics of reflection, as well as optical properties of dense water clouds vs. thin ice crystals can be explained in details.

Chemistry enriched by the climate change

Chemistry is also a rather complex science, exhibiting various sub-topics and applications from different kinds of industry based on unique natural and even artificial materials, to the environment trying to get rid of these emitted contaminants.

Aim and task of teaching chemistry is to make the pupils gradually acquire the necessary erudition and approach, making the educated people of the 21st century to understand the chemical features, effects, chemical phenomena relationships and interdependence of the materials, occurring in their environment, and to purposeful use of them in their everyday activities.

Besides introducing the large variability of the existing materials on the Earth, it is also important to emphasize that there are a few simple organising principles, allowing us to understand this diversity of materials. It is important to reach that the pupils could recognise many relationships within nature and between nature (environment) and society. Chemistry, as a piece of natural sciences requests an active attitude to environment where their own observations, as well as mindful following of at least the electronic media for environment related news is a key target. Following these news, the responsible treatment of these chemical materials is also an important consequence of this activity.

Contrary to the other subjects, *Figure 3* indicates not the internal structure of the subject, but connections of chemistry to other aspects of sciences and, rather, the society.

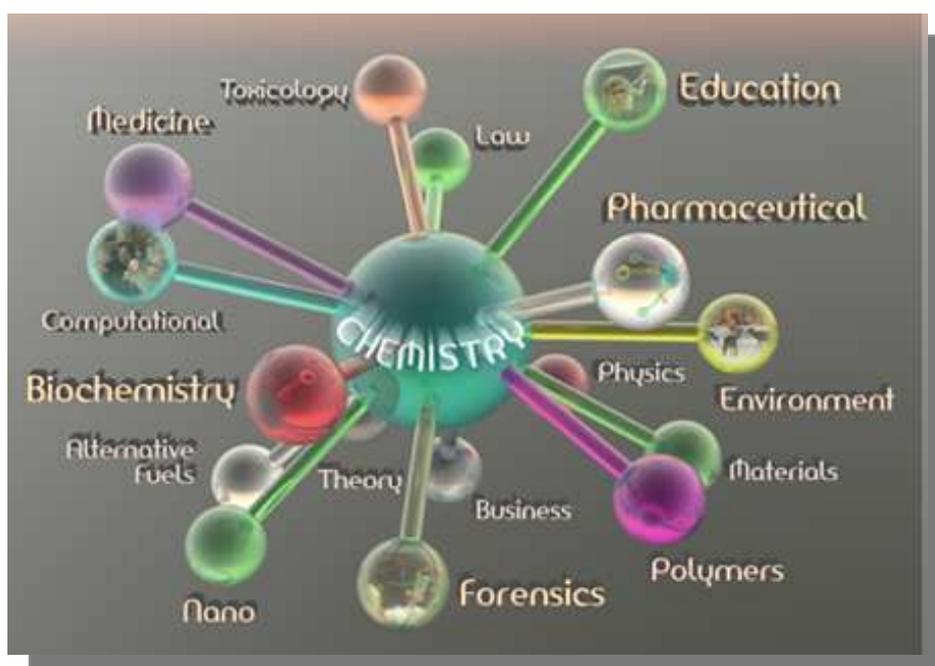


Figure 3. Relations of chemistry to other sciences and society. <http://www.csc.edu/sci/chemistry/>

Chemical changes leading to, or at least modifying of, climate changes, are good bases to demonstrate various aspects of chemistry which were not attractive enough without its personal (mankind in danger) component. Hence the reactions and cycles of the various chemical components can expect enhanced interest from the pupils.

Table 2 lists a few atmospheric chemistry phenomena that are useful to be mentioned in classroom lessons of chemistry. For example in line 3, solid air contaminants, the teacher may stop for a while dealing with these unpleasant dangerous components. Besides the gases, causing and increasing the greenhouse effect there are also aerosol components. (The whole atmosphere is an aerosol, in the strict chemical terminology.)

Table 2. Examples of chemical phenomena related to climate with some explanations.

Phenomenon/Process	Broader topic	Reason for emphasis	Relation to climate
Atmospheric composition	Materials of the environment. Inorganic chemistry	Knowing or territory of life	Greenhouse gases and their effects
Photochemical reactions	Inorganic chemistry (oxygen)	Atmospheric processes	Ozone formation and decomposition
Solid air contaminants	Materials of the environment	Environmental pollution	Particulate matter. Dry and wet deposition, their effects on the living environment. Ozone depletion.
Gaseous air contaminants	Materials of the environment	Environmental pollution	Dry and wet deposition, their effects on the living environment. Ozone depletion.
Cycle of the elements	Environmental chemistry	Ever renewing environment	Rain-water quality. Soil resources supply and mobilisation.

These aerosols are also important from environmental point of view. They get less attention compared to the gases due to its much smaller residence time in the atmosphere, and, hence, rather patchy spatial structure, closely related to the primary (direct) and secondary (affecting through chemical reactions among the primarily emitted atmospheric components) sources.

Figure 4 indicates the five most important problems of atmospheric chemistry. They are the acid rain, the summer smog (high ozone), the ozone-hole (low ozone), the enhanced aerosol concentrations and the greenhouse effect, together represent ca 25 different chemical formations. None of them are involved in more than 3 problems. This means that a reduction of them does not solve all problems at once, though it is often hypothesized by laypersons even in the media.

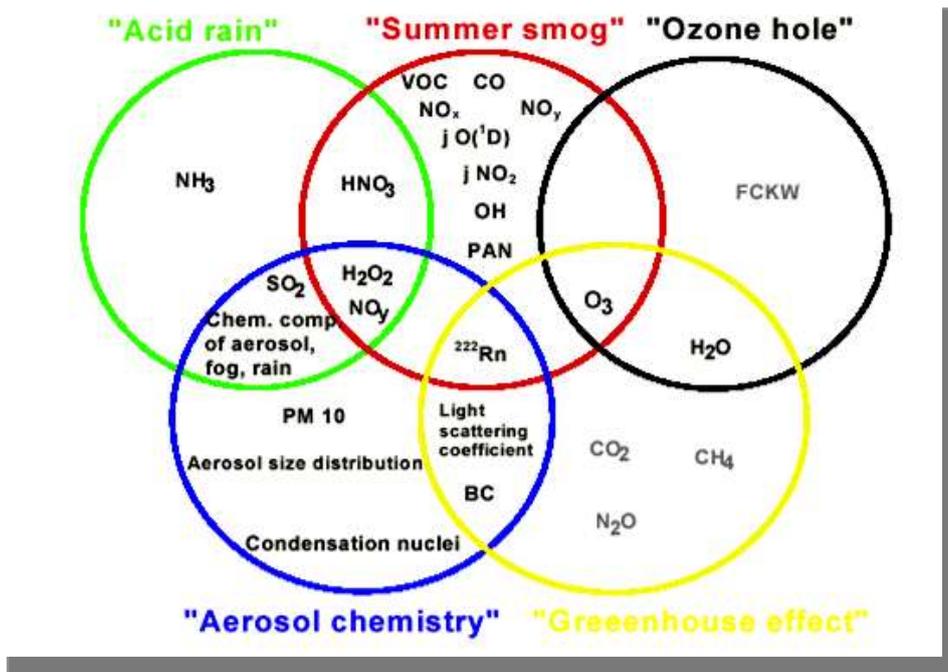


Figure 4. Five important problems of the atmospheric chemistry, indicating the key chemical components that play a key role in the selected issues. No one component influences more than 3 problems!

Biology enriched by the climate change

Biology is even more complex compared to the previous sciences or subjects. Figure 5 indicates the wide variety of the discipline according to one point of view, the level of organising, only. Perhaps one could not display the full complexity of biology in two dimensions.

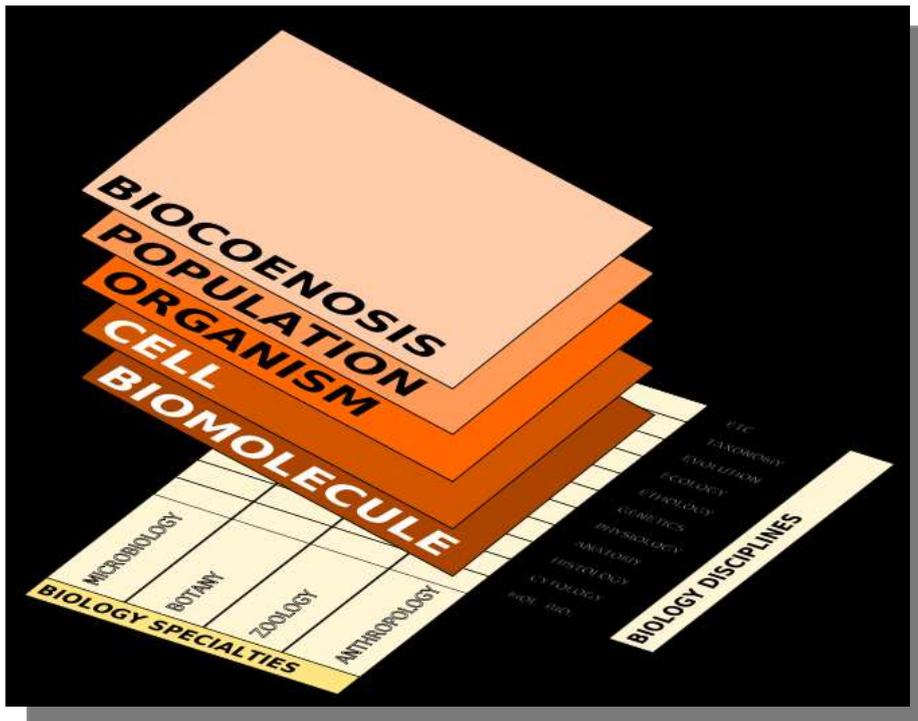


Figure 5. The structure of biology as a science.

Hence we do not describe the whole subject, but just one key aspect the possibilities and limitations of adaptation to the environmental (including climate-) changes.

One of the most important topics is the importance of adaptation and natural selection during the fast and considerable changes in the environment of populations. Teachers have the opportunity to show living examples for adaptive strategies for stress tolerance of the species: which are sensitive for changing temperature conditions and which species are not? Which species tolerate flooding and which are the drought tolerant ones? Teachers can choose symbolic endemic and invasive species, for example the decreasing habitat of endemic species like *Colchicum hungaricum* and the increasing habitats of stress tolerant grasses or trees like *Ailanthus altissima* or *Calamagrostis epigeios*. Among animals the same processes can be observed in the case of sensitive amphibians like *Salamandra salamandra* and the stress tolerant tropical bat species: *Pipistrellus kuhli* (Parmesan 2006, Mihály and Botta-Dukát 2004). In water ecosystems the growing radiation causes visible changes in the composition of algae and hydrophyte vegetation which can be presented by teachers as well.

Teachers should teach the monitoring examination methods and analysing the results of them through simple temporal changes like algae-flowering or the earlier reproduction time of amphibians in the last century. The other important topic is the CO₂ content of the atmosphere and the role of trees in decreasing it. This is the fact that a tree can absorb CO₂ in great amounts and one of the reasons of the higher CO₂ in the atmosphere besides the

higher emission the increasing global deforestation rate per year and per ha. Teachers must show that not only trees but other assimilating organisms like algae, bryophytes and ferns can also absorb CO₂. The whole process of assimilation and CO₂ cycle is important and this is the point where we can show that every person can do for lower CO₂ level from the biological and ecological point of view: plant a tree! Use less paper! The impact of climate change for human body is also very important topic in the education of biology. New diseases appear in new areas (Tsai and Liu 2005) and the weak defence capacity of social health systems makes individual health and national security vulnerable. Teachers must emphasize the relation between the changes in zonality and the appearance of exotic diseases in new areas.

The main areas in the education of science and within that in teaching biology according to the Hungarian National Core the ecological topics, physiological parts and the human biology themes where climate change must be mentioned and built in. The most important phenomena which are offered to emphasise can be seen in *Table 3*.

Table 3. Examples of biological phenomena related to climate with some explanations.

Phenomenon/process	Broader topic	Reason for emphasis	Relation to climate
Changing temperature maximum-minimum, average and stress tolerance of some species	Ecological tolerance	Presenting growing danger for sensitive species	Temperature data, annual average values of temperature according certain regions
CO ₂ atmospheric level and CO ₂ absorbing capacity of plants	Plant physiology, assimilation	Showing the importance of assimilation processes in big cycles of Earth.	The effect of the increasing CO ₂ level
Temporal changes in seasons and reproductive strategies of animals	Zoology and systematic biology	Reproduction tied to wet habitats among amphibians	Long term seasonal changes in weather
Higher temperature average, flooding, drought and new diseases	Human Health	Exotic and native diseases and effects for human body	Extreme weather, higher temperature average values

Finally, the need for adaptation is illustrated in the well known Whittaker diagram describing the main ecosystems in the temperature-precipitation system of coordinates (Figure 6). What can living organisms do during climate change? Three things basically: to tolerate the changes, to leave the place (very slowly by the plants) and to die...

To stop the loss of biodiversity: conservation and active, experimental design: the importance of ex situ conservation projects!

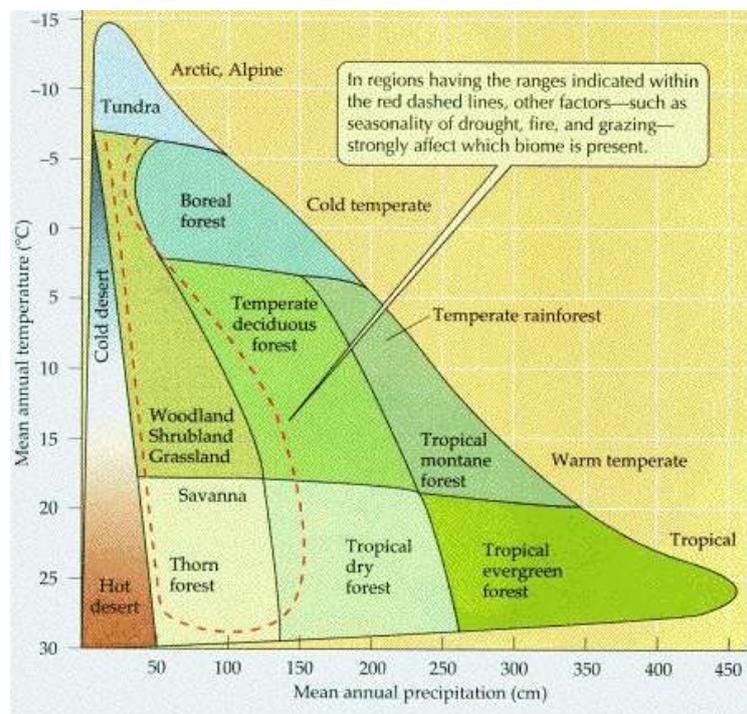


Figure 6. The Whittaker diagram of present vegetation cover in terms of the annual mean temperature and precipitation. http://web.rollins.edu/~jsiry/Syllabus_Nature-along-Coast.htm

Geography enriched by the climate change

Last, but not least geography, as the probably closest subject to the climate change issue. Geography is not less complex, than biology, since it includes not only living and lifeless spheres of the earth, but also the society, as it is indicated by the image. On the other hand geography, as it follows from its name, first describes its discipline in widest complex approach, but it does not surely want to solve every detail, since single topics of geography often form limited, but infinitely deep individual disciplines.

Geography is a so called chorological science (chorology: study on distribution, in anc. Greek), i.e. it investigates the geo-systems. Geosystems are systems of the common space of natural and societal interactions among the solid (lithosphere), fluid (hydrosphere), gaseous (atmosphere) and living (biosphere) sub-systems. This space of interaction is called *geo-sphere, geographical shell or geographical environment*.

The main branch of geography is physical geography, dealing with the natural processes and interactions of the environment. A key term of this branch is the landscape, sometimes bearing regional character. The other main branch is tie social or human geography,

sometimes also called economical geography, dealing with interactions of landscape and society or various aspects of society with each other.

As it is seen in Figure 7, physical and social geography are not always separated. They are mainly connected by the common space filled by both of them and the need for holistic view and application of results from both branches for the wealth of society.

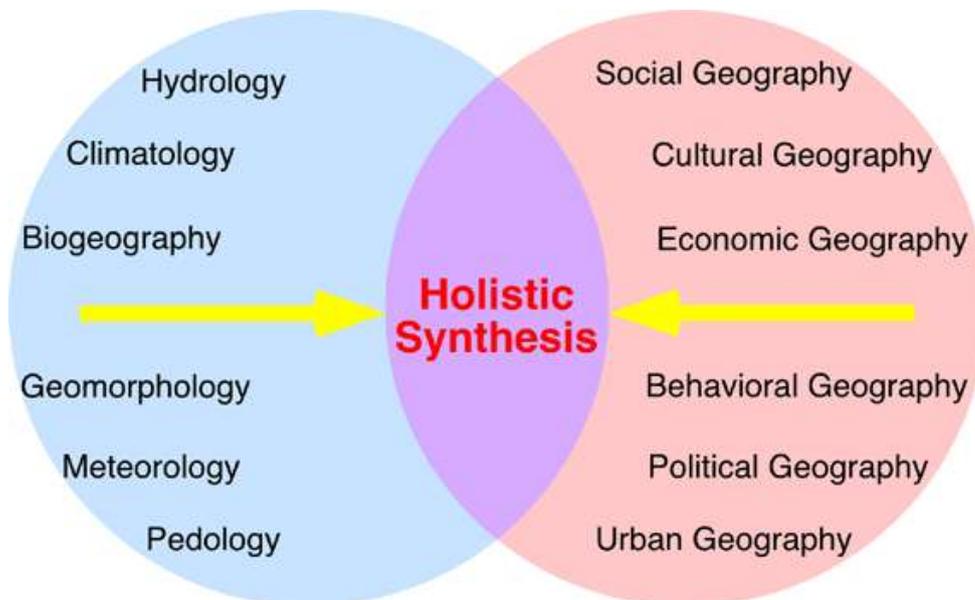


Figure 7. Main branches of physical and social geography with their interaction.
<http://www.physicalgeography.net/fundamentals/1b.html>

Geography studies the systems of the common space of natural and societal interactions among the solid (lithosphere), fluid (hydrosphere), gaseous (atmosphere) and living (biosphere) spheres. This space of interaction is called geo-sphere, geographical shell or geographical environment. Solid shell of the earth is rather popular among the pupils since one can collect its products even by their free hands.

Geography embraces the organised co-existence of people in many aspects. Most straightforward among them are the Economical geography and Social Geography. Some key aspects of these fields, indicated in the table, can also be emphasized for themselves, also in relation with the changing climate.

A series of examples for using the climate change for depending one or another aspect of geography are listed in *Table 4*.

Table 4. *Examples of geographical phenomena related to climate with some explanations.*

Phenomenon/process	Broader topic	Reason for emphasis	Relation to climate
Rea-arrangement of population distribution. Migration, over-population conflicts.	Population Geography	Requirements to sustain in a region, correlation of population and natural resources.	Critical changes, e.g. desertification, loss of Himalaya glaciers.
Transformation of the settlements. Over-population in the mega-cities.	Settlement Geography	Requirements to establish and to sustain a settlement.	Cross-cutting of climate warming and overpopulation.
Polar ecosystem reduction Sea-level (volume) rise Changes in flooding frequency Loss of drinking water in the Himalaya region	Hydrology (Hydro-geography)	Vulnerability of sea-ice and mountain glaciers. Processes to influence the sea level. Climatic and other causes of flood.	Warming fast at the poles. Expansion, melt of pack ice. More intense rains, heat-waves.
Shift of vegetation zones; extinction of species, expansion of other species. Expansion or reduction of the wet ecosystems.	Biogeography	Importance to retain the present biodiversity. Possibilities and limitations of the vegetation to adapt.	Regional climate changes, reminding to shift of climate zones.
Spontaneous and managed adaptation to the climate changes, possible modification of its extremes. Occurrence of new pests.	Agricultural Geography	Possibilities and limits of biological adaptation. Effect of environment on the competition among the species. Adaptation by plant breeding.	Slow changes, but changes in extreme events.
Economic effect of the climate changes: costs of adaptation and mitigation.	Economic Geography	Showing the costs (and incomes) of selected key economical activities.	Slow changes, but changes in extreme events.
Changes in water, road- and rail connections partly related to primary (drying) and secondary (settlement structuring) reasons.	Transportation Geography	Factors determining water-, road or rail connection (including the environmental conditions, as well).	Consequences of climate change in water levels, their stability and on population.
Lack of food and water, poverty, epidemic	Social Geography	Existence and geographical distribution of poverty, famine, thirst and epidemic.	Slow changes, but changes in extreme events.
Physical changes of the natural surfaces	Geology	Rock disintegration in the process of weathering	Extreme weather conditions, likely more

		(rain, ice, wind, temperature)	intense with warming.
Soil erosion Slow shift of the zonal and non-zonal soil types	Pedology (Soil Geography)	Process and consequences of soil degradation.	Intensive rains, likely more frequent with the warming.

A pair of further disciplines of human geography is even more directly affected by climate, though they are influenced by other trends of population and other sources of stresses. From time to time, even the climate anomalies (i.e. long-term, weather extremities) can cause faster (but more recoverable) versions of the longer-term threats.

During one generation the sea ice area did dramatically shrink in the Northern Hemisphere. It is also a good point to call the pupils attention on why the Southern Hemisphere does not suffer from the same rapid changes. This is a fairly old pair of figures, so one may also call the pupils to find much more recent figures on the same topic.

Unique example of adaptation to the altitude can be observed in La Paz, Bolivia. In the world's highest capital city (3660 m in average with 4100 m, still inhabited) the more affluent families live in the lower neighbourhoods (at ca. 3400 m, whereas those of less economic fortune build their homes onto the surrounding hills. The mean air pressures are 660 (i.e. 2/3 of the normal oxygen supply) vs. 600 hPa, where even this ten percent makes a difference! (For more information visit GEOGRAPY nEtQUIPMENT: 2006!)

Zonal and continental differences are obvious features of our present climate. They reflect different physical characteristics of the solar radiation and heat capacity of various domains of the climate system. Are these differences markedly reflected by the patterns of past and future climate changes, too?

The answers to this question are illustrated by seasonal changes of temperature and precipitation in *Figure 8*, taken from the IPCC WG-I (2007) Report. They are averaged for all available models, i.e. they are results of pure physics. As such, they are concentrated illustrations of several phenomena used in physical geography. Analysis of these changes is an impressive tool to demonstrate zonality and continentality, these key aspects in education of physical geography. These key aspects of geography are:

- *Zonality* of the changes, clearly seen both in temperature and precipitation. The strongest changes near the pole are characteristic features of the changes due to the ice/snow–albedo feedback changes. The belts of precipitation changes, due to circulation reasons, are also present in the differences of both variables and seasons. However, combined effects of these variables on runoff or soil moisture changes are already influenced by effects of non-zonal topography and soil taxonomy.

- *Continentality* is seen both in the faster changes of the temperature over the continents, and in the slower changes on the west coasts. In the precipitation fields, this term is seen in the summer half year of both hemispheres as a disturbance of the zonal structures. Another feature of continentality is that the Northern Hemisphere, covered by continents to larger extent, warms faster parallel to the global changes.

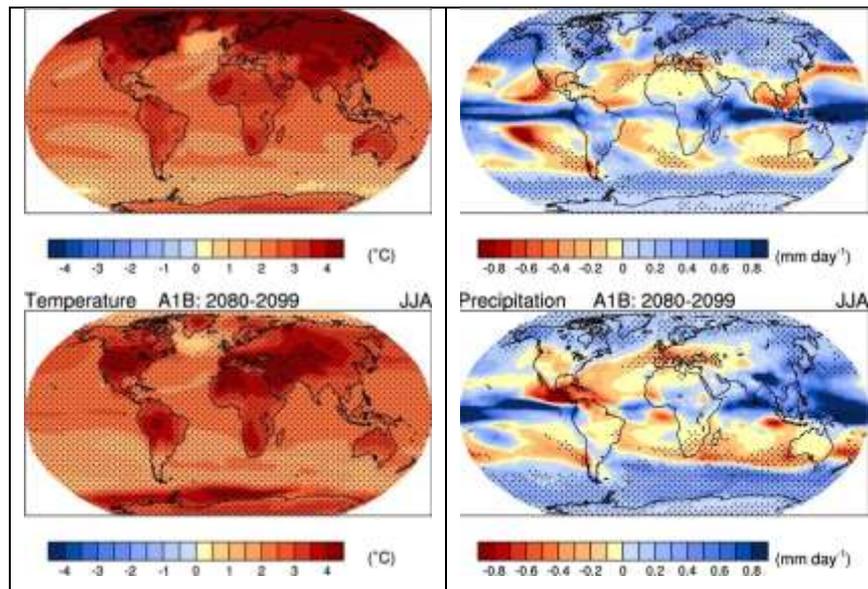


Figure 8. Model-mean changes of temperature (warming) and precipitation (different signs). These pictures are results of the physical differences computed by the global climate models. As such, they validate the concepts of zonality and continentality.

Weathering: a complex effect of climate

Weathering is the process of disintegration of rock from physical, chemical, and biological stresses. I.e. this is one of the processes in our Planet which can well be explained in each of the four natural sciences, physics, chemistry, biology and geography.

Weathering is influenced by temperature and moisture (climate). As rock disintegrates, it becomes more susceptible to further physical, chemical, and biological weathering due to the increase in exposed surface area. During weathering, minerals that were once bound in the rock structure are released.

Figure 9 indicates how temperature affects weathering in our present climate.

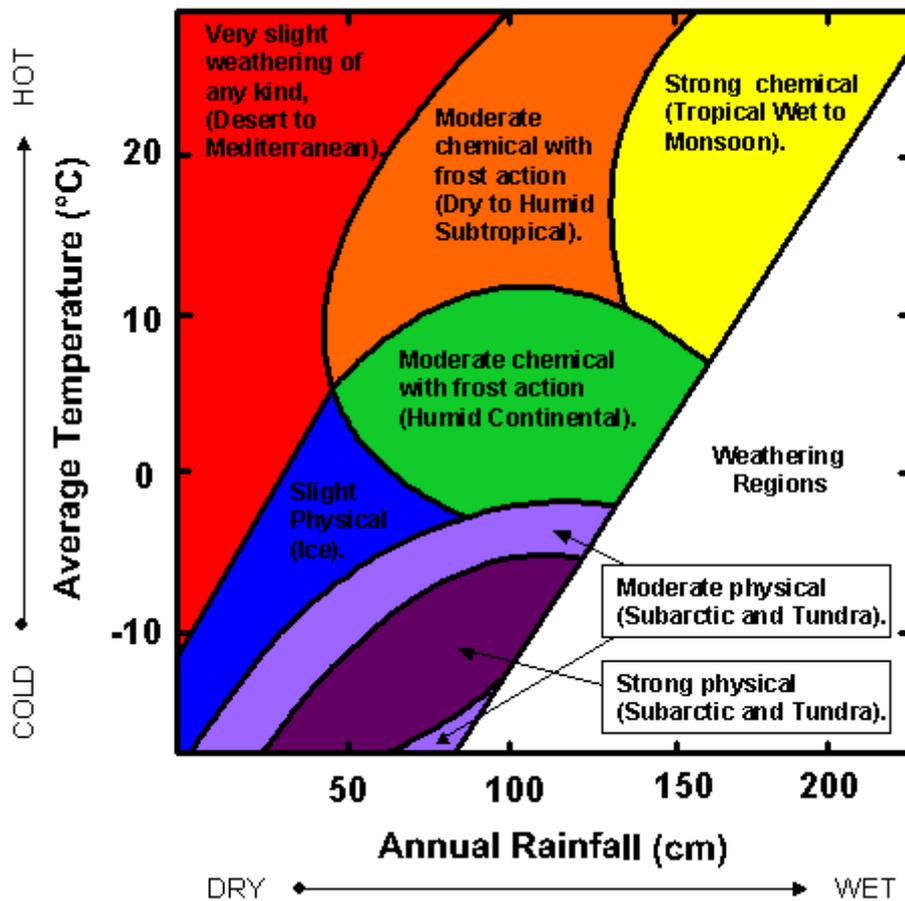


Figure 9. Influence of the interaction of temperature and rainfall on processes of physical and chemical weathering. As annual rainfall and temperature increase, chemical weathering dominates over physical weathering. On the contrary, notice that as the temperature lowers, physical weathering begins to dominate over chemical weathering. Image courtesy of University of Nebraska–Lincoln, 2005. http://plantandsoil.unl.edu/crop_technology2005/soil_sci/?what=topicsD&informationModuleId=1124303183&topicOrder=2&max=7&min=0&

The degree of weathering that occurs depends upon the resistance to weathering of the minerals in the rock, as well as the degree of the physical, chemical, and biological stresses. A rule of thumb is that minerals in rocks that are formed under high temperature and pressure are less resistant to weathering, while minerals formed at low temperature and pressure are more resistant to weathering. Weathering is usually confined to the top few meters of geologic material, because physical, chemical, and biological stresses generally decrease with depth. Weathering of rocks occurs in place, but the disintegrated weathering products can be carried by water, wind, or gravity to another location (i.e. erosion or mass-losing). This figure is a fairly good one for both physics, chemistry as well, as geography teachers to emphasize corresponding aspects of their topic.

Conclusion

Science subjects can be enriched by climate change information, even if the aim is just to make these subjects more attractive. Each subject of natural sciences has possibilities for it. Some examples were presented. Probably it is possible in several other school subjects, as well.

Finally let us reflect some aspects of the 35th ATEE Conference indicating how climate change can be a part of the answers to the selected questions. These are as follows:

- *“What opportunities are there for teachers’ life-long professional development?”*, since the enhanced interest in the society and media provides a good opportunity for the teachers to follow its debates and development continuously.
- *“What major challenges are/ should be faced by teachers in Europe today?”*, since the EU produces the best rates of greenhouse gas emission to the GDP, worldwide, effectively demonstrating that this way of life is in fair coincidence with development.
- *“What kind of research could best serve teacher development?”*, as definitely this complex of questions, or a better delimited set of it provides a good topic of research for the next few decades.

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Key competence development: Climate change related exercises

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Abstract

Dealing with global environmental problems, including the climate change related ones, provides good opportunity to apply the knowledge from the school subjects for solution of everyday problems. At the same time, this activity opens new possibilities to develop competences of pupils. The paper starts with brief characterisation of the environment of geography teaching and continues with description of the nine key competences defined by the National Core Curriculum (NCC, 2007) in Hungary. This Section also points at selected possibilities to develop these competences by climate change related activities. Finally, a special activity, solving exercises is presented by indicating a few methodological possibilities to improve the targeted competences.

Keywords: *key competences, National Core Curriculum, climate change, exercises*

Introduction

Global environmental problems including those related to climate change became significant in geography by the introduction of National Core Curriculum in 1995 (Ütő-Visi 2002). Although, environmental problems appeared also at the end of the 1980's in the textbooks, its introduction to the classroom largely depended on the teachers preparedness and attitude that time (Sárfalvi and Tóth 1990). The time between yielded recognition of the environmental problems, not independently from the rapid societal and economical changes in Hungary, but also thanks to internal development of geography education, as well.

Besides geography, the environmental problems appear also in other subjects of elementary and secondary school, such as physics, chemistry, biology and others (Pajtok-Tari et al. 2011). Furthermore, new integrating areas of development appeared, such as environmental education, physical and mental health, etc.

Importance of the environment becomes accepted by continuously increasing part of the society. Hence, wide co-operation in environment-motivated behaviour of the society involves increasing role of the schools in Hungary, too. So, it is not enough to transfer and control the knowledge of our pupils. Active role in solving the problems needs various competences to be developed, as well. The rest of this paper presents some thoughts on competence development.

Firstly a description of the competences and the nine key competences is provided. A list of possibilities of developing the nine competences by climate relevant activities is pointed out in the next step. Finally, creative classroom exercises are presented and connected to the key competences.

Competences and key competences

Modifying tasks of education, as developing the competences becomes also important, besides knowledge transfer. The revision of National Core Curriculum (NCC) in 2003 and 2006-2007 pointed at importance of developing the so called key competences, besides the topical requirements what the pupils should own, as lexical knowledge.

The key competences became core parts of the NCC in its last modification. These are outstandingly important abilities, which are inevitable to further learning and to successful participation in the society and world of labour. These competences in Hungary are based on those elaborated by the EU (ERF, 2007).

The nine key competencies are the followings (NCC 2007)

- *Communication in the Mother Tongue*
- *Communication in Foreign Languages*
- *Mathematical Competence*
- *Competences in Natural Science*
- *Digital Competence*
- *Learning to learn*
- *Social and Civic Competences*
- *Sense of Initiative and Entrepreneurship*
- *Aesthetic and Artistic Awareness and Expression*

In more detail, their definitions and brief characterisations are the followings (NCC 2007):

Communication in the mother tongue is the ability to express and interpret concepts, thoughts, feelings, facts and opinions both orally and in writing as well as the appropriate and

creative use of the language in a full range of societal and cultural contexts such as education and training, work, home life and leisure.

Communication in foreign languages is considered to have the same elements as communication in the mother tongue. Communication in a foreign language demands other skills, such as mediation and intercultural understanding.

Mathematical competence is the ability to develop and apply mathematical thinking which also enables an individual to solve a range of problems in everyday situations. The emphasis is as much on process and activity as on knowledge. Mathematical competence embraces the development and use of abilities related to mathematical modes of thought, the application of mathematical models as well as an inclination to apply these.

Competences in science refer to the body of knowledge and methodology employed to explain, to make predictions and to control our actions with regard to the natural world and the processes that take place as a result of interaction between mankind and the natural world. This competence entails understanding the changes brought about by human activity and the related individual and public responsibility for sustainable development.

Digital competence means the confident and critical use of Information Society Technology for work, communication and leisure purposes. This is based on the following skills and activities: recognising, retrieving, evaluating, storing, creating, presenting and exchanging information as well as communication and cooperation in networks via Internet.

Learning to learn is the ability to pursue and persist in learning, organise one's own learning both individually and in groups, including effective management of time and information; to recognise the needs and opportunities and to know the process of learning. Learning to learn urges the learner to apply his or her knowledge and skills in a variety of contexts drawing on his or her prior learning and life experience.

Personal, value-oriented, interpersonal, intercultural, *social and civic competences* are prerequisites for a harmonious life and community integration. Civic competence enables an individual to apply his or her knowledge of social processes, structures and democracy in order to actively participate in public affairs.

Sense of initiative and entrepreneurship helps an individual both in everyday life and at work to get to know his or her broader environment and to be able to grasp the opportunities that lie ahead. This competence comprises knowledge, creativity, propensity to induce changes and risk-taking as well as developing and implementing plans in order to achieve objectives.

Aesthetic and artistic awareness and expression involves an appreciation of aesthetic perception and the importance of expressing - either in the language of traditional arts or with the help of the media - ideas, experiences and emotions in a creative way.

One may establish that the nine key competences comprehend different abilities although there are close interrelations between them. In one hand also establish that all of them can

be related to the environment to some extent, in the other hand all of them can be developed by exercises addressing the climate change.

Developing the key competences by knowledge on climate

Table 3 provides a first-approach list on the possibilities to improve these competences by using the events, explanations and attitudes related to climate changes (Pajtók-Tari et al. 2010). In some cases these recommendations are rather similar to those that could be recommended in any other topic. In some other cases, however, the enhanced interest in weather and climate makes it more efficient in the circle of pupils and teachers, as well.

For example, the lively discussion on the anthropogenic vs. natural origin on one hand, and the exciting news on extreme weather catastrophes, as well as new possibilities to mine oil from below the Arctic-ocean may be worth reading in English or other languages even spontaneously, without classroom forcing, too. Mining for these pieces of new information provides good opportunity to develop digital competence as well.

Science competence is a rather obvious target to develop for the first sight. But this competence can be developed only if the scientific point of given climate question is clearly resolved. In many cases this does not happen, hence teacher of geography or of the other subjects is needed to explain the scientific process in question.

Table 3: Examples on how climate change can be used to improve the key competences (Pajtók-Tari et al. 2010)

Key competence (KC)	Example of using climate change to develop the KC
<i>Communication in the Mother Tongue</i>	
	• learn new words of climate, effects and responses
<i>Communication in Foreign Languages</i>	
	• find extra motivation in understanding the CC disputes
<i>Mathematical Competence</i>	
	• use CC as motivation to understand usefulness of math
<i>Competences in Natural Science</i>	
	• use CC to teach and integrate Natural Sciences
<i>Digital Competence</i>	
	• besides the Internet, compilations and calculations in CC
<i>Learning to learn</i>	

	• use CC as a fast developing topic to learn for learning
<i>Social and Civic Competences</i>	
	• weather extremes are good examples of cooperation
<i>Sense of Initiative and Entrepreneurship</i>	
	• renewable- and low-carbon industry are good examples
<i>Aesthetic and Artistic Awareness and Expression</i>	
	• nature itself provides picturesque examples in storms

One must admire that there is no specific key competence for environmental awareness. Causing less harm to the environment and delimiting other people and enterprises to pollute environment where it would be avoidable requires several other key competences. They are Competences in Natural Science, Social and Civic Competences, Aesthetic and Artistic Awareness at least, but maybe also the Expression Sense of Initiative and Entrepreneurship. These competences can be developed in the classroom, as presented in the next Section.

Key-competence development by climate-related exercises

In the followings possibilities of competence development are presented by using climate related exercises. Six examples are shown indicating the targeted key competences. The examples are taken from the book Makádi and Ütő-Visi (2007).

Exercise 1: Associate to the drawing!



Pay attention to the drawing, and solve the tasks below:

- a) Give 5 concepts you can associate with the drawing!*
- b) Give a title to the drawing!*
- c) Comprehend the message of the drawing in 5-10 sentences.*
- d) Try to find further cartoons in the printed or electronic sources related to the climate change! Show them to your school-mates in form of a presentation or exhibition! Discuss them focusing on how their authors focus our attention on the environmental threats!*

Figure 1. The key drawing of Exercise 1. See the tasks in the second column.

<i>Objectives of the exercise:</i>	The exercise expects to understand and explain a drawing. The aim of its execution is to recognize casual relationships and to evaluate the consequences of the provoked changes in the environment. In addition to it, induction and deepening the demand of the pupils for environment-motivated behaviour
<i>Competences to develop:</i>	<ul style="list-style-type: none"> - <i>Competences in Natural Science</i> - <i>Digital Competence</i> - <i>Communication in the Mother Tongue</i> - <i>Social and Civic Competences</i> - <i>Aesthetic and Artistic Awareness and Expression</i>
<i>Form of the elaboration:</i>	<p><i>Individual work of pupils: listing terms, giving a god title, preparation of a summary..</i></p> <p><i>Teamwork: collecting strips, systematisation, making exposition from the drawings.</i></p> <p><i>Classroom work: systematisation of the involved terms and principles, discussion.</i></p>

Exercise 2: Explain the image!



Figure 2. The key picture of Exercise 2.

Have a look at the picture, and solve the tasks below:

a) Imagine yourselves instead of the plant in the image. Tell us what happened with you! What can you future be?

b) Prepare a comic from 5-10 drawings, starting or finishing with this image. Write Hungarian and English legends to the individual drawings. You may prepare a short video, as well. In any case provide a title to your creation. Show them to your school-mates. Collect a jury from your pupil-mates, who give an assessment of these creations.

<i>Objectives of the exercise:</i>	<i>The aim of this exercise is to make the pupils thinking about the causes, expected consequences and mitigation possibilities related to global environmental problems, including the climate change. It can also support developing their creative, problem-solving thinking, as well, as their responsible, environment-motivated behaviour</i>
<i>Competences to develop:</i>	<ul style="list-style-type: none"> - <i>Competences in Natural Science</i> - <i>Digital Competence</i> - <i>Communication in the Mother Tongue</i> - <i>Communication in Foreign Languages</i>

	<ul style="list-style-type: none"> - Social and Civic Competences - Sense of Initiative and Entrepreneurship - Aesthetic and Artistic Awareness and Expression
<i>Form of the elaboration:</i>	<i>Individual work: description of the story, preparing the comics or a film.</i> <i>Teamwork: Preparing comics or a film, presentation of it, evaluation of the results.</i>

Exercise 3. Think over the numbers!

Table 1. Key table for Exercise 3.

Leading carbon-dioxide emitters (data from 2003 in million tons)

Rank series	Emission
1. USA	5834
2. China	3507
3. Russia	1431
4. India	1219
5. Japan	1202
6. Germany	850
7. United Kingdom	543
8. Canada	516
9. Rep. Korea	445
10. Italy	432
1-10. together	15980
World total:	24344

a) What percentage of the total CO₂ emission comes from the 10 strongest emitters? How many times stronger the first emitter compared to the 10th one? What proportion of the world emission is caused by the USA and China? What are the causes of these emission values and proportions?

b) Prepare a picturesque diagram to present the data and proportions!

c) Prepare a thematic map using the data!

d) Find more up-to-date data! Collect the same data for Hungary and for other countries!

Investigate the table, and solve the tasks:

<i>Objectives of the exercise:</i>	<i>The aim of the exercise is to collect and evaluate the related data and their picturesque interpretation, as well, as to develop the ability to use mathematical tools. Development of logical geographical thinking is also one of the aims.</i>
<i>Competences to develop:</i>	<ul style="list-style-type: none"> - Competences in Natural Science - Communication in the Mother Tongue - Communication in Foreign Languages - Mathematical Competence - Aesthetic and Artistic Awareness and Expression
<i>Form of the elaboration:</i>	<i>Individual work for the pupils: computation and visualisation with the data, collection of additional data.</i>

Exercise 4. Prepare a puzzle using the letters of the given solution!

- | | |
|----|----------|
| 1. | S |
| 2. | U |
| 3. | S |
| 4. | T |
| 5. | A |
| 6. | I |
| 7. | N |

<i>Objectives of the exercise:</i>	<i>The exercise expects determination, understanding and systematisation of related words and concepts from the pupils. Clear, unequivocal phrasing of these definitions helps to understand the main elements of the content.</i>
<i>Competences to develop:</i>	<ul style="list-style-type: none"> - <i>Competences in Natural Science</i> - <i>Communication in the Mother Tongue</i> - <i>Learning to learn</i> - <i>Social and Civic Competences</i>
<i>Form of the elaboration:</i>	<i>Individual work of pupils: listing the terms, giving a god title, writing a summary. Work in study-pairs: Solution of the puzzle, evaluation of the efforts and the result.</i>

Exercise 5. Organise a conference!



Figure 3. The key picture of Exercise 5.

Air-pollution and other problems of environment raise our attention to the importance of environmental protection. Organise a conference in this topic!

- a.) Give a title to the event! Find an attractive key sentence!
- b.) Plan the program of the conference. Which topics would you involve and why?
- c.) What kind of side events would you organise parallel to the conference?
- d.) Make a plan on consecutive steps of the organisation! What is needed to a successful conference? Make a financial plan, too!
- e.) How would you inform the public?

<i>Objectives of the exercise:</i>	The aim of this exercise is to develop the organising and entrepreneurship competences; to join everyday life phenomena and processes with school subjects
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	and to support environment-sensitive behaviour and responsible civic attitude.
<i>Competences to develop:</i>	<ul style="list-style-type: none"> - <i>Competences in Natural Science</i> - <i>Digital Competence</i> - <i>Communication in the Mother Tongue</i> - <i>Mathematical Competence</i> - <i>Social and Civic Competences</i> - <i>Sense of Initiative and Entrepreneurship</i> - <i>Aesthetic and Artistic Awareness and Expression</i>
<i>Form of the elaboration:</i>	Teamwork: Planning the conference. Project task: realisation of the conference in a local community with participation of many pupils, projecting a closing publication.

Exercise 6. Work as a reporter!



Figure 4. The key picture of Exercise 6.

Imagine that you are a reporter experiencing the event in the picture!

a.) Write a short reportage about the picture. Give a title to it, as well!

b.) Prepare an interview with someone among the following persons: Environmental officer, representative of the firm possibly responsible for the pollution, a person living in the block-house on the map, a doctor who is expert in the health effects.

c.) Find out such dialogues and dramatise them with your bank-mate!

<i>Objectives of the exercise:</i>	The aim is to recognise causes and consequences of our environmental problems. Preparing the reportage can contribute to realise and understand the different, sometimes contradicting, opinions and points of view, and to formulate an individual opinion by the pupils. It helps forming environment-sensitive civic behaviour.
<i>Competences to develop:</i>	<ul style="list-style-type: none"> - <i>Competences in Natural Science</i> - <i>Communication in the Mother Tongue</i> - <i>Social and Civic Competences</i> - <i>Sense of Initiative and Entrepreneurship</i>
<i>Form of the elaboration:</i>	Individual work for the pupils: preparing the conversation or reportage. Work in study-pairs: conversation, role-playing

Conclusion

Development of key competences is of key importance also in Hungarian educational practice. The National Core Curriculum defines 9 key competences almost identically to the last European recommendation. The only difference is the separation of mathematical and science competences, increasing the weight of natural sciences in the list of competences.

There is a table of recommended activities to develop each of the key competences by climate related activities. A part of them is general, applicable for many other scientific topics. But another part of the competences can be developed relying on enhanced interest of the pupils (and perhaps their teachers) in extreme weather phenomena and climate change.

The presented exercises develop several key competences and they call pupils' attention to the climate change and environmental problems in various aspects. The exercises are based on active cooperation with the pupils, also relying on the motivating energy of the common efforts and creative solutions. The exercises are related to topical specifics of geography, to some extent, but they can also be solved without them. As it was seen in the previous talk, environmental problems are closely related to several other school subjects, as well.

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RESEARCH OBSERVATORY

Initial Teacher Training in English Schools: Reflections on the assessment of standards and characteristics

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Abstract

This paper focuses on the responsibility of Higher Education Institutions and their partners in schools in coping with the challenges arising from the maintenance of standards for Initial Teacher Education and changes in their interpretation related to a changing inspection regime. It discusses the responses of a group of teachers and teacher educators to the changing emphasis of inspection in initial teacher training in England. This paper will discuss something of the background to this change. Initial Teacher Training in England has been subject to regulation for many years and this regulation has increasingly been accompanied by a process of inspection, with the outcomes of inspection linked to funding arrangements. Thus inspection for compliance with state requirements has become embedded in the English system of initial teacher training. Thus the twin levers of regulation and inspection have served to promote conformity and compliance in initial teacher education and to promote a state curriculum. Drawing on previous work with registered inspectors the authors argue that changes in the inspection regime will change the way workers in the sphere change their practices. Changes in the Inspection process have an immediate impact on what teacher trainers and trainees experience in their training. Working with experienced teacher trainers and teachers, two of the current authors explored how regulatory criteria (standards) and inspection criteria (characteristics) could inform judgements of the professional practice of trainees. The working group sought ways to share their understandings of how regulation and inspection could impact on the assessment of trainees. It proved impossible to adopt a matrices based approach and this paper reflects on the substance and imperatives flowing from the cameos and vignettes that were used to characterise desirable performances by trainees and desirable judgements by trainers. Implications for current practice and future work are identified.

Introduction

In the UK the department responsible for education and training regularly issues documents guiding and directing the system, called circulars, that are usually treated as having the force of law. The circular (DFES 2002) we now deal with applies directly to all providers of initial education and training for school teachers. This circular came in the wake of a plethora of others, for example DfE Circulars 9/92 and 14/93 (DfE 1992, 1993) these paved the way for a culture of compliance with central requirements. This was done by the creation and elaboration of standards and requirements drawn up by the government department responsible for education and training. These circulars introduced a requirement that each trainee spent a good proportion of their time training in schools. Contracts and agreements between schools and HEIs became more formal; roles and responsibilities were to be clarified; job specifications for school teachers involved in training had to be drawn up with individual schools. The key issues of 'accountability' within new frameworks of devolved responsibilities to school teachers, and 'entitlement' of the student teachers to minimum levels of support and opportunities in schools could no longer be left to the earlier ad hoc arrangements, which previously were dependent upon more informal channels of communication. Thus partnership arrangements became 'formal alliances' which in some ways gave a greater 'sense of partnership', with more realistic and well developed appreciation of each institution's positions. The nature of existing partnerships in university-based Initial Teacher Training (ITT) remains imbalanced as HEIs are required to involve schools in ITT, but schools do not have to have a reciprocal duty to be involved in ITT. (Harrison 2006)

The impact of these circulars has been monitored and maintained by regular and rigorous inspection conducted by the Office for Standards in Education (Ofsted). The entire state maintained system, not just teacher training, is subject to inspection by Ofsted. The power of the inspectorate is extraordinary, described by Hood et al. (1999, 10) as 'the nuclear weapon in the government's armory'. For teacher training inspection carries powerful financial consequences with reductions in numbers and hence funding for those who do not achieve well and opportunities for further funding for those who do achieve well.

It is worth noting at this point that there are separate and distinct inspection processes conducted by Ofsted designed to assess the quality of educational provision in schools and HEIs. Both schools and HEI teacher training providers are subject to legislation and inspection and hence there is likely to be a general culture of compliance in both settings.

Historical Context of Initial Teacher Education in England

During the last two decades the nature of Initial Teacher Education in the United Kingdom has changed considerably as a result of legislation, regulation and inspection. It has included a significant shift in the balance of work between Higher Education Institutions (HEIs) and schools, with much more emphasis being placed on school-based, and school centred, training. The former involves the establishment of partnerships between HEIs and schools, and nationally they continue to supply the profession with the vast majority of newly qualified teachers. The latter, which includes School Centred Initial Teacher Training Schemes (SCITTS) where schools work independently of HEIs, although first introduced in the early 1990's they remain minority suppliers of new qualified teachers in the England. The pros and cons of both systems are still very much debated, and future legislation may see even more proposed changes, the recently elected coalition government (May 2010) would appear to favour school centred training to the more established, and more popular, HEI-School partnership training model.

As a direct consequence of opening up of the market in this early 1990's, some in HE were concerned that over time the nature of training would become 'skills based' and lack the necessary grounding in pedagogical theory. Edwards (1995, 164), for example, refers to the debate at the time, in which some saw school-based training as a 'descent into unreflective apprenticeship' whilst others viewed the contribution of the HEIs as too remote and theoretical. Edward's own view was that schools should leave the 'theory' to higher education, but that...

...they should not do it all. Theory, understood as generalisation from the critical scrutiny of practice, is an activity in which good schools regularly engage. The contribution of higher education is to add a wider frame of reference and a particular commitment to independent enquiry. (Edwards 1995, 164)

Furlong et al (1996), however, referred to the emergence of three types of partnership: 'HEI-led', 'Collaborative' and 'Separatist' and as Penny and Houlihan (2003, 243) observed 'each reflected very different approaches to 'joint' activities in the context of 'partnership-based' initial teacher training'. Given that the key responses to the policy changes introduced in the early 1990s were that the schools had taken on a much more active role in Initial Teacher Education (Furlong et al. 2000) the DfEE, in December 1999, invited schools to bid to become Training Schools and as such to seek new innovative ways of improving the quality of Initial Teacher Training.

In its evaluation of the training schools programme, OFSTED's (2003) indicated that most schools were unwilling to take on the full responsibility of an independent provider and were happy to acknowledge the HEIs ability to provide a wider frame of reference. As the Partnership model had evolved so the schools had come to value both the contribution of the HEIs and the expertise they bring.

Two decades of policy change have prompted an 'evolution' in Initial Teacher Education with new types of partnerships emerging. There have been anxieties on both sides of the partnership as schools have seen more clearly the demands of providing effective teacher education and HEIs have worried about the possible marginalization of their role in teacher training.

Standards, performativity and measurement

Phillips and Harper-Jones (2003, 126) describe a preoccupation with performativity as 'the dominant metaphor for describing new Labour policies and priorities on education in the early twenty-first century'. Similarly, Ball (2003) states:

Performativity, it is argued, is a new mode of state regulation which makes it possible to govern in an 'advanced liberal' way. It requires individual practitioners to organise themselves as a response to targets, indicators and evaluations. To set aside personal beliefs and commitments and live an existence of calculation. (Ball 2003, 215)

Ball *ibid* goes on to describe an education service which is increasingly dominated by markets, managerialism and performativity, which is not simply about changing what educators do, but about changing who they are.

Peters (2004), drawing upon Lyotard (1984), outlines the focus on performativity in the latter part of the twentieth century, and the concerns he raises have also been explored in a number of educational settings. Strathern (2000), for example, describes a *tyranny of transparency* in higher education and Ball (2003) debates how *value has replaced values* in schools, and how the professional judgement of teachers has become subordinate to the requirements of performativity and marketing. Ozga (2000) expresses the view that the 1999 framework for Continuing Professional Development had more to do with a government desire to control the teaching profession than with professional outcomes. More about standardising practice than enhancing quality, something which Sachs (2001) found to be happening in many countries, including England.

Some of the main criticism of performativity (see for example, Elliott 1996; Ball 2003) is related to the time and energy spent on performance monitoring and management at the expense of activities, such as, working with students, research and curriculum development. Elliott *ibid* expresses a particular concern about gathering suitable evidence for measuring performance, or benchmarking against set standards. The standards used to measure the performance of trainee teachers in England, for example, requires this type of evidence base to support what would otherwise be a rather simplistic *tick-box* monitoring exercise. For trainee teachers the standards may be seen as 'expectations and indicators that make one continually accountable and constantly recorded' Ball (2003, 220).

Performance management, appraisal, review, and target setting are now used in schools, and are a key aspect in threshold benchmarking to assess teacher progression to higher pay scales. Ball (2003: 224) identifies some potential difficulties with such processes, for example, valuing people for 'their productivity alone' and creating a compliance culture that leads to 'fabrications' which he describes as:

versions of an organisations (or person) which does not exist – they are not 'outside the truth' but neither do they render simple true or direct accounts – they are produced purposefully in order 'to be accountable' Truthfulness is not the point – the point is their effectiveness, both in the market or for inspection or appraisal. (Ball 2003, 224)

This approach to auditing performance reflects the games playing and creative accountancy that some researchers feel schools are increasingly under pressure to adopt to prove compliance, or to demonstrate success, in a competitive environment (see for example, Gray et al. 1999; Elliott 2001; Ball 2003). Elliott (2001, 202) described it as 'pathologies of creative compliance in the form of gamesmanship around an indicator culture'. Measuring performativity has become a regular part of what teachers and schools now do, but for it to help in developing practice and raising pupil achievement it has to be more meaningful than the auditing 'fabrications' outlined by Ball (2003). Furthermore, measuring performance through regulation and inspection may not generate the improvements that government departments like to promote, as Lawn (1999, 110) pointed out 'regulation and threatening behaviour seem to be short of the mark in their capacity to engineer a positive response from teachers'.

Recent developments

In 2009 the Training and Development Agency for Schools (TDA) supported a regional collaborative investigation in the South West of England. This investigation took the form of a series of workshops that brought together experienced school based mentors with trainers from HEIs to explore the utilisation of the standards set out in the relevant government circular and the characteristics used by Ofsted to describe their achievement.

For school and HEI professionals there appeared to be an underlying tension between the application of the standards and characteristics. We identified some ambiguity in Ofsted's use of the term characteristics, while they are not grading criteria they are supposed to help providers establish what a trainee who is doing better than just meeting QTS standards looks like. Some of the ITT providers involved in the workshops were able to use this tension creatively to escape the downward pressure of total compliance. By operating creatively they were able to produce examples of developing practice that would lead to improvements in the training process. It had allowed creative professionals to identify and use spaces that had arisen as a result of the tension between the standards and the characteristics. It enabled them to use their professional judgment, operating, at least in part, at an institutional as well as a personal level.

Workshop participants agreed to provide rich descriptions of both trainees and their judgments, pen portraits, in doing this we moved beyond the established methods of formal evaluation. The reasoning behind this was to try to capture how mentors were operating judgments that used the space created by the tension we noted above. We now turn to some of these pen portraits, in doing so we identify some commonality as to what constitutes outstanding trainees. Unlike Ofsted's documentation these judgments go beyond performance, files and explanations and come some way to defining particular classroom practices as pedagogically more effective and inspiring than others. These pen portraits can be found in the report of the workshops (Eke, Ryan et al. 2009).

A pen portrait of Kate reports that as well as having a good honours degree she also had experience of working as learning support assistant working with a child who had developmental delay and communication difficulties. It needs to be noted that this kind of experience placed her in a position where her attainment could be expected to be better, for instance the portrait states 'she had experience of extensive communication with the parents of the child she was employed to support but fewer opportunities to communicate more formally with parents and carers. Her team working skills were good, developed through her work as a learning supporting assistant. She appears to be atypical in the sense that the judgment made identifies that Kate met the main areas for development identified at the start of her course what is not made explicit is how those areas were identified and agreed. The main judgment is that she developed her understanding of practice in culturally and socially

diverse contexts. Unlike the judgments made of the other trainees no reference is made to a particular pedagogy.

The pen portraits of Ann, an early years trainee, and David, a primary trainee, show the mentors, HEI tutors and other involved in assessment as identifying not just how well they meet the standards or demonstrate characteristics but go beyond that to describe aspects of pedagogy, for instance, it is stated that for Ann 'her assessments were well integrated with her planned teaching' but further she 'willing engaged in the life of the school in a professional manner. She understood how her professional work was informed by external colleagues.' There is an important pedagogical judgment which refers to 'matching the needs of all learners' and 'flexibly manage the cognitive demands and the pace of talk'. She engaged in imaginative development of cognitively demanding tasks which demonstrated uptake and a concern for the abiding interests of children. Going beyond this she was praised for the way she could explain the differences in teaching approaches she adopted for different subjects. In effect the judgment of outstanding rests at least in part of her development of a dialogic pedagogy (Alexander, 2009). David demonstrated outstanding work in what the university describes as a challenging school placement. He was praised for his use of interactive teaching in all lessons. Going beyond this he showed 'evidence of uptake responding to learners' engagement.' The university tutor was impressed by David's understanding of how out of school activities produced a sense of worth in the pupils.

Stephen, a secondary science trainee, with a non-traditional background, but with experience as working with adults with learning difficulties and a recognition of the importance of good organisation and structure for a good learning environment. It was noted that he had the capacity through critical reflection to produce his own training plan. He sought to develop his understanding of achievement and diversity issues. His mentor identified characteristics of his [practice which show a development of dialogic teaching, for instance 'lessons which capture learners interest in which all learners make progress and which respond to learners interests before and during the lesson demonstrating excellent subject and pedagogical knowledge he was also noted to have gained the respect of pupils colleagues, parents and carers.

Elizabeth, a secondary English trainee, demonstrated commitment by seeing to improve her knowledge of English literature and saw this as an aspect of her development of her professional knowledge and understanding. Very early in the course she showed the ability critically to reflect on her own practice and act on the advice and feedback from others. As with the other outstanding trainees it was her development of dialogic teaching that was identified as highly significant in her practice. This was described as 'having rapport with learners which involved high quality dialogue and questioning and which were based on good relations and interactions with pupils.' In addition the development of lively lessons

capturing the interests of learners during which the pupils concentrated willingly. Another English trainee was described as 'inspirational' and able to go well beyond the functional skills agenda set centrally.

In the case of James, also an English trainee, he entered with an excellent academic record and quickly showed sensitivity. He was concerned that his placement in a private school was so different from his own school experience that that might create difficulties for the pupils. He was reassured and 'immediately developed an outstanding rapport with learners.' He engaged the pupils through the use of high level questioning, capture their interest and engage them in debate. His final report noted his capacity to be analytic and to take account of research and pedagogy in the planning of lessons.

What we can say here that although expressed in different terms those responsible for training were able to focus on the development of a dialogic pedagogy. They also noted how the trainees were engaged with pace and match.

Discussion

All of the above trainees during the period of training had opted into being assessed at masters' level and being entirely successful at that. It is clear that they see this an important aspect of their continuing professional development and all of the mentors make comment on this. Although engagement with continuing professional developments is identified in the standards and characteristics here we can see it explicitly realised. Alongside this the trainees were identified as being prepared to take personal responsibility for their development of subject knowledge and pedagogy. For instance Elizabeth set herself a target of developing her knowledge of contemporary English literature, poetry and fiction for young people. Stephen whose first degree was in psychology and holds a masters in cognitive neuro-science identified aspects of physics and chemistry as needing development by the end of the programme his subject knowledge in both biology and physics were assessed as excellent.

One of the difficulties of the current training programmes is establishing a clear evidence base for judgment that school mentors and HEI assessors can share with confidence. Observations of classroom practice rest almost entirely with school based mentors what we can see here is that the mentors have the professional confidence to encourage trainees to move well beyond the strictures of centrally set standards and characteristics. Effectively, as discussed earlier, these mentors seized the space available for innovative action. In like manner the HEI tutors took the opportunity to use the same space. This is clearly reflected in their conjoint judgments. Both sets of experienced professionals have used the

characteristics to move beyond the standards in seeking excellence in early teacher education.

We believe that what is happening is that outstanding trainees are identified by their capacity to recognise what constitutes dialogic practice and seek to develop it in their own classrooms. The judgments would indicate that the trainees are not simply following a pedagogical prescription but are outstanding by virtue not just of their understanding but their professional desire to develop that practice. The Bernsteinian concepts of match and pace are commented on in all judgements, we can surmise that these concepts are vital to critical understanding in the development of dialogic approaches. Anna for example is identified as having 'the flexibility and adaptability to match her teaching to the progress made by pupils and to match the pace of her lessons to pupils needs. Alongside their concerns with dialogic practice, match and pace all of these trainees to a concern engaging with the values and ideas of social justice.

We identified a general culture of compliance, performativity and self regulation as presenting difficulties for the development of programmes and individual trainees. What we believe we can say, albeit from a small and somewhat self selected sample, is that there is the opportunity to move beyond these agendas and this will be of benefit to the system as a whole. Finally what we identify as good practice shows the school based mentors and HEI tutors using their independent professional judgment based on values and principles not central direction.

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From Student Teacher to Professional Teaching.

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Abstract

Educating good teachers is on the political agenda of most European countries. What constitutes a good teacher, and how teachers should be educated, may, however, differ. In Norway, as in many other countries, the role of the teacher is described as a professional one. This article analyses the concept of professional teaching, and outlines the consequences for mentoring in pre-service teaching. The data referred to draws on the experiences of teacher students with professional reflection while in placement schools. The article examines how these experiences may influence their professional development, and reflects on the transition from teacher student to professional teacher.

Keywords: *teacher education, critical reflection, professional development, beginning teachers, theory and practice*

Introduction

The aim of teacher education is to qualify students for professional teaching within national aims and objectives. In Norway this is done through two equally important learning arenas, coursework at the university over four years and 20 weeks of pre-service teaching spread over the first three years.¹

Teacher students start their formal education with a lot of knowledge of both teaching and learning derived from their own schooling. These experiences will influence both course work and practice. Learning to be a teacher thus starts at the age of six and is strengthened by many years of observation (Lortie 1975, Bandura 1986). These observations are, however,

¹ From 2010 teacher education at the university colleges is organised in a new way. The 20 weeks of pre-service teaching are spread over all four years. The course in education theory is strengthened from 30 to 60 ects and is spread over the first three years and includes a bachelor thesis.

limited to what happens in the classroom. Learning to be a teacher must therefore also involve experiences with those parts of teacher work that the students have not met. When starting to teach as qualified teachers, the development of teacher competence and identity will continue, and be stabilised through cooperation with other teachers on concrete tasks.

Professional teacher education

Responsible teaching requires teachers with subject knowledge, pedagogical understanding and classroom skills, and the capacity to form relations with pupils, colleagues and parents. In addition, professional competence includes critical reflection, which is the ability to argue professionally and to contribute to development and change (Dale 2001, NOKUT² 2006, St.meld. (White Paper) 11, 2008-09). Critical reflection aims at exposing how culture and traditions have informed our thinking by questioning routines and traditions and reflecting on what is worthwhile doing. (Bengtson 2007). In this perspective, “theory,” as taught at the university, should not give recipes for teaching, but challenge and develop the students’ thinking, thus preparing them for considerations on important educational matters (Dewey 1904/64, Dale 2001, Hammerness et al. 2005). However, many studies indicate that teacher students do not value theoretically based knowledge. They seem to experience a gap between theory and practice, and pre-service teaching is regarded as their main learning area. (Numan 1999, Heggen 2005, Laursen 2008, Heggen and Damsgaard 2010.) To reduce the gap between theory and practice, NOKUT (2006) recommends that the course work at the university should be more practice oriented, while Solstad (2010) argues that it is just as important that the students meet practice teachers who have the ability and will to reflect and discuss educational issues professionally.

Practice in professional teacher education³

Knowledge, attitudes and skills are transmitted through language and communication, and competence is developed through participation in common tasks within a community of

² NOKUT is the abbreviation for Norwegian Council for Quality in Education

³ In this article practice teacher and mentor are synonyms. The time spent in schools is described as practice, as pre-service teaching, or practice periods. I also use the term placement schools. Using the concept of practice, does not restrict this important learning period to technical training. The contract between the university and the practice schools gives the student group, while in practice, 15-20 hours a week with their mentor to discuss and reflect. In addition each group will be contacted and followed up by one of the lecturers from the university.

practitioners (Lave and Wenger 1991). The placement school may be seen as such a community for teacher students, and the practice teachers represent the competent others, who, more or less consciously, transmit their values and thoughts about what constitutes good teaching to the students. It is during the placement periods that the students experience how teaching is normally planned and accomplished, and whether or not professional reflection is included in the teachers' conceptions of competence. Experiences in the placement periods may therefore greatly influence the students' learning. As Bandura (1986, 51) puts it: "... providing a model for thought and action is one of the most effective ways to convey information about the rules for producing new behaviour."

Teacher students bring into their education 12-13 years experience of teacher work. These experiences may limit their ideas. The practice teachers, thus, have to focus on two goals. One is to help students to develop necessary skills and practical competence. The other is to involve students in professional reflections and theoretically based discussions, and to encourage them to question routines and traditions (Putnam and Borko 1997). In this way professional aspects of teacher competence may be integrated into the students' conceptions of good teaching.

To focus on these professional perspectives represents no undermining of the importance of practical skills. Dewey (1904) has, however, reminded us that although mastering skills may look impressive at first glance, development is mainly restricted to how to do better what you already do. Without critical reflection, new and apparently successful methods will easily be accepted without probing into the values lying behind, a point that has been demonstrated in more recent research (Haug 2003, Klette 2003, Jensen 2008).

Mentoring and reflection in pre-service teaching

Mentoring and reflection while in practice are central to teacher students' development. While the concept of reflection generally means looking back, Dewey (1933/2007) developed this concept to also include reflection both in advance of actions and while in action. Pre-reflection includes both thinking and self-reflection. It is now, before deciding how to act, that the students' thoughts, ideas and plans can be verbalised and challenged and opened up for alternatives. Merely to sanction the students' plans is not what is meant by pre-reflection. That would indicate an instrumental view on teacher work and may give the students a false feeling of doing the right thing. Reflection in action is the reflection and adjustments that are necessary to deal with what happens while still in action. Post-reflection is looking back, reflecting and analysing both process and result and focusing on what can be learnt from the experience.

Dale (2001), discussing professional teacher education, makes a distinction between practice-oriented reflection and professional reflection. The focus in the former type of reflection is on instrumental issues and skills, often done after a lesson. Professionally-oriented reflection, which is crucial in a professional teacher education, includes, in addition, critical reflection and theory based reasoning and arguments.

Research indicates, however, that teacher students rarely meet theoretical concepts while in placement schools, and mentoring can mostly be described as practice-oriented. Mentors tend to think of their job mainly as introducing the students to the real world of teaching, as it is. The focus is on developing skills that help the students to do better what they already do while critical questions and tasks are avoided. The students tend to follow the teachers' plans. In this way, the teachers' values and traditions are subtly transmitted to the students. (Sundli 2002, Edwards and Protheroe 2003, Lunenberg and Korthagen 2003, Sundli and Søndenå 2007, Bullough et al. 2008, Skagen 2009, Solstad 2009.)

The placement periods are highly valued by most students. This is not surprising. It is now they try out the occupation they have chosen. However, this enthusiasm does not guarantee that the practice is good from a professional point of view as this is described in the White Paper already referred to. If critical and theory-based reflection is not on the agenda in the practice period, routines and traditions at the school may be looked at and accepted as generally true.

These reflections on the development of professional competence formed the background for my own study. It is obvious that students learn a lot while in placement schools. Thus, the question is not if they learn, but what they learn. I wanted to know more about this and the following research question was developed:

What kind of experiences do teacher students have in relation to a professionally-oriented teacher education during their pre-service teaching periods?

Research procedure

The question above was the starting-point for an investigation into the experiences of one cohort of teacher students. Questions about the students' views on the relationship between theory and practice were also addressed, as an understanding of this relationship is considered crucial for professional teaching. The investigation covered the two first years of teacher education. During these two years the students complete the coursework common to all students, including education theory. They also finish four periods of different lengths, to be spent in placement schools. The cohort consisted of 43 students starting their teacher education autumn 2006. This number was reduced to 34 by spring term 2008.

As my interest was to learn about the variation in the students' experiences and learning, I wanted to include the whole cohort in the study. With about 40 students and four planned data collections, interviews would be too demanding. Therefore, a questionnaire approach was chosen. This method gives no possibilities for probing into interesting answers. On the other hand, the influence of the researcher is reduced, which I found very important, being one of the two lecturers covering the course work in education theory. As I wanted to gain insight into the students' thoughts and experiences, I chose to ask open questions, which allowed the students to formulate their own answers.

Even if there is no reason to believe that these students are different from other students starting their teacher education that year, the results cannot be seen as independent of the lecturers and practice teachers involved. Generalisation, therefore, is risky. The results may, all the same, give valuable insight into teacher students' experiences with professional reflection in pre-service teaching periods.

The data was gathered at seminars after each of the four practice periods, which gave an 85-90 % response. Anonymity was stressed because of the relationship between researcher and respondents, and because I did not want the students to feel disloyalty towards their practice teachers. This was done by giving each student a number which followed them throughout the four data collections.

The data was transcribed and manually categorised after each practice period. This procedure gave me closeness to the data, which made it easier to see variations in the students' experiences and interpretations.

In the following section, results from the investigation which illuminate the research question will be presented.

Results

The responses demonstrate that halfway through their four year teacher education, the students have developed their thinking and learnt much about what it means to be a teacher. The way in which the placement period is organised varies a lot from school to school in terms of content put into the reflection periods and the time allotted for mentoring and reflection, and, thus, to the students' learning.

Mentoring and reflection

The students were asked to judge how mentoring and reflection with the practice teacher had influenced their learning outcome and professional development, and what they had learnt from pre- and post-reflection.

The data indicates that most students had in some way been involved in reflection, and that this had been important for their learning outcome. After the first practice period the students mainly refer to good advice and informative answers to all their questions, but there are also responses indicating that they were involved in thinking and reflection. In the second practice period, and later ones, the students were more engaged in own teaching, and there is a distinct change of focus from general interest for what happens in the classroom to a focus on themselves as teachers, and how to do better:

The mentoring has meant a lot to me. It has helped me to be cleverer. When the practice teacher has told me what to change, I have done my best to change what she wanted me to change. (S13 after 2. period)

I have been told what had been good, which goals were reached, and what I have to work on to do better. (S45 after 3. period)

Only 10-15 % of the students refer to practice teachers who challenged them and encouraged their thinking. These students report that they had learnt to reflect critically on what had been done, if it could have been done otherwise to improve the children's learning, and to reflect on the reasons for the choices they had made:

She helped me to initialise my own thinking. She did not tell us to do so or so, but inspired us to reflect ourselves. I learnt very much! (S10 after 2. period)

The comments have been honest and constructive. Constructive because they have inspired me to reflect instead of focusing on what is good or bad. Very useful. (S38 after 3. period)

She has helped me to reflect on the teacher I want to be instead of looking back at the teachers I have met before, or what I myself have done before. (S30 after 3. period)

Learnt MUCH. Learnt to reflect critically on different ways of doing things. Maybe there are other and better ways? And learnt to reflect on WHY I choose to do things this way or the other. (S34 after 3. period)

Professional reflection and the three different phases of reflection inspired by Dewey were discussed at a seminar for the practice teachers and lecturers involved with the students before the second practice period. The importance of pre-reflection was stressed as this is the phase with the greatest potential for professional development (Dewey 1933, Jacobsen 1997).

The study demonstrates, however, that post-reflection was by far the most applied form of reflection, generally focusing on ways in which what had been done could improve. There are few comments indicating that what had been done was questioned from a more fundamental perspective, as for instance if the activity had been worthwhile doing.

Pre-reflection is meant to challenge the students' taken-for-granted assumptions and to open their eyes to all the dilemmas and alternatives facing a teacher. The students who had experienced pre-reflection report that it is important to reflect on choices and reasons for doing what they wanted to do before acting. Many of them regret having too little time for such reflection:

Pre-reflection has been very useful. It made our project and lessons much better. We should have had much more time. (S13 after 3. period)

Pre-reflection has been important for the development of my ability to reflect on teaching from a theoretical perspective. (S11 after 4. period)

Most responses indicate, however, that what had been called pre-reflection mainly had functioned as an acceptance of what the students had already planned, and not as a means of developing their thinking and ideas:

Most often it functioned as a sanction of our planned teaching schedule, in the staff-room, just before the lesson started. (S29 after 3. period)

Pre-reflection can best be described as "tell me (the student) if this is good enough", and the practice teacher answers yes or no. (S30 after 4. period)

Many students appreciated responses like this because they could be "sure" that what they had planned was right. These responses indicate an instrumental view on teaching as either

right or wrong. It also demonstrates that students have different limits for risk-taking, thus strengthening the view put forward by Putnam and Borko (1997), that to develop professional competence, the students' former thinking and representations need to be verbalised and challenged.

Other students were happy to carry out their own ideas without a practice teacher interfering with their plans. Even if some students tell of very traditional schools where change seemed impossible, many practice teachers were willing to let the students try out alternatives to traditional teaching, though signalling that this was not to be regarded as "normal" teaching. The study reveals that most students appreciated the responses they got from their mentors. Good advice and positive responses are both safe and encouraging. It helps the students to do better what they already do, and to function better in the given context. But it does not challenge their thinking, and contributes only moderately to increase their capacity to judge their own values and evaluate alternatives. Some students regret this; they had wanted more depth in the reflection:

Would have learnt more, and the outcome would have been better, if she had challenged us more. (S11 after 1. period)

I feel that the practice teachers in this period have done little to my professional growth and development. They have been happy with everything I have done, not given me any challenges. (S12 after 3. period)

Totally, the comments indicate that reflection mostly can be characterised as practice-oriented more than as professional, and that the practice period has functioned more as training than as education. Even if some students ask for more challenges, most of them are happy with the mentoring. They have followed the advice they got and, thus, have become better teachers.

Theory and practice

Professional teaching, as defined in this article, presupposes theoretical and research-based knowledge. The students were, therefore, asked to which degree they saw a relationship between education theory, as learnt at the university, and practice as experienced in the placement schools. They were also asked to which degree they judged pedagogical insight to be important for teacher work.

After the first practice period, 30 % of the students saw no relationship between theory and practice. About 25 % use terms like a little, to some degree and partly, while 45 % of the respondents were affirmative about such a relationship. After the fourth practice period, 90 % of the students report that knowledge of educational theories is important and necessary for understanding the pupils, for planning, and for the analysis and evaluation of teaching. They added that knowing theories is important for participating in discussions about pedagogical matters and arguing for own values and ideas through the use of a professional language. Typical statements:

[Pedagogical insight] may help you to reflect on own decisions and to involve yourself in discussions. (S22 after 2. period)

I could have written a thesis about this question. Theoretical insight is absolutely necessary. It is the first building stone you need before you start practising. (S23 after 3. period)

Theories are necessary to choose between alternatives. (S10 after 4. period)

But there were also fellow students who had great difficulties in seeing any relationship between theory and practice throughout all the four practice periods. They had not thought about theory one single day while in practice, and had not met any of the concepts they had worked with at the university. Thus, they believed more in their own and others' experiences. Comments such as these suggest that theoretical perspectives have not been on the agenda in the mentoring sessions.

The reason why it is difficult to see the necessity of theoretical/pedagogical insight is that the practice teachers never use any of the concepts we learn and discuss at the university. They do not illuminate the theory. (S41 after 3. period)

Other comments support these responses by telling that pedagogical reflections and discussions mostly had been done with fellow students. Having the same background, their learning had benefited from discussing common issues.

Some of the students more directly point to the importance of the practice teachers' attitudes to, and interest in, pedagogical questions for their own understanding, as demonstrated in the following quotations:

Of course [I see the relationship between theory and practice]. If I had not learnt any theory [before the practice period] I would have been able neither to observe, nor to understand, dialogues on theories and pedagogical matters. (S38 after 1. period)

Very much. Our practice teachers very competently drew our attention to the relationship between theory and practice, exemplifying from situations which had come up during the school day. (S12 after 2. period)

Two years into their teacher education, most of the respondents in this study see the need for theoretical concepts and pedagogical insight for the planning and analysis of their own teaching. The responses also demonstrate that the practice teachers' attitudes towards theoretical perspectives are important for the students' understanding. When practice teachers do not point to such perspectives or involve the students in critical reflection, this understanding is hampered, and the students are informed that theoretical perspectives have little relevance for professional competence.

Theoretical concepts may, however, be part of the practice teachers' "silent" knowledge, directing their teaching and doings without being explicitly pronounced. But if the teacher is not conscious about what she does or why, routines, as Schön (1983) points to, easily take over, resulting in reproduction and stagnation. When thoughts become visible and alternative interpretations are met through reflection, both the practice teachers' and the students' understanding may increase, as underlined by Rodgers (2007). If not, focusing on professional perspectives at the university will easily be thought of as an exercise which bears no relevance to the real life of teachers.

Meeting with a new culture

The newly qualified teacher comes to her new school with a foundation of subject knowledge, education theory and altogether 20 weeks of pre-service teaching from different schools representing different cultures and traditions. At the new school, another culture will be met, a culture that mirrors the historical development of that school, both with its manifest and its invisible features.

While in placement the student teachers have been legitimate peripheral members within the greater community of practice at the practice school (Lave and Wenger 1991/99). Even if they will have to conform to the culture and expectations of this school, they may keep a certain distance because they know they are going back to the university after some weeks. It means that they can afford to be critical and question the practice they are part of. It also means, as this study has revealed, that trying out alternative teaching methods and forms of

organisation which break with the given culture is meaningful because they are still members of the educational culture at the university where such actions are legitimate.

As newly qualified teachers the situation will be different. They enter a new community of practice, bringing along their values and their images of what constitutes good teaching, and what kind of teachers they would like to be. It is now, when these ideals meet with the new and "real" world with its routines and traditions, artefacts and modes of thinking that the professional identity of the new teachers will develop and gradually be stabilised through participation, negotiations and chosen actions. Membership in the culture develops through acquisition of and loyalty to this culture: "... to be competent ... is to learn the forms of argument and discourse – the accepted way of reasoning – within the disciplinary community." (Putnam and Borko 1997, 1942)

Culture, thus, has a strong influence on individual actions. It is, however, the new teacher who decides how to respond to the new culture. Being newly qualified and confronted with all the practical challenges, uncertainties and workload this automatically entails, the need for belonging and being accepted may be so strong that the dominating way of thinking and doing at the new school is acknowledged as legitimate without any questioning. If, and how, such subordination will take place, may depend on both personal and emotional factors, and the culture characterising the new school. (Nygren 2004, Skårderud et al. 2005, Bullough et al. 2008.) If the new teacher, during her pre-service teaching periods, has experienced professional perspectives as a legitimate and natural part of teacher work, it will be less risky to bring such perspectives into her new job. This hypothesis is supported by Grossman et al. (2008).

Teacher work has to balance between efficiency and innovation (Hammerness et al. 2005). Efficiency is about establishing routines so that the teacher can act without having to stop and think all the time. Innovation is to think in new ways, think about change without fear and break routines if judged necessary. If courage and the will to innovation are not developed, routines and culture may prevent the teacher from seeing solutions that would have been better, and teacher work may end up in inadequate routines. For the new teacher it is important to be part of the new culture, but also to influence this culture and contribute to its development.

This perspective has relevance for the mentoring of new teachers⁴. Mentoring is introduced in the White Paper (St.meld.11, 2008-09) as a means to educate more professional teachers

⁴ In Norway beginning teachers have full responsibility at her new school without any formal support. From 2010 all teachers have the right to participate in a program for newly qualified teachers, and to have a mentor at her new school.

and bridge the gap between “theory and practice”. Bullough et al. (2008) question this assumption, referring to research demonstrating that mentors tend to avoid discussing difficult themes with their protégés, and rather concentrate on practical issues. To succeed, the mentors will have to balance between practical help and advice, and, at the same time, encourage and value critical thinking and reflection. Focusing mainly on efficiency, the mentoring of new teachers may strengthen the adjustment to, and acceptance of, the new culture without questioning its legitimacy. The so-called practice shock may be reduced, but the result will not necessarily be more professional teachers.

The process of becoming a professional teacher is not finished at the end of formal teacher education. The process continues through negotiations and chosen ways of working within the culture met at the new school.

Discussion

This article has explored the concept of professional competence. A main idea has been that to develop such competence, teacher students need to meet practice teachers, or mentors, who challenge their former assumptions and involve them in critical thinking and discussions on important educational issues. Besides, professional competence demands an integrated view on the relationship between theory and practice. This focus has had no intention of undermining the importance of developing more practical skills, but in this article the professional perspectives in pre-service teaching has been stressed.

However, only few of the students involved in this study tell of practice teachers who encouraged professional and critical reflection. Reflection in pre-service teaching periods can mainly be described as practice-oriented. This is not surprising. In contrast to the professional teacher role described in the White Paper (St.meld. 11, 2008-09), Jensen (2008) reports that teachers’ identity first of all is practice-oriented and grounded in experience, while other studies have revealed that practice teachers do not look at themselves as teacher educators (Ulvik 2007, Nilssen 2010). These findings strengthen the image of theory and practice as representing “two worlds.”

From a socio-cultural perspective, learning is woven into social processes of identification, and thinking cannot be separated from social practice (Brinkmann and Tanggaard 2007). Looking at the development from teacher student to professional teacher from this perspective, the university represents a social learning arena valuing a certain mode of thinking. The placement schools represent another learning arena where a different mode of thinking dominates. Mattsson (2010, 134) clarifies the differences between the two practices stressing that there are “... different provinces of meaning, different systems of justification

and different regimes of truth.” At the university, legitimacy and justification are based on academic traditions. In the schools, legitimacy is based on practical actions, communication and relations. As long as the students are part of the university community, academic tradition, with its focus on critical reflection and theory-based argumentation, may be looked upon as meaningful, legitimate and justified. When entering a new school as qualified teachers, this mode of thinking may no longer be a natural part of social practice.

If the students, while in placement schools, experience professionally grounded perspectives and theory based actions, such perspectives may be integrated into their view of teacher professionalism and good teaching. These experiences will inform the students that professional perspectives are part of teacher competence, justifying and legitimating this mode of thinking. Such experiences may be stored as symbolic representations and latent competences which may be activated when judged functional, as, for example, when encouraged by the mentor at the new school.

Green (2009) has interpreted the concept of professional practice. First, such practice can be seen as practising a profession, as teachers are practising being teachers. Next, it can be seen as practising professionalism, that is, practising what it is to be professional, to act professionally. In this way practice is connected to identity. Practice teachers are performing their professional roles as teachers, but the research being referred to in this article suggests that they might not perform their jobs as practice teachers as professionally as expected. Their identity is not tied to being a teacher educator, but to being part of the community of teachers.

If the education of professional teachers, as described in official papers, is to succeed, the identity of practice teachers first has to be challenged. Second, their responsibilities as teacher educators, including practising professionalism in their work with the students, must be deliberated. This does not mean that educating professional teachers is the sole responsibility of practice teachers. Kemmis (2009, 37) reminds us that, “change requires forms of collective change and forms of collaborative discussion and inquiry.” Educating professional teachers, thus, makes a closer co-operation between teacher educators at the university and teacher educators in the placement schools, necessary. Different provinces of meaning, truth and legitimacy need to be expressed and discussed, for, as Rodgers (2007) emphasizes, expressing and sharing thoughts and reflections together is necessary to developing new understandings and new practices.

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The *Relative* Significance of Gender in Comparison to a Range of Personality Dimensions for Nonverbal Expressiveness and Nonverbal Sensitivity. 10 Correlational Studies

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Abstract

Gender differences in nonverbal communication are often controversially discussed as inevitable and large due to evolutionary heritage or as trivial leading to a focus on similarities. To expand upon earlier research, a set of studies was conducted with 675 university students to examine gender differences in nonverbal expressiveness and sensitivity, and how gender compares with personality dimensions in relation to these nonverbal competencies. Results revealed small but significant gender differences in nonverbal expressiveness and very small, non-significant differences in nonverbal sensitivity, comparable to gender differences in other psychological domains. The magnitude of gender relations to nonverbal competencies also fell well within the range of the magnitude of accepted personality correlations to the same competencies. In line with constructivist approaches the findings suggest that gender is not the primary but merely one of many human characteristics that relate to nonverbal communication.

Regardless of gender, eventual individual deficits can be overcome with training.

Keywords: *gender studies, nonverbal communication, personality dimensions*

Introduction

Our belief systems are permeated with social stereotypes that focus on the differences between males and females. Men and women are classified into two categories distinct from each other in the belief that they possess traits that are God given, inherent and unalterable. It is not surprising, therefore, that pop-psychology and pop-science books have topped the best-seller lists in most parts of the world, but it is indeed worrying. The difference perspective is

quickly taken up and supported by the media because it constitutes an effective marketing device; it can, however, have a lasting negative effect on people who make out of these gender 'beliefs' a life governing principle that rules their behaviour and shapes their expectations with regard to the behaviour of others.

Many myths have sprung around the notion of how men and women communicate, and how difficult it is for them to understand each other since they come from different planets. The harm is that these myths get accepted as dogma "treated not as a hypothesis to be investigated or as a claim to be adjudicated, but as an unquestionable article of faith" (Cameron 2008, 3). Furthermore, important research that tries to deflate such popular ideas is often not acknowledged; the 'similarities' approach fails to get the same exposure as the 'difference' approach for the simple reason that "sex differences sell; sex similarities do not" (Wood and Dindia 1998, 28).

But is the *differences* hypothesis merely a myth built on the idea of an unchangeable, biological and/or evolutionary differentiating factor or is it based on theoretical consideration and sound research? Are males and females profoundly different from one another or are they more alike than different?

As gender constructivist approaches suggest (e.g., DeBeauvoir 1949/1951; West and Zimmermann 1987) and research reviews and meta-analyses impressively testify, there are far more gender similarities than differences in social interaction (Wilkins and Andersen 1991; Canary and Hause 1993), supporting the notion that men and women may not have fundamentally different communication cultures. Does that also apply for *nonverbal* communication? Nonverbal competencies may reflect possible gender differences more clearly due to the fact that they are more difficult to control and therefore more evident than verbal ones. Intermediate reports on this project were already presented or published elsewhere by two of the present authors (Gerada Aloisio and Klinzing 2004; 2005).

Purpose of studies

The purpose of this project was to conduct correlational studies to validate and expand earlier research on the importance of gender differences and similarities in key nonverbal competencies, specifically *Nonverbal Expressiveness* and *Nonverbal Sensitivity*. Gender differences/similarities in nonverbal abilities and related competencies were assessed in consistent samples and then compared to those in other psychological domains in order to understand their relative magnitude. Furthermore, the strength of relationships between several personality dimensions and nonverbal competencies were compared to that between gender and the same competencies to examine whether gender is primary or comparable to other possible factors.

Rationale

Encoding ability

Only main results with focus on variables tested in the studies presented here are provided. Hall (1984) reviewed 35 studies, on gender differences in encoding facial expressions, body movement, or tone of voice. Results show that women are slightly more expressive in facial behaviour, gesture, smile and gaze more, receive more gaze, use more interpersonal touch, approach others more and are approached closer than men. Updated reviews by Hall, Carter and Horgan (2000), and Hall (2006) do not change the picture.

Klinzing and Gerada Aloisio (2004) assessed gender differences by using global measures, like the Rating of Alter Competence (observation by groups) for nonverbal "Expressiveness" and "Other Orientation" (Spitzberg 1988). The authors found only weak, not statistically significant differences between male and female university students in both scales and comparison groups (median ES=0.14).

Friedman et al. (1980) also found small differences in favour of women in overall nonverbal expressiveness ($r_{pb}=0.12$; 0.09). Studies by Gerada Aloisio and Klinzing (2005; 2007) and Klinzing (2009) revealed ACT-gender differences of comparable magnitude ($r_{pb}=-0.07$; $r_{pb}=0.10$), similar to findings by Schiefer et al. (1984) and Klinzing and Gerada Aloisio (2004).

Decoding ability

Accuracy of nonverbal decoding was assessed by groups of subjects judging nonverbal stimuli that consisted of facial expressions, posture and body movements, voice delivery, alone or in combination.

A rich body of studies, mostly conducted in the USA, have examined gender differences and gender similarities in nonverbal competencies. In her meta-analyses of gender differences in decoding abilities, Hall (1984; 1998) found median r_{pb} 's of 0.20, 0.21, and 0.25, comparable to those of Rosenthal et al. (1979). Hall (1984; 1998), similar to Rosenthal et al. (1979) judged the tendency for women to be more effective than men in nonverbal decoding as one of the most consistent in the field. According to these authors such gender relationships represent a highly stable phenomenon across ages, decades, and numerous cultures.

In Germany Klinzing (1998; 2003), Klinzing and Gerada Aloisio (2004) and Gerada Aloisio and Klinzing (2005) conducted several investigations with university students using the PONS and other tests and found low and not statistically significant differences between men

and women.

Gerada Aloisio and Klinzing (2007) assessed gender differences in one field study in Malta and five training studies in Germany (Gerada Aloisio and Klinzing 2005) using face photographs. Results for inservice teachers in Malta revealed no statistically significant differences in intuitive judgement, while female teachers significantly outperformed their male colleagues in analytical judgment. These results could be replicated in three studies with student teachers and students of Education in Germany. However, in two additional studies with German university students no gender differences could be obtained in both intuitive and analytical judgement.

Gender differences were also assessed by Self-Ratings of Nonverbal Sensitivity (Rosenthal et al, 1979; Zuckerman and Larrance 1979; Hall 1984; Gerada Aloisio and Klinzing 2005). Generally, in US-studies the gender differences in self-reported accuracy of decoding were small (in favour of women, $r_{pb}=0.30$, Zuckerman and Larrance 1979) and in the same range as the gender differences in tested decoding performance (Hall 1984). The German and Maltese studies by Gerada Aloisio and Klinzing (2005; 2007) employing the same instrumentation developed and used by Rosenthal et al. (1979) and Hall, (1984) revealed that females rated themselves as more warm, as slightly more competent to understand other people and social situations, and they rated their ability to decode general nonverbal signs and signals (tones of voice, body movements, and facial expressions) only little higher than their male colleagues. In five cases these results became statistically significant for self-rated "warmth". Effect Sizes show that the differences between men and women were small, greater in self-ratings of *general* nonverbal sensitivity (inservice teachers: $M ES=0.25$; university students: $M ES=0.36$) than in self-ratings of specific nonverbal channels (voice, body, face; inservice teachers: $M ES=0.21$; university students: $M ES=0.09$)." (Gerada Aloisio and Klinzing 2005, 7).

Gender differences in the relationship between self-rated and tested Nonverbal Sensitivity were studied by Rosenthal et al. (1979) who found same range results in four samples. For the first three questions the median of medians across the four studies was $r = -0.16$ for males and $r=0.02$ for females. For items rating subjects' own ability to understand tone of voice, body movement, and facial expressions, the authors reported that the correlations between the Self-ratings and PONS test performance across the four samples "were small and of nearly equal magnitudes for males and females" (Rosenthal et al. 1979, 170).

Does age interact with gender in Nonverbal Sensitivity? Rosenthal et al. (1979) found very small interactions between age and gender, indicating "that the gender effect is relatively stable over time." (Rosenthal et al. 1979, 366).

How should all these gender differences be interpreted? Are they big or trivial? To estimate the relative magnitude of gender-differences, Hall (1998) compared findings from her meta-

analyses on Smiling and Nonverbal Sensitivity to those from meta-analyses on variables in other psychological domains (attitudes, abilities, traits, behaviours), and correlates of these nonverbal competencies. Gender differences for Smiling and Nonverbal sensitivity exceeded gender differences in the other domains and in the relationships between nonverbal competencies and their correlates, or were of comparable magnitude. Hall (1998, 169) concluded: “(...) *sex differences for smiling and nonverbal sensitivity are relatively large.*” Nonverbal decoding and encoding are discussed so far as separate skills. In face-to-face communication interactants are decoding and encoding nonverbal cues simultaneously. Knapp and Hall (2002, 92) reported findings from about a dozen studies and found positive, weak as well as negative relationships. Do men and women differ in the relation of the two competencies? No study could yet be found regarding gender differences on this topic.

The studies

Research questions

For this part of the project the following research questions were formulated:

1. Are there significant gender differences among students of education/student teachers in:

1.1 Nonverbal Expressiveness?

1.2.1 Tested Nonverbal Sensitivity?

1.2.2 Self-rated Nonverbal Sensitivity?

1.2.3 Relationship between Tested and Self-Rated Nonverbal Sensitivity?

1.1/2.4 Relationship between Nonverbal Expressiveness and Nonverbal Sensitivity?

1.1/2.5 Relationship between Nonverbal Competencies and Age?

1.1/2.6 Relationship between Nonverbal Competencies and Semester Completed?

2. How big are gender differences in nonverbal competencies relative to gender

differences in other psychological domains?

3. How do relationships between Nonverbal Expressiveness or Nonverbal Sensitivity and personality-dimensions compare with relationships between gender and the same nonverbal competencies?

Subjects

Altogether **675** undergraduate students studying education (m: 192; f: 483) in two large German Universities signed up to participate in the studies (age: M=23.84 years).

Data collection

For the assessment of **Nonverbal Expressiveness**, the *Affective Communication Test* (ACT, 13 items, nine-point scales, Friedman et al. 1980) was administered. Internal consistency of the ACT was 0.77, test-retest reliability ranged from 0.90 to 0.91.

Five validity studies with promising results by Friedman et al. (1980), Kring, Smith and Neale (1994), and Klinzing and Gerada Aloisio (2007) indicate that “Charisma” can largely be understood as nonverbal expressiveness. Studies investigating *convergent* and *discriminant validity* (Friedman et al., 1980; Klinzing and Gerada Aloisio 2007) and treatment validity (Klinzing and Gerada Aloisio 2009) turned out to be successful.

To assess **Nonverbal Decoding Ability**, the *Profile of Nonverbal Sensitivity* (PONS-test, Rosenthal et al. 1979; 47-minute black and white film and sound track, 220 two-second auditory and/or visual segments) was used. Test-retest reliability was $r=0.69$; internal consistency: 0.86. Test-retest-reliability assessed in this project was $r= 0.66$ ($p<0.01$; the interval between test and retest was five to six months). The PONS-test fared well in terms of convergent, discriminant (Rosenthal et al. 1979), and treatment validity (Klinzing and Gerada Aloisio, 2009).

There were students who took the PONS a second time as they participated in seminars and lectures in which this test was also included. Because the effects of pretesting with the PONS on subsequent PONS-performance are strong (Klinzing 2003) the data from participants who took the PONS the first time have been calculated separately.

For the assessment of gender differences in **Self-ratings of Nonverbal Sensitivity** and in the relationship between **Tested (PONS) and Self-Rated Decoding Abilities**, the Self-Rating developed by Rosenthal et al. (1979) was used (six-items; nine-point scale). For **Research Question 1.2.3** the first three items (concerning warmth, understanding of people,

and understanding of social situations) were correlated with **PONS total score**; the questions regarding sensitivity to specific nonverbal channels (items 4-6: tones of voice, body movements, facial expressions) were correlated with their **corresponding marginal, combined scores** of the PONS-test: “voice40”; “body60”, and “face60”.

To assess **Personality Dimensions**, the **Freiburger Persoenlichkeits Inventar (FPI –** Freiburger Personality Inventory, 114 items, 12 scales; Fahrenberg, Selg and Hampel 1978) was used:

FPI 1: Nervousness;

FPI 2: Angry Aggression;

FPI 3: Depression;

FPI 4: Excitability/Arousability;

FPI 5: Sociability;

FPI 6: Calmness;

FPI 7: Reactive/Instrumental Aggression/Dominance;

FPI 8: Inhibition;

FPI 9: Openness;

FPI E: Extraversion;

FPI N: Emotional Lability;

FPI M: “Masculinity”.

This test has reported acceptable psychometric properties in the literature (see Fahrenberg et al. 1978).

Due to class absence data were not available for some participants.

Results

Research Question 1.1, 1.2.1, and 1.2.2: Similarities/Differences in Nonverbal Expressiveness, tested and self-rated Nonverbal Sensitivity. In *Table 1.1/2* the results are summarized.

Table 1.1/2: Differences/Similarities in Nonverbal Expressiveness (ACT), Tested and Self-Rated Nonverbal Sensitivity (PONS). Pooled Point-Biserial Correlations (rpb) and p-Values.

	rpb	p	N
ACT:	0.21	p<0.01	556
PONS:	0.049	n.s.	531
Self-Rating of Nonverbal Sensitivity			
1) "I Am Warm"	0.29	p<0.01	279
2) "I Understand People"	0.10	n.s.	284
3) "I Understand Social Situations"	0.11	n.s.	284
4) "I Understand Voice Tone"	0.07	n.s.	284
5) "I Understand Body"	0.03	n.s.	236

6) "I Understand Face"	0.12	p<0.05	236
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n.s.: p>0.05; *p<0.05; **p<0.01; two tailed tests. Positive values of r represent higher scores for women, negative values represent higher scores for men.

As summarised in *Table 1.1/2.1/2* significant pooled differences between males and females were found for *Nonverbal Expressiveness* in favour of women (rpb=0.21, p<0.01). Gender differences for *Nonverbal Sensitivity* (PONS) turned out into a pooled rpb of 0.05 (n.s.). Results for Gender differences in self-ratings of general and specific nonverbal sensitivity (item 4-6) turned out to be very weak, except for item 1 (warmth).

Research Question 1.2.3 deals with gender differences in the accuracy of predictions from self-reported to tested PONS-performance. In *Table 1.1.3* the pooled findings are summarized.

Table 1.2.3: Pooled Relationships between Tested Nonverbal Sensitivity (PONS) and Self-Rating of Nonverbal Sensitivity. Pearson r- and p-Values for the Total Group and for the Group without Test-Repeaters (in Italics).

<u>Variable</u>	<u>Decoding Abilities: Profile of Nonverbal Sensitivity (PONS)</u>		
<u>Self-Rating of Nonverbal Sensitivity</u>	Males (m)		Females (f)
	r	p*	m vs. f
			p**
1) "I Am Warm"	-0.05 (n.s.)	0.16 (p<0.05)	0.41/0.12
(N=200)			(N=79)
	<i>-0.01 (n.s.)</i>	<i>0.16 (p<0.05)</i>	0.32/0.25
	(N=63)	(N=169)	
2) "I Understand People"	0.08 (n.s.)	0.11 (n.s.)	0.81
	(N=81)	(N=202)	

	0.13 (n.s.) (N=65)	0.11 (n.s.) (N=171)	0.89
3) "I Understand Social Situations"	0.10 (n.s.) (N=81)	0.06 (n.s.) (N=202)	0.76
	0.18 (n.s.) (N=65)	0.06 (n.s.) (N=171)	0.41
4) "I Understand Voice Tone"	0.10 (n.s.) (N=81)	0.007 (n.s.) (N=199)	0.82
	0.07 (n.s.)	0.04 (n.s.) (N=65)	0.84 (N=168)
5) "I Understand Body"	0.01 (n.s.) (N=81)	0.05 (n.s.) (N=199)	0.76
	0.02 (n.s.)	0.03 (n.s.) (N=65)	0.94 (N=168)
6) "I Understand Face"	0.13 (n.s.)	-0.04 (n.s.) (N=81)	0.50/0.20 (N=199)
	0.06 (n.s.)	-0.03 (n.s.) (N=65)	0.84/0.55 (N=168)

*two tailed test, n.s.: $p > 0.05$. **calculated by Fisher's z transformation.

Results as summarized in *Table 1.2.3* show that the correlations between *self-perceived and tested decoding ability* for the total group and the group without test-repeaters are near zero. Differences between male and female students in the magnitude of these correlations are small and in no case statistically significant.

Research Question 1.1/2.4.: Gender differences and similarities in the relationship between encoding (ACT) and decoding (PONS) abilities. In *Table 1.1/2.4* the pooled findings are

summarized

Table 1.1/2.4: Gender Differences and Similarities in the Relationship between Decoding (PONS) and Encoding Ability/“Charisma” (ACT). Pearson r- and p-values for the Total Group and for the Group without Test-Repeaters (in Italics).

PONS	ACT				
	Males (m)		Females (f)		<i>m vs. f</i>
	<i>r</i>	<i>p*</i>	<i>r</i>	<i>p*</i>	<i>p**</i>
	0.08 (n.s.)		0.03 (n.s.)		0.62
	(N=137)		(N=384)		
	0.06 (n.s.)		0.05 (n.s.)		0.92
	(N=125)		(N=357)		

*two tailed test, n.s.: $p > 0.05$. **calculated by Fisher’s z transformation. p-values reflect the differences of absolute correlations.

Results as summarized in *Table 1.1/2.4* reveal that the relationship between encoding and decoding abilities is very weak with no significant differences between males and females.

Research Question 1.1/2.5.: Gender differences and similarities in the relationship between Age and encoding (ACT) and decoding (PONS) abilities. In *Table 1.1/2.5* the pooled findings are summarized.

Table 1.1/2.5: Gender Differences and Similarities in the Relationship between Age and Nonverbal Expressiveness/Charisma (ACT). Pearson r- and p-Values for the Total Group

and the Group without Test Repeaters in Italics*

Age	Encoding Ability/"Charisma" (ACT)				
	Males (m)		Females (f)		<i>m vs. f</i>
	r	p*	r	p*	p**
	0.20 (p<0.05)		0.02 (n.s.)		0.06
	(N=153)		(N=402)		
	Decoding Ability/PONS				
	-0.14 (n.s.)		-0.12 (p<0.01)		0.82
	(N=169)		(N=460)		
	<i>-0.11 (n.s.)</i>		<i>-0.14 (p<0.01)</i>		<i>0.75</i>
	(N=149)		(N=423)		

*two tailed test, n.s.: p>0.05. **calculated by Fisher's z transformation. p-values reflect the differences of absolute correlations.

The results as summarized in *Table 1.1/2.5* show a weak but positive relationship between age and encoding ability ("Charisma") with a nearly significant difference between male and female university students in favour of men.

The relationship between age and decoding abilities (PONS) is significantly negative but small with no significant differences between males and females.

Research Question 1.1/2.6.: Gender differences and similarities in the relationship between Semester Completed and encoding (ACT) and decoding (PONS) abilities. In *Table 1.1/2.6* the pooled findings are summarized.

*Table 1.1/2.6: Gender Differences and Similarities in the Relationship between Semester Completed and Nonverbal Competencies (ACT; PONS). Pearson r- and p-Values for the Total Group and the Group without Test Repeaters in Italics**

Semester Completed	ACT		Females (f)		<i>m vs. f</i> <i>p**</i>
	Males (m)		r	p*	
	0.21 (p<0.05)		0.03 (n.s.)		0.11
	(N=101)		(N=318)		
	PONS				
	0.005 (n.s.)		-0.02 (n.s.)		0.82
	(N=119)		(N=367)		
	0.02 (n.s.)		-0.12 (p<0.05)		0.22
	(N=103)		(N=333)		

*two tailed test, n.s.: $p > 0.05$. **calculated by Fisher's z transformation. p-values reflect the differences of absolute correlations.

The results summarized in *Table 1.1/2.6* show that the relationship between Semester Completed and encoding ability ("Charisma") as well as Decoding Abilities (PONS) are near zero without significant differences between males and females.

Research Question 2: Are the obtained differences between male and female university students substantive or marginal? A comparison of these differences with those in other psychological domains helps to interpret these findings.

The findings reveal that Gender differences for personality dimensions (assessed with the FPI) resulted into a weak median rpb of 0.11 ($M=0.13$). Interpretively compared Gender differences in *Nonverbal Expressiveness* ($rpb=0.21$, see above) exceeded slightly those in Personality dimensions. The gender relationship in *Nonverbal Sensitivity* ($rpb=0.04/0.05$), however, was slightly exceeded by that in personality dimensions ($Mdn.rpb=0.11$).

Research Question 3: The results are summarized in *Table 3*.

Table 3: Relationships between Gender and Nonverbal Competencies (Nonverbal Sensitivity, Nonverbal Expressiveness) Compared to Relationships between Personality Dimensions and the Same Nonverbal Competencies. Product Moment Correlations and p-Values.

	Nonverbal Expressiveness			Nonverbal Sensitivity					
	ACT	Gender-ACT (N=556)	Comparison of Correlations	PONS		Gender-PONS (N=631/574)		Comparison of Correlations	
	r	rpb	p (for r absolute)	r	r	rpb	rpb	p	p (for r absolute)
Freiburger Personality Inventory (FPI) (N=442)				FPI-PONS (N=631/426)					
1. Nervousness	-0.10*	0.21**	0.08	-0.06	-0.05	0.05	0.04	0.87	0.87
2. Aggression	-0.02	0.21**	0.003	0.04	0.03	0.05	0.04	0.87	0.87
3. Depression	-0.22**	0.21**	0.87	0.001	0.02	0.05	0.04	0.42	0.76
4. Excitability	0.09	0.21**	0.05	-0.05	-0.02	0.05	0.04	1.00	0.76
5. Sociability	0.57**	0.21**	<0.0001	0.02	0.03	0.05	0.04	0.62	0.87
6. Calmness	0.29**	0.21**	0.18	-0.006	0.02	0.05	0.04	0.47	0.76
7. Dominance	-0.02	0.21**	0.003	0.02	0.01	0.05	0.04	0.62	0.64
8. Inhibition	-0.32**	0.21**	0.06	-0.03	-0.02	0.05	0.04	0.74	0.76
9. Openness	0.04	0.21**	0.007	0.12*	0.09	0.05	0.04	0.25	0.44

E. Extraversion	0.57**	0.21**	<0.0001	0.05	0.09	0.05	0.04	1.00	0.44
N. Emotional									
Lability	-0.20**	0.21**	0.87	-0.0007	0.01	0.05	0.04	0.42	0.64
M. Masculinity	0.24**	0.21**	0.62	-0.02	0.003	0.05	0.04	0.62	0.56
Age	0.05	0.21**	0.007	-0.13	-0.14	0.05	0.04	0.15	0.09
	(N=555)			(N=629)	(N=572)				

n.s.: $p > 0.05$; *: $p < 0.05$; ** $p < 0.01$, two tailed test. Positive values of r represent higher scores for women, negative values represent higher scores for men.

Research Question 3. The results as summarized in *Table 3* revealed that for **Nonverbal Expressiveness** Gender relations (ACT, $r_{pb}=0.21$) were stronger than Personality relationships in about half of the comparisons: in Nervousness ($p=0.08$), Aggression ($p=0.003$), Excitability ($p=0.05$), Dominance ($p=0.003$), and Openness ($p=0.007$). The strength of relationships between Personality Dimensions and Nonverbal Expressiveness exceeded that between Gender and Nonverbal Expressiveness in the other half of comparisons: in Calmness (n.s.), Sociability ($p<0.0001$), Inhibition ($p=0.06$), Extraversion ($p<0.0001$), and “Masculinity” ($p=0.62$). For Depression and Emotional Lability, the r 's were of about the same magnitude (criterion difference <0.05). Gender exceeded Age in the relationship to ACT.

The results also revealed that Gender relations to **Nonverbal Sensitivity** (PONS) were very weak, thus in about the same range as the weak relations of Personality to Nonverbal Sensitivity with no *significant* differences between these correlations in all cases. In the comparison of correlations between **Personality Dimensions** or **Gender** and Nonverbal Sensitivity, the Gender relations very weakly and *non-significantly* exceeded Personality Dimensions in seven cases or were of about the same strength in four cases (criterion difference < 0.02 difference). In two comparisons the strength of relationships of Personality Dimensions exceeded Gender relations to Nonverbal Sensitivity: FPI 9 and FPI E (considering especially the data for the group without the test repeaters). Also Age exceeded Gender in the relationship to PONS.

Summary/Conclusion

The findings from the present project revealed that the pooled gender-differences for Nonverbal Expressiveness revealed an $r_{pb}=0.21$, and for tested Nonverbal Sensitivity $r_{pb}=0.05$ among German university students (**Research Question 1.1 and 1.2.1**). They confirm earlier results in Germany (Gerada Aloisio and Klinzing 2005; 2007; Schiefer et al. 1984; Klinzing, 1998; 2003; Klinzing and Gerada Aloisio 2004).

For Nonverbal Expressiveness the differences between men and women were comparable to US findings (Friedman et al. 1980) but for Nonverbal Sensitivity they were considerably lower (see the meta-analyses of Hall 1998: $r_{pb}=0.20$; 0.20 ; 0.25); differences in Nonverbal Sensitivity were possibly influenced by culture norms.

For **Research Question 1.2.2** Gender differences in self-ratings of general and specific nonverbal sensitivity turned out to be very weak except for item 1: warmth-coldness. As expected (see also Rosenthal et al. 1979), it is especially desirable for women to represent themselves as “warm” rather than “cold” persons. In general, however, women do not

consider themselves as more skilled in nonverbal decoding ability than men (also Hall 1984). The results for **Research Question 1.2.3** show that the correlations between self-reports of *general* and *channel-specific* sensitivity and tested receiving accuracy (PONS) for the total group and the group without test-repeaters are near zero without significant differences between female and male students, confirming the findings of Rosenthal et al. (1979) who also reported small correlations between the Self-ratings and tested PONS performance and of nearly equal magnitudes for males and females.

As mentioned above, in face-to-face communication, interactants are decoding and encoding nonverbal cues simultaneously. The question arises whether receiving and sending skills form part of a general communication ability. Knapp and Hall (2002) reported findings from about a dozen studies and found positive, weak, as well as negative relationships (see above). For **Research Question 1.1/2.4** on the relationship between en- and decoding abilities results are very weak with no differences between males and females. The conclusions of Rosenthal et al. (1979) and Knapp and Hall (2002) are supported.

Results for **Research Question 1.1/2.5** revealed a weakly positive relationship between age and encoding ability ("Charisma") with a nearly significant difference in favour of men. Men seem to enhance their charisma slightly more over the years. The relationship between Age and decoding ability (PONS) turned out to be significantly negative but small ($r=-0.13$), with no significant differences between males and females, indicating a loss of Nonverbal Sensitivity with Age among male *and* female university students (see also Rosenthal et al., 1979; Klinzing and Gerada Aloisio 2004).

Are nonverbal competencies improved at university (**Research Question 1.1/2.6**)? The results of the present studies revealed a near zero relationship between Semester Completed and encoding ability ("Charisma") as well as Decoding Ability (PONS) without significant differences between males and females. The study of education obviously helps neither female nor male students to improve nonverbal competencies (see Klinzing and Gerada Aloisio 2010).

Research Question 2: How should these relationships be interpreted, are they substantial or trivial? In this project the strength of relationships between gender and nonverbal competencies was compared to that of personality dimensions and the same nonverbal competencies. Interpretively compared Gender differences in **Nonverbal Expressiveness** ($rpb=0.21$) slightly exceeded those in Personality dimensions, whereas the latter ($Mdn.rpb=0.11$) slightly exceeded gender relationships in **Nonverbal Sensitivity** ($rpb=0.04/0.05$). Thus, it can be concluded from the findings of the present study that, contrary to Hall's (1984; 1998) conclusions, Gender differences are weak.

Research Question 3: Gender might be only one, and not necessarily the most important, of the many factors that affect people's nonverbal skill. The results revealed that the

relationships between Gender and **Nonverbal Expressiveness** were *significantly* stronger than Personality relationships in four of the comparisons. However, in the other three comparisons the opposite is true. Gender relations in **Nonverbal Sensitivity** (PONS) were very weak thus in about the same range as the weak relations of Personality to Nonverbal Sensitivity. In the comparisons of these correlations no *significant* differences could be found.

Scientific/scholarly significance of the studies

To our knowledge, the investigation of relationships between gender and nonverbal competencies directly compared to relationships between personality and the same nonverbal competencies **in consistent samples** has so far not been undertaken. The findings of the present studies attempted to contribute to the understanding of the *relative* importance of gender for Nonverbal Expressiveness and Nonverbal Sensitivity, in comparison to a range of personality dimensions. In line with constructivist approaches, the findings question possible gender-relationships to be primary in communication. Regardless of gender, eventual *individual* deficits in personality dimensions and abilities like nonverbal competencies can be overcome with training (Klinzing 2002; Klinzing and Gerada Aloisio 2009).

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Teachers' Personal Projects as Moderators between Personality Traits and Psychological Well-being

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Abstract

Background: Research has shown that teachers' well-being has positive effects in their performance and in the life of schools' organizations. However, these studies were mainly focused on the direct effects of personality traits in well-being. Nevertheless, a holistic understanding of the relations between personality and well-being requires that the study of personality includes different levels of personality analysis. Teachers' personal projects, as levels of personality analysis associated with personal action, may provide important information regarding this issue.

Aims: This paper investigates the premise that teachers' personal projects moderate the relations between traits and psychological well-being. Specifically, we propose to explore the moderator effect of job personal projects in the relations between conscientiousness facets and teachers' psychological well-being.

Method: A battery of self-report questionnaires was used to assess personality traits, personal projects and psychological well-being in 398 teachers of primary and high schools.

Results: Findings show that job personal projects moderate the relations between competence and deliberation and psychological well-being dimensions.

Conclusions: Our study shows that having or not job personal projects has an impact on the relationship between personality and psychological well-being of teachers.

Keywords: traits personality, personal projects, moderation, teachers, psychological well-being

Introduction

Teachers' well-being emerges as essential for effective teaching. Research has shown that resilient and engaged teachers influence the experiences of autonomy and competence of students, and foster their motivation (Klusmann, Kunter, Trautwein, Lüdtke and Baumert 2008). Similarly, Day et al. (2000) argues that motivated and enthusiastic teachers increase intrinsic motivation in students and enhance their levels of vitality. In context of the "broaden and build theory", Frederickson (1998, 2001) also suggests that positive emotions increases several cognitive functions such creativity, attention and memory and extend action repertoires, expectations, resources, motivation and resilience in the face of adversity.

The studies conducted on the teacher's well-being context respect mainly to job satisfaction issue/aspect. However, recently, several authors argue a broaden perspective of work well-being that rise above the job satisfaction concept (Illies and Schwind and Heller 2007; Page and Vella-Broderick 2009). Namely, Page and Vella-Broderick (2009) propose a new model of employee well-being linked to mental health framed in positive psychology that posit subjective and psychological well-being as key criteria for employee mental health.

Sheldon (2004) considers that the study of personality may be the most important for understanding optimal human well-being. Early research has established that personality is related both to subjective (DeNeve and Cooper 1998; Diener and Lucas 1999; Lucas 2008; Steel and Schmidt and Shultz, 2008) and to psychological well-being (Burns and Machin 2010; Grant, 2009; Keyes, Shmotkin and Ryff, 2002; Schmutte and Ryff 1997; Siegler and Brummett, 2000). These studies refer mainly to one personality level: the trait level. However, the holistic understanding of the personality and its relationships with the several outcomes, namely the well-being, demands to know the linkage between the several levels of analysis. Therefore, it is important to go beyond the relationship between traits and psychological well-being and to know how the several personality levels interact in the production of psychological well-being.

Personality: traits and personal projects

Pervin characterizes personality as "the complex organization of cognitions, affects, and behaviors that give direction and pattern (coherence) to the person's life" (1996, 414). In the last decades, some authors concerned with the study of the structure, functioning and coherence of personality suggest a model of three levels of personality research that integrates traits, goals and self-stories (Little 1996, 2008; McAdams 1995, 1996). McAdams

(1995, 1996) argues that the knowledge of a person requires information about all total levels. Furthermore, it is in the “interplay between enduring structures and dynamic processes, between inner processes and external contexts that some of the most distinctive and intriguing features of being human are revealed” (Little and Joseph, 2006, p. 376).

Traits

Five Factor Model (Costa and McCrae 1992, 1994; Goldberg 1990; McCrae and John 1992; John and Srivastava 1999) is the most consistent model of the personality study relating to traits level and it describes five traits of stable personality characteristics that organize individual's differences in emotional and social life. The Five Factor Model is defined as “a hierarchical organization of personality traits in terms of five basic dimensions: Extraversion, Agreeableness, Conscientiousness, Neuroticism, and Openness to Experience” (McCrae and John 1992, 175) Each five personality factor includes six facets that are supposed to measure a discrete trait (Costa and McCrae 1992). McCrae and Costa (2008, 285) consider “that an analysis that incorporates NEO-PI-R facets and their combinations can lead to detailed information that goes far beyond the five factors”. Several other authors have equally suggested that the prediction of numerous variables could be improved by using facets instead of global Big Five dimensions (Ekehammar and Akrami 2007; Paunonen and Ashton 2001; Paunonen, Haddock, Forsterling and Keinonen 2003).

Previous research has shown that conscientiousness domain has a considerable impact on job performance (Barrick and Mount 1991). McCrae and Costa (2008) refer that the conscientious individuals are usually more productive because they are punctual, hard-working and systematic.

Conscientiousness concerns the individual's degree of organization, persistence, and motivation in goal-directed behavior (Costa and McCrae 1992). Individuals with higher levels of conscientiousness are organized, self-disciplined, punctual, scrupulous, neat, ambitious and persevering. This personality domain integrates six facets that are more specific traits: competence, order, dutifulness, achievement striving, self-discipline and deliberation.

The current study involves two of these facets: competence and deliberation. Competence refers to the degree of efficiency, self-confidence and resourcefulness. Deliberation refers to the degree in which individuals are meticulous, cautious and concentrate.

Personal projects

Personal projects are extended sets of personally salient action in context, that range from the daily doings (e.g. To correct English tests of my students.) to the self-defining passions of life time (e.g. Release my people) (Little and Chambers 2004). They are personal action constructs about intentional action in context and the dynamics and impacts of action (Little

2006). Little (1996, 2000) argues that personal projects connect internal motivational propensities and external, ecological obstacles and affordances. Literature in personal projects realm suggests that they are units of personality analysis that integrates the goals level between the traits level and the self-stories level (Little 1996).

Human flourishing, under a project analytic view, comprises the sustainable pursuit of core projects (Little and Chambers 2004). Social ecological model suggest that personal projects features have both a direct effect on well-being, and interact with traits and contextual factors in the production of well-being (Little 2008).

Personal projects range in several categories: intrapersonal, interpersonal, academic, occupational, leisure, maintenance and health/body. The present study focuses specifically in job personal projects elicited by teachers. These projects are related with job tasks or job courses.

Psychological Well-Being

The conceptualization of Psychological Well-Being (PWB) aimed at generating an empirical approach based on theory about what it means to be mentally healthy (Ryff and Singer 2006).

PWB is defined as a multidimensional construct that comprises a set of six dimensions related to positive psychological functioning in adulthood and in elderly people: autonomy, environmental mastery, personal growth, purpose in life, positive relationships with others, self-acceptance (Ryff 1989). Each dimension articulates different challenges individuals encounter as they strive to function positively, corresponding to six scales that assess individuals' appraisals of themselves and their lives across six conceptually distinct realms of psychological functioning. Thus, people's try to feel good about themselves while aware of their own limitations (self-acceptance); to develop and maintain warm and trusting interpersonal relationships (positive relationships with others); to shape their environment so as to meet personal needs and desires (environmental mastery); to sustain individuality within a larger social context, seeking a sense of self-determination and personal authority (autonomy); to find meaning in one's efforts and challenges (purpose in life); and to make the most of one's talents and capacities (personal growth) (Keyes and Shmotkin and Ryff 2002; Ryff 1989; Schmutte and Ryff 1997).

This study involves three dimensions of psychological well-being: positive relations with others, purpose of life and environmental mastery.

Current study

The aim of the present research is to study the moderating influence of teachers' job personal projects in the relationship between competence and deliberation (conscientiousness facets) and positive relations with others, purpose of life and environmental mastery (three of psychological well-being dimensions). Our hypothesis is that to have or not to have job personal projects influence the relationship between facets and psychological dimensions.

Method

Participants

Three hundred and ninety eight teachers participated in this study, recruited from primary and high schools in Viseu district (Portugal) and selected randomly by clusters corresponding to the schools they worked in. Mean age was 41.09 (SD=7.71), 72.1% were females (n=287) and 27.9% males (n=111). The majority of subjects were married, (75.6%, n=301) and 78.95% were graduated n=314). The mean of years in teaching experience was 16.85 (SD=8.00).

Procedure

We contacted schools' boards and obtained permission for the data collection. With the collaboration of school staff, the author gave participants a battery of self-report questionnaires related to personality, well-being and socio-demographic and professional data, as well as script information about the research goals and filling instructions. In line with ethical requirements, it was emphasized that participants cooperation was voluntary and their answers were confidential and only used for the purpose of the study.

Measures

Personality Traits - The personality traits were measured with an integral self-report version of NEO Personality Inventory – Revised (NEO PI-R), that was developed by Costa and McCrae (1992) and validated to the Portuguese population by Lima (1997). Results of

internal consistency for conscientiousness facets (competence and deliberation) are presented in Table 1.

Personal Projects - Personal projects were assessed through the *Personal Projects Analysis – PPA* (Little, 1983; Lima, 2002). PPA incorporates four modules for personal projects analysis: elicitation, appraisal hierarchy, and impact. This study uses only the first module. In the personal project elicitation module the respondents are encouraged to generate their planned or ongoing projects without constraint. The projects listed were categorized and then the number of projects in a given category can be used as indexes. In our study, we dichotomized the category job personal projects in to have or not to have job personal projects.

Psychological Well-Being - PWB was measured by the Scales of Psychological Well-Being (SPWB) (Ryff, 1989; Ryff and Essex, 1992) and adapted to Portuguese population (Novo, 2003). In the current study, the Cronbach’s alpha was .82 for environmental mastery, .85 for positive relationships with others, .84 for purpose in life.

Results

Reliability analysis of conscientiousness facets showed Cronbach’s alphas of .61 to competence and .70 to deliberation (Table 1). Means and standard deviations for each facet of conscientiousness are presented in Table 1.

Table 1: Means and standard deviations for all subjects (N=398) and Cronbach’s alphas of the two Conscientiousness facets.

	N=398		α Cronbach
	Mean	SD	
Conscientiousness			
Competence	21.78	3.18	.614
Deliberation	18.76	4.16	.700

We conducted Pearson product-moment correlations to explore the relationship between conscientiousness facets and the three measures of psychological well-being (Table 2).

Table 2: Correlations (2-tailed Pearson r) between conscientiousness facets and the psychological well-being dimensions

Variables	Positive Relations with Others	Purpose of Life	Environmental Mastery
Competence	.348**	.527**	.460**
Deliberation	.163**	.363**	.345**

** $p < .01$

Results showed that the conscientiousness facets are positively and moderately correlated with PWB dimensions at a statistical level of .01.

The moderator effect of job personal projects on the relationship between conscientiousness facets and PWB dimensions

In order to analyse the moderation effect of job personal projects on the relation between conscientiousness facets and PWB dimensions, we conducted several multiple hierarchical regression analyses considering the interaction between continuous predictors (competence and deliberation) and a categorical predictor (to have or not to have job personal projects) (Baron and Kenny 1986; Cohen, Cohen, West and Aiken 2003). In this procedure, in an attempt to reduce the error associated with multicollinearity, we used a standardized procedure, centering the values of the continuous predictor variables, and then obtained the interaction product by multiplying the two variables (continuous and categorical) (Aiken and West, 1991).

Competence, job personal projects and positive relations with others, purpose of life and environmental mastery

The three first hierarchical regression analyses explore the moderator effect of job personal projects on the relation between competence and positive relations with others, purpose of life and environmental mastery. In Table 3 we can see the three steps of the model. In the first step, we entered the competence facet as a predictor and in the second step we further incorporated job personal projects as a predictor variable. Whereas in the first step the predictor entered (competence) produced a statistically significant model, the entry of the second predictor (to have or not to have job personal projects) doesn't produce a significant model. On third step, the interaction terms were entered and also produced three statistically significant models. The interaction terms were entered and produced a R^2 of .132 [$F_{(1, 394)} = 4.125$; $p < .043$] on positive relations with others, a R^2 of .289 [$F_{(1, 394)} = 4.251$; $p < .040$] on

purpose of life and a R^2 of .227 [$F_{(1, 394)} = 5.149$; $p < .024$] on environmental mastery. Thus, there was a significant interaction of competence and job personal projects on predicting of these three dimensions of PWB.

Table 3: Model summary of the three steps hierarchical multiple regression using Competence (Conscientiousness facet) to predict the Positive Relations with Others, Purpose of Life and Environmental Mastery (PWB dimensions) having Job Personal Projects as moderator (N=398).

Predictor	Job personal projects as moderators between competence and psychological well being dimensions					
	Positive Relations with Others		Purpose of Life		Environmental Mastery	
	ΔR^2	β	ΔR^2	β	ΔR^2	β
Step 1	.121***		.278***		.211***	
Competence		.348***		.527***		.460***
Step 2	.002		.003		.005	
Competence		.346***		.525***		.457***
Job PP		.048		.055		.072
Step 3	.009*		.008*		.010*	
Competence		.603***		.762***		.728***
Job PP		.040		.047		.064
Competence X Job PP		-.274*		-.252*		-.289*
Total R^2	.132***		.289***		.227***	

* $p < .05$ ** $p < .01$ *** $p < .001$

Regression coefficients analysis (table 3) showed that competence is a statistically significant and independent predictor in all steps model, whereas job personal projects aren't. The interaction between these two variables points out to the existence of a moderator effect of job personal projects on the relation between competence and positive relations with others ($\beta = -.274$; $t = -2.031$; $p = .043$), on the relation between competence and purpose of life ($\beta = -.252$; $t = -2.062$; $p = .040$), and on the relation between competence and environmental mastery ($\beta = -.289$; $t = -2.269$; $p = .024$).

In order of better understand the relation between competence and these three PWB when we have the two conditions of job personal projects (to have or not to have job personal projects), we plotted graphics considering three levels of competence (low, medium and high) and the two conditions of the categorical variable.

The first graphic presented in Figure 1 refers to the relation between competence and positive relation with others with two conditions of job personal projects.

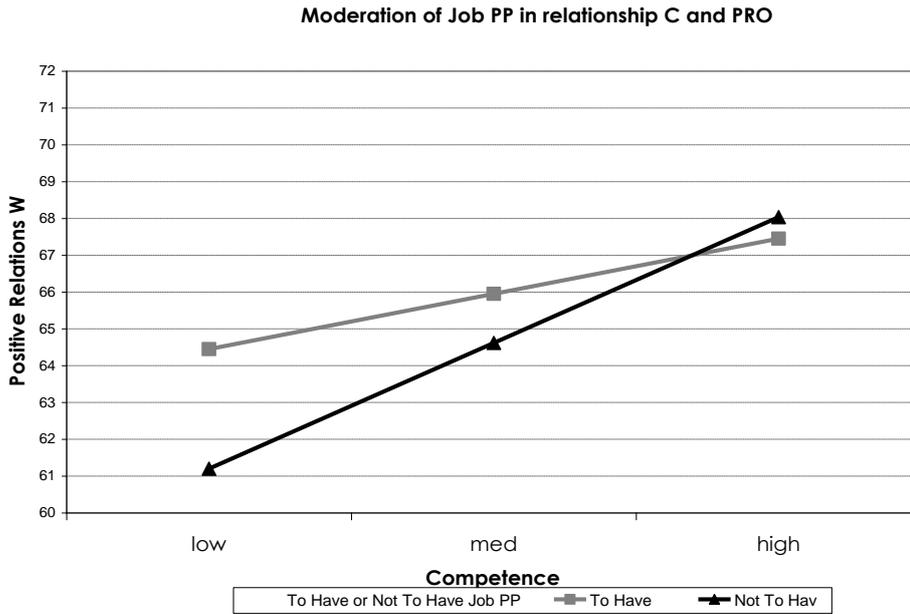


Figure 1. Graphic for the relation between competence and positive relation with others with two conditions of job personal projects.

We can observe that to have job personal projects positively affects positive relations with others in individuals with low levels of competence. However, individuals that do not have job personal projects are slightly benefited if they have high levels of competence.

To enhance the understanding of the relation between competence and purpose of life when we have different conditions of job personal projects we plotted the graphic that we can see in Figure 2.

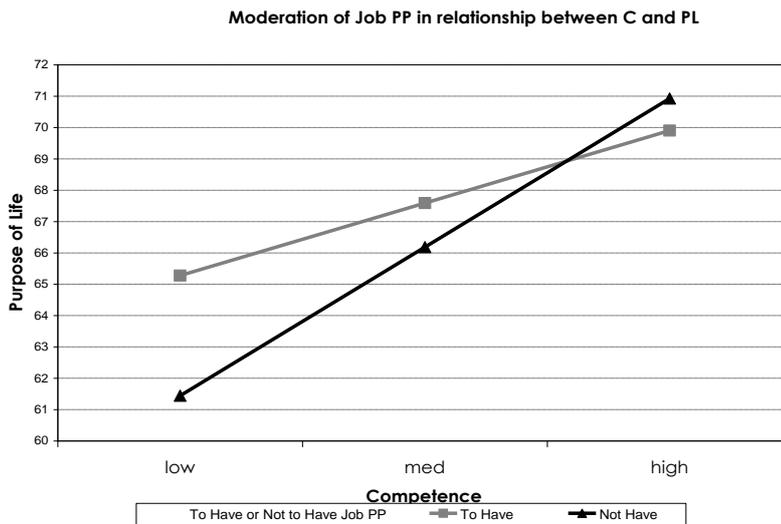


Figure 2. Graphic for the relation between competence and purpose of life with two conditions of job personal projects.

In this case, the graphic shows a similar pattern. To have personal projects makes difference in purpose of life in individuals with low level of competence, but individuals with high level of competence reveal slightly higher purpose of life if they don't have job personal projects. At last, we also plotted a graphic to enhance the understanding of the relation between competence and environmental mastery, when we have two different conditions of job personal projects (Figure 3).

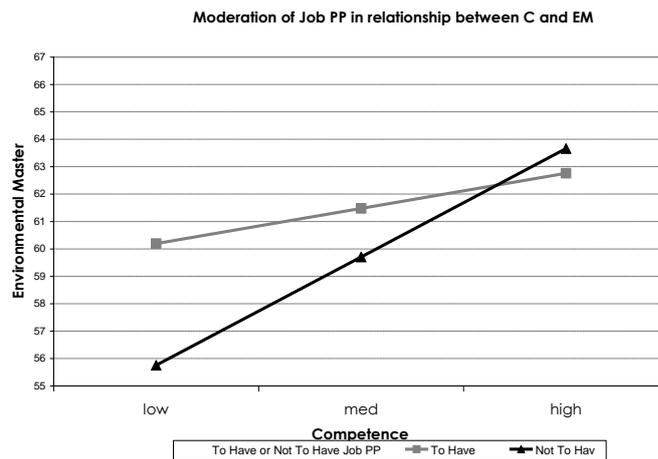


Figure 3. Graphic for the relation between competence and environmental mastery with two conditions of job personal projects.

The graphic indicates the same pattern of the last two. Thus, to have job personal projects makes a difference on environmental mastery in individuals with low levels of competence, but individuals with high levels of competence is benefited if they don't have job personal projects.

Deliberation, job personal projects and positive relations with others, purpose of life and environmental mastery

The following three hierarchical regression analyses explore the moderator effect of job personal projects on the relationship between deliberation and positive relations with others, purpose of life and environmental mastery.

In order to analyse the effect of job personal projects on the relation between deliberation and these three psychological well-being dimensions, we conducted multiple hierarchical regressions. We can see that only the first and the third steps are statistically significant (Table 4). In the first step, we entered deliberation as a predictor and on the second step we added job personal projects. Moreover, when the interaction terms were entered, third step, they produce a R^2 of .040 [$F_{(1, 394)} = 3.851; p < .050$] on positive relations with others, a R^2 of

.149 [$F_{(1, 394)} = 5.014$; $p < .026$] on purpose of life and a R^2 of .140 [$F_{(1, 394)} = 5.878$; $p < .016$] on environmental mastery. Thus, there was a significant interaction between deliberation and job personal projects on predicting these three psychological well-being dimensions.

Table 4: Hierarchical multiple regression using Deliberation (Conscientiousness facet) to predict the Positive relations with others, Purpose of Life and Environmental Mastery (PWB dimensions) having Job Projects as moderator (N = 398)

Predictor	Job personal projects as moderators between deliberation and psychological well being dimensions					
	Positive Relations with Others		Purpose of Life		Environmental Mastery	
	ΔR^2	β	ΔR^2	β	ΔR^2	β
Step 1	.027**		.132***		.119***	
Deliberation		.163**		.363***		.345***
Step 2	.004		.006		.008	
Deliberation		.164**		.364***		.346***
Job PP		.062		.078		.092
Step 3	.009*		.011*		.013*	
Deliberation		.382**		.598***		.601***
Job PP		.064		.079		.094*
Deliberation X Job PP		-.239*		-.257*		-.279*
Total R ²	.040**		.149***		.140***	

* $p < .05$ ** $p < .01$ *** $p < .001$

From the regression coefficients analysis (Table 4), we can see that deliberation is an independent and statistically significant predictor in all three steps. The interaction between deliberation and job personal projects suggests the existence of a moderator effect of job personal projects on the relation between deliberation and positive relations with others ($\beta = -.239$; $t = -1.963$; $p = .050$), on the relation between deliberation and purpose of life ($\beta = -.257$; $t = -2.239$; $p = .026$), and on the relation between deliberation and environmental mastery ($\beta = -.279$; $t = -2.424$; $p = .016$).

In order to improve the understanding of these relations when we have two different conditions of job personal projects we plotted three graphics (Figure 4, 5, and 6).

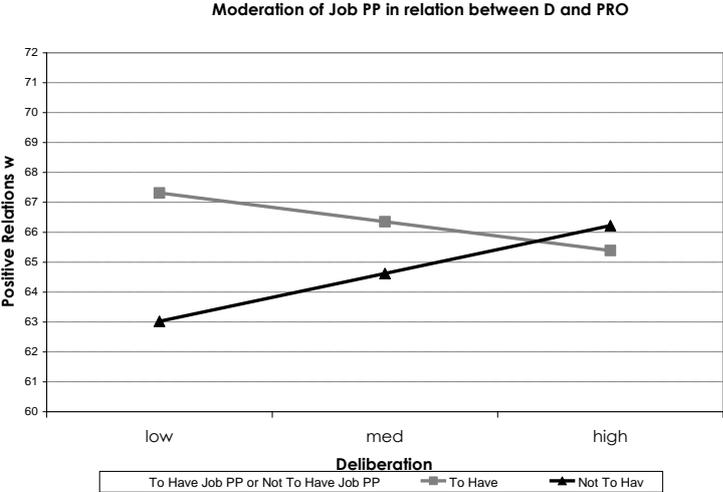


Figure 4. Graphic for the relation between deliberation and positive relations with others with two conditions of job personal projects.

We can observe that positive relations with others is benefited if individuals with low levels of deliberation have job personal projects (Figure 4). However, not having job personal projects slightly increase the level of positive relations with others on individuals with high level of deliberation.

To better understand how the two conditions of job personal projects differentially affect the relation between deliberation and purpose of life, we also plotted a graphic (Figure 5).

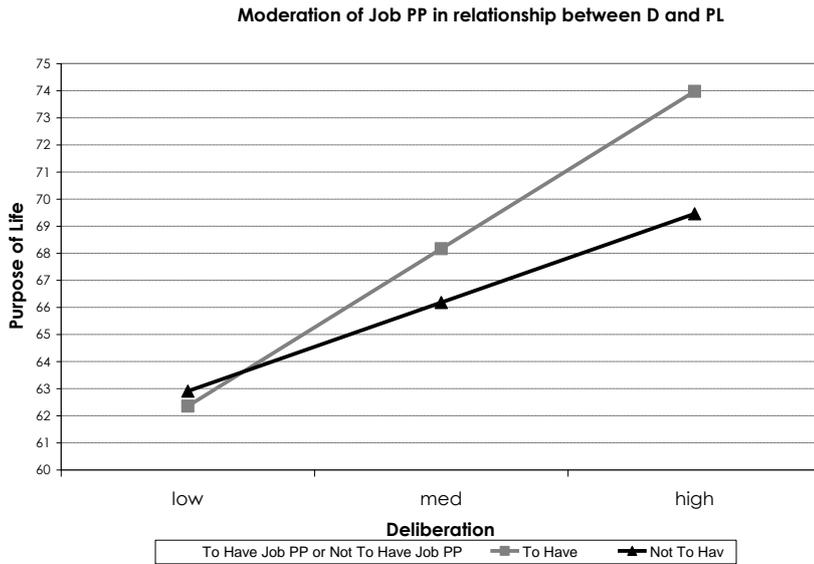


Figure 5. Graphic for the relation between deliberation and purpose of life with two conditions of job personal projects.

We can see that to have or not have job personal projects makes a difference in the level of purpose of life in individuals with high levels of deliberation, but makes low difference on individuals with low levels of deliberation.

Next graphic allows us to better understanding how the two conditions of job personal projects affect the relationship between deliberation and environmental mastery (Figure 6).

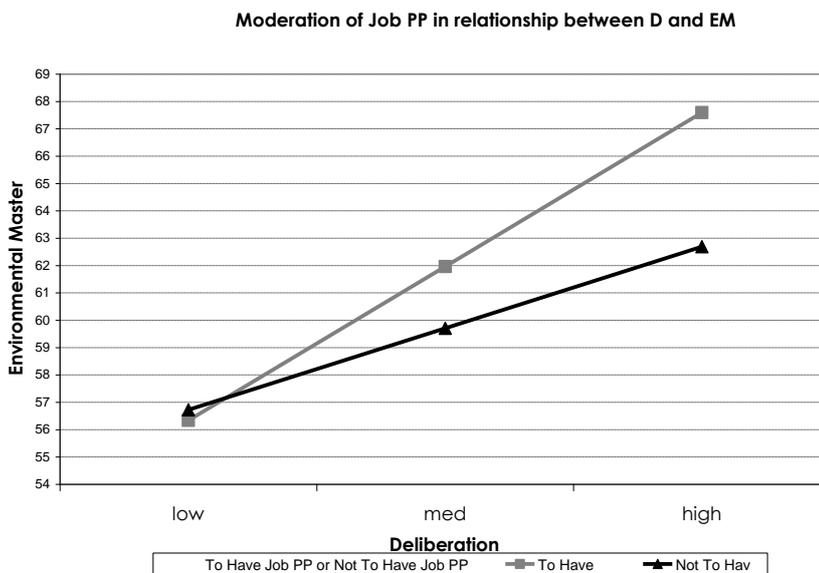


Figure 6. Graphic for the relation between deliberation and environmental mastery with two conditions of job personal projects.

We can see that having job personal projects enhances the level of environmental mastery when individuals show high levels of deliberation.

Discussion

The present study aimed at exploring the moderating influence of job personal projects between traits and teachers' psychological well-being dimensions.

Our hypothesis that to have or not to have job personal projects would influence the relationship between competence and deliberation (conscientiousness facets) and positive relations with others, purpose of life and environmental mastery (psychological dimensions) was confirmed.

Our results suggest that teachers' job personal projects do indeed reveal a moderating influence in the relationship between competence and deliberation traits and the psychological well-being, positive relations with others, purpose of life and environmental mastery. In addition, there is specificity in the way teachers' job personal projects moderate the relationship between each of these particular traits and the psychological well-being dimensions: to have job personal projects is beneficial to teachers' psychological well-being if teachers have low competence; having job personal projects is beneficial to teachers' psychological well-being if teachers have high deliberation. The exception is the moderation of the relationship between deliberation and positive relation with others, in which to have job personal is beneficial to positive relations with others if teachers have low deliberation.

Consequently, teachers who have low sense of efficiency, self-confidence and resourcefulness (competence trait) may benefit in positive relations with others, purpose of life and environmental mastery, if they have job personal projects. But to have or not to have job personal projects doesn't seem to make a great difference in teachers who have high levels of competence trait. Thus, to have job personal projects seems to lead teachers with low level of competence to increase their levels of psychological well-being.

Teachers who are highly meticulous, cautious and concentrate (deliberation trait) may benefit in their purpose of life and environmental mastery if they have job personal projects. Job personal projects can be a way of expression of the deliberation related with finding meaning in one's efforts and challenges (purpose of life) and to shape their environment so as to meet personal needs and desires (environmental mastery). However, to have high deliberation and job personal projects may have a negative impact on positive relations with others in teachers. Possibly, teachers too focused on their tasks, cautious and meticulous and with job

personal projects have more difficulty in developing and maintaining warm and trusting interpersonal relationships.

Our study presents a novel contribute to the personality realm and its relation to teachers' psychological well-being.

Empirically, it supports the proposal that an holistic understanding of relations between personality and well-being should consider the personality as a whole since the several personality levels interact in the production of well-being (Little 1996, 2008; McAdams 1995, 1996). Personal action moderates the traits influence, and alters the strength and the direction of their impact in three dimensions of psychological well-being. So, this study reinforces that several levels of personality work together and that the quest of understanding the structure, functioning and coherence of personality and relationship with well-being needs information about all levels (McAdams 1995, 1996).

Importantly, this study highlights the importance of teachers' work in their psychological well-being. The single fact of having or not having personal action linked with teachers' work has an impact on the relationship between personality traits and teachers' psychological well-being. This fact supports the premise of social ecological model that suggest that personal projects features interact with traits in the production of well-being (Little 2006, 2008).

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VOCATIONAL AND ADULT EDUCATION

One + one is more than two – A dialogical mentor relationship in vocational teacher education

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Abstract

The present study examines mentoring in a Finnish vocational teacher education context. Mentor means the supervisor, who is supporting a mentee during his or her teaching practice. The subject of the research is a dialogue in the mentoring process – What is the significance of the mentoring situation to mentor and mentee? The results show that a successful mentoring relationship can benefit both the educational institutions, mentors and mentees as well. The dialogicality appeared to be one of the cornerstones of a good mentoring relationship, and at its best it led to the empowerment of all the partners. Positive experiences will also encourage teachers to become mentors. Mentoring will become a hoped-for way of action in the work community and it should be utilise.

Keywords: *mentoring, supervising, vocational teacher education, dialogue*

Introduction

This paper focuses on the relationship between mentors and student teachers with a particular focus on their different meanings of the mentoring process. In teacher education, mentoring has traditionally been understood as a supervision process between an experienced teacher and a novice teacher who wishes to become an autonomous actor. Many studies (Nissilä 2006; Ragins and Kram 2008) have focussed on the views of mentees but few have examined the impact of the mentoring process on the mentors. More recently studies have focussed on the professional development of mentors (Hall et al. 2008; Ianchu-Haddad and Oplatka 2009; Allen 2008; Hennissen et al. 2010). Mentoring is an interactive action, which inevitably impacts on both mentors and mentees. By focussing on the dialogical aspects of the relationship, a deeper understanding of the relationship can be developed.

In the Finnish context the mentors are qualified and experienced teachers with academic education. The student teachers are also substance specialists with academic education, but they have also fresh working experience. However some of the student teachers have gained experience as unqualified teachers prior to pursuing their studies.

Two main concepts: A mentor and a dialogue

Mentoring is a process that has many definitions in the research literature (Sundli 2007; Wang and Odell 2002). In the 1970s and 1980s supervising teachers focused mainly on the socialization of prospective teachers. Later mentoring gradually came to include the encouragement of new teachers to grow professionally through reflection on their practices (Feiman-Nemser 2001).

Mentoring is viewed as a nurturing process in which a skilled or more experienced person counsels a less skilled or a less experienced person. The purpose is to promote a mentee's professional or personal development. Sometimes the mentor may even have a formal evaluative role (Ianchu-Haddad and Oplatka 2009, 45.) The core idea of mentoring is connected to a professional supervising relation.

The most traditional conception of mentoring is the so called novice-expert model which emphasizes teaching, the transfer of regulations and normative practices, modelling and repetition (Saarnivaara 2008, 96). The question is of the socialization of a mentee into the practices of a certain school or institution.

Wang and Odell (2002) identified three perspectives in relation to mentoring; these include the humanistic approach; the situated apprentice approach and the critical constructivist approach. The humanistic perspective focuses on the development of a learner's self-esteem and confidence in learning through a counseling process. In practice, a mentor teacher assumes the role of a counselor who helps novices identify and resolve personal conflicts, redefine their needs as a teacher and feel confident about teaching (Wang and Odell 2002, 475). According to Brown et al. (1989) the situated apprentice perspective assumes that all knowledge is contextualized and that it grows out of the context where it is used. In practice, mentor teachers help novice teachers to develop practical knowledge including teaching techniques and skills. The critical constructivist approach offers both partners a possibility to produce new knowledge. The goal is to critique existing knowledge, structures, and the culture of teaching. Mentors in such a relationship are regarded as change agents. Learning and development are mutual (Wang and Odell 2002, 477). However this approach has been criticised on the grounds

that it is the mentor who is regarded as a change agent. It is the mentor who asks critical questions to develop the prevailing knowledge and practices (Karjalainen et al. 2006.)

One of the most interesting conceptions depicting mentoring is the dialogical approach. In a dialogical relationship, equity is central. The dialogical approach refers to the fact that the partners both give something valuable and receive something valuable as well. Mentoring is professional dialogue in which both novice and experienced teachers learn something new (Karjalainen et al. 2006).

The context of the study

The study was designed and carried out in Finland, in the University of Applied Sciences, in the School of Vocational Teacher Education in Oulu. The unit offers the teacher's pedagogical studies of 60 ECTS. A general entrance requirement for the program is the Master's degree or the highest vocational degree in the majoring subject and a three-year work experience in the respective field. The student teachers in this study represent well-educated adults with work experience who participate in a number of careers. Their path to increasing awareness of pedagogical measures is expected to be different from that of the young, non-graduated students. Vocational student teachers have acquired vocational or professional identities in their jobs. They have deep knowledge of their respective fields and have composed masters' and, in some cases, doctors' theses. Consequently, they are supposed to have critical thinking skills, autonomy, inquiry and problem solving competencies in their fields of expertise.

The curriculum is based upon the concept of a vocational teacher's work and its development and on the professional skills of a teacher. The objective of the curriculum, both in content and form, is to promote the development of a teacher as an expert in pedagogy. Today, the professional skills of a teacher require expertise in many areas so that he or she can act as a pedagogical expert. The core areas include Pedagogic know-how; Know-how of work communities; Know-how in work life, and Know-how in research, development and innovations.

These areas of expertise in pedagogy are combined in the praxis which is the application of what is learnt as well as the development of new ideas during teaching practice. In the school of vocational teacher education the comprehensiveness of teaching practice is 11 ECTS. The practice includes observing teaching processes and student groups (about four days) and a planned sequence of lessons (at least 20 hours) supervised by a mentor who also gives feedback together with the supervisor from the school of vocational teacher education unit.

The purpose of the study

As the most recent studies see mentoring more and more as a dialogue and mutual interaction in which both partners learn, this study explores the dialogical approach to mentoring.

Mentoring relationship is multidimensional. As the mentors are experienced teachers they bring this the relationship whereas the mentee brings their academic competence and fresh working experience to the relationship. Since the student teachers come directly from work life, it can be presupposed that their work life competence and professional skills are top-quality. On the other hand it may have passed a long time since mentor has worked in his/ her substance field.

In this study the term 'mentor' refers to the supervisor of teaching practise who has been chosen from among the teachers of the institution involved to support the practising student teacher. Thus the mentor works as a full time teacher. He/she will give a certain number of his/her lessons or other teaching to be carried out by the student teacher. The student teacher is responsible for the unit of lessons agreed, but the mentor teacher supports him/her in planning, realization and student evaluation. The official role of the mentor is to assist the mentee in interpreting students' behavior and to help him/her to discover how to promote and guide the students' learning processes.

An important tool for the mentor is his/her personality. As an experienced teacher, the mentor should have the ability to foster the mentee's learning and attend to his/her needs. At the same time the contents and needs of the curriculum must be considered. These different tasks may cause confusion to a mentor and the essence of different roles shows how complex the relationship between a mentor and a mentee is. A successful mentoring relationship may, however, develop into a rewarding experience for both partners. Hall et al. (2008, 342) suggest that "the mentor teacher must work to create a context that will facilitate the beginning teacher's learning, engage in discussion, reflection, and criticism of teaching". They criticize the fact that sometimes the mentor is considered the same as a co-operative teacher who only offers a chance for a novice teacher to practice and gives his/her support in this.

The participants and the method

The research data was collected in two separate research projects, but they will be analysed here as one entity of material. The first data set was collected using open-

ended interviews, lasting from 45 minutes to over one hour long, with 17 mentors in different vocational institutes. The aim was to explore mentors' views about their mentoring activities and the supervision of teaching practice. They were asked to consider their views about mentoring as a process; the manner in which they mentor teaching practice; what they consider to be the core elements of mentoring and what does the process say about mentors and student teacher involvement.

The second data set were reflective essays of ten higher education student teachers who were gaining the qualifications for HE/vocational teaching. After they had finished their teaching practice they were asked to reflect on their experiences. They were allowed to write freely about the issues that they felt had promoted their learning processes as teachers.

Combining these two different data we wanted to deepen the interpretation of the dialogicality concerning the mentoring relationship. The data was subjected to cross analysis by both researchers from which common themes were discerned from the data.

The results

According to the results, an open and dialogical mentoring relationship during the teaching practice is significant both at individual level and collective level. The individual level refers to the mentors and mentees: experiences and the meaning of teaching practice individually to them. The collective level refers to school or whole institution: the changes that have been made on the grounds of mentoring process.

The benefits for school and educational institution

Both mentors and mentees told of the changes that took place at the school level because of the mentoring process. One of the mentees indicated that the research idea had been raised during the teaching practice after a common dialogue:

"Mentoring supported my practice greatly. Actually, we got so much interested in it in our working community that we carried out a minor research on the theme and wrote an article based on our experiences."

Another example about the influence at community level shows concrete changes that were suggested by the mentee and realized in the contents of the curriculum. Mentors experienced a number of benefits from the process.

"A mentee came from outside. He had a ready solution to one issue. It is not easy here to bring about any changes directly. There are certain bureaucracies and certain habits here in the school, and the habits must be broken."

Maybe a mentee cannot directly change the practices of the community in any big scale. However, part of the mentors told that the presence of the mentee and teaching practice in general had made the working community to think of their own teaching culture. A mentee could also participate in some activities, e.g. in the curriculum reform work.

The benefits for a mentor

Mentors emphasized strongly their professional and pedagogical development. They found it very profitable especially to observe the lessons of their mentees and to reflect and discuss them afterwards. Similar results were also found by Hobson et al. (2009) and Ianchu-Haddad and Oplatka (2009) in their studies. The mentors described in many contexts how discussions with mentees facilitated an analysis of their own pedagogical actions and enabled them to verbalise their own views about teaching and learning.

"Because of mentoring I can reflect on my own teaching, look at it like an outsider and think of how can I develop my own teaching."

In mentoring process there are lots of interaction and change of ideas. There discuss two professionals. For this kind of discussion there is not normally time at school.

Mastering teaching methods. Lesson observation helped the mentors to find ideas to be carried out in their own teaching and the development of teaching methods. Some of them reported that they had changed their teaching methods after observing the mentees' lessons:

"I could adopt some teaching styles and models and try them."

In other words, after following how the mentees used a new teaching method they got encouraged to try new methods as well. On the other hand in dialogues between the mentor and mentee there arose new innovations in regard to teaching methods in the discipline in question.

The development of individual substance knowledge. The mentors reported that their subject based knowledge has also developed:

"I have a mentee who was a master of science of technology and he was working as an environmental auditor. His perspective to teaching subject was totally different from mine. It was interesting because I considered the subject as a chemist and he considered it as an officer".

Learner Knowledge. In addition to new ideas about teaching methods and substance knowledge the mentors told that they had become better informed of their own teaching group and students. They indicated that they had started to think of the learners in a new way and perhaps more deeply than earlier. When a mentee planned his/her lessons, even the mentor came to think of his/her teaching activities critically. One of the mentors reflected in the following way:

"What should the students learn? In what a way should they learn? How do they actually learn? How do we teach them to learn?"

The benefits for mentees

In their reflective essays the mentees clearly reported different benefits of the discussions. From these descriptions we found three diverse roles of mentors.

Mentor as an emotional supporter. The results show clearly the important impacts of the reflective discussions that mentees had with their mentors. One mentee writes:

"Mentoring relieved so much pressure after difficult situations during my teaching practice. It was big emotional support for me. In discussions the mentor helped me to see things in their right perspectives and the great failures weren't really so big."

Mentor as a practical counsellor. A mentee writes:

"My mentor helped me in many practical situations. For example she said that I should be more assertive in the beginning of the lectures. Otherwise there will be too much noise because the group is so big."

Mentor as a `therapist`. A mentee writes:

“The discussions were almost like a therapy sessions: I had to find the answers for many questions from deep myself. It was very broadening.”

In the analyses there was found a group of meanings which regards mentoring as an especially positive experience from the viewpoints of both mentors and mentees. These descriptions were connected to personal processes of growth. The expressions were recognized as the features of empowering. Overall our analyses show the significance of the reflective and confidential relationship between a mentor and mentee. This kind of relationship can form between two persons who value each others.

Dialogical relationship empowers both mentees and mentors

Both the mentors and mentees emphasized in their stories the importance of equal and confidential atmosphere in mentoring which promoted the feeling of empowerment. Mentees described that the supervision carried out according to the principles of mentoring had made them analyze their pedagogical ways of acting. One of the mentees reported that the mentoring discussion had made her find solutions out of herself and become critical about earlier adopted ways of acting. An extract of an essay:

“After one unsuccessful group work my mentor made me think in which way it would have been possible to open up the bad situation at the same moment. Just to change the way of teaching and grouping the students in another way”

Mentors, again, described mentoring in itself to bring variation, reinvigoration and enthusiasm into their everyday teaching work. Although mentoring caused extra work in the daily chores, they experienced it as enriching. The mentors indicated that they got energy from even the enthusiasm of mentees. They had experienced feelings of success in their mentoring which brought pleasure. In addition to the fact that mentoring meant changes in everyday routines the mentors told that they had started to think of their work as teachers more deeply.

The mentors reflected on their teachers' identity on one hand in their minds when observing the actions of the mentees and on the other hand in their dialogues with the mentees. The mentors' personal inner processing remained often unexpressed, as they did not necessarily tell their mentees of the thoughts arisen during the mentees' actions.

“I would have taught it in another way. It is true that things can be learnt in other ways as well. I have been thinking of that matter. And I have not given any

feedback of it to the mentee, since I think it is only my own processing around that matter.”

The following example given by a mentor shows the significance of collective reflection and dialogue as well as of their promoting effects:

”I enjoy this kind of interaction terribly much. It is a great fun. In this kind of change of ideas you can share the experiences in quite another way than with your own student group, which is our everyday work.”

The above quotation describes the emotional reward gained through the experiences in dialogical mentoring and empowerment. According to Grimmet (1996) the teachers’ experiences of empowerment are important especially because they enable teaches to reflect on their own goals and beliefs not only autonomously but also in collective reflection with other people.

Conclusions

The present research examined mentoring from a dialogical perspective. The starting point was to study in what ways dialogicality becomes apparent in mentoring relationships. How is it described by mentors and mentees?

The present findings are synchronous with other research findings concerning mentoring and the mentors’ experiences: the mentors of this study also experienced that the mentoring of teaching practice increased their professional competence. According to Hall et al. (2008, 335) the mentors support dialogicality when they can offer emotional and professional support. Our research revealed the same phenomena. The positive and emotionally supportive promotes dialogicality and the empowerment. Both mentees and mentors emphasized importance of equal and confidential atmosphere.

As teacher educators we have to regard the results as a challenge. The results encourage us to develop teaching practice more towards dialogicality and pay attention to mentor education in the future. The personal and professional growth of a teacher is a long process, and professional growth can be supported by a successful mentoring relationship right from the start. It may enhance a young teacher to find his/her own way to be a teacher. For that reason the role of a mentor should rather be a peer supporter and co-reflector than an evaluator.

The School of Vocational Teacher Education in Oulu is starting an alternative model of teaching practice which will be piloted in autumn 2010. This model differs from the other models of practice in the fact that the mentee will not teach the mentor's group and lessons but he/she will practice in his/her own work community, developing his/her own teaching. There will be appointed a mentor from among the co-teachers. It is this kind of teaching practice that will greatly benefit from the model of dialogical mentoring. The mentor will participate genuinely in the development of teaching and observe the practical realizations of the ideas. The mentee will receive peer evaluation and support for his/her development work, and respectively the mentor will find ideas for his/her own work. Both the mentee and the mentor are members of the same work community, so the working context is familiar to them. This model will hopefully prompt new ideas for developing the whole work community as well as for enhancing empowerment.

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Student Teachers Innovating on the Blackboard Learning Platform

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Abstract

Capacity for innovation is increasingly important in vocational teachers' work. The school has an important function in building a readiness for innovation, and the educational system is therefore an essential part of a national innovation system. Teachers constantly need to keep up to date, to be innovative in their own work and in developing their organization. This article first discusses capacity for innovation and its significance in teachers' work. Then a study module is described that was implemented at the Oulu School of Vocational Teacher Education, within which the student teachers carried through an innovation process, related to their own work. According to the student feedback, the greatest benefit to the students was to carry through the innovation process and to learn to use innovative approaches.

Introduction

It is argued internationally that the capacity for innovation is one of the characteristics that teachers should aim for (Poell, Seezink, and Kirschner 2010). Studies characterize innovative teachers in different ways and terms. For example according to Malm et.al (2009), an innovative teacher is, above all, one who uses new teaching methods, is pedagogically skilled, interactive, sensitive to pupils' individuality, and encouraging to collaborative learning. In education innovations have been connected to the use of different teaching methods, for example the teaching innovations are based on cooperative learning, new technologies, and continuous assessment (Dickie and Jay 2010; Reyes and Gálvez 2011). Innovation is important in vocational teachers work and therefore it is important that student teachers' have the possibility to join courses where innovation processes are discussed. In the course

under study, student teachers have developed new teaching methods, online courses and different kinds of guides for students and teachers.

The purpose of this case study is to describe the study model that was implemented at the Oulu School of Vocational Teacher Education within which the student teachers carried through an innovation process, related to their own work.

Creativity and innovation

Innovation and creativity are terms that are used interchangeably. From the viewpoint of the social psychological school of thought, creativity is influenced by the environment (Puhakka 2007). Innovations do not arise in a vacuum, as they always have a social context in which they take place. Closest to innovation in teachers' work is social innovation which arises from the creative activity of an individual, group, community and/or network that leads to a result bringing some added value to the individual's or community's welfare, health or service system (Taipale and Hämäläinen 2007; Wets 2009).

Ideas arise in innovation processes. Innovation is currently understood in a broader sense, and it also involves the process through which a new product is developed (Ke-Zhang and Xin-An, 2010). There are several models for the innovation process. In simplified terms, the innovation process can be presented as a linearly progressive path, in which progress is made gradually from basic research and the observed need to the final innovation (Kyffin and Gardien 2009).

In practice, however, the innovation process does not proceed in a linear fashion, as it is an interactive whole that focuses on collaboration, networking and overlapped development. Distribution, spreading and combination of knowledge and competence is essential to the process. A basic requirement for the emergence of innovations is *competence*. Innovation requires an ability to look at a task with new eyes and to combine existing knowledge in a new way. Innovations are (usually) not about detached inventions by single individuals, as they are produced in working teams, workplaces and other organizations, in which the various skills of different individuals can be used to achieve a common goal (Montuori and Purser, 1999; West 2009). These issues are considered in the case study findings presented in this paper.

An implemented study model

The focus of this case study was to establish:

- how the study module to support the process of innovation was implemented in practice
- what the student teachers learnt during the innovation process and how the process could be developed further.

Most of the studies in the Innovation course took place in a collaborative learning environment on the Blackboard platform (BB-platform). The course contained only one contact day in the middle of the course. The teachers of the course are the authors of this article.

Fourteen student teachers contributed to the implementation of the course, thinking up, designing and testing their own innovations during the course. Underlying the course implementation was the construction of collaborative knowledge (Scarmardalia and Bereiter 2003) which is the process of making use of the learning environment, where the participants can simultaneously create messages, comment on each other's messages and organize the ideas and thought presented based on the messages. In this way, the ideas and knowledge developed can be improved upon all the time. Dissemination, distribution and combination of knowledge and competence is essential to the process. (States Sciences and Innovation Council 2003). Each student teacher has his or her own innovation that they develop in the learning environment. Technological approaches thus enable collaboration and knowledge construction between the student teachers.

Course Description

The innovation course (10 credit units) was conducted in autumn 2009 and it took fourteen weeks to complete (Figure 1). The course was optional for teacher students. When the course began an important aim was to get to know each other, therefore students first assignment was to introduce them in BB-platform by sending an introduction message. The second assignment requested the students to familiarize themselves with the concepts of creativity and innovation, what kind of innovation ideas they have met in their daily life and what kind of innovations are needed in vocational education. They wrote an advance assignment about these themes and send it on the BB-platform. One aim of the advance assignment was to focus their ideas on possible innovation themes, and the innovation solutions they recommended to deal with vocational education. So, the next step was to

concrete their own innovation theme and write short description of it on the platform. Everyone got feedback of their innovation themes from teachers and co-students. The idea was that teacher students can specify, get new ideas and perfect their innovation themes based on the feedback. After this process they sent their accepted and actual innovation idea on the BB-platform. The Innovation themes included: the creation of an electronic workbook for the vocational training, the development of innovative e-learning course for engineer students and the creation of a practical learning environment for vocational special students.

The Innovation course included a single contact day called the Innovation Workshop, this was the fifth step in the course. This workshop allowed everyone to work on his or her innovative theme by means of the methods of creative problem solving used in groups. Teacher students had to specify potential problems in their innovation theme and sought ideas and solutions from co-students. This was a significant learning process for each of the students participating. In the sixth step the innovation problems that were solved, reported and discussed, innovation reports were also sent in the BB-platform. At the end of the course got feedback about their innovation reports from teachers and co-students.

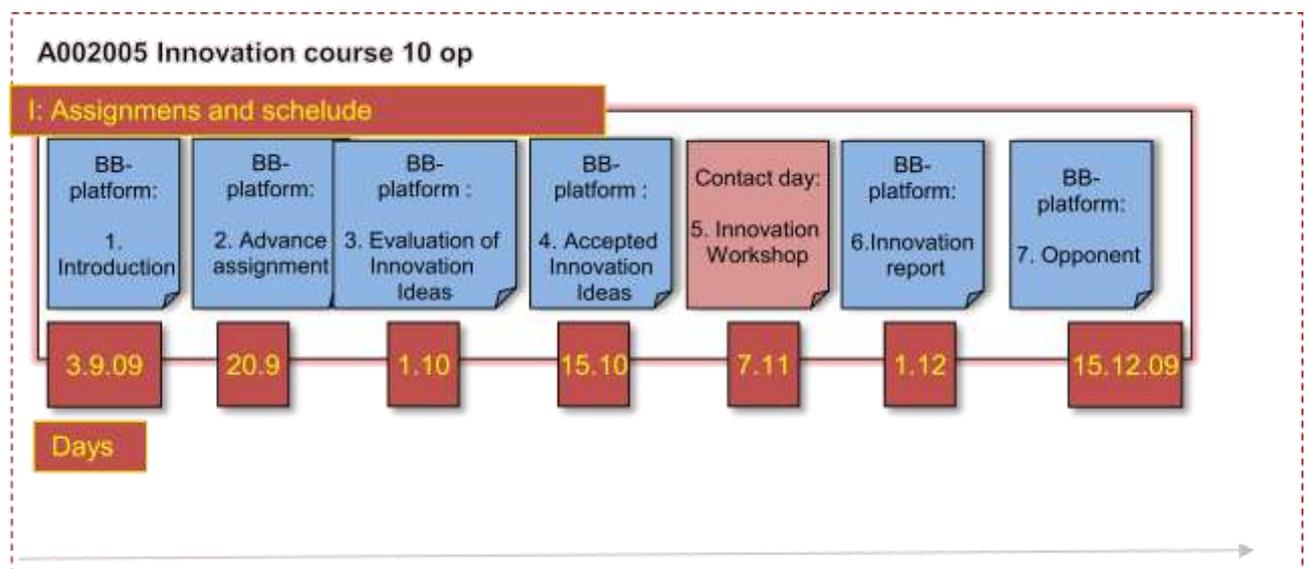


Figure 1. Innovation course: Assignments and schedule

Methodology

The research can be characterized as a case study. Case studies are records of innovative or good practice. This study has some ideas about a phenomenographic approach which is

an interpretive research approach examining different ways of people's experiences or conceiving a range of phenomenon. (Marton 1988). The research data was gathered by means of an electronic feedback questionnaire. Categories were constructed for the teacher students' open-ended answers, in which they were describing a variety of things. The outcome providing a valuable starting point consisted of a structured summary of the questionnaire materials.

The inquiry was sent after the students had received assessments of their innovation reports and all the course requirements had been fulfilled. From among the fourteen students who completed the Innovation course, seven returned the questionnaire. There could have been three more respondents. The remaining four have not yet finished the course, as they were taking a more advanced version of the course. These students also apply their innovations in practice and supply a report on it. Therefore feedback from them will not be received until they have completed the entire course. In accordance with case study, all returned answers were valuable and they gave important knowledge. However, like in case studies in general, it is difficult to summarize and develop general propositions and theories on the basis of specific case studies. Therefore, the value of this study is to describe the implemented study module and teacher students learnt during the innovation process.

The following questions were asked to elicit answers to the research problems mentioned above.

How did the students benefit from the Innovation course altogether? What use had the advance assignments been to the students and how did they feel about working on the BB platform?

What had the meaning of the innovation workshop day been to the students? How did they feel about peer assessment and how did they feel about tutoring during the course? In the end we asked what kind of suggestions for development did the students have as regards the course?

Findings of the study

The participants felt they had benefited from the course in many and diverse ways. The students had received an idea of the innovation process and learnt to use various innovation methods. One of the students put it like this:

"The fact that we worked on innovation in such a systematic way in the course (first literature, methods, and then the innovation day, work on the report and comments) also contributed a lot to the work on the innovation itself. I could surely not have

carried through my idea so sensibly without the course. I would have rushed headlong to an implementation of sorts and would then have learnt through trial and error.”

Multidisciplinarity was clearly something positive that was present in the groups. *The **advance assignments*** had been helpful in getting oriented to the course. They helped to understand the whole. Questions about the students own innovations had made their thoughts “fly”, putting them in a good innovative mood.

“Advance assignments are great to stimulate the students and to make them committed to their topics and studies in general.”

The students were quite satisfied with *the **learning platform*** and working on it. The Blackboard platform had functioned well and concretized the course, with the studies mostly taking place through distance learning. The assignments available on the platform had given their work a nice rhythm.

“I recommend that the Blackboard platform should also be used in the future. The best thing about it is that it can be used on different computers around the world and that it is based on a database. It is well capable of responding to the future challenges.” One participant, however, criticized the user interface, because it was too “flimsy”.

The students were highly satisfied with *the **innovation workshop***. It had allowed them to take their own innovation ideas a step further. In the innovation workshop, the students had learnt to make excellent use of various innovation models, and above all, the work in the multidisciplinary groups had been fruitful.

“The innovation workshop day was fruitful, partly because the groups included students representing different fields of education who introduced their own views to the assessment of innovations.”

“This was a truly nice day; it really exceeded my expectations. The group was nicely involved in the development of others’ ideas, and I gained a good deal of personal experience with different innovation techniques.”

Peer assessment resulted in quite conflicting feedback. Some had received good feedback.

Others felt that they had benefited very little from peer assessment. The students had felt that assessment was not easy, if the topic was too strange for them.

“This will surely work with variable success, depending on how well your peer has familiarized him- or herself with the work. Yet I think it is good also to hear another person’s viewpoint on the matter.”

The students were generally very satisfied with **tutoring**. The studies were, however, thought to be largely based on independent work. An effort was made to make the learning platform as “tutorial” as possible.

The students said:

“There was enough tutoring for me. There cannot be as much tutoring in an online course as in contact teaching, but I think the comments and feedback on the BB platform were sufficient.”

“I think the tutor gave clear instructions and it was easy to follow them. You could read instructions at various points on the Blackboard platform.”

“The tutoring was truly positive in tone and gave a lot of freedom to the students to implement assignments and their innovations the way they wanted. This is very suitable to a professional teacher who has plenty of writing experience.”

The studies on the Blackboard platform had proceeded without any problems, and it gave the students much needed freedom in terms of time and place. For many students, it was a prerequisite for participation in the course. In terms of content, the students also thought they had learnt to use innovation methods, to make use of common knowledge with the group, and to carry through an innovation process. The goals set for the course had thus been met.

Discussion

Innovations produced for vocational training can be classified within the sphere of social innovations. In the output of innovations (Poell, Seezink and Kirschner 2010), the course also had characteristics of collaborative knowledge production. Firstly, the prototypes for innovations were developed in the work communities together with colleagues. Furthermore, the fellow students commented on each other’s innovation ideas and also evaluated each other’s innovation reports. One thing that the students clearly experienced problematic was

assessing another student's work. The assessors were chosen at random, and therefore the work to be assessed could have content outside the assessor's expertise that the student could not give sufficient feedback to the author. In future, the tutor should arrange the assessor in such a way that themes and content that are close to one another would be assessed by their respective authors. Otherwise, the students were satisfied with peer assessment, as they received feedback on other aspects. There was enough tutoring and it was understood that one of the important elements of tutoring was constituted by the tutorial learning environment built on the Blackboard platform. Distance assignments also provided a useful stimulation for the Innovation course. The students also presented relevant proposals for development. It was suggested, among other things, that the tutor should compose a clear description of the stages of the innovation process.

Based on this study it could be said that this module provided student teachers with an excellent opportunity to use their own creativity and innovation in the development of their own activities and it provided inspiration for them. It is hoped that they will, as teachers who have gone through the innovation process described above, adopt innovative working methods in the future as well, also spreading enthusiasm among their teacher colleagues. Like West (2009) pointed out, the creation of something new is also likely to be the future of the school organization.

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Lifelong development of vocational education teachers at the crossroads of higher education, the school system and the work life

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Abstract

The focus of this paper is on lifelong development of teachers in vocational education and training (VET). VET has been part of the educational system in Norway, but since 1974 it is part of upper secondary education and is offered side by side, often in the same school building, in classrooms and in school workshops. The insertion of VET programme in the upper secondary schools is a special and important feature of education in Norway as it keeps the access to higher education open to pupils attending the academic as well as the vocational programmes. Teachers in VET are constantly challenged by rapid changes and demands for new knowledge and skills. They must, therefore, continuously increase their proficiency by seeking to update their competencies in the content of their disciplines as well as in their pedagogical development. Teacher education (TE) plays an important role because it must bring together the competencies of VET teachers in their professions and provide them with a continuing development of their expertise vis-à-vis their pedagogical knowledge and skills. The varied demands on VET teachers requires that programmes aimed at their lifelong development take into account their special position, which is at the crossroads of work life, of schools, and of the specific TE programme. Thus, TE for VET is a double practice field, anchored in the teaching occupation and the profession for which the training qualifies. Practice-based learning is a special feature of Akershus University College's (AUC) bachelor 3-year TE programme for VET. This paper reports how practice is built into the programme to provide VET teachers with professional and pedagogical knowledge for their continuing development. The paper focuses on how VET teachers attending AUC's TE programme develop the breadth and depth of their knowledge and skills in the area of expertise within their trade certificate. Such knowledge and skills is the core of

their teaching in the upper secondary school context. The findings are based on analyses of students' reports about their practice in companies, and interviews with students and their teachers. Several challenges for carrying out lifelong learning aimed at VET teachers are identified. Nonetheless, the high relevance of such type of programmes for teachers' development is evident. This paper is based on partial results of a European project on practice-based learning that is being carried out together with other European universities. Empirical material for the project has two sources. One part consists of information about life long learning development of the staff of a ships yard company in charge of the employees' life long learning. The other part consists of information gathered from vocational education teachers from upper secondary schools that attend AUC's bachelor programme and have carried out their practicum in their field of expertise.

Vocational education and training in norway

Vocational Education and Training (VET) programs in Norway have a long history with roots in trade and industry, which consists of a large number of small and medium sized companies and few large ones often located far away from each other. This fact may have contributed to creating a climate favorable to implementing training policies at a local level that later supported the inclusion of initial vocational education and training within the school structure. However, it ought to be emphasized that the historical development of today's technical and vocational education in Norway reflects also the establishment of the Norwegian social democratic post-war society, which promoted the implementation of educational policies and the education of professionals for trade and industry.

Most aims of Norwegian educational policies today were attained through laws and regulations by the end of the 1970s. In 1974, the traditional Gymnasium and the vocational schools were unified by one comprehensive law (Upper Secondary School Act of 1974). One of the fundamental aims of the new law was to give equal status to practical and theoretical education (Ministry of Church and Education 1982, 19).

VET programmes in Norway as part of the upper secondary schools.

Today's VET programmes in Norway are part of the upper secondary schools. The curriculum in this upper secondary school system has, since the 1974 Reform, been characterized by plurality and unity, making this level quite different from the basic education covering primary and lower secondary school level, with a common curriculum. The new

secondary school moved away from the earlier traditional school pattern, which was essentially marked by the written culture of general education, and made it possible for skilled workers to have an upper secondary school degree in their areas of expertise.

To understand how vocational education is inserted in Norwegian higher education, one has to look at the context where this education takes place and for what purposes. A brief overview of vocational education is given in Figure 1.

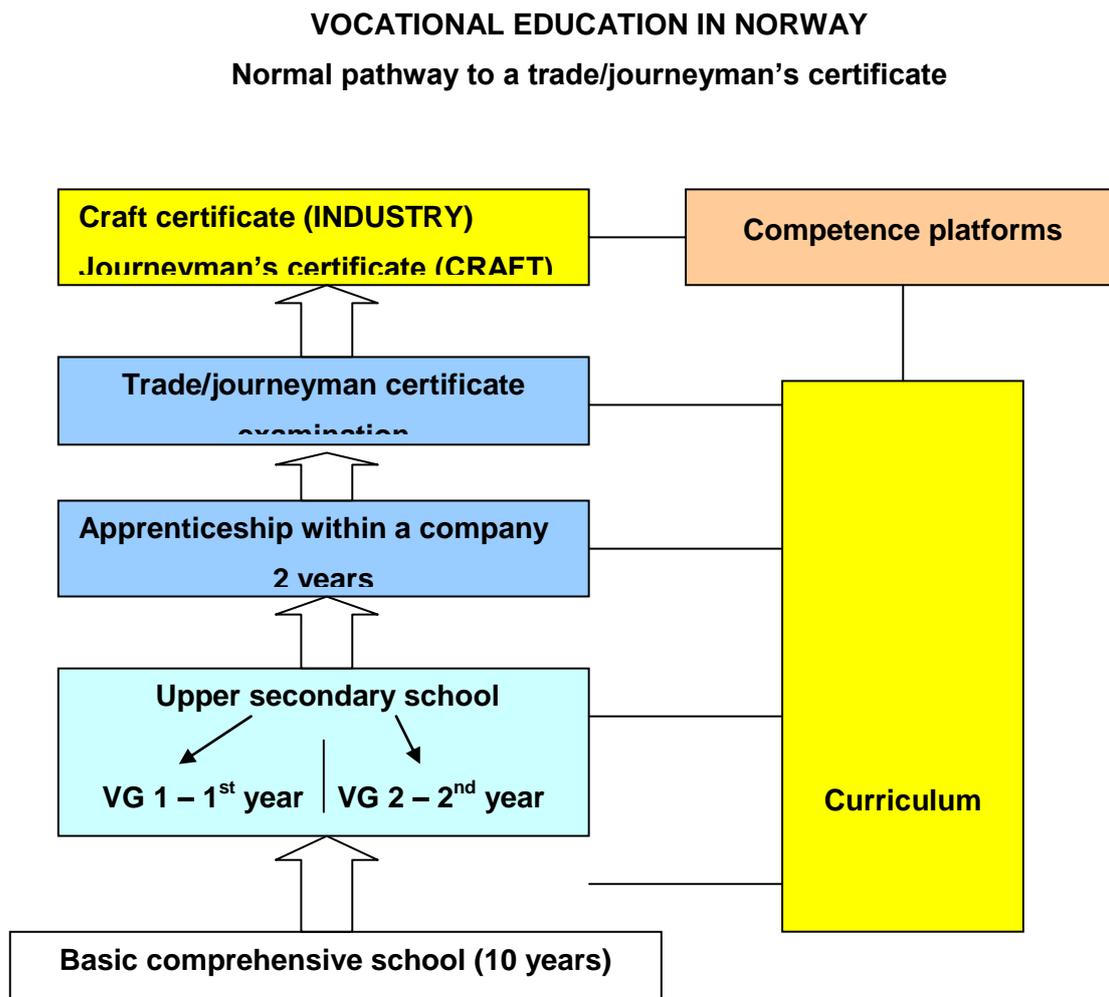


Figure 1: The path to vocational education in Norway

Figure 1 shows how vocational education and training (VET) is included in the Norwegian educational system today. It was inserted in the upper secondary level of the school structure after the 1974 Upper Secondary School Law, when classic academic and vocational education and training became part of a single comprehensive school. General theoretical education and vocational education and training have since been offered side by side, often in the same school building, in classrooms and in school workshops. The insertion of VET programme in the upper secondary schools is a special and important feature of education in

Norway because it keeps the access to higher education open to pupils attending the academic as well as the vocational programmes.

The basic courses offered in the first year of upper secondary school (VG1) are broad and aimed at recruiting pupils to a wide choice of trades⁵. For example, Programme for Building and Construction prepares pupils for the skilled worker level in several different professions that include plumbing, masonry, painting, carpentry and others. And all these require broad and in-depth knowledge and skills. This means that programmes for VET education have also the purpose of recruiting pupils interested in working in professions that have a gamut of niches for acquiring in-depth knowledge. Thus, the teachers working in VET face great challenges which are not unique for one trade, such as Building and Construction here referred but common to all VET programmes mentioned in footnote 2. The teachers have to know their specific trade in depth and must also have a broad knowledge that includes the related professions. Such knowledge is important when preparing pupils for their professional choices in the first year of the upper secondary school (VG1). Using again the example from the programme of Building and Construction, in spite of the difference between carpentry, painting and plumbing, a teacher in painting must also be able to teach one of the other disciplines in the first year of upper secondary school. Such structure requires that teachers in vocational education have both deep and broad competences. The same rule applies to teachers in Electricity and Electronics, in Restaurant and Food Processing, in Health and Social Care and the other programmes. All these teachers must have deep knowledge in his/her specific discipline, and a broad knowledge in the other vocational disciplines within the educational programme that he/she teaches. Such knowledge shall contribute to make a teacher better qualified to work in the first year of upper secondary education. However, a teacher must also have a deep knowledge in his/her area of expertise to be a competent teacher in the second year of high school (VG2).

Another important feature of the insertion of VET in upper secondary education is that teachers in vocational education such as, for example, carpenters, plumbers, nurses, or florists, whose background is highly built around practical activities, work side by side with teachers of languages, chemistry, mathematics and other subjects, with their teaching relying heavily on their academic background.

⁵ Having completed lower secondary education, a student can choose to enter one of the following nine Vocational Education Programmes: Programme for Technical and Industrial Production; Programme for Electricity and Electronics; Programme for Building and Construction; Programme for Restaurant and Food Processing; Programme for Health and Social Care; Programme for Media and Communication; Programme for Agriculture, Fishing and Forestry; Programme for Service and Transport; Programme for Design, Arts and Crafts.

Lifelong development of teachers of vocational education and training

Recruitment of teachers for VET in Norway is done among professional workers that have a trade certificate earned after 12 years of education in the school system and two years of practice as an apprentice⁶ in a company (see Figure 1) and in addition, two years of practice in the work life. This is also the minimum requirement for students that wish to teach in vocational education at the upper secondary level⁷ and who apply to the Teacher Vocational Education and Training (TVET) programme at Akershus University College to acquire a pedagogical education. This means that the applicants are adults with some years of work experience in industry, in crafts, or another professional area. Such a decision is part of their lifelong development.

Their decision to earn a degree in pedagogy is linked to their wish to work either as teachers in the vocational areas of upper secondary schools or as instructors of apprentices within a company. In both situations, practice based learning is an important component of their education.

The aims of the three year bachelor programmes for VET teachers offered by AUC are outlined in the White Paper of 1996-1997 (Kirke 1997) voted in by the Parliament, and later translated into a frame curriculum. The White Paper highlighted that teacher education for VET should be rooted in four main principles, which support a framework rooted in practice based learning. These four principles are stated as:

- *TE for VET is a double practice field, anchored in the teaching occupation and the profession for which the training qualifies.* This means that the education of teachers for VET is grounded in and obtains its content from the tasks, functions and the work culture that characterises the teaching job as well as the different occupations.

⁶ Apprenticeship schemes are part of the upper secondary school system. It is the final part of the education given at a workplace in the form of on-the-job training. The enterprises are obligated to submit the apprentice to tests relevant to the trade in which they are examined at the end of the training period, and the apprentice has the right to wages during the tests. Since the Law for Teacher Education of 1975, teacher education for VET has been included in the higher education system. The law legitimated education and training for teachers in basic education (primary and lower secondary level), for pre-schools (kindergarten), for upper secondary schools as far as it regards teacher education for trade or industry.

⁷ Most of these teachers are hired directly from the trade or industry into the teaching profession, under the condition that they pass the pedagogic exams within a period of 3 years.

- *TE for VET has specific training traditions and methods.* This means that education has, as a starting point, the purpose of bringing forward the development of pedagogical principles that provide the basis for technical and vocational training. Thus, teaching ought to be task-oriented and work-based, with a mutual exchange between practice and theory, in other words, the point of departure is what is known from experience, which moves toward the unknown and abstract.
- *TE for VET requires comprehensiveness and logical connections in the programme of studies.* This implies that the various components in education must be part of a combined work and, together, constitute an integrated whole.
- *TE for TVET is as equally valuable an education, as other forms of teacher education and of education for other profession-oriented education at the universities and university-college.* This means that education of teachers for VET is one specific profession-oriented teacher education that corresponds to other types of higher education programmes, founded on research-based content. This education gives competencies and possibilities for further development within the academic area.

The outlined principles emphasise that teacher education for VET must be understood as strongly linked to the work life within which the aspiring teacher has his/her qualifications. One question to be asked at this point is why practice is so important for learning.

The theoretical support for practice based learning

The interest for studying the boundaries between education and the work life is not new and it is the focus of attention of contemporary research.⁸ The importance of practice for learning is also the focus of attention of researchers interested in investigating adult learning. The value of practice and practical experiences, especially learning that takes place outside the boundaries of educational institutions is being increasingly considered a relevant source of knowledge and as valid as the formal learning that takes place inside educational institutions. The changes in the forms of learning today bring forward the fact that learning occurring at the work place is as pertinent and relevant as learning in schools (Bergan 2006; Holmesland

⁸ The Journal of Vocational Education and Training, 2009, volume 61, issue 1 has several articles that address questions related to work based and school based learning in different countries.

et al. 2004). Thus, there seems to be a consensus that the workplace is the best one for learning. This contention is often made regarding educational programmes that require practical skills such as within technical and vocational education. However, Warring (1999) argues that the workplace and the school are different and independent learning spaces. He claims that such understanding is necessary so that exchanges between the different arenas can give pupils the possibility to make the best use of the learning opportunities. Table 1 presents Niels Warring’s comparison between learning at schools and at the workplace.

Table 1: Comparison of learning at the school and at the workplace

School	Workplace
General	Concrete
Distant	Near
Concept of practice	Grip in practice
Other community	Daily community
Highlights learning opportunities at work	Places learning requirements for schools

Ronny Sannerud (2009) refers to the tensions that exist between the school based learning and the work place learning and represents them in Figure 1. Sannerud claims that the two spaces operate according to different logics and his question mark indicates that the interface between the two arenas creates a space that needs further investigation.

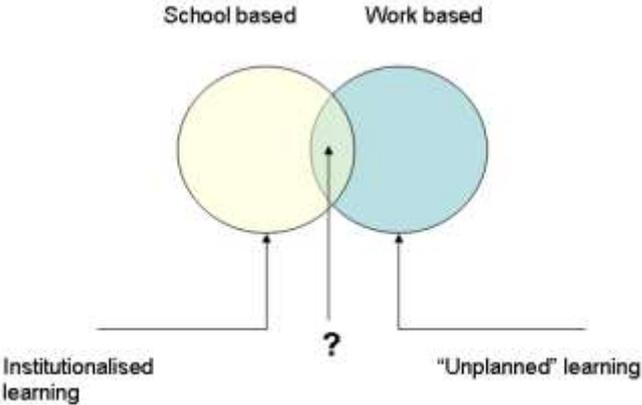


Figure 1: The tension field between educational college/schools and training/learning at the work place

What characterises the interface between schools and the work life is a general question to be asked. More specifically, one can wonder about the institutions or arenas that define such space. Sannerud proposes that the state and/or community structures affect the interface. Etzkowitz proposes that there is a Triple Helix (Etzkowitz and Leydesdorff 1997, 1999) which can be either non-obligatory or obligatory/integrated, represented in figures 2 and 3, respectively.

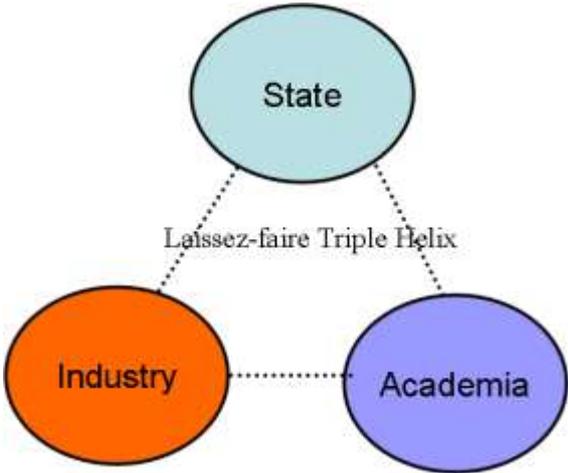


Figure 2: The non-obligatory triple helix

As shown in Figure 3, the obligatory/integrated triple helix includes the social and cultural structures that affect the interface between the workplace and the educational institutions. This interface is an interesting area for investigation. An important aspect to be investigated is the overlapping of the different structures and how the boundaries are defined.

Integrated triple-helix

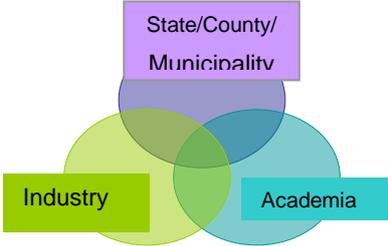


Figure 3: The integrated triple helix

This brief presentation of the context for technical and vocational teacher education (TVTE) and the theoretical framework for practice based learning provides the background to present how practice based learning is built into AUC's technical and vocational teacher education and discuss how it is implemented.

Technical and vocational teacher education at Akershus University College

A practicum in the specific area of knowledge is one of the requirements of Akershus University College's bachelor programme in TVTE. As indicated in Figure 1, upper secondary school teachers are required to have deep knowledge in his/her specific discipline, and also a broad knowledge in the other vocational disciplines within the educational programme that he/she teaches. Such knowledge shall contribute to make him/her a more qualified teacher for the first year of upper secondary education (VG 1). However, a teacher must also have a deep knowledge in his/her area of expertise to be a competent teacher in the second year of high school (VG2). A practicum in the specific area of knowledge is also a requirement in AUC's TVTE. An illustration of breadth and depth of expertise, with Building and Construction (BAC) cluster as an example, is presented in the "upside down T" in Figure 4.

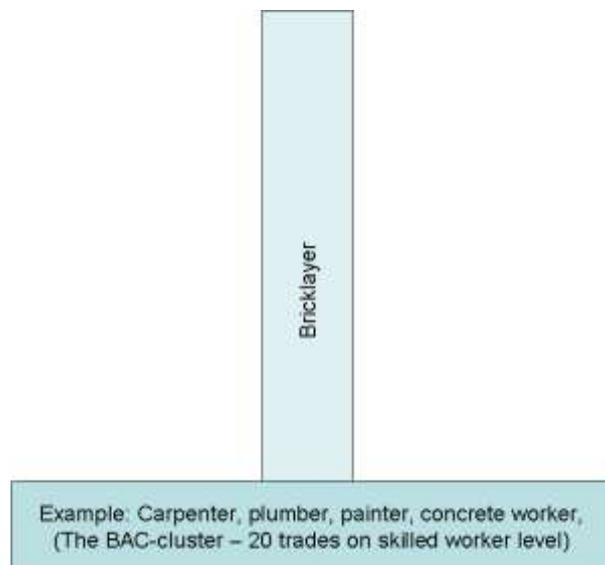


Figure 4: The "upside down T-curriculum"

As previously referred, teachers for VET are recruited among professional workers that have a trade certificate earned after 12 years of education in the school system and two years of practice as an apprentice in a company (see Figure 1). They must also have at least two

years of practice in the work life. As in other professions, teachers in VET are being constantly challenged by rapid changes and demands for new knowledge and skills. The varied demands require that programmes aimed at their lifelong development take into account these teachers' special position, which is at the crossroads of work life, of schools, and of the specific TE programme. TE for VET is a double practice field, anchored in the teaching occupation and the teachers' specific professions. Figure 5 illustrates the special position of practice for TVE teachers' lifelong development.

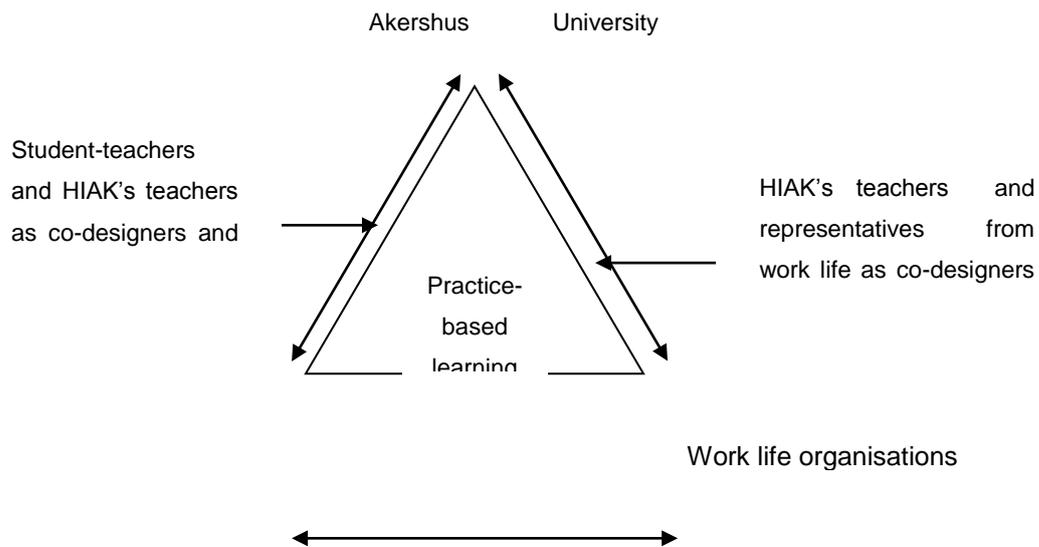


Figure 5: The special position of practice based learning in TVTE

As shown in Figure 5, Practice-based learning is a special feature of Akershus University College's (AUC) 3-year TVTE bachelor programme. One might wonder about the relevance and pertinence of such feature for a teacher in vocational education. Questions about the importance of practice for learning are also being asked in several other professions. Why is there such interest for practice in the learning process?

In the history of education, one can find many assertions and contentions about the importance and value of practice for all kinds of learning. Its importance for learning has been expressed earlier by many other educators (among them Dewey and Grundtvig), and it has been studied in depth by several contemporary researchers (Lave and Wenger 1991; Polanyi 1962; Wenger 1998). Practice based learning is a learner centred approach to learning in which the student does not take on a passive role, as in a traditional type of formal education. Instead, the learner is an active partner. This formulation of practice based learning corresponds to how the concept is understood and implemented in the TVTE bachelor programme at AUC, and for such reason, this higher education institution is a

partner of the Euronet-PBL project. The focus of this project at AUC has been the probing of practice based learning in the bachelor programmes of Building and Construction and of Electricity and Electronics offered by the Faculty of Technical and Vocational Teacher Education. Information gathered from students and teachers has provided the basis for analyses and inferences about problem-based learning, which are presented next.

The students attend the programme on a part time basis. This means that they work as VET teachers at an upper secondary school alongside their studies in teacher education. They spent the equivalent of three weeks carrying out the practicum in a company, either during teacher vacation, or with a special arrangement as, for example, having some free days. The students were allowed to select the place for their practicum within a specific framework. The students' background varied. They had either trade certificates in building and construction or in electricity and electronics. All of them contacted the companies directly because they were acquainted with somebody in the company selected for the practicum. They all wanted to gain greater expertise, either in the breadth or in the depth of their professions.⁹

The task given by Akershus University College

One of the main focuses of the programme for Vocational teacher education is on didactic issues. Directions regarding learning activities are made quite clear for the students' practice.

This means that students' projects require a specific focus:

- on the every day work tasks in the company, and
- on highlighting of how to prepare and conduct learning activities in the vocational schools based on what they have learned in the company.

The *Practicum* placement is not a complex project. Instead, it is an extensive task that is incorporated into the study programme of AUC. Therefore, there has been little room for options. There is a general task for the *Practicum* placement that is linked to the development of the vocational teacher's competences.

⁹ All students of AUC's teacher education programme must have a practicum in the breadth and depth of the trade they teach in VET at the upper secondary school.

Contact and arrangements with the companies

In all cases the students took the initiative to contact the companies. Often, the student was well acquainted with the owner(s) or a top administrator of the companies. All agreements were oral and no contracts were signed. The interviewees from the companies indicated having had positive experiences with pupils from the upper secondary school but they had never before received students attending higher education. The implementation of the task/project was led by the students. There were no special arrangements to facilitate the practicum activities, as it is done for apprentices coming from upper secondary schools, whose practice is part of their education for obtaining a trade certificate. The companies regarded their roles as making a place available for the practicum. It was indicated by some students, and also by representatives from the companies during the interviews that they are not in favour of too much paper work. In fact, they prefer to receive trainees who were acquainted with the owner, with a head administrator, or perhaps an employee. The main reason for this is the small size of the companies.¹⁰ Among the practicum places selected by the students, most of them were classified as small size and having between 2 and 10 employees. During the practicum the students carried out specific activities, and were sometimes followed by a helpmate who was an employee of the company.

Defining the student's task and the report on findings

The guidelines for the students' tasks focus mainly on the student's learning within the study programme. The companies did not expect to benefit from the students' work and tasks performed during the practice period. The companies' role has been mainly to offer the facilities for the students' practical activities and the support of a "helpmate" or "mentor" during the practicum. The implementation of the task/project was led by the student himself based on some key topics and related to the purpose of their practicum, which was either the depth or the breadth of competence.

The tasks and activities performed in the companies varied according to the students' background and interests. In one of the cases the student, a carpenter, did the practicum in concrete work. This student was interested in learning about the latest technology and equipment used by a large construction company which receives about 80 apprentices per

¹⁰ 95 % of Norwegian companies are small size with up to 5 employees.

year from the whole country. The student observed how apprentices were trained and followed up by an instructor until the end of their apprenticeship, when they performed a specific task and were graded by 1 or 2 professionals in order to receive the trade certificate. In the report, the student emphasised the importance of a “concrete” worker to be able to cooperate with others at the construction site, as well as to perform the work in a safe and economical way. “This is important because there must be a flow of work”, he writes. He states that all these are important observations that he brings back to his teaching at the upper secondary education.

A similar opinion was expressed by two other students who said it is important for teachers at the upper secondary school to make observations inside a company and have this knowledge when teaching in the first year (VG1) or second year (VG2) of upper secondary school.

Another student described how an apprentice was followed by the mentor and the kind of documentation that had to be filled out as part of the apprenticeship period. The student expressed the importance of high-quality guidance for people in practical work regarding, especially, the solution of different problems. In addition, the student referred to the importance of in-service training for the updating of necessary knowledge and competence. Among them, the student mentioned knowledge about new rules and regulations required by law. He added that in-service training activities are organised through external courses and seminars. During the interview, the student reinforced the importance of all these aspects for him as a teacher in vocational education.

In another case, the student, who is a teacher for the occupation of painter, performed tasks of masonry in the construction of a new bathroom in an old building. This was a very extensive work. «I took part in the removal of the old floor and the whole process of casting and setting a membrane and tiles» he said. The student indicated that he had learned much about different products and application methods. Another point emphasised was that a mason focuses a lot on order and cleanliness.

He stated that all these observations are important because they bring him back to his teaching at the upper secondary education. The report gives good reasons for the need of a broad competence for teachers in the programme for Building and Construction, which recruits to 20 trades at the skilled worker level. He emphasised that one of the things he had learned, and confirmed during the practicum, was the importance of allowing the pupils to try out in an early phase of learning. He said that often, in order to spare time, a teacher/instructor might be tempted to do the work himself/herself and just tell the pupils to observe.

Another student who is a teacher in the programme for Electricity and Electronics (EE) described her experience as a skilled worker in a large company. The student has not

expressed learning goals very precisely, but she indicated her interest in learning more about fibre technology and fibre optic. The person responsible for the student during the practicum used enough time to tell and teach her about the new technology.

During the interview the student expressed that it was interesting to discuss with the mentors issues related to what is taught in the school and what the company expects the pupils to know when they become apprentices. Among other things, the student was critical about the learning taking place at the upper secondary school and claimed that the programme is four years behind what a 16 year-old will face in the work life. A reason pointed out for the gap between schools and work life was attributed to the use of outdated books in the schools.

Another student, with a trade certificate in masonry, indicated his interest in broadening his skills by doing his practicum in plumbing. In the report, the student gives "good reasons" for the need of both broad and in-depth competence for teachers of VET in upper secondary schools. He expressed his opinion about the practicum in the work life by emphasising the importance of tasks being varied, otherwise, as he puts it: "Learning outcomes are not good enough if you have to repeat a task, as for example mount a sink, day after day. This requires planning." And he continues by saying: "Better planning and coordination of the practices in the company is important. This means that objectives and learning outcomes should be clear."

The student has used a matrix to summarise his awareness about:

- what he wants to learn,
- how he can learn it,
- why he should learn it, and
- what he has learned during his practice period in the companies

He summarises in the matrix how the experience gained in the companies is linked to the local curriculum for Building and Construction programme in VG1.

Students' reflections about the practicum

The students' reports were mainly descriptive and some of the reflections had a didactical character as, for example, a link made by a student between what he had learned in the company to his job as teacher in VET. To supplement some gaps, the students were invited to interviews, during which they gave a fuller account of their experiences during the practicum, and reflected upon them in relation to their work as teachers and, likewise, as students.

During the interviews the students reinforced that the practicum in a company had given them the opportunity to reinforce the required competences and skills to be a teacher in

Building and Construction in upper secondary education. The students emphasised the importance of depth of knowledge for teaching their own subjects, and, in particular, the relevance of having a greater understanding of related subjects in building and construction. They expressed that having performed tasks in other subject areas had also increased their respect for related areas within the same branch, as for example, a greater understanding of plumbing and painting by a mason, or masonry by a painter, and so on.

Conclusions about the practicum

The practicum in a company gave the students the opportunity to reinforce the required competences to teach within the Building and Construction cluster. Thus, the relevance of the practicum in a company seems to be two-fold. First, it contributes to developing knowledge and the “right skills” within their specific area of expertise. Second, it increases the students’ knowledge and skills in the breadth of the curriculum, which is the main focus in the first year of upper secondary education.

As a general conclusion, one can state that there seems to be a consensus among the students that the practicum has strengthened their competencies in relation to their breadth of knowledge for teaching in VG1. By carrying out practical activities in related areas of the curriculum outside their own area of expertise increased their skills in the related areas within Building and Construction. The students claimed that skills are an important aspect of teaching because “pupils notice right away when a teacher is clumsy in performing a practical task in front of the group”. The teacher also feels uncomfortable in such situation and might be tempted to focus more on the theoretical part of the curriculum in order to avoid a bad performance in front of the pupils. Last but not least, two interviewees emphasised that they had gained higher respect for the work done by their colleagues in the Building and Construction cluster.

Reflections about the relationship between AUC and the companies

Concerning the role of the companies in the practicum the overall impression points toward their positive involvement in the practicum. However, due to the approach followed in the programme which leaves the responsibility for initial contacts and practicum arrangements as an oral agreement between the students and representatives from the companies, there not seems to be the possibility for future follow-up of each individual’s contacts. For some companies, this was the first time they had a student from higher education and expressed

that "The student is an adult and knows what he wants. We can very well organise this by ourselves." When asked about improvements in the practicum, the interviewee added: "Everything has worked fine. Perhaps it would have been different in a large city where one is not acquainted with "all" people. There, you could probably need a written agreement and detailed organization."

However it seems that such understanding is not shared by all. One of the companies expressed the wish of getting feedback from AUC regarding what can be done to bring the company closer to the educational activities. This comment was justified with the statement that they want to be at the forefront in the development of the subject. Although the interviewee indicated that the company had no proposal to change the student program, it could consider the idea of contributing professionally to what is relevant within the discipline of electricity/electronics.

From the interviews, one can infer that lack of formality has not been a hindrance for the students achieving their aims during their practicum. However it appears that some type of formal agreement between AUC and the companies would be welcomed. When one of the interviewees was asked whether he would accept to have a student that was a "stranger" and how he would have reacted, he responded: "A short note from the college about what it is about, one A-4 page, so I would certainly organise things better. I would plan more or less as for an apprentice."

Final comments

Results of this project on practice based learning have been followed up in two workshops carried out at AUC with students and the academic staff of AUC, plus representatives from the county council, upper secondary schools, and the work life. One of the consequences of the discussions during the workshops is the decision to develop a closer collaboration between the companies and AUC's technical and vocational teacher education programme.

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INCLUSION AND SPECIAL NEEDS

Evidence Based Teacher's Activity Teaching Students with Emotional and Behavioral Disorders: a Practical Approach "How We Educate?"

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Abstract

The paper presents an empirical study (years 2006–2007), which was carried out in order to describe the activities and the experiences of the teachers, teaching a student with emotional and behavioral disorder (EBD), to define the typology of teachers' activities and developed interactions with the student with EBD. It also describes evidence based teachers activities through participatory action research (years 2007–2008). Research took place in educational institutions and was carried out in order to obtain in-depth knowledge of the reality of the educational process of the student with EBD, of developed interactions with other participants of the educational process and to change it, encouraging positive behavior supports and changes both in the activity of the participants and the institution.

Keywords: *emotional and behavioral disorders (EBD), evidence based teachers activities, positive behavioral support.*

Evidence-based teacher's activity, grounded on the culture of scientific cognition, actualizes the practitioners' research, trying to change and improve the educational process, developing new knowledge during learning-in-action and forming evidence-based culture in educational institutions (Armstrong, Moore 2005; Biesta 2007; Coe 1999; Costello 2003; Koshy 2005; Petty 2008; Pollard 1997, 2006; Porter, Lacey 2005; Schwandt 2005; Wiltshier 2007). This includes teaching and learning in knowledge society, initiating teachers to refer to and carry out studies, cooperate in social networks and teams, solve problems encountered in educational process, analyzing, collecting data, evaluating their activities and reflection. Defining the problematics of the concept "evidence" in education studies, the scientists, representing the social constructivistic attitude (Coe 1999; Biesta 2007; Petty 2008),

emphasize its close connection with value education and moral education, when decisions are related not to what is possible (factual decision) but what is pedagogically wanted (the decision of value).

According to Porter, Lacey (2005) one of the main aspects of the activity of practitioners-researchers is that investigation is involved in everyday activity. The main practitioners' activity is to teach, to help children and youth having learning difficulties, to assess their needs and to perform many more practical works. In rare cases practitioners' are given complementary time or they are distracted from their main work when performing investigative activities, but usually they perform research during their practical activity. Although practitioners and researchers (scientists) are most often described as two separate groups of people with different prospects and different abilities and skills, the majority of the authors agree that the combination of these two groups is possible. Freeman (cit. Porter, Lacey 2005, 117) writes about a teacher-researcher explaining that it is "a story about two nouns connected with a dash" Analyzing and explaining the meaning of these nouns the author presents the most important agreement that a teacher-researcher works "in this dash". "Teacher", he explains, "is a person, and "research" is a process and relating them both together person's-process is created. Dash highlights the relations and differences between two worlds of education and research, it is acting and interest, when it is juggled with two needs complementing each other: need for education – it is the activity in a concrete context referring to what is known and what is to be achieved; research projection comprises an opposite direction when it is aimed to find out the bases and hidden preconditions of these activities. Biesta (2007), doubting about the expediency of the direct transition of research scientific technological model when analyzing and acting in the educational situations, emphasizes that in education measures and aims are related not to technological or external methods but to internal and interrelated values, the essence of education is rather a moral practice than a technological idea. According to the author the most important question for pedagogues is not about the effectiveness of their activity but about a possible pedagogical value of what they do, that is, about such desired pedagogy that would give possibilities to learn from own activity avoiding the contradiction between what they propose to do and what they really do.

Education of students with emotional and behavioral difficulties, in general education schools, based on the concept of evidence-based teacher's activity, giving a sense to the development of positive behavior supports, analyzed in this paper, is a typical pedagogical **problem**, which is specified by the essential question of the study: How does evidence-based teacher's activity change the educational process of students with emotional and behavioral difficulties?

Empirical study (2006–2007), which was carried out in order to describe the activity and the experiences of the teachers, teaching the student with emotional and behavioral disorders (EBD), and to define the typology of teachers' activities and developed interactions with the student with EBD. Research sample: teachers (N = 76), working with students with EBD in a mainstream school. To select the respondents, a (non-probability) objective sample method was employed: subject teachers (N = 41), primary school teachers (N = 15), special educators/speech therapists (N = 9), social educators (N = 8), psychologists (N = 3) were interviewed. The research interview was based on cases of 36 students experiencing emotional and behaviour problems recommended by the chosen schools. Attempt was made the sample to represent teachers working with students of various age (12 cases in primary schools, 24 – in Year 5 to 8), and various types of schools (16 cases in primary schools, 12 – in high schools, and 8 in gymnasiums). Data collection method was a qualitative semi structured interview, applying in-depth interview elements. Preliminary research instrument was compiled on the basis of the concept of evidence-based teacher's activity; essential issues were distinguished: the situation of the student with EBD and teacher's activities while planning, acting, evaluating and reflecting. During the interview it was sought to see into and listen closely to the respondents' (teachers') experiences and activities developed with the student with EBD and his/her family. Data analysis methods: classical content analysis, cluster analysis, and cross tabulation.

Research data reveal that teachers, describing and evaluating activities while teaching students with emotional and behavioral difficulties, emphasize formality of planning educational activities and prevalence of activities orientated to gather knowledge. The interaction with the student with EBD highlighted the dominance of clinical disability situations and behaviorist approach-based teachers' orientation to the alteration of the students' behavior. While analyzing the interaction with the family of the student with EBD, the teachers declare parents' minimal involvement in the educational process and the shift of problems arising in everyday reality of the educational process to the family. The interaction with the family of the student with EBD is developed, providing with information or acknowledging parents' initiatives. While analyzing their educational activity, teachers emphasize the lack of technologies for understanding and solving of problems, poor cooperation with other participants of the educational process ("your class – your problem"), the shortage of reflective environments and the expressed need to have them. The teachers' speeches also record the elements of reflective activity – reflection on action, written evaluations and internal reflections rendered to the teachers' community. Teachers' activities, teaching students with EBD, and developed interactions with the student and his/her family are divers, ranging from empowerment-orientated, developing interaction and positive behavior to eclectic, orientated to rendering of knowledge, formal and developing

social exclusion. The dominance of social exclusion category in four types of teachers' activity presupposes a conclusion that the student with emotional and behavioral difficulties often appears in segregation situations, which are initiated by the teaching teachers or their colleagues, "normal" children and their parents. During the educational process the student with EBD encounters the activities of different teachers, in which little is harmonized. It is assumed that during one school day the student, in the subject system in particular, experiences a broad range of teachers' activities and interactions, ranging from orientation to constructive interactions and positive behavior to development of social segregation, stigmatisation or even exclusion.

The method of activity research in participation has been used in order to get deeper knowledge about the education reality of a pupil having EBD, constructed relations with other participants of education process and to change it stimulating the activities of learning in action and maintaining of positive behaviour in the activity of the respondents and institution. The essential aim of activity research in participation was to encourage teachers to plan, act, assess and reflect their activities, to construct collaborating educational environments.

Research instrument was prepared on the grounds of the concept of teacher's evidence-based activity, actualizing the teacher's learning-in-action and positive behavior supports of the student with EBD. During the participatory action research, the participants of the research initiated changes in the actual educational process, seeking to improve it; therefore, participatory action researches each time took place individually. Research sample: pupils' case (N = 1), mother (N = 1), teacher (N = 1), specialists (N = 2), administration representatives (N = 2). Data collection and analysis methods: audio records of discussions, open-ended questionnaires for the teachers and their analysis, the analysis of the observations of teacher', pupil' and their parent' own activities, the analysis of reflections, diaries, the researcher's notes in the margins.

Performing activity research in participation general principles of ethics have been followed¹¹: pupil's parents' written agreement was received as well as the agreements from all the participants and school administration. With regard to the requirements of ethics for activity research¹²: the participants of the research were informed about the details of research performance and principles of ethics, the confidentiality of the data was ensured: coding of names, by the request of school – coding of school title (in fact, only one of three schools requested the coding of the title). When the participants of the research agreed, conversations and reflections were recorded with Dictaphone. When they refused, the

¹¹ BERA (2004), SERA (2005).

¹² Coghlan, Brannick (2005), McNiff, Whitehead (2006), Nolen, Putten (2007), Mills (2007).

researcher took notes. In order to avoid the inaccuracies of researcher's subjective interpretation, the results of the research were presented to school communities, discussed with the participants and presented for the respondents' critical reflection and remarks.

Stage 1 – situation analysis cycle from the viewpoints of all participants of education process comprised several meetings.

Table 1. Situation analysis from the viewpoints of all participants of education process

Data (SEC, PPS assessment conclusion, pupils' and her family's biography aspects)	Jurga during the research was studying in 2 form. Teacher already in 1 form notices that the girl does not communicate with classmates, completely does not talk during classes. Colleagues (who were teaching girls from the same family) consoled the teacher indicating that their pupils also did not communicate and speak much in the first form, but later "recovered". 2008-09-29 school SEC prognosticates emotional and behavioural disorders and modifies general education programme of the Lithuanian language. 2008-10-29 PPS assessment conclusion: communication disorder (selective mutism). In the conclusion of psychological assessment it is stated that it was not succeeded to make verbal and nonverbal contact. In speech therapist's assessment conclusion it was stated that the girl reacted to the presented variant of the response nodding ("yes) and shaking ("no") the head. Mild special educational needs and education according to general programmes were stated. Assessment in child's development centre, consultations of children's psychotherapist were recommended.	
Participants' meanings and implications	Statements – empirical indicators	Interpretation and conceptualization
Accentuation of pupil's personal abilities	<i>I know that she knows how to read, she is excellent at writing and solving mathematics tasks. [prim.];¹³</i>	Accentuation of learning abilities
	<i>She likes being on duty. [prim.];</i>	Description of favourite activities
Communication at home	<i>At home she speaks, plays. [m.]; She tells her impressions as well as other girls. [m.];</i>	Activeness
	<i>She needed to write some essay, so we had troubles with that essay. [m.];</i>	Assistance rendered
	<i>They obey their father. Father almost does not speak to her, they communicate little. Our father does not show aggression and does not shout at children. [m.];</i>	Father's authority

¹³ Explaining codes: [J.] – Jurga; [m.] – mother, [prim.] – primary class teacher, [sp.] – speech therapist, [spec.] – special pedagogue (the researcher during the activities of this case also performed the functions of special pedagogue).

	<i>At home she also sometimes does not speak, becomes stubborn, does not look into eyes. [m.];</i>	Limitation
	<i>I never give her money, she does not go to the shop alone. [m.];</i>	Limitation of new environments and activities
Inadequacy of communication at school	<i>She does not say a word, I am asking, but she as if does not know how to speak. [prim.]; This time neither "yes" nor "no" – she does not say anything. [log.];</i>	Not speaking
	<i>During the break she is always standing next to the classroom door. [prim.];</i>	Need for familiar environments
	<i>In an alien place she sits alone, does not play with children, then gradually, at the end of the evening starts to play. [m.];</i>	Tension in new environments
	<i>She does not show any initiative independently, I would say, she is even afraid to show it. [spec.];</i>	Fear of new activity
Actions of activating communication	<i>I told the class girls to be friends, but the friendship ends somehow. [prim.];</i>	Encouraging classmates to communicate
	<i>I say, when you come to school, raise your hand and speak. [m.];</i>	Encouragement to get involved in education process activities
Problematic situations from the position of person's discrepancies, disorders	<i>In a preschool class we had problems, visited the psychologist. I talked to psychologists, she said that it is normal, it will get well with age. [m.];</i>	Reference to authorities
	<i>She is stubborn and you will not get a word from her. [m];</i>	Withdrawal from outer world
	<i>She comes home angry, some fits of anger. Starts to cry when angry. [m];</i>	Little emotional stability

In situation analysis from the viewpoints of all the participants of the education process during the first meeting a rather ambiguous situation of the description of Jurga's emotional and behavioural difficulties was revealed: mother accentuates full daughter's communication with family members, teacher – complete non-communication, not speaking during the education process. Jurga does not participate in the conversation, she is sitting and looking down. Already during the first meeting **activity planning** took place, as well as foreseeing problems and objectives, search for resources **consulting with the participants of situation** (stage 2) actualizing and **initiating changes in personal activity** (stage 3). The ambiguity of the description of pupil's emotional and behavioural difficulties was felt by all the participants of the meeting, therefore, during the discussion the following activities were foreseen:

- mother will observe Jurga's behaviour and emotions during education process (1 day);
- every day mother will ask Jurga about her successes at school, emotional moods;
- once a week the pupil will visit speech therapist and special pedagogue in order to better know her and stimulate communication.

On 23 November 2007 mother participated in the lessons, observed daughter's emotions. During the lesson the teacher presented tasks activating communication and collaboration. The teacher aimed to show the expression of Jurga's communication, collaboration and involvement into education process activities during the lessons.

During the second meeting mother having observed her daughter's activities during the education process and having seen Jurga's complete dissociation and withdrawal starts to describe the manifestations of inadequate communication in new situations and sometimes poor emotional stability. Mother becomes anxious about the girl's situation at school and agrees with the idea to actively involve and participate in planning, performing, assessing joint activities and share her observations with teachers. Mother emphasized that she really will be able to devote time for participation in the meeting and more active communication with the daughter.

The teacher and school specialists (speech therapist, special pedagogue) emphasize the importance of mother as Jurga's communication partner in the process of activity research in participation, accentuates the necessity of observation in order to reveal the pupil's individual needs and the harmony of all participants of education process in satisfying them. It was agreed upon the periodicity of activities and the time of meetings was arranged. The questions of ethics were discussed about Jurga's participation in the meetings (mother will talk to Jurga whether she wants to participate in the meetings, how she feels during them), about the group participants' ethical behaviour both in their meetings and in the dissemination of information. With the agreement from the meeting participants **joint education activities constructing the maintaining of positive behaviour** were started to plan (stage 4). Specialists regret because of inability to render psychological assistance for the pupil at school and initiate the search for external resources, i.e., apply to the town's Pedagogical Psychological Service (PPS) to request psychologist's consultations. It was agreed upon the continuation of activities and new activities were foreseen:

- every day mother will ask Jurga about her successes at school, emotional moods;
- once a week the girl will visit speech therapist and special pedagogue in order to better know her and stimulate communication;
- special pedagogue will apply to the town's Pedagogical Psychological Service for a psychologist's consultation for the pupil;

- communicating with Jurga to encourage her to look into eyes, to maintain eye contact;
- to ask to answer the questions “yes” or “no”, record the answers;
- encourage Jurga to observe and record her communication.

Joint activities of the participants of education process covered 7 meetings of the team of maintaining positive behaviour (2007-12-03, 2008-01-07, 2008-02-21, 2008-02-28, 2008-03-06, 2008-05-15, 2008-05-19), in which Jurga, mother, primary class teacher, special pedagogue participated. On 16 April 2008 special pedagogue spoke to the psychologist from Pedagogical Psychological Service and discussed Jurga’s emotions and behaviour during psychological consultations, psychologist’s insights and prospects of possible activities. During every meeting the participants’ activities were reviewed, reflections were shared, changes were assessed and further activities and their aims were foreseen together.

Activity research in participation performed together with Jurga, her mother, primary class teacher and speech therapist encouraged all the participants to gather for joint activity analyzing the situation, planning, acting, assessing one’s own and others’ activities and reflecting: during group discussions, filling in observation forms and discussing the data, mother and teacher writing diaries.

In this case the discourse of the conception of the situation of a pupil having emotional and behavioural disorders emerged. The activities of activity research in participation were oriented towards discursive cognition analyzing how the participants of the situation interpret, accept and understand the reality of the situation of a pupil having SEN. Individually formed discourses of every participant of education process manifested, the analysis and perception of which helped to construct individual, group, social and cultural reality.

Mother referring to the authorities (psychologist said, that it will get well with age) does not give much significance to the daughter’s problems and hopes that they will be solved by themselves. On the one hand, mother accentuates Jurga’s full communication in home environment: she plays with sisters, children in the yard, however, expresses as if completely opposite observations: she did not speak to anyone; she said that no one wants to make friends with her; sometimes you cannot get a word out of her. During activity research in participation filling in the diary of Jurga’s activity and emotions and discussing with the other participants, mother starts to define her daughter’s verbal communication more widely, discussing mostly used words, describing communication situations: *I asked how she felt. She asked me what it meant. I gave her examples, but she only laughed...¹⁴*; and emphasized that communication with the daughter became more active: *at home in the*

¹⁴ From mother’s diary

evenings when there is no one around, now I have noticed after our conversations, she comes to me and then we talk for several hours. In the last reflections discussing her personal input and the efficiency of activities, mother states: I myself got the best use when I started observing Jurga, I saw my child in a different way. And this our discussion, our activity together was very useful. I learned to notice small details in her behaviour, emotions and talk about it.

Primary class teacher describing pupil's activity and expressing her perception of the situation states: *in the first form Jurga did not answer the questions, did not read aloud, did not communicate with classmates, but she did her tasks in writing very well. During breaks she walked alone, hunched. I thought that the girl was shy and that it would get well with time. When the situation did not change: I decided to consult the specialists working at school: special pedagogue, speech therapist and social pedagogue. We discussed and foreseen individual plan of child's education.* In the process of activity research in participation teacher observed Jurga, filled in observation reports, wrote diary and activated pupil's involvement to common activity of class pupils. Teacher initiated various activities: joint games of class pupils, encouraged the girls to be friends with each other, recorded and encouraged verbal and nonverbal pupil's activity: keeping eye contact in communication, nodding head, answering the questions with the words "yes" and "no". On 12 May 2008 teacher organized the game "What if I could not speak" for pupils so that classmates could understand the situation of a person who does not speak and share their impressions. According to the teacher after this game Jurga started to communicate more: *"during the lessons I meet Jurga's glance more often. Sometimes she smiles"*¹⁵; the pupil herself come to her classmates and observes their activity.

Reviewing the dynamics of meetings of the team of maintaining positive behaviour it is necessary to point out that during the activity every member not only planned, performed, assessed and reflected their activities, but also searched for external resources: mother activated daughter Jurga's communication with her sisters, teacher encouraged the pupil's involvement into joint activity of class pupils not only during lessons but also during breaks, special pedagogue consulted with PPS psychologist.

Stage 5 – **presentation the results** of activity research in participation **for the participants**, coordination of interpretations and insights, critical reflection.

The first presentation of the results of activity research in participation took place preparing for international scientific practical conference "Exclusion and Social Participation: Educational Psychosocial Aspects. "Difficult" Child at School – Pebble in a Shoe or...?"

¹⁵ From teacher's diary

organized by Social Education Research Centre of the Faculty of Social Welfare and Disability Studies, Šiauliai University. The second presentation of the results of activity research took place on 12 April 2008 in the meeting of Teachers' Council. Teachers described in brief the principles of activity research in participation, the performed activity and their results. The third presentation of the results of activity research took place on 12 November 2008. The data of activity research in participation and their interpretation were presented to the participants of the research in order to validate the data of the research, coordinate the positions of all participants and their subjective interpretations performed by the researcher. In the presented reflections teachers accentuate the need to initiate changes in their activity that occurred during the activity research in participation and the prospects of model application.

Conclusions and discussion

In the context of education of pupils having special educational needs cultural differences and the differences of the conception of adequate behaviour are very relevant. Both pupil and teacher may represent and often do represent different cultural consciousness, they may have formed appropriate behaviour describing their position, therefore, the right given to teachers to manage pupil's behaviour disregarding pupil's personal needs and attitudes often does not give expected results and even causes resistance. In this context the role of the family of a pupil having special educational needs becomes very important. In the author's research evident lack of parents' activeness, transferring pupil's problems to the family or employing parents as discipline warrants have been stated. Flicker, Hoffman (2006); Scheuermann, Hall (2008); Wearmouth, Glynn, Berryman (2005) accentuate employing parents as resources in solving difficulties faced by a pupil having SEN, stimulating partnership and performing joint activity; Gerulaitis (2007) – parents' involvement in the education of a disabled child in a special school and factors motivating the involvement; Ališauskienė, Miltenienė (2004) – collaboration between parents and school.

Massmedia orienting towards the tendencies of negative thinking in the society tend to develop a negative discourse towards pupils having EBD and especially emotional and behavioral disorders. Usually negative cases and events related to the education of pupils having SEN in mainstream school are announced, described and demonstrated stating the consequences of the expression of intolerable behaviour or emotions presenting information from one side. Meanwhile, positive practice and successful cases educating pupils having EBD in the educational community society are considered as normal. Problems are often concealed, because "if a teacher "manages to keep order" problems do not exist". It

presupposes another ambiguous situation when a teacher does not speak about occurred difficulties, “closed in the room” trying to individually solve occurred problems or “somehow suffer that lesson”. Involvement of the participants of the education process (pupil, his/her family, specialists and teachers) as equal partners in decision taking, planning, performing, assessing and reflecting of their activities not only constructs behavior based on self-control and responsibility and maintaining of positive behaviour, but also stimulates the processes of learning in action when everyone is learning together with the others and from each other.

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CULTURE LANGUAGE AND CITIZENSHIP

Supervision and Professional Development in In-Service Teacher Training Regarding Sexuality Education

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Abstract

This research describes the contributions for teachers' professional development of two different in-service teacher training modalities, a Workshop and a Training Course, involving, respectively, eight (n=128) and seven (n=130) different classes, whose principal aim was to prepare teachers to carry out action-oriented sexuality education projects in their schools. The content analysis of materials produced during the in-service teacher training, complemented with a semi-structured individual interview, and observation, associated with a focus-group interview were selected as research techniques for the triangulation of data. Principal results showed some differences in teachers' professional development who attended these different training modalities. A larger number of teachers who attended the Workshop than those involved in the Training Course, developed reflexive actions which led to positive changes in their methodological approaches of sexuality education and increased more student participation. This article concludes by discussing the influence of these results with regards to the selection of the modality of in-service teacher training when personal and professional development is intended.

Keywords: *supervision, professional development, sexuality education, in-service teacher training*

Introduction

Professional development and supervision in in-service teacher training

Professional and social demands related to the educational system faced daily by teachers, the complexity of school and classroom environments, especially the interactions with

students, parents, other teachers and school boards and the different forms of professional development and teacher identity, lead teachers to choose different practices in their classrooms and different modalities of in-service teacher training.

Sachs (2009) argues that Continuing Professional Development (CPD) to ensure the goals of both improving student learning and support a strong and autonomous teaching profession, needs to incorporate four existing approaches: 're-instrumentation', 'remodelling', 'revitalization' and 're-imagination'. The 'CPD as re-instrumentation' places emphasis on the technical approach of the trainer and the trainee teacher, where relevance and the immediate application of the trainee's knowledge is the main objective and can empirically generate and validate the relationship between teacher efficacy and student learning. In the same traditional approach focused on knowledge transfer, the 'CPD as remodelling' enhances a practical approach to teaching, but is more concerned about changing existing practices, and more focused on increasing content and pedagogical knowledge.

In Sachs' view (2009) the 'CPD as revitalization' is active, challenging, and involves students in the learning activity. It focuses mainly on teachers' learning in a transformative vision, particularly in their professional renovation, through opportunities to review their practices and, in so doing, to become reflexive practitioners. Finally, Sachs (2009) defends 'CPD as re-imagination', whose main objective is to transform the intentions and practices of teachers and equip them, either individually or collectively, to act as trainers, promoters and knowledgeable critics of reforms.

This latter modality of transformative and emancipatory CPD, limited to teachers' pedagogical practices, presupposes supervision as a theory and practice of regulation of the processes of teaching and learning where supervisors, teachers and students are partners in the learning and in the transformation of conditions to attain quality education (Vieira 2006, 2009). According to Vieira (2006), the theory and practice behind this model of supervision are based on the interaction of the personal, public and shared contexts of theoretical and practical knowledge; in the personal and social construction of theoretical and practical knowledge; in the transformative and emancipatory orientation of school training and pedagogy; and in the values of a democratic society: freedom and social responsibility.

In Portugal, although a variety of supervision models co-exist in practice, there are some that deserve greater attention due to their historic contribution and others by relying on the current social-constructivist perspectives that privilege the formative and reflective roles of supervision (Alarcão 2003; Alarcão and Tavares 2007, Moreira 2006; Sá-Chaves 2002, Vieira 2006).

Within this framework, the discussion of the role of reflection in teacher learning becomes imperative. According to Korthagen (2004, 2009, 2010) and Kelchtermans (2009), teachers' reflections should include the moral, emotional and political dimensions of teaching (broad

reflection) as well as the beliefs, self-representation of teachers and teaching in general (deep reflection). Reflection helps teachers to be aware of their professional and personal aspects from an integrated perspective (Korthagen and Vasalos 2005). Korthagen (2004) also argues that for a long time, attention was given to rational and conscious resources of behaviour, leaving aside the human dimension of education. In this sense, Korthagen (2009) highlights the importance of teachers being aware of their identity as teachers, their personal mission and their relationship regarding their professional behaviour. To this end, Korthagen (2004, 2009) proposes the 'onion model' that includes six levels or layers of reflection: 1) environment, for example, a particular class or student; 2) pedagogical behaviour; 3) competencies; 4) underlying beliefs; 5) identity, which means, relationships in the way we see our own professional or personnel identity; and 6) our mission as teachers (level of spirituality) and transpersonal levels which refer to the inspiration of teachers, their ideals and their moral purposes. The author argues that an in-dept reflection (from the 4th level) implies that the 'teacher transposes' the comfort zone, which is familiar and safe, and takes risks in the sense of true professional development (Korthagen 2009).

In this remarkable evolution of the focus of training and professional teacher development, teacher supervision "extended to the ambit of in-service teacher training in the workplace [...] and gained collaborative, self-reflexive and self-formative dimensions, while teachers began gaining confidence in the relevance of their professional knowledge and ability to make their voices heard as researchers of their own practices and builders of specific knowledge inherent in their social function" (Alarcão and Tavares 2008, 15). In this context, supervision can take a more formal style for being vertical (supervisor - teacher), an informal style for being collaborative, also called peer or horizontal, and an intrapersonal style when self-supervision (self-monitoring) occurs (Alarcão and Tavares 2008).

In-service teacher training and sexuality education in portugal

Today in Portugal, the training for kindergarten teachers and teachers of the 1st (1st to 4th grades), 2nd (5th to 6th grades) and 3rd (7th to 9th grades) cycles of basic education and secondary education (10th to 12th grades) includes pre-service, specialized and in-service training (Decreto-Lei n° 15/2007, 19 de Janeiro). According to the Scientific and Pedagogical Council of In-Service Teacher Training, training modalities are divided into two groups: training focused on content (courses, modules and seminars) and on school contexts and professional practices (study circles, workshops training, projects and internships).

In-service teacher training in sexuality education emerges in the above described context. According to Law (Lei n.º 60/2009), each group of schools has a teacher-coordinator and an interdisciplinary team of teachers involved in health and sexuality education. In addition,

each class has a teacher responsible for health and sexuality education whose function, together with the class director and all class teachers is to develop at the beginning of the school year, the class sexuality education project, which should contain the content and themes which will be later approached, the initiatives and visits to be made, and the invited authorities, technicians and specialists outside the school. This class project should be compulsorily included in the educational project of the groups of schools, respecting the guidelines established by their General Council after hearing from student and parents' associations and teachers. The number of hours devoted to sexuality education should be tailored to each level of education and each class should not be less than six hours for the 1st and 2nd cycles of basic education, and twelve hours for the 3rd cycle of basic education and secondary education. Later (Portaria nº 196-A/2010), the Portuguese Government stated that the teacher coordinator for health and sexuality education and the teacher responsible for health and sexuality education class, and also class teachers who integrate interdisciplinary teams to carry out this project, will have the guarantee of the Ministry of Education that the necessary in-service teacher training in this area will be available in order to empower teachers to carry out their roles as educators in sexuality. In summary, the regulation of in-service teacher training in sexuality education in Portugal is very recent, however, given the current legal framework for sexuality education in the school community, teachers urgently need in-service teacher training in this area.

In this context, the contributions for teachers' professional development of two different in-service teacher training action modalities, whose principal aim was to prepare teachers to carry out action-oriented sexuality education projects in their schools, will be presented.

Method

Participants

Two hundred and fifty eight teachers from the 5th to the 12th grades, of fifteen schools of the North of Portugal, were involved in this in-service teacher training on sexuality education. This team was predominantly constituted by women (85,9% and 86,2% respectively from the Workshop and Training Course) with the majority of participants between 30 and 44 years old.

While in the Training Course (n=130, distributed in seven different classes), the majority of teachers were from the Natural Sciences subject area (77,7%), in the Workshop (n=128, distributed in eight different classes) there existed a great diversity of subject areas: Natural Sciences (27,2%); Portuguese, English and French (18,8%), History (11,7%); Physical

Education (10,9%); Geography (9,4%); Maths (5,5%); Arts and Crafts (5,5%); Physics and Chemistry (3,1%); Morals (3,1%); Musical Education (1,6%); Philosophy (0,8%); and Information and Communication Technology (ICT) (0,8%).

In both modalities, the majority of teachers taught in the 3rd cycle (7th – 9th grades) (53,1% and 31,5% respectively from the Workshop and Training Course), in secondary level (10th – 12th grades) (34,4% and 13,1%), and simultaneously in basic and secondary level (7th – 12th grades) (3,9 % and 30,8% respectively).

Teachers' professional experience in both Workshop and Training Course were similar, principally having a number of years of teaching respectively corresponding between: 6-10 years (34,4% and 25,4%); 11-15 years (30,5% and 18,5%) and 16-20 years (15,6% and 16,2%).

Procedure

Characterization of the in-service teacher training methodology

This research involved two different modalities of in-service teacher training based on participatory and action oriented sexuality education: a Workshop and a Training Course.

The methodology that characterized the Workshop aimed to: delineate or strengthen procedures for action and to produce materials for action, defined by the set of participants as the most appropriate response to the improvement of their educational interventions; ensure the functionality (utility) of the products obtained in the workshop for the transformation of practices; reflect on the practices developed; and build new procedural or technical means. This Workshop lasted for 50 hours, divided into 25 hours for teachers attending classes where active strategies were carried out to train teachers more scientifically in the methodological areas and in specific themes based on sexuality, intermingled with 25 hours of classroom teaching to create conditions for teachers in collaboration with students to plan and create the necessary infrastructures at their school for an alternative educational approach to enhance action-oriented sexuality education (see Vilaça, 2008a, 2008b, Vilaça and Jensen 2010).

The Training Course had as its global function, that teachers acquire knowledge, skills and competence and develop self-training and educational innovation, addressing predominantly the following objectives: updating and enhancing knowledge, both theoretical and practical; acquiring and developing skills and tools of analysis and questioning of the experiences of teachers in training; and improving professional skills. The content covered by the Training Course was directed to 'know' and 'know-how', also with the principal aim to prepare teachers to carry out a sexuality action-oriented project in their schools. Moreover, activities of analysis on the process were carried out, constituting a regulatory mechanism, which was

itself a process of training and 'reflexive practice'. In this research, the Training Course lasted for 25 hours and was organized in classroom sessions divided into weekly sessions of four hours.

The principal differences that occurred during the implementation of these two in-service teacher training modalities, were the absence of development of activities/ didactic material and the opportunity to validate them in the context of schools in the Training Course, and a trainer as a critical friend during the implementation of the beginning of school projects, who was only present in the Workshop and not in the Training Course.

Measures

The documental analysis of materials produced by teachers during in-service teacher training, complemented with a semi-structured individual interview, and participatory observation associated with a focus-group interview, were selected as the specific research techniques for the triangulation of data.

At the beginning of the in-service teacher training, the plan regarding the last sexuality education project carried out by the teacher in his/her school setting was analysed. A semi-structured interview, previously validated, was applied individually in order to clarify some graphic omissions. This interview was specially adapted to each teacher because the intention was to put forward questions in function of the written plan. This clarification included questions of the following type: 1) What are your expectations for this course/ workshop? (What new knowledge, attitudes and skills do you consider you will acquire in this training?); 2) Were these issues/problems, established in your plan, carried out in the subject that you taught or in other school activities?; 3) Who decided what issues/problems would be developed by students?; 4) Who decided what activities would be developed by students?; 5) What kind of activities were carried out? 6) Did you establish partnerships with experts or organizations outside the school to collaborate in the project? If yes, what was their contribution?

At the end of the in-service teacher training, a sexuality action-oriented project to be put in action in teachers' schools was planned. The analysis of this plan was also complemented with the above mentioned individual interview, conducted approximately three months after the project started in schools, where the first question was substituted by another similar question: "What new knowledge, attitudes and skills do you consider you acquired in this Workshop/ Course?"

In order to complement evidences collected during participant observation, three focus group interviews in each class (N= 42), involving five-six teachers, were carried out at the end of the training. This technique is the only one which allows for group interaction and increases

Regarding their aims for in-service teacher training:

Deepen their knowledge about sexuality and SE	94	73,4	126	98,4	115	88,5	129	99,2
Being familiar with good practices of SE	120	93,8	128	100,0	125	96,2	127	97,7
Constructing and validating activities of SE	51	39,8	79	61,7	14	10,8	0	0
Being able to decide which methodologies are appropriate to the psychosexual development of students during the project	23	18,0	97	75,8	54	41,5	82	63,1
Learning how to elaborate SE projects	98	76,6	100	78,1	96	73,8	103	79,2
Knowing techniques to evaluate SE projects	35	27,3	37	28,9	39	30,0	42	32,3
Establishing partnerships for the implementation of SE in their schools	29	22,7	126	98,4	12	9,2	103	76,2
Collaborating on research projects with the university	10	7,8	75	58,6	15	11,5	15	11,5
Obtaining credits for career progression	36	28,1	15	11,7	42	32,3	42	32,3

Regarding their personal characteristics:

Feeling more motivated to carry out SE	75	58,6	126	98,4	5	3,8	90	69,2
Increasing their self-confidence to implement SE	0	0	112	87,5	17	13,1	103	79,2
Better understanding what their role is in SE in their schools	14	10,9	39	30,5	9	6,9	25	19,2
Increasing their knowledge in order to have a more reasoned and critical opinion of SE	23	18,0	126	98,4	19	14,6	99	76,2
Being able to collaborate with others to improve SE in their schools	0	0	97	75,8	2	1,5	82	63,1
Increasing their assertiveness to fight for changes they feel necessary in SE	0	0	79	61,7	0	0	30	23,1

When the Workshop and Training Course had finished, three months after the project started in schools, the majority of teachers maintained the above referred to wishes and considered that they had successfully been able to attain them from the training process. However, the majority of teachers also considered that they attained other very important objectives for their continuing professional development namely: establishing partnerships for the implementation of SE in their schools (98,4% and 76,2% respectively from the Workshop and Training Course); being able to decide which methodologies are appropriate to psychosexual development of students during the project (75,8% and 63,1% respectively); feeling more motivated to carry out SE (98,4% and 69,2% respectively); increasing their self-confidence to implement SE (87,5% and 79,2% respectively); increasing their knowledge in order to have a more reasoned and critical opinion regarding SE (98,4% and 76,2% respectively); being able to collaborate with others to improve SE in their schools (75,8% and 63,1% respectively) and increasing their assertiveness to fight for changes they feel necessary in SE (61,7% and

23,1% respectively).

These results indicated that in both modalities (although more visible in teachers from the Workshop), the majority of teachers who were initially only concerned in increasing their pedagogical and content knowledge guided in their practices by an ethical that orientated all of their professional development for their activities in the classroom, at the end of these training they had as their fundamental concern the desire to seek in-service teacher training to improve their own practices changing them by way of engaging in 'reflection-on-action', which means, to empower them to decide on what are the appropriate methodologies applicable to the psychosexual development of students during the project. Moreover, while at the beginning of these training the majority of teachers were exclusively concerned in attaining objectives related to their practices, at the end they were more focussed on the development of their personal characteristics, such as feeling more motivated, increasing self-confidence and having a more reasoned and critical opinion.

It is also important to emphasise that simultaneously, although more visible in teachers from the Workshop, teachers increased their awareness of the importance to act individually and collectively on the structural factors in school and society which affect a desirable development of SE. Indeed, in both types of training (although more visible in teachers from the Workshop), there had been a shift in the perspectives of how teachers viewed their continuing professional development. Initially, they were more focused on improving instruction and management of student learning however, at the end of the training, they had also been able to focus on teacher learning as well as the need to critically reflect and act in order to bring about changes in school and in society.

It was found that these teachers changed their visions from a more professional and instrumental development to a transforming vision, and mainly focused on teacher learning (Sachs 2009), where the role of reflection on teacher learning had become crucial and included the emotional and political dimensions of teaching, as well as the representations that teachers had of themselves and of their teaching profiles (Korthagen and Vasalos 2005).

Evidence of teachers' personal and professional changes

There was some evidence observed during the in-service teacher training and in the final SE projects of teachers, that teachers from both training modalities (although more visible in teachers from the Workshop), changed their practices and some of their attitudes and beliefs in SE. The principal characteristics of their practices were in the structuring and guidelines of the school's SE project (table 2).

ideas.	3	2,3	126	98,4	5	3,8	90	69,2
The strategies for project evaluation were defined at the beginning of the project	5	3,9	128	100	35	26,9	130	100

When teachers arrived at these Workshops and Training Courses, they stated that in all projects of health education and SE from their schools, they described the themes (93,8% and 97,7% respectively) and/or problems that would be developed with students (10,2% and 23,1% respectively), the objectives, content and how to implement the SE project in the class, namely the selected active activities proposed. Some projects also described action-oriented activities (9,4% and 19,2% respectively from the Workshop and Training Course) and some study visits to be conducted (58,6% and 22,3% respectively).

More than half of these teachers explained that in sexuality education projects, it was the Class Director or the Class Council who decided on the specific themes of the SE class project (68,0% and 19,2% respectively from the Workshop and Training Course), while the strategies and activities of the project were almost all previously decided on by adults (61,7% and 60,8% respectively) and experts were called to the school to present lectures or workshops (78,9% and 74,6% respectively).

At the end of the in-service teacher training, when teachers planned their projects for the future, the S-IVAC (selection of a problem, investigation, vision, action and change) methodology was applied. Projects continued with themes (75,8% and 73,1% respectively from the Workshop and Training Course) and/or problems (100,0% and 100% respectively), objectives, content and how to implement the SE project in the class. However, the active activities proposed in the initial projects were replaced in all new projects by action-oriented activities which were started with the definition of their ethical guidelines. Moreover, there occurred a decrease in the number of projects which planned some study visits to be conducted (11,7% and 14,6% respectively from the Workshop and Training Course), increased the number in which the students, together with the Class Director, decided on the specific theme/ problems of the SE class project (43,8% and 56,2% respectively), increased the activities suggested by students, who decided on which were the most appropriate within their action-oriented project (100% and 53,8% respectively) and increased the number of schools which called in experts to participate as the final speakers, with the aim of synthesising and completing students' ideas in roundtables or workshops organized by students who presented their own communications (98,4% and 69,2% respectively from the Workshop and Training Course). Moreover, all these new projects were planned by students who asked for the collaboration of various subjects for their development and included at the beginning of the planning of the projects, strategies for their global evaluation.

Throughout in-service teacher training, many changes in beliefs and attitudes of teachers in

relationship to sexuality, sexuality education and the continuing professional development of teachers were observed. Below is an extract of an interview of a female teacher in a focus group interview from the Workshop, illustrating the above referred to changes and which indicates the pattern of changes which occurred in the majority of teachers from the Workshop:

My state of mind at the beginning of the training was completely open, but I was somewhat shy. My shyness was not only related to the subject, but also with the fact that I did not know to what extent the material would be 'within' the sexual themes. I wanted to increase my knowledge and to create activities that were actually appealing and effective for the development of the knowledge and skills of students and for their clarification of values in the area of sexuality. I also wanted to experience an exchange of ideas with other teachers on the most problematic issues and to be able to answer my doubts relating to matters of sexuality and its suitability for the different age groups. (...) I think I achieved all the above. Now, I am actively making changes to the school conditions in order to help students to acquire democratic values, respect for others, freedom and solidarity. I feel I 'grew up' scientifically and as a person. (...)

[During the training I felt] captivated and motivated to acquire knowledge and skills in the area of sexuality and for their consolidation throughout the activities practiced. While compiling and actively exploring the proposed activities, they made me feel at ease in addressing these various issues at school, but also helped me to better understand what was missing in my teaching and how I could improve it. (...) I reinforced what I had already thought about the ability that teachers have when they work together to promote changes in the school. (...) I know that I am able to improve SE in my school, and I feel that it is also my professional duty as a teacher.

This teacher had a transformative vision (Sachs 2009) of continuing professional development. She emphasized her desire to work collaboratively with other teachers from her school to act on structural factors that influence the teaching of SE in order to individually and collectively, contribute to promote positive changes in the school community. She also reflected on her own mission as a teacher and said that it is a teacher's obligation to improve SE in school.

Conclusions and implications

The principal results demonstrated some differences in the dimensions of personal and professional development acquired by teachers who attended these different in-service training modalities. Although the majority of teachers who attended the in-service teacher training changed their focus from an instrumental view of the continuing professional development to a transformative vision, this shift was most visible in teachers who attended the Workshop. In the Workshop, a larger number of teachers than those attending the Training Course increased the level of student participation in the school project and demonstrated their concern about being able to decide on which methodologies were appropriate to the psychosexual development of students during the project, which means increasing their self-reflection to provoke positive changes in their methodological approaches of sexuality education. Therefore, the results of this research have some implications in the selection of the modality of in-service teacher training when personal and professional development is intended. According to these research data, and respecting the reservation imposed by the fact that the teachers of each training modality do not have the same pre-service training, the Workshop as a modality for in-service teacher training, allows for a greater collaboration among teachers and the trainer, and for a longer follow-up time that seem favours their personal and professional development.

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The Conceptions and Practices of the Islamic and Christian Community in Bolgatanga in Ghana in Relation to Sexual Health Education

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Abstract

Ghana is a West African developing country with more than 23 million inhabitants, of which four out of five have to live on less than 2 dollars a day. The consequences of unsafe and unwanted sexual actions are a huge problem in Ghana. The country has more than 260.000 people infected with the STD HIV (2007). An estimated 200.000 children have lost one or both parents due to AIDS. The Bolgatanga district lies in the Upper East Region, one of the poorest regions in Ghana. At least, three-quarter of the inhabitants have no access to clean drinking water and good sanitation. Moreover most people have to deal with health problems among which are diarrhea, malaria, TB and std's. In the Bolgatanga district, it is identified that many girls have become pregnant (unwanted), and because of that are not going to school (anymore). They can be repudiated from the community or have abortions illegally with mutilation or death as a consequence. Moreover, forced marriages and sexual initiations like circumcisions take place. All these social and health problems contribute to a low quality of life for youth in Ghana.

This research is part of a four-year project to generate recommendations and examples of effective education on sexual health for youth. Two bachelor students of INHolland University investigated the conceptions and practices of Muslims and Christians in the Bolgatanga district in Ghana. The students lived for two months with a Muslim and a Christian Ghanaian host family. The team used open interviews and observations with a broad target group: boys, girls, parents, social workers, religious leaders and teachers. Based on the results, recommendations have been made for sexual health education.

Keywords: health education, sexuality, Ghana, HIV/Aids, youth

Introduction

Worldwide people encounter negative consequences of unsafe and (unwanted) sexual actions, like sexual transmitted diseases (std's), unwanted pregnancies and traumatisation. Sexual education turned out to be an important method to prevent these problems.

Education about sexuality and relationships exist out of delegation of knowledge, formation of opinion and teaching skills in relation to physical, emotional and social development, relationships, sexuality and health (Dutch Expert Centre on Sexuality 2009). To start effective interventions on those areas, research is needed on conceptions and practices of the target group, and the factors which influence their sexual behaviour (Stephenson 2009; Glover, et al. 2003; Singh, et al. 2000). In this way different types of interventions can fit on the most relevant factors of influence.

In Ghana youth encounters several negative consequences of unsafe and (unwanted) sexual actions like std's, HIV/aids, unwanted pregnancies and death and mutilation caused by abortion. The Youth Harvest Foundation Ghana (YHFG) in the town Bolgatanga is an NGO¹⁶ that promotes the sexual and reproductive health and rights of adolescents and wants to make a positive contribution to their healthy development into adulthood.

In cooperation with the YHFG INHolland University started in November 2009 a research project on the conceptions and practices of youth about sexuality in Bolgatanga in the north of Ghana. The aim of this four-year during project is to advice the YHFG on sexual education and on educational means that fit the conceptions and practices of their youth.

The research question in this paper is: Which conceptions and practices do Christians and Muslims have in the Bolgatanga district in relation to sexuality and sexual health education? In April 2010 two students wrote their bachelor thesis on this question. They used open interviews and observations with people from the Muslim and Christian community in the Bolgatanga district in Ghana. Based on these data a first inventory of their results is made.

In paragraph 2 the theoretical background and the health situation in Ghana is described. Paragraph 3 describes the research method. The conclusions and recommendations are described in paragraph 4.

¹⁶ Non governmental organization: created by natural or legal persons with no participation or representation of any government. In the cases in which NGOs are funded totally or partially by governments, the NGO maintains its non-governmental status and excludes government representatives from membership in the organization. Website: www.yhfg.org

Theoretical Background

Ghana is a West African developing country with more than 23 million inhabitants, of which four out of five have to live on less than 2 dollars a day. The consequences of unsafe and unwanted sexual actions are a huge problem in Ghana. The country has more than 260.000 people infected with the sexual transmitted disease (STD) HIV (UNAIDS 2008). An estimated 200.000 children have lost one or both parents due to AIDS (Millennium goal atlas NCDO 2009).



Figure 1: Map of Ghana, Bolgatanga in the north east

The Upper East Region (UER) is lying in the far north east of Ghana bordered to the countries Burkina Faso and Togo. It's one of the poorest regions in Ghana and has 920.000 inhabitants, of which 50 percent is younger than 15 years old. In the region only 16 percent of the people live in the city. In the UER almost half of the people (largely 46 percent) have the traditional religion, largely 28 percent is Christian and almost 23 percent is Muslim¹⁷.

Bolgatanga is the capital region of the UER and has 70.000 inhabitants; most of them belong to the ethnic group 'Frafra'¹⁸ (Ghana Statistical Service 2002; Lewis 2009). The UER is one of the regions where it is identified that many girls become pregnant (unwanted), because of that they are not going to school (anymore). They can be repudiated from the community or

¹⁷ A small part has another or no religion. Exact data in relation to the Bolgatanga district is not available.

¹⁸ The ethnic group Frafra consists out of four other dialects. In Ghana 820.000 people in total belong to this group, 656.0000 people live in the UER (Lewis, 2009). Exact data in relation to the Bolgatanga district is not available.

have abortion illegally with mutilation or death as consequences. Moreover forced marriages and sexual initiations like circumcisions take place (Youth Harvest Foundation Ghana 2008; Mensch, et al. 1999). These social and health problems contribute to a low quality of life of people in Ghana, and at the cost of the social-economic development of the country. The appeal that is being done on the health care supplies as a consequence of the mentioned problems is very large.

In more ways this area is interesting for research. The UER is mainly a rural area and lags behind with regard to development comparing with the urban areas in Ghana. At least three-quarter of the inhabitants of the region hasn't got access to clean drinking water and good sanitation. Moreover most people have to deal with health problems (among which diarrhea, malaria, tb and std's) and poverty problems (Ghanaweb 2009a; UNICEF 2002; Agyei-Mensah 2005; Owusu 2002). The area is not an attractive place to work for doctors, the people who work there, are often over worked (Ghanaweb 2009bc).

In this region there haven't been done hardly any research on conceptions of youth about sexuality, on their sexual behaviour or the factors that influence sexual behaviour. Moreover the organization Youth Harvest Foundation Ghana, which focuses on sexual education for youth in the Bolgatanga district, explained their need for more insight in the knowledge, attitude and behaviour of youth in relation to sexuality (YHFG 2008). This knowledge will lead to advices for effective interventions. It is supposed that youth have a lack of knowledge and skills in relation to sexual transmitted diseases and reproductive health (Worlanyo Aheto and Prosper Gbesemete 2005; YHFG 2008).

Research Method

Research question

Which conceptions and practices do Christians and Muslims have in the Bolgatanga district in relation to sexuality and sexual health education?

Target group

Youth, teachers, social workers, parents and religious leaders from the Christian and Islamic community.

Method

The qualitative research methods open interview and observation are used. These are appropriate methods when there is less knowledge about a specific topic of research (Baarda, De Goede, Teunissen 2001). The research team consisted out of two student-researchers Social Work and Pedagogic. In total 14 interviews have been held. A general topic list is made.

Respondents:		Topic list:
Key informants	Number	
Boys between 12 and 22 years old	4	<ul style="list-style-type: none"> - Cultural conceptions in relation to relationships and sexual behaviour - Cultural practices in relation to relationships and sexual behaviour - Religious conceptions in relation to sexual behaviour - Religious practices in relation to relationships and sexual behaviour - Sexual behaviour of youth - Relationships of youth - Unwanted pregnancies and (illegal) abortion - Safe sex and std's - Influence (extended) family in relations to relationships and sexual behaviour of youth - Sexual Education to youth
Girls between 12 and 22 years old	3	
Teachers	2	
Parents	2	
Social Worker	1	
Religious leader	1	
Health worker	1	
Total	14	

Figure 2 and 3

The research team wanted to get a broad idea of the conceptions and practices of the target group. To adapt the Ghanaian culture and the Frafra culture in Bolgatanga in particular, the student-researchers stayed with a host family. One host family was Muslim and the other one had Christian and Muslim members.

The interviews were held individually and recorded on audio equipment. The respondents were found by the network of the host families, the YHFG and the student-researchers. The interviews were transcribed literally. The interviews were divided into several categories. The categories were analyzed to write the results.

The student-researchers made a report of their observations, and analyzed their report by the categories made from the analysis of the interviews. Complementary categories were made if necessary.

Results

In this paragraph the results of the bachelor thesis's of the student-researchers are described. Paragraph 4.1 describes the Christian community, paragraph 4.2 describes the Islamic community.

The Christian Community in Bolgatanga

The results are divided into five categories: institution, social network, value structures, sexuality and miscellaneous.

Institution

In the Christian community in Bolgatanga the age for marriage is around 25 or 30 years old. Marriage is not only a commitment between two people but also between two families. The families interfere with choosing the right family to get involved with and also interfere if there are problems in the marriage. It is not possible to just get a divorce because there has been paid a bridal fee, and the bride is owned by her husband.

A large group of the youth attends boarding schools where they live on campus. They don't talk much with each other about problems they are facing. It seems like they rather like to keep things to themselves. There is also a big group of young people who can't afford to get education. Their parents can't provide for them, so they live on the street and try to make some money to survive. Some girls perform sexual activities for a little bit of food or money. Poverty is one of the challenges that is a big influence on the behaviour of youth and on the sexual and reproductive health. The youth who lives on the streets are more vulnerable to risks because they have never had sexual education and because they are desperate to make some money.

Social network

The relationships the youth have are most of the time short term. The Christian girls who are interviewed don't get involved in boyfriend-girlfriend relationships because they want to focus on education and church. The interviewed boys do have experience with girls. Most of the time the parents are not aware if their children are in relationships. The youth doesn't want to listen to their parents. There is a lack of respect and they feel they know better than their parents. They want to be modern and parents try to hold on to old traditions. The parents don't know how to control their children anymore. The youth doesn't share problems with parents often. They keep things to themselves because they are scared to be judged or because they feel the parents don't have the ability to help.

Value structures

The majority of the interviewed Christian youth doesn't talk about love. The adults believe the youth doesn't know what love is yet. Only one respondent has been in love with a girl for many years already. He claims to be the only one in his group of friends to have these kinds of feelings for a girl. His friends just want to have fun.

"Then she asked me whether I'm still in love with somebody else. And I told her no. I'm in love with her. I'm not in love with any other person. I can't go for any other person apart from her." (Boy, 21 years)

Cheating is something that happens frequently in relationships in Bolgatanga. Especially the men cheat on their wives. If a married woman cheats, she makes the ancestors angry and they can harm her family. It seems it's more accepted for men to cheat. Only if a woman is married she is off limits. Otherwise they will still try to seduce her.

Appearance is a big influence on how people experience sexuality and lust. If a girl dresses in a way where she exposes a lot of her body there is a big chance she will awaken sexual feelings from men that look at her. Some people think if those girls get in trouble it is their own fault. Some respondents had the attitude in life of being powerless when it comes to having any influence on their life's. They feel only God can do that. This attitude makes that they might stay in a position they don't like because they don't make an effort to change it.

"So you should dress, this ones, your skirt is very short. And something falls and you have to pick. The whole of your thighs will be seeing. And if a guy sees that, though he no love you, but he will be tempted to do what? Have sex. He will have that thing in mind to have sex with you." (Girl, 20 years).

Sexuality

A part of the Christian youth respondents claims not to involve themselves with sex. They want to wait till marriage. They do say that it (sex) happens a lot in Bolga. Some give the reason that before you get married you also have to see if there is a connection on a sexual level. To prevent problems after you have gotten married. One of the places where they get a chance to have sex is on the big funeral parties in the dry season. These are occasions where there is not a lot of control from parents and one of the few chances girls get to get out of the house at night.

A lot of schools and churches don't spend a lot of time on giving sexual and reproductive health classes because talking about these topics is a taboo. They advise the youth just not to get involved with sex before marriage but that's about the extent of it.

A big group of the youth doesn't use protection when they have sex. Some don't think about it and some feel shy to buy condoms. The social control is quite big and someone might see them buy it and tell the parents. If a girl carries condoms she gets a bad name because she probably has sex with a lot of boys.

Some girls already get pregnant at the age of 14 years. If the boy doesn't take responsibility, the girls have to do it alone or with help from her parents. In most cases they believe the boys when they deny it. If the girl doesn't want the child she doesn't always go to a clinic to get an abortion. There are illegal doctors that perform abortion or they take a concoction of medicines or alcohol mixed with ground glass to cause an abortion. All these methods are very dangerous and a lot of girls die because of it.

People that get infected with an STD or HIV often are ignorant to it. Some don't know about the ways you can get infected or they just don't think about it. One of the respondents is a community nurse. She works at a clinic where they provide free HIV testing. More girls than boys go to the clinic to get tested.

Sexual abuse does happen but it's something that is kept in the family most of the time because it is a disgrace to the families. The community nurse tries to make girls aware of their right to get an abortion if they get pregnant because of rape and that they have the right to report it if they have been abused.

"Yeah, yeah we do it before marriage... We believe in it. Actually because I think, I know it's important before marriage because you have to know your partner sexually." (Boy, 22 years)

Miscellaneous

A part of the community sees that not talking about sex has negative effects on the development of the youth. The social worker experiences that if you have an open attitude towards the youth they will be open about their problems.

Because of globalization the youth gets in touch with other cultures. They see the luxury in the western video clips and they desire these things as well. In Ghanaian video clips and in the way of dressing in clubs you see that they copy what they see in those clips. Most of the times they even exaggerate it.

From the youth that has been interviewed the girls have a more positive vision for their future than the boys. The future of Ghana is seen as one that is changing and improving but it will take time to work on big challenges like poverty and sexual and reproductive health issues.

The Islamic Community in Bolgatanga

The results are divided into three categories: social network, sexuality and reproductive health and social aspects.

Social network

The age for marriage according to the Islamic community is when a girl reaches puberty. It becomes clear from the results that the Islamic youth is around 25 years old when they get married. According to the respondents they can choose the partner they like, but the family and the parents have to agree with the marriage. Also forced marriages still happen, but this is changing. Before marriage the family investigates the background of the girls' family for example on hereditary diseases. When a woman marries the man gets ownership on her. Furthermore it is expected from the woman that she takes care of the household in the family house of the man, and works for an example on the market. For the Islamic wife it is important to have children to increase her status in the community.

The Islamic community doesn't embrace a marriage between an Islamic person and a person from a different religion. Therefore one of them has to change his or her religion. In certain cases when an unmarried girl becomes pregnant, she should get married with the boy who made her pregnant.

When a girl is still in school, she is not allowed to have friendships with boys. If the community sees a girl talking to a boy she will get a bad name. Parents are afraid when young girls and boys interact, because they think they will not concentrate on their education. The results show that parents are afraid that their children will lose their focus on their education and get pregnant. It is not common for parents to communicate openly about relationships and sexuality with their children. This arises from taboos on these subjects and deep-rooted traditions. The Islamic youth goes to friends for information and most of the time this information is not correct.

The finding suggests that the knowledge of Islamic youth and parents is limited or incorrect regarding sexuality and sexual- and relational education. The result is that young people have unsafe sexual contacts. Not only limited knowledge is the cause of this behaviour, but also poverty plays a role. Relationships are not made from love. Girls often have sex with older men in exchange for money or material things. This increases the risk of being infected with an STD or HIV.

“We have people like fourteen years who are getting pregnant most of them are going in for abortion. Most of the abortion are done illegally”. (Social Worker)

Sexuality and Reproductive Health

Every young person in the Bolgatanga district, regardless of religion, culture, education or gender are entitled to good education about sexuality and relationships. Although most young people sometimes have access to various information sources such as internet and friends, the knowledge of these young people about sexual development, contraception and sexual risk is limited or incorrect. Knowledge is important, but not the only condition for good sexual health and wellbeing for young people. Knowledge on these subjects is important to promote healthy sexual health and prevention of sexual health risks including HIV/STIs, unwanted pregnancies and unsafe abortions.

The interviews and observations show that boys and girls are discouraged by the Islamic community to have sex before marriage. Some respondents indicate that informing young people about topics related to sexuality will cause that young people turn into sex. Handing out condoms is countered by the religious leaders and the education service. The observations and interviews indicate that there is a taboo to use condoms, especially when a girl is proposing. This results in a number of Islamic youth who get infected with HIV/AIDS, STD's and unwanted pregnancies.

Young girls who get unwanted pregnancy before marriage have a difficult life in Bolgatanga. Firstly, according to a number of respondents a girl has to drop out of school. Secondly, they are a disgrace to the family and they will be send away. Finally they may go in for an abortion at the hospital or with an unqualified doctor. The unqualified doctor often uses unsafe methods, which can result into mutilation or death.

“I was telling them to teach our children about how to use a condom. Some of them say no, we are spoiling the children rather. If we do that we are telling the children to go out and have sex. So no parent will talk about sex.” (Community nurse)

“Ok so we all tell them to abstain so you don't get pregnant or you don't get STD's”. (Religious leader, Islamic community)

Social Aspects

The Upper East Region in Ghana and especially the Bolgatanga District is one of the poorest parts of Ghana. According to the respondents some of the Islamic youth doesn't go to school and there are only a few jobs available. This ensures that the youth is in a vicious circle of poverty. According to respondents, the impact of poverty on young people is enormously.

They leave Bolgatanga and go to the south of Ghana looking for work. Often poorly paid jobs, or the girls go into prostitution. According to a number of respondents, the conduct of the girls is also affected by poverty in sexual matters. The observations show that girls watch video clips, porn, series and get a one-sided view about the western world. Girls seem to want to pursue this lifestyle.

Conclusion and recommendations

The findings of the bachelor thesis's on the conceptions and practices of Christians and Muslims in the Bolgatanga district in relation to sexuality and sexual health education are described in this paragraph.

The results suggest that the knowledge of Islamic and Christian youth and parents is limited or incorrect regarding sexuality and sexual and relational education. The result is that most of the young people have unsafe sexual contacts. Not only limited knowledge is the cause of this behaviour, but also poverty plays a role. Relationships are not based on love. Girls often have sex with older men in exchange for money or material things. This increases the risk of being infected with an STD, AIDS or unwanted pregnancies.

The youth is in a vicious circle of poverty. They have limited access to education, and poverty is causing school drop-outs. The drop outs have hardly or never had sexual education, so they are more vulnerable for risks regarding their sexual and reproductive health.

The youth has low self-esteem and they don't think they can change their situation. Which also results in passive attitude to improve their situation.

A lot of schools, churches and mosques don't spend a lot of time teaching reproductive health classes, because talking about these topics is a taboo. They advice the youth not to get involved in sex before marriage and encourage abstinence. They don't give the youth the right information for them to make healthy decisions when it comes to their sexual activities.

A part of the community - especially the people who work in the social welfare sector – noticed that not talking about sexuality has negative effects on the behaviour of the youth. They experience that the youth will talk openly about their problems, if you approach them without being judgmental.

Parents don't communicate openly with their children regarding subjects like sexuality and relationships. They feel uncomfortable talking about these subjects because it is a taboo. Parent's don't know how to control their children. The youth has access to a lot of information sources like internet and television. They want to be more modern because they see how people live in the western world and the parents hold on to old traditions which create a gap

between the youth and the parents. This results in youth who doesn't listen to their parents anymore.

Recommendations

Based on the results the student-researchers advice to involve the parents more in education about sexuality and relationships. The Youth Harvest Foundation Ghana (YHFG) in the Bolgatanga district provides reproductive health education on schools. After the education the youth could present what they have learnt to their parents. Then the parents know more about sexuality and relationships, they know what their children learn in school and it creates an opportunity for parents and youth to talk about these topics.

The YHFG makes use of European volunteers who give reproductive health classes in schools. Some of the volunteers have a study background related to social studies, some of them don't. To professionalize the education and to make the education more effective all the volunteers should attend a course in advance. This course should be about (1) the youth and the sexual behavior of youth in Bolgatanga (knowledge), (2) the approach of youth when you want to discuss sensitive or taboo subjects (attitude) and (3) educating youth on such topics (skills). People who could be involved in this course: community nurse, social worker, youth, formal volunteers and experts on youth and sexuality. It could also be possible to organize this course for volunteers in Europe in cooperation with the partner organization of the YHFG: JugendPartnerschaft Ghana in Germany. For example researchers in this project about youth and sexuality in Bolgatanga could contribute to the course.

Teachers in social studies and moral education have to give lessons about for example puberty, reproductive health, risk behaviour. According to the respondents the teachers don't tell them enough about it. The respondents prefer the lessons of the YHFG. The YHFG could cooperate with the teachers to (1) exchange experiences and facts about the behaviour of youth, (2) exchange on skills to feel more comfortable as an educator to talk about sexuality and reproductive health and (3) sharing and exchange of educational means like role-plays and (memory) games. Next to that schools could organize meetings for parents, to get parents more involved with the development of their children. Most parents deny the sexual active behaviour of the youth, and because of this denial they think sex education is not necessary and will only promote having sex and will harm the youth. Nevertheless the facts are there, the youth is (unsafe) sexual active and they experience the negative consequences of it.

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Professional Development of Physical Education Teachers as Health Educators in Ukraine

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Abstract

The article is dedicated to the problem of health education for physical education (PE) teachers. Because of the university education joining European educational community, the problem of high-quality education of teachers turns from a process to the result of studies and the update of principles of maintenance and methods of studies formation as a result. Within the framework of reformation of the system of physical education, priority in physical education teacher activity is to form students skills of healthy way of life as a result of their conscious and responsible attitude toward their own health. As a result, the professional competence of PE teachers has to be developed.

Keywords: *health, health education, teachers of physical education, Ukraine*

Introduction

Traditional values of Ukrainian people are the nation's health, its spiritual and physical perfection that is based on self-fulfillment and healthy youth. The duty of each country, Ukraine's in particular, is defined by the UN Convention on the Rights of the Child, the Universal Declaration of survival, protection and development of children, and that is education of the younger generation, formation of educated, creative personality, establishing its physical and psychological health.

Nowadays the promotion of healthy life on scientific and practical levels is practically not perceived by youth. We can talk about a particular vacuum that fill important targets (Yaremenko 2005).

In connection with the gradual entry of Ukraine into the global educational community there is a question of reforming the national education system throughout its modernization. There are sustained discussions in scientific circles about the ways to implement such modernization and its rooting in the general education system with the greatest benefit and the minimum of imbalance. The only thing that raises no doubt is this feasible changes. These changes are time defined, because it is impractical to educate young people of future with education of the past. As regards this, O. Vishnevskyy (2008) said, that education was designed to meet the social order, which means that it depends on the dynamics and direction of society. The necessity of improvement the system of health educators' education is certain by a number of regulatory and legal acts of Ukraine regarding education in general and physical education in particular of the last years. However, analysis of these acts has shown that in our country there are pre-conditions for realization of actions, devoted to the maintenance of health of children and young people, however, despite legislative norms, there is worsening of situation due to growing number of negative phenomena which take place in youth environment that directly have bad influence on their health.

Moreover, having carried out the analysis of literary sources on the subject of the research we have found out a number of contradictions which pushed on an idea about the change of priorities in the development of physical education system in particular. These contradictions are the following:

- the presence of scientific-theoretical acquisitions, practical experience, enthusiastic physical education teachers and absence of positive result in «physical education – child's health» context (Singaevskiy, S. 2002, Vlasyuk, G. 2002, Demchishin, A. 2007, Kovcun, V. 2007, Turanskiy, A. 2008 and others);
- the objective requirements of society in specialists skilled to carry out health-related activity and by the low level of base health education as a meaningful component of professional education (Minenyuk, A. 2007, Polulyakh, A. 2007);
- need in skilled, professional teachers, enthusiastic about health education, and unachieved teachers of physical culture, which have a practical experience of healthy way of life formation (Babych, V. 2006, Zhara, G. 2007, Ivanova, L. 2007).

Expedience of bringing physical education teachers in health education can be explained by means of physical culture - on the essence it is a powerful mean of forming, maintenance and strengthening of child health in itself. The main idea for PE teacher's in-process with students is to form the objective necessity for every student in physical education (including the healthy way of life), prophylaxis of diseases, traumatism, abilities and skills of the personal hygiene and physical preparation. Moreover in physical education health strengthening, assistance appropriate physical development of schoolboys and forming of their value orientations on the healthy way of life is determined as a basic task.

For this reason, the involvement of PE teachers to health education does not cause doubts. But there are doubts about their skilled education for introducing this discipline. Because as V. Babych (2006, 213-217) marks, purposeful training of physical education teachers to the basics of students' valueological knowledge, abilities and skills, is not stipulated in the curricula of high education. Exactly these descriptions determine the level of today's high-quality formation. Moreover, health education is based on new for Ukraine concept of vital skills formation, and any physical education teacher needs elucidation of this concept and necessity in its introduction.

In subsequent researches we plan to study possibilities for physical education teachers to get acquainted with the method of life skills that will help them promote their own competence in realization of health education in school.

Challenges that concern the youth require being fully educated, highly professional and competent, possessing life skills. However, the youth should prove its willingness to survive in today's dynamism of social processes. Conform to social order, which depends on the dynamics and direction of social development, aims and education that is gradually included into the European educational community and is under respective reformation. Reformation concerns physical education as well, it determines the principle of health-oriented education of personality developed physically, physiologically homeostatic, adapted socially, mentally balanced, harmonized with nature, which has a clear conscious positive motivation and spiritual foundation. In the reform of physical education a priority direction in the work of modern physical education teacher is formation of healthy lifestyle habits for youth, because of their growing conscious responsibility for their own health, which requires the development of teacher's professional competence as well. According V. Vodopjanov (1986, 87) healthy living is a "special social value, which is the basis of activity as a measure of personality, social essence of quality, which shows a high degree of individual "inclusion" in public attitude".

Research Methods

Theoretical Analysis of Literature

The issue of pupils' health, healthy lifestyles and health foundations series are presented in the works of Yeres'ko, O. 2005, Vasylenko, S. 2006, Gushchyny, N. 2006, Manyuk, O. 2006, Polishchuk, N. 2007), Boychenko, T. 2008, Vasylyashko, I. 2008 and others. The problem of lack of health education and healthy lifestyles is studied in works of Shyyan, O. 2005, Pashchenko, V. 2006, Kuznetsov, V. 2006, Medynskyy, S. 2008 and others. The question of teachers' training of health education is explored in works of Chernysheva, Y. 2004,

Strashko, S. 2006, Babanich, V. 2008, Voynarovskyy, A. 2008, Omelyanenko, V. 2007, Ponomarenko, V. 2008, Vorontsova, T. 2008 and Adyeyeva, O. 2009. The issues of healthy lifestyle means for physical education students are presented in the research works of Vashchenko, O. 2003, Horashchuk, V. 2005, Androshchuk, N. 2006, Kyryl'chenko, S. 2007, Ivanova, L. 2007, Minenyuk, A. 2007, Polulyakh, A. 2007 and others.

Sociological Methods: Survey, Questioning

Questioning was conducted among students of different faculties in Lviv State University of Physical Education (LSUPE) to determine their attitude toward training students in the basics of health and healthy lifestyles and self-assessment exercise on valeological education as well as among physical education teachers to determine their attitude toward teaching students the basics of health and healthy lifestyles, as well as establishing best practices and ways of such teaching. Generally 111 students of LSUPE and 20 physical education teachers in Lviv region participated in the survey.

Results of Research

The need to improve training for implementation of health technologies in school practice has been identified in a number of regulatory and legal acts of Ukraine on education and physical education in recent years. Review of the regulatory framework of Ukraine shows that the state created the pre-conditions for implementation of measures dedicated to preserve the health of children and youth, but, in spite of legislative regulations, the growth of the negative phenomena is observed that directly affect the deterioration of young people health. Almost in all documents it is stated that professional focus of modern physical education teachers should be on formation of healthy lifestyle habits and responsibility for their own health among students. The order of Ministry of Education and Science of Ukraine № 524 from 12.06.08 is about health promotion, development of health-educated person, improving educational and health-system rehabilitation work in the personality-oriented student education, their implementation in team practice, creating new programs, a technology for building health lessons, testing methods for relaxation, sports and health work, creating a database of innovative technologies on a positive motivation for healthy lifestyle, the introduction of training seminars for teachers from different directions. Researches of Sinhayevskyy, S., Vlasjuk, D. (2002) etc. emphasize the fact that quite a contradictory situation has evolved in Ukrainian schools today, which suggests a change of priorities in the development of students physical education. The problem is that in spite of the scientific and

theoretical achievements, practical experience and significant number of trained physical education teachers positive results in the context of "physical education - student health" are missing.

According to O. Mykytyuk (2009) the main causes of this situation are: (1) the lack of generally accepted understanding of school health in PE teachers competence as a complex phenomenon that has great potential for improving the quality of pupils health; (2) the lack of substantial methodological and technological aspects of the health competence of school teacher of physical education; (3) the problem with the development of healthy lifestyle habits in the school environment.

Solution to the problem, according to several researchers (Vorontsova, T., Ponomarenko, V., 2008), can be in revitalization of professional and pedagogical activity of physical education teachers with emphasis on the new paradigm and psychologically sensible educational technology where life skills methods take special place.

The expediency of bringing physical education teachers on health-orientated discipline in the first place can be explained by that physical culture which in its essence is a powerful mean of forming, maintaining and strengthening the child's health. The main purpose of physical education teacher is objectively necessary for each student development of every student required level of physical education (including healthy lifestyles), prevention of diseases, injuries, skills and personal hygiene and physical training. Additionally the physical education health promotion , proper physical development of schoolchildren and formation of their positive evaluation of healthy ways of life are defined as the main tasks.

Besides, J. Timoshenko (2007) emphasizes the need to fill the mandatory content component of higher physical education with knowledge of social and philosophy sciences and associated practical skills and abilities. Some specialists also note that the important point in training of teachers of physical education is their maximum versatility. Training of new types of literacy (wider - culture) should ensure a high professional mobility, so it is possible to quickly respond to pressing social needs. The implementation of health education is due on the one hand, by the essential problem in Ukraine individual and public health, the other - necessity of training to perception principles of a healthy lifestyle (Romanova N., 2007).

Analysis of the literature showed the need to improved training of PE teachers for health education. To that end, we questioned among future and current PE teachers. The survey showed that all PE teachers have expressed willingness to join the teaching of disciplines with valeological orientation, explaining it by the direct relation of physical education and health of the child and emphasizing the need of special professional training for teachers. Feasibility of PE teachers' involvement in health education raises no doubt unlike the question of their skilled preparation for implementation of this education. With this aim we

tried to determine their level of competence in the issue of healthy life of children and youth. Students (future physical education teachers) were asked to make self-assessment (in percent) of competence in health education:

10__20__30__40__50__60__70__80__90__100 %

Analysis of this question has shown that the level of self-assessment of competence in health education is relatively high (70-80%), but level of their real knowledge is much lower. That is evident from the results of the survey module. The topics suggested that cause the need in additional training or deepening of knowledge are the following:

- A) The life and health;
- B) Safety of daily life;
- C) Physical development of children;
- D) Prevention of dangerous diseases;
- E) Psychological well-being of children;
- F) Your answer.

The greatest need of deepening has the theme of physical and psychological development of children.

In further research we plan to explore the possibility of mastering methodology of life skills by teachers of physical education that in turn will allow them to increase their own competence in implementing health education to pupils.

Conclusions:

- as a result of analysis the regulatory and legal acts as well as other literary sources, we determined the existing contradiction between objective needs of society for specialists that can professionally implement recreation activities on one hand, and low basic paradigm of education as a significant component of training on the other;
- analysis of questionnaires showed the excessive levels of self-assessment of competence in health education and the need to deepen knowledge in the sphere of physical and mental development of children;
- an essential element of high quality health education is recognized to be essential in school training based on life skills, which in turn is a synthesis of the most successful teaching experience and achievements of psychological science. Mastering the methods of life skills by teachers of physical education will enable them to increase their own competence in the implementation of professional and pedagogical activities and contribute to the quality of teaching health-related subjects.

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***Reference is translated from Cyrillic.**

GLOBAL EDUCATION

International Collaboration and Web 2.0 Technologies: A Leverage for Learning Motivation

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Abstract

Learning motivation has been one of the major concerns in the field of education. It is believed that Web 2.0 technologies have a positive impact on students' learning motivation (Blees and Rittberger 2009). With increasing international connectedness, the integration of these technologies and international collaboration extends the potential of computer-supported collaborative learning (CSCL). This paper attempts to explore how an international collaboration programme (ICP) with the use of Web 2.0 technologies is organized to facilitate learning motivation of a group of twenty Grade 8 students in Hong Kong, who collaborated in the project with twenty students in Barcelona. Data collection methods include focus group interviews and a questionnaire known as Collaborative Inquiry-based Project Questionnaire that measures students' learning motivation. Findings, discussion and implications are also presented in the paper (Chow and Law 2005).

Keywords: *learning motivation, web 2.0, computer supported collaborative learning (CSCL)*

Introduction

Learning motivation has been one of the major concerns in the field of education. It is believed that Web 2.0 technologies have a positive impact on students' learning motivation [1]. With increasing international connectedness, the integration of these technologies and international collaboration extends the potential of computer-supported collaborative learning (CSCL). This paper attempts to explore how an international collaboration programme (ICP) with the use of Web 2.0 technologies, including *Wiki, Knowledge Forum, Slide, Google Documents, Issuu, Glogster* and some others, is organized to facilitate learning motivation of a group of 20 Grade 8 students in Hong Kong, who collaborated in the project with the students in Barcelona. Data collection methods include focus group interviews and a questionnaire called *Collaborative Inquiry-based Project Questionnaire* (Chow and Law

2005) that measures students' learning motivation. Findings, discussion and implications are also presented in the paper.

Literature review

Learning Motivation and Web 2.0 Technologies in CSCL Environment

Motivation refers to the inner psychological process that provides direction and vigor for a behaviour (Reeve 1996). The self-determination theory focuses on how to support human natural tendencies to learn. It suggests that all humans are motivated when their three basic needs, namely relatedness, competence and autonomy, are fulfilled. Web 2.0 technologies, with their popularity over the past few years, provided a lot of opportunities for learning and re-shaped the educational goal (O'Reilly 2005). Concerning relatedness, Web 2.0 technologies provide an opportunity of the establishment of community of learning (Chan and Chan 2008; Ogunleye 2008). It is because students can provide academic and social support to each other. Through virtual interaction, they provide and receive feedback from others until a consensus and advancement of understanding is achieved. The community of learning, under the CSCL environment allowing for open dialogues and participation, is facilitated by the exchange of different perspectives throughout the process of collaborative knowledge building. This collective learning mode hence reinforces the sense of belonging (Chan 2009). Learning motivation can be raised through enhancing students' competence by using Web 2.0 technologies (Ingles Jr. 2008). Students' critical thinking, communication, study, writing and ICT skills can be enhanced through the progress of fruitful cybernetic interaction. As the integration of Web 2.0 technologies in pedagogical design can accommodate different learning styles, students' learning confidence can be developed.

Web 2.0 technologies foster autonomy of student learning (Chan 2009 ; Lee, 2008). Students can get access to learning anytime and anywhere. Learning is no longer restricted by the physical place and time. In this on-line learning environment, the students can learn at their own pace and they are allowed to create their own learning content. Therefore, their self-learning capacity can be enhanced. In sum, a lot of studies show that Web 2.0 applications can motivate students by creating a creative, self-regulatory, challenging and stimulating learning environment (Barlow 2008; Chang 2005, Keller 2008; Wang and Reeves 2006).

Learning motivation and international collaboration via web 2.0 technologies

Another great opportunity of Web 2.0 environment is global classroom. With practical case studies (Boss. and Krauss 2007; Wan and Lam 2009), students are motivated in the

cybernetic environment in which they are actively interacting and collaborating with students across the national border. New ideas emerge from the combination of opinions inside and outside the communities. This creative conversation acts as a stimulus to learning (Leadbeater 2008). It is because the orchestration of different perspectives due to variation of culture, background and social environment can enrich discussion and sharing.

Moreover, apart from on-line discussion, Web 2.0 technologies allow students' face-to-face interaction across countries, such as video conferencing. This uncommon mode of learning arouses their interest and curiosity to understand their partners in terms of their background, opinions and contextual issues (Peters 2009).

Background of the study

The international collaboration programme was named as "*World Healer*" as conducted from November 2008 to April 2009 as a pull-out extended learning programme of Liberal Studies at Grade 8 in a secondary school. A set of learning objectives were in this project, including: (1) students were able to acquire the concepts of ecological footprint; (2) students were able to develop ICT competencies and 4Cs (creativity, communication, collaboration and critical thinking skills); (3) the students were able to develop the sense of global citizenship through inquiring the global issues and exchanging ideas with international students; and (4) it was expected to facilitate students' learning motivation.

As selected by the school in accordance with their low learning motivation across subjects, the 20 participants (two withdrew from the programme in mid-way due to time conflict with another remedial class) participated in the programme. The author was the major instructor who was a principal of another school. The programme was conducted once a week for 90 minutes. This programme was also synchronized at two schools in Hong Kong and Barcelona as it was an international collaboration project, whereas English was used as a second language and all the learning activities were conducted in the same way. The programme was a part of the formal curriculum in Barcelona while it was a pull-out programme in Hong Kong. A number of Web 2.0 technologies were integrated in the pedagogical design.

At the initial stage, for the purpose of the facilitation of international collaboration, the students sent souvenirs to their overseas partners in November 2008. Later then, the Barcelona Corner and Hong Kong Corner were set up in the Hong Kong and Barcelona schools respectively. A Wiki (<http://worldhealer.wikispaces.com>) was set up for collaborative planning, sharing progress and keeping hyperlinks of student assignments. The Wiki comprised the course outline, theme song, school introduction, lesson materials, lesson

plans, all students' works as well as the episodes and reflection of the two video conferences.

At the second stage, there was the inquiry of ecological footprint. Each student completed his or her own one-day life documentation in late November 2008. By using *Slide* (<http://www.slide.com>), they presented their own life routines and share them at the *Wiki*. The students were then formed into groups of four to investigate their ecological footprint by using an online survey known as "Zerofootprint KidsCalculator" (http://www.zerofootprintkids.com/kids_home.aspx). As a result of different life-styles between the countries and amongst the group, diversified findings were obtained and summarized in the *Wiki*. A video conference was conducted on 13 January 2009. With using *Skype*, the students first introduced their schools and cities, explained their ecological footprint findings and then examined indigenous environmental issues.

At the third stage, from February to March 2009, knowledge building in a CSCL environment was facilitated. Reviewing their personal life documentation and previous ecological footprint surveys, the students should develop a sustainable life-style collaboratively. All Barcelona and Hong Kong students constructed their knowledge in a common database on the *Knowledge Forum* (hereby KF). KF was an on-line collaborative knowledge building platform developed by The University of Toronto and supported by The University of Hong Kong in this project. Arising from a wide range of topics, including transportation, housing, consumption and diet, the students discussed them in detail and then they were also asked to finish a weekly reflection in *Google Documents* (i.e. *Google Form*). It helped strengthen good practices and their strengths in the previous week as well as helped them plan the week ahead.

The fourth stage was the consolidation stage. The students reviewed all the notes on the KF and designed their ideal sustainable life-style in April 2009. They presented their individual project with the use of either an interactive poster (<http://www.glogster.com>) or an e-book (<http://issuu.com>). The posting of the works also welcomed comments from the instructors and their peer. A video conference was conducted on 28 April 2009. Using VIA, a video-conferencing software, the students shared the local current environmental issues and explained their own sustainable life-style. Four outstanding students were chosen and sponsored to participate in a study tour to Barcelona from 26 June to 6 July 2009 so as to extend the cultural exchange experiences.

Research Methodology

Research Question

The research question of this study is *To what extent is students' learning motivation enhanced in the international collaboration programme (ICP) with the use of Web 2.0 technologies?*, aiming at exploring students' learning motivation is facilitated in the ICP, that is, *World Healer*, that applies the use of Web 2.0 technologies, including *Wiki, Knowledge Forum, Slide, Google Documents, Issuu, Glogster*, etc.

Research Methods

To answer the above research question, mixed methods were employed to discover the impact of the ICP, *World Healer*, on students' learning motivation, with the use of Web 2.0 technologies. Focus group interviews and a survey called *Collaborative Inquiry-based Project Questionnaire* (CIPQ) (Chow and Law 2005) were conducted at the end of *World Healer* programme.

In qualitative aspect, focus group interviews were organized with the participant students in *World Healer* programme. Two student focus groups of a total of randomly selected 8 students (44.44% of the total number of participating students) were invited for one-hour semi-structured interviews. With the use of semi-structured interview guidelines, the interviews focused on their learning experiences and perception of *World Healer*.

In quantitative aspect, an instrument called *Collaborative Inquiry-based Project Questionnaire* (Chow and Law 2005) was used to investigate the impact of the changes from the learning of well-defined content to open-ended inquiry and from individual learning to group-based learning on learning motivation. The participants in the survey were the 20 participant students attending *World Healer* as they were considered as low-motivated students by the school. Two of them withdrew in the middle of the course unfortunately due to time conflict with another remedial class. In early May 2009, they were asked to complete the *Collaborative Inquiry-based Project Questionnaire* (CIPQ) (Chow and Law 2005) to collect the data about their self-efficacy of learning, purpose of learning, and perceptions of class work and group project work. The participants were asked to rate the items in a 7-point scale, from 1 (not confident at all) to 7 (very confident). CIPQ is of high reliability and validity. The reliability of using CIPQ in this study was 0.88.

Data analysis was carried out with the following procedures. All focus group interviews were transcribed by the researcher and verified by another experienced researcher. Each interviewee was renamed as a number. Qualitative analysis was conducted through coding

the raw data. During the process, the interviews were colour-coded and grouped into themes and issues that were numbered and generated. Each code was supported by typical and representative quotes. Moreover, statistical data from the questionnaire were processed with the use of SPSS package.

Findings

The following seven common themes were emerged from the quantitative and qualitative data. They include: (1) community of learning; (2) deep learning; (3) flexibility and autonomy; (4) learning confidence; (5) student engagement; (6) writing and critical thinking; and (7) enhancement of ICT skills. They are presented as follows:

Community of learning

Community of learning was formed in the process of the *World Healer* programme. It allowed the students to use different angles to see things. In the survey, the students had a high rating of the item *"I can analyze both sides of the argument."* (Mean=6, SD=0.94) and the item *"I am open-minded when our classmates opposed my viewpoints."* (Mean=6, 0.84). In the focus group interviews, the students also had this similar view. For example, one student said, *"Different places have different special features, for example, in Spain, they have a bicycle station so that the people can use the bicycle as transport means to go to school or workplace. They have different information and cultures"* (Student A, Focus group interview 1, 20 May 2009). Collaboration was enhanced as the students could learn from different perspectives. *"We can know more different opinions from other people's perspectives... more people are involved, more crowded, more opinions from different perspectives"* (Student F, Focus group interview 2, 20 May 2009).

The participating students expressed that they could have cultural exchange and learn more about the topic. For example, a student said, *"We can know more about their cultures and how they protect the environment"* (Student A, Focus group interview 1, 20 May 2009). Moreover, the students could build up a knowledge network. For example, one student said, *"Application of KF is also a good learning tool. Using KF can let us use special ways such as brainstorming, concept mapping, to re-think about what we have learnt and show them there, and then other people in different places can enrich them together. This network can be formed into a great knowledge network"* (Student B, Focus group interview 1, 20 May 2009). Another student also fed back that, *"Through many different activities, we learnt a lot of knowledge about environmental protection. For example, in discussion, when we search*

information about environmental protection over the world, we discovered how other countries adopt environmental protection” (Student G, Focus group interview 2, 20 May 2009).

Apart from collaboration, a sense of belonging could be built up in the community. *“I feel that KF activity can enhance our sense of belonging because we have to write our views and there are many people, including your members, those participating in the activities, going to discuss the feasibility of the activities... I can gain sense of satisfaction as my idea is valuable. ...the people agree with your views” (Student B, Focus group interview 1, 20 May 2009).*

During the process of learning, as perceived by the students, their communication skills were enhanced. In the survey, the items *“I am open-minded when our classmates opposed my viewpoints.” (Mean=6, SD=0.84), “I can clearly express my opinion.” (Mean=5.5, SD=0.85), “I can skillfully point out others’ mistakes without creating negative feelings.” (Mean=5, SD=0.90) and “I can handle frustrating and annoying situations in learning.” (Mean=5, SD=0.96).* One student said, *“I learn how to be patient and accept others’ opinions. Everyone has one valuable idea. We all have to collect ideas together so that we can have a deeper answer that is risen up” (Student D, Focus group interview 1, 20 May 2009).*

Deep learning

The students showed their understanding of learning. In the survey, many students expressed *“I can understand the subject content.” (Mean=5.5, SD=1.17) and “I can reflect on my learning and master my learning direction.” (Mean=5.0, SD=1.00).* Moreover, there was a high rating of the items *“I can search useful information from various sources.” and “I can learn on a new topic on my own”.* During the interviews, they expressed that they could take a deep approach to their learning. One student said, *“I learnt how to deeply research a problem. Because KF discussion can help us to focus on searching more information on the topic as set by others” (Student E, Focus group interview 2, 20 May 2009).* Another student elaborated, *“I learnt more about environmental friendliness, in the KF, we had deeper and deeper discussion, sharing about our cultures and how to protect the environment with our partners, Barcelona students, so we had deeper understanding. Sometimes critiques, for example, taking the lift, we can think more deeply. The lift is running all the day, so we can know about ‘cold’ knowledge” (Student G, Focus group interview 2, 20 May 2009).*

Flexibility and autonomy

Students could have more autonomy in the learning process. One student expressed, *“Sometimes we can self-study, or search information, finding answers on our own, etc. It’s hard to find this mode of learning. And it allows great flexibility and autonomy to us. So we can experience learning with fun.”* (Student C, Focus group interview 1, 20 May 2009). His view was echoed by another student, stating that: *“Teacher just gives few suggestions. Most of the knowledge is created by you. You will memorize more as it’s you who found it out yourself. If your finding goes to a wrong way, then you cannot learn about the topic. And what you find or research on may be more extreme. Then overall development may be varied”* (Student D, Focus group interview 1, 20 May 2009). With the deployment of Web 2.0 applications, flexibility of learning was facilitated because students were allowed to extend their learning whenever and wherever they get access to the Internet.

learning confidence

The programme helped cater for different learning styles of students. Students can express their understanding in multi-media formats, ranging from text-based discussion forum and e-book production, on-line surveys, slide show, interactive poster to oral presentation at video conferences. Students could get more confidence in their learning and they found their learning process was fun. One student expressed, *“I discovered that learning can happen with fun. Because in the whole process of the programme, it’s like a curriculum that teaches us to discover new things. That means, from the beginning to the end, you won’t feel bored and you can learn”* (Student G, Focus group interview 2, 20 May 2009). Another student also responded in a similar way, stating that: *“Normally we just sit there and listen. The teacher talks. Perhaps we absorb a lot of knowledge within one time. We have to listen and at the same time we have to digest. This learning ...now Knowledge Forum is a learning mode that allows us to choose how much information we want to receive. If you are interested or concerned in certain topics, you may find more information about that topic and be more concentrated. The amount of information is in line with our abilities”* (Student C, Focus group interview 1, 20 May 2009).

Student engagement

Students were highly engaged in the process of the programme. When being asked about the most impressive learning experience in the programme, one student said, *“For me, video conferencing is more impressive. The first time we did that to exchange ideas in our two countries. We can know their learning or their learning progress. We can deepen our*

knowledge and experience." (Student A, Focus group interview 1, 20 May 2009). Another student also had a very similar view about his impressive learning experience, stating that, *"Video conference allows us to exchange ideas with Barcelona students. We can learn from each other and raise our learning ability."* (Student B, Focus group interview 1, 20 May 2009).

Writing and critical thinking

Students' critical thinking skills were developed through the writing process in the programme, that is, writing notes on the *Knowledge Forum (KF)* and self-reflection on *Google Documents*. One student reflected, *"Normally we held a meeting to express one's opinions in group discussion. Your team member may agree or not, so there will be more opinions. That means, reflecting on the others' notes, we can know what's wrong and what's right. Now we express ourselves on the KF. Because the product of KF notes comes from the process of writing on KF that involves our thinking, analysis, etc. So I think I can learn something. Sometimes when doing it at home, perhaps we can have more personal thinking. Team members have different views and they put their views onto the KF. KF also let us exchange views with Barcelona students. It is a dual way of communication to exchange views...reflection ...in KF, after posing a problem, you have to judge and give responses and it involves critical thinking..."* (Student F, Focus group interview 2, 20 May 2009).

Enhancement of ICT skills

With the use of Web 2.0 technologies, students' ICT skills were enhanced. One of the students said, *"We also learn about how to use free programmes to make a beautiful product, e.g. SlideShow, Glogster, Issuu, etc."* (Student A, Focus group interview 1, 20 May 2009). Another student also said, *"Through KF and other online resources, we can discover that there are a lot of free resources on the Internet that can replace those hard resources so we can save the environment by reducing the use of these resources."* (Student B, Focus group interview 1, 20 May 2009).

Apart from that, some students could build up their confidence in using ICT. For example, one student said, *"SlideShow... Sometimes I was worried about whether I could do it. Later, after the completion and seeing that it was good, when I see something interesting from the SlideShow after the lessons....because I have no experience in doing it."* (Student G, Focus group interview 2, 20 May 2009). Another student also discovered something that he did not know before. He said, *"The most impressive thing in the programme is the video conference. Formerly I heard about this tool. But I did not try it into use. After using it, I discovered that it's*

really amazing. We can see the people who are just facing you and talking to you!" (Student C, Focus group interview 1, 20 May 2009).

Summary

World Healer, a CSCL environment integrating international collaboration and Web 2.0 technologies, seemingly helps facilitate students' motivation due to the development of relatedness, autonomy of learning and enhancement of competence.

First, interaction and connectedness were facilitated and a community of learning was established. Collaboration was not only encouraged amongst individuals, but also the class connected with another overseas class. Students across the border had a common learning goal and inquiry schedule. With frequent sharing of works in wikis, interaction through on-line discussion and video conferences, the constructive momentum of inquiry was kept due to the stimulus emerged from both parties. The stimulus mainly originated from the deep on-line discussion and idea diversity due to different social and cultural contexts. This reinforced the positive learning atmosphere and sense of belonging within the community.

Second, flexibility and autonomy of learning were allowed, which increased the students' learning motivation. Throughout the learning journey, students were the centre of learning while the teachers acted as facilitators. The students could learn at their own pace because they could adjust their plan according to the weekly reflection. The students could also freely choose the content and format of various project works. These arrangements could therefore cater different learning styles and needs amongst the students. Besides, since a lot of learning activities were facilitated on-line, the students could participate in learning wherever and whenever they got access to the Internet. This breakthrough of time and place provided the learners with flexibility and autonomy of learning. The students could hence even learn beyond "classroom-bound comfort zone" (Alm 2006).

Third, enhancement of learning confidence due to development of learning competence motivated the students. Critical thinking skills were developed through the analysis and sharing of the on-line survey data, stimulating on-line discussion and fruitful interaction at the video conferences. The text-rich on-line discussion also facilitated the development of writing skills. It was obvious in the programme in which English was the second language of both groups. Students reported that the association of thinking and writing helped their inquiry. Students' ICT skills were developed as a number of ICT applications, ranging from search engine, web materials, presentation tools, communication tools to meta-cognitive tools, were embedded in the fabric of the learning journey.

To conclude, international programme with Web 2.0 technologies leveraged participation and collaboration of students in learning. It is also an important attribute of 21st Century education in which life-long learning and connectedness are focused (Law, Pelgrum, and Plomp 2008). This student-centred, open, flexible, autonomous learning approach could motivate the students. It was because this liberal and engaging way of learning encouraged self discovery, group learning for deep understanding, momentum of learning and learning with joy. As a result, intrinsic motivation could be developed amongst the students.

Implications

With reference to the findings of this study, educators can infer some implications for educational practice at various aspects. In terms of curriculum development, the implementation of international collaboration and Web 2.0 technologies in formal curriculum is a stimulating and fruitful experience for both students and teachers as it supports human basic needs of motivation, namely relatedness, autonomy and competence.

As this learning mode in formal curriculum deviates from the mainstream approach, continuous professional development is very important. Teachers should understand the opportunities brought by Web 2.0 technologies and international collaboration. The technical issues are not important as most Web 2.0 applications are user-friendly. However, it is important for teachers as professionals to understand and master the interplay amongst three forms of knowledge, namely content knowledge, pedagogical knowledge and technological knowledge in the Technological Pedagogical Content Knowledge (TPCK) framework (Mishra and Koehler 2006). As teachers incorporate these components, they present a form of expertise different from, and exceeding, the knowledge of a subject expert, a technology expert and a pedagogical expert.

The introduction of this innovative practice needs the support from the school. Apart from an insightful school vision of this vigorous learning mode, school leadership, school networks, infrastructure, commitment to teachers' professional development, administrative support, pedagogical support for teachers should be taken into account (Pelgrum 2008). Last but never the least, government policy is important to support this kind of innovative curriculum design. In addition to the provision of infrastructure, a clear vision of education and a relevant strategic plan are essential.

Conclusion

The embedment of international collaboration and Web 2.0 technologies in curriculum and pedagogical design creates a classroom with relatedness, autonomy and competence through active participation and connectedness. Learning motivation, in this liberal, flexible, autonomous, joyful and engaging environment, can be leveraged. The success of this CSCL innovation lies on the effort of teachers, school and government.

More research in this kind of CSCL mode should be introduced. Schools may vary in terms of structure, culture, nature of students, teachers' TCPK competence, infrastructure and administrative procedures. They may also vary among different countries due to cultural and contextual factors. Therefore, more studies over a wide range of contexts may help us understand how and to what extent international collaboration with Web 2.0 technologies raises students' motivation. In addition, there are a lot of Web 2.0 applications for international collaboration and they may serve different learning objectives, including cognitive and meta-cognitive development, social networking, threaded discussion, communication, collaborative creation, feedback and survey. Educators should understand when, where, how they are used properly in order to develop their full potentials. Continuous research is essential as new Web 2.0 technologies are being invented.

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SCIENCE AND MATHEMATICS EDUCATION

Balancing Support, Challenge and Responsibility in Professional Development: the Views and Experiences of Participants in a Mathematics Curriculum Innovation Project in the Republic of Ireland

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Abstract

This paper is set in the context of a change in second-level mathematics curriculum in the Republic of Ireland. A curriculum innovation project, Project Maths, is emphasising teaching and learning styles that involve 'hands on', discovery and meaningful learning. Support by means of a professional development programme is being provided, and during a pilot phase teachers in pilot schools are taking some responsibility for developing and trying out approaches and materials. The process is challenging, as it may require changes in teachers' underlying philosophies of both mathematics and mathematics education. Using these as a lens, the paper reports on interviews with six teachers involved in different ways with the process. It draws conclusions with regard to the implementation of Project Maths.

Keywords: *Professional development; Mathematics education; Teachers' philosophies*

Introduction

This paper is set in the context of a change in the second-level mathematics curriculum in the Republic of Ireland. A curriculum innovation project, Project Maths, has been piloted in twenty-four schools for two years and is being introduced nationwide in the academic year 2010-2011. While some updating of curricular content is involved, the main focus is on trying to change (presumed) predominant teaching/learning styles: from behaviourist-type approaches based on exposition, rote learning and practice, to more constructivist approaches involving 'hands on', discovery and meaningful learning. Such a process is complex and challenging. Support by means of a professional development programme is being provided on a more ambitious scale than for any previous such programme aimed at

Irish second-level mathematics teachers. However, also to a greater extent than heretofore, it has required a group of practising teachers (those in the pilot schools) to take some responsibility for developing and trying out approaches and materials.

Both the project itself and its implementation process have provoked lively discussions among concerned mathematics teachers. Prominent themes have included: views about the philosophy of mathematics education informing the project and/or about the pedagogy it seeks to encourage; opinions on the phased implementation of the project; and issues round the professional development provided. For this paper, the themes were explored through semi-structured interviews with six teachers whose views were deemed by the author to be of especial interest. It is hoped that insights emerging from the interviews will help to illuminate the process that has taken place and will suggest how it might develop in the future.

According to Prediger, Vigiani-Bicudo and Ernest (2008, 441):

[Changing] instructional practices in mathematics classrooms can not only be a matter of new curricula or of providing materials, but also a matter of challenging traditional personal philosophies of teachers. That is why philosophical reflections become more and more part of teacher education programs.

Hence, a framework is provided through discussion of philosophies of mathematics and mathematics education and their likely relationship to constructivist approaches to classroom teaching. Using this as a major lens, an outline is given of the evolution of Project Maths; the research methodology for the paper, and its implementation, are then described; findings are reported and conclusions drawn.

Philosophies of mathematics and mathematics education

Philosophies of mathematics

In examining the history of mathematics over many centuries, it is possible to identify two dominant philosophical traditions. One stemmed from the Greeks – passionate in their pursuit of truth and valid argument – and gave us the mathematics best exemplified by edifices of theorems derived rigorously from sets of axioms. The other, the Hindu-Arabic tradition, provided a theory of arithmetic that was based less on a search for abstract truth and more on the provision of a workable calculus (Kneebone 1963; Rouse Ball 1922).

As mathematics developed and became increasingly abstract, questions were asked as to whether it was a secure discipline, one in which the theorems were really 'true' and the methods used were defensible. Around the beginning of the twentieth century, this 'crisis in the foundations' led to debate in the Greek tradition and to the emergence of three important philosophies of mathematics – Logicism, Formalism and Intuitionism – designed to address the difficulties. All three contributed valuable insights but ultimately failed to achieve the objective of showing that the contemporary mathematics had secure foundations. The positions are summarised below; fuller accounts are provided for example by Kneebone (1963) and Dossey (1992).

- According to *Logicism*, associated with the names of Russell and Whitehead, mathematics is *true*: a body of knowledge, deducible from 'obviously' true starting points by rigorous logical (hence truth-preserving) arguments. However, locating the 'obviously' true starting points, from which at least a large body of existing mathematics could be deduced, proved impossible, so the Logician agenda could not be carried out.
- If traditional mathematics could not be shown to be true, then perhaps it could be formulated in such a way that it would be consistent – that one could never 'prove' a theorem and also 'prove' a contradictory theorem, in each case by apparently acceptable methods. This search for consistency was the goal of Hilbert's *Formalism*. In a sense, the Formalist approach can be seen as a game, or a set of games, played with symbols according to certain rules; some formulae are taken as starting points (akin to axioms), and others (the 'theorems' of the system) are derived from these by 'rules of inference'. For most people, the interesting games are those that can be interpreted as meaningful mathematics, with 'true' theorems obtained from plausible axioms by appropriate deduction. Unfortunately again, however, the goal was out of reach. The famous Gödel theorems showed that the 'Hilbert programme' cannot be attained; it is possible neither to set up a suitable formal system that encapsulates all of mathematics, nor to prove the consistency of a system that represents even just arithmetic.
- A different approach, designated as *Intuitionism*, is due to Brouwer. According to this, the natural numbers are given to us in intuition and mathematics is built up from them by constructive arguments; arguments by contradiction are not accepted. The failure of the Intuitionist approach lies in its not being able to 'save' enough traditional mathematics.

Two very different responses to the crisis have had implications for school mathematics.

- One response was provided by the '*modern mathematics*' approach that viewed the subject as the study of structures or systematic patterns of relationships, each

structure underpinned by suitable axioms, and containing theorems obtained by derivation according to strict rules of inference. In its formulation and use of rigorous deduction, it is in the formalist tradition, but it does not seek justification through consistency proofs. This approach affected many school curricula in the 1960s and 1970s (Howson 1991).

- A contrasting approach emerged, notably in the 1960s through the work of Lakatos. In the spirit of Popper's 'critical fallibilism', Lakatos claimed that 'informal, quasi-empirical mathematics does not grow through a monotonous increase in the number of indubitably established theorems, but through the incessant improvement of guesses by speculation and criticism' (Lakatos 1963, 6). This can be called an *Empiricist* view. It provides one influence underlying the focus on problem solving in school curricula from around 1980.¹⁹

Philosophies of mathematics education

The relationship between teachers' conceptions of mathematics and their teaching approaches has been the subject of study especially since the early 1980s (Philipp 2007; Prediger, Vigiani-Bicudo and Ernest 2008). Ernest (1985) provided a threefold categorisation of conceptions of mathematics that been a basis for much of the work in the area. The categories are labelled and described here as follows (Dossey 1992; Ernest 1985):

- *Platonist*: a body of knowledge, already existing and summarised in true theorems that can be discovered rather than created;
- *Instrumentalist*: a bag of tools, such as routine procedures and 'tricks', useful in obtaining answers to exercises and standard problems;
- *Problem-solving*: a continuously expanding field of human creation, reflecting ongoing activity rather than a static product.

With regard to the philosophies described above, Platonism most obviously reflects a Logician position, and Platonist concerns also inspired both Formalism and Intuitionism. The Problem-solving approach is Empiricist in spirit. Instrumentalism can be seen as an inheritor of the Hindu-Arabic rather than the Greek tradition.

The Instrumentalist category merits further discussion here. If its 'tools' are interpreted as powerful and coherent methods of analysis and computation, it perhaps relates to a philosophy of applied mathematics. However, it also covers a view of mathematics that

¹⁹ Constraints of space for this paper unfortunately preclude discussion of this trend and of the emergence of 'Realistic Mathematics Education' (in which mathematics is developed through addressing suitable problems set in meaningful and engaging contexts).

involves rules with little or no relationship to one another and routine procedures that can be applied without understanding and perhaps without meaningful application to real-world contexts. This may reflect an incomplete understanding of mathematics rather than a consciously chosen philosophy, and hence may be prevalent among teachers who are not mathematics specialists

Possible relationships to psychologies of learning

While teachers' views of mathematics affect their approaches to teaching and learning, they may not fully determine them. Other factors, such as beliefs about how students learn, may come into play. At the risk of over-simplification, one can consider teaching approaches as lying on a spectrum, from transmission methods inspired by behaviourist beliefs (telling and drilling) at one end, to discussion and discovery motivated by constructivist beliefs at the other. Somewhere in between lie approaches that use a transmission style but aim to focus – by various means, such as making mathematical connections, choosing apt examples or encouraging student questions – on the development of understanding.

For this simple model, certain associations appear more likely than others. Teachers endorsing a Problem-solving view of mathematics might be expected to favour constructivist teaching approaches, in which the emphasis is on mathematics as a 'process' and on the building up of shared knowledge in the community formed by the classroom. Teachers holding a strongly Instrumentalist view are likely to favour transmission approaches, with mathematics treated as a static and rather arbitrary 'product'; they may not value, or even know, the interconnections that feature in teaching for understanding. If they adopt constructivist-type teaching strategies, it is likely to be for pedagogical rather than mathematical reasons. Teachers with Platonist views are likely to want their students to appreciate the coherence, logic and power inherent in mathematics and hence to teach for understanding, typically striking a balance between process and product. Again, their functioning nearer the 'product' or the 'process' end of the spectrum might result from their views on learning.

Irish mathematics syllabuses: from 'modern mathematics' to project maths

Against this background, the Irish curricula in the past few decades can be considered, and the introduction of Project Maths discussed. It is relevant to note first that Irish second level schooling has two cycles, Junior (three grades, for students typically aged 12-15) and Senior (two or three grades, for students typically aged in the range 15-18). Each cycle leads to a

State examination, the Junior Certificate at the end of the Junior cycle and the – notably high-stakes – Leaving Certificate at the end of schooling.

In the 1960s, the Irish second level Mathematics syllabuses were strongly affected by the ‘modern mathematics’ movement, giving prominence for example to set theory and algebraic structures. The abstract and formal approach was accentuated by the style of the questions in the State examinations, which emphasised symbolism and precise language and contained few questions using real-life contexts. When the ‘modern’ programme was introduced, there was a focus on understanding the relationships involved; however, when ‘modern’ curricula are implemented by teachers who do not endorse their philosophy, the outcome in classrooms can be Instrumentalist, and anecdotal reports suggest that much implementation in Ireland followed that trend (Dossey 1992; Oldham 2007).

Curriculum revisions in the 1980s and 1990s diluted the ‘modern’ content, though some vestiges remained. While no particular philosophy was cited as underpinning the revised syllabuses, they can be seen as consistent with Platonist conceptions. For all revisions, it was again intended that the courses would be taught for understanding; however, evidence points to the fact that, again, much teaching emphasised procedures rather than concepts, suggesting that many teachers held Instrumentalist views (see for example Beaton et al. 1996).

The international focus on problem solving, especially from the 1980s, was not greatly reflected in Irish debates at system level until the results of the PISA 2000 study revealed Irish limitations in the field. This, together with growing dissatisfaction with the low level of achievement of many school leavers and also the low level of understanding among some who went into mathematics-related courses at third level (university / college), led to a long overdue debate concentrated on teaching and learning rather than just on curricular content and assessment (National Council for Curriculum and Assessment 2005; Oldham 2007). Project Maths is a response to this. While some updating of content is involved, information about the project emphasises essential numeracy skills and the use of contexts and applications. Additionally, the project not only aims to implement the long-term intended focus on teaching and learning for understanding, but also actively encourages constructivist approaches involving hands-on activities and problem solving (<http://www.projectmaths.ie>).

Implementation has been phased, with twenty-four pilot schools participating initially. Two of the five content areas, or ‘strands,’ were introduced *at both Junior and Senior cycle level* in the first year of the project (2008), two more in the second year, and the fifth in Autumn 2010. This means that – controversially – the revised Leaving Certificate courses are being taught to students unfamiliar with the style and to some extent the content that is being introduced into the revised Junior Certificate courses. (This reflects political pressure for a ‘quick fix’ rather than sound educational planning.) The national rollout is following similarly but with a

two-year time-lag. This allows the pilot schools to contribute to the development of the syllabus and of teaching and learning approaches that would implement it faithfully: in at least a Platonist and preferably a Problem-solving spirit. However, for teachers who have been used to having syllabuses, sample examination papers and textbooks available before a revised syllabus is launched, participation in shaping the curriculum at the same time as teaching it is a considerable culture shock.

Methodology

Aim and scope

As indicated above, this paper investigates the concerns of some teachers prominently involved in the debates about Project Maths, in particular with regard to their views about the philosophy and/or pedagogy underpinning the project and about the professional development programme supporting its introduction. In order to obtain the teachers' opinions after the first Leaving Certificate cycle involving Project Maths was completed, interviews were planned for the period following the Leaving Certificate examinations (Summer 2010). Six teachers – four men and two women – were selected for the study. All are known to the author, as fellow members of the mathematics teaching community in the Dublin area. Four of them teach in Project Maths pilot schools; two do not, but have contributed greatly to the discussions at meetings of the Irish Mathematics Teachers' Association. All have experienced substantial professional development, albeit in varying ways: formal or informal, officially provided or through their own study. The selection was made also to reflect differing viewpoints. Some of the six were positive in general about Project Maths, while others had reservations, for example making statements suggesting to the author that the project ran counter to their own views on mathematics or mathematics education. Further details are omitted in order to preserve the teachers' anonymity.

Design of the interview schedule

The interview schedule had to address teachers' conceptions of mathematics, views on teaching, and experiences of Project Maths, with particular reference to the professional development provided or needed as the project is rolled out. Where possible, questions and instruments that had been used in previous studies in Ireland were employed, so that findings can be set in an Irish context. Following Eaton and O'Reilly (2010), an open

question was placed first in the schedule: '*Why did you choose to become a mathematics teacher?*' The interview schedule thereafter had six sections, described in turn below.

Section A aimed to allow the teachers to describe their own experience of learning mathematics and hence hopefully to reveal aspects of their mathematical identities (Eaton and O'Reilly 2010). Section B was structured round the 'mathematics as a process' subscale used in the Second International Mathematics Study (SIMS), and was intended to indicate the extent to which teachers 'view the discipline as rule-oriented or heuristic, as fixed or changing, and as a good field for creative endeavour or not' (Robitaille and Garden 1989, 199). Examples of its fifteen statements (each allowing for one of five responses, from 'strongly disagree' to 'strongly agree') include:

Mathematics is a good field for creative people

Learning mathematics involves mostly memorising

Mathematics is a set of rules.

Robitaille and Garden (1989) point out some problematical aspects to the subscale; in different statements, words may have differently nuanced meanings – say, 'rules' as algorithms (learnt by rote) or as principles of rigorous argument (reflecting insight and understanding). However, in the present study the focus is less on the actual responses chosen than on the teachers' stated reasons for their choices.

Section C aimed to address the teachers' philosophy of mathematics directly, by providing six statements designed by the author to reflect different views (Oldham 1997); the intended views, which appear in square brackets below, were not presented to the teachers.

- (a) Mathematics is a body of important knowledge, encompassing eternal truths [Platonist view with a Logicist emphasis]
- (b) Mathematics is a richly interconnected set of relationships that can be understood and appreciated [Platonist view with a Formalist or 'modern mathematics' emphasis]
- (c) Mathematics is an activity involving the formulation and exploration of problems [Problem solving / Empiricist view]
- (d) Mathematics is a collection of useful skills providing for rapid, efficient computation and solution of problems [Instrumentalist view]
- (e) Mathematics is a repertoire of ingenious and intriguing strategies for obtaining results [Instrumentalist view, but also reflecting intrinsic interest in or enjoyment of the subject]
- (f) Mathematics is a language for the elegant and economical formulation of statements and arguments [a view not explicitly discussed above, but reflecting elements of Formalism].

Again there are possible ambiguities of meaning; the word 'problems' in statement (d) is intended to signify routine exercises and standard problems, rather than genuinely unfamiliar challenges, but is standard terminology in many textbooks. The teachers were asked to specify and account for both their personal preferences and their choice of philosophy for teaching school students (stating their top three choices in each case), and to account for any differences.

Teaching was addressed explicitly in section D. This presented pairs of statements due to Becker and Anderson (1998) and utilised in an Irish study by Close et al. (2004); each pair contrasts 'traditional' transmission-based with more 'progressive' and perhaps constructivist views. Pairs include:

My role is that of explaining and showing students how to do mathematics and to assign suitable practice vs. My role is that of facilitator. I try to enable students to discover or construct concepts for themselves.

Interest and motivation need not drive students' work – it is more important that they learn the mathematics in textbooks vs. It is critical for students to become interested and motivated in doing mathematics.

For each pair, respondents were invited to place themselves on a five-point scale between the two extremes, supplying reasons. Sections B, C and D together were intended to provide triangulation as well as to capture differing nuances in viewpoints.

The final two sections asked about the teachers' experiences of Project Maths and about their suggestions for future support in the project's implementation. No overt structure was provided in the schedule, but a 'prompt' was offered with regard to the innovative nature of the project in allowing the teachers in the pilot schools to contribute to syllabus formation, if this point did not occur spontaneously.

The schedule was piloted with two of the author's colleagues who teach research methods. One, a philosopher of education with a background in mathematics teaching, also critiqued the statements in section C with regard to their reflecting the philosophies intended. No changes were made as a result of the pilot.

Implementation

All six teachers agreed to take part in the study. They were sent copies of the interview schedule in advance of the interviews, which took place in the author's office and were recorded. The length of the recordings ranged from forty-four minutes to one hour and eighteen minutes. The teachers chose their own pseudonyms, gender appropriate in each case:

From pilot schools: Jack, Luke, Sarah, Sean

Not from pilot schools: Brendan, Patricia.

The interviews were transcribed, and the transcripts given multiple readings. For this paper, the main focus was on philosophy, pedagogy and professional development.

Results and discussion

The teachers' philosophies

Reflecting the main lens used in this paper to examine the interview data, it is appropriate to start by reporting the teachers' preferred philosophies, indicated especially by responses to section C of the schedule. For their personal philosophies, none of the six teachers prioritised Instrumentalist views, and only one – Sean – included the rather bald Instrumentalist statement (d) (mathematics as a collection of skills) in his top three. Four picked out broadly Platonist descriptions as their first choices; Sarah and Sean prioritised statement (a) (mathematics as truth) while Brendan and Patricia prioritised statement (b) (mathematics as relationships). The remaining two teachers, Jack and Luke, endorsed the Problem-solving description given by statement (c).

Analogously, the responses to section B indicated that none of the teachers' conceptions of mathematics was strongly product-oriented. Their selections, and especially the reasons given for them, tended towards the 'process' end of the process-product spectrum. They also provided interesting connections to data from other parts of the interview schedule. For example both Jack and Sean, in disagreeing with the product-oriented statement 'Learning maths involves mostly memorising,' contrasted their present views with their experiences of learning mathematics by rote in their school days; they had developed a passion for the subject only when their college education – in Sean's words – '*lit the fire.*' Patricia's discussion of 'rules' prefigured her choice of (b) as her favourite description of mathematics; she firmly endorsed '*structure,*' not rules. Reflecting the ambiguity already noted as inherent in the word 'rules', Jack disagreed with the (supposedly product-oriented) statement 'Mathematics is a set of rules' and Luke agreed with it, but they put forward similar views on the role of rules as constituting a part but not the whole of mathematics.

With regard to teaching, the two teachers who in section C made perhaps the most abstract personal choice of philosophy – mathematics as truth – named a different preferred approach for teaching their students. Sarah chose the linguistic / Formalist (f), while Sean with slight reluctance selected the Instrumentalist statement (d) as reflecting much of what he has done in his teaching career, providing students with skills. (As mentioned above, he saw

'skills' in a positive light, hence not as mindless drill.) Brendan chose 'problem solving' ahead of his own favoured 'relationships' for his students; the other three made the same first choices for their teaching as for themselves.

The teachers' responses to the items in section D, dealing with preferred approaches to teaching, showed considerable variation in detail but on average lay near the middle or towards the 'progressive' end of the scale. (Of the three who in section C endorsed Problem-solving approaches to teaching, two – Brendan and Jack – predictably returned the most 'progressive' scores; by contrast, Luke's responses were actually the most 'traditional'.) Interestingly, the six teachers' responses to the two pairs of statements listed above are notably more 'progressive' than those typical of the national sample in the study by Close et al. (2004).

Project maths and professional development

Of the six teachers, three – Luke, Sarah and Sean, all from pilot schools – indicated that they were positive overall about the project, especially for Junior-cycle classes. Luke had initially found it '*wishy-washy*,' but had come to appreciate its aims and to see that his students benefited. However, difficulties were reported for Senior-cycle students (and teachers), used to traditional learning approaches and worried by the approach of the high-stakes Leaving Certificate examination; the introduction of the project in the Junior and Senior cycles simultaneously was regarded as a mistake. Jack, the fourth pilot-school teacher, had initially been very positive, favouring radical change in Irish mathematics education; however, he was afraid that poor and confusing implementation would cause the project to fail, and that innovative assessment would soon becoming routine. Of the two teachers not in pilot schools, Patricia spoke more about details than about the overall philosophy of the project. She had been selected for interview partly because (consistent with her Platonist views) she had expressed doubts about an experimental approach to a subject dealing with rigorous deduction, but she did not mention this in the interview; rather, she spoke about her view that the project philosophy did not recognise the necessary role played by grasp of procedures for learning mathematics. Brendan reported being strongly opposed to the project, for pedagogical rather than mathematical reasons; while endorsing problem solving, he described 'hands on' and discovery methods as inefficient. (This can be contrasted with his 'progressive' responses to section D of the interview schedule; it may be necessary to refine the schedule for further use.) He also regretted the consequent reduction in the traditional content that he himself enjoyed and valued.

It is perhaps worth noting here that the three teachers who appeared happiest with their own school education were most worried about content reduction. Like Brendan, Patricia expressed fears of *'dumbing down.'* Sarah regretted the loss of *'abstract and non-numerical'* material; however, she hoped that when students have learnt through hands-on approaches in the Junior cycle, they will be ready for more traditional learning in the Senior cycle – at which time some of the content removed might be restored.

As regards the professional development, the pilot-school teachers expressed varying views on the type of support that they had received – Luke, for example, would have preferred more focus on new content rather than pedagogy – and also on its quality. However, the *quantity* of work required from participants and the uncertainty about the final syllabus especially for Leaving Certificate students were uniformly regarded as challenging. With regard to their role in helping to shape the courses, the pilot-school teachers felt that their concerns about the syllabus were not taken on board; rather, they had to labour unduly hard in developing the resources needed to implement the project faithfully – in Jack's words, could feel *'sort of used and abused and guinea-pigs'* rather than responsible partners in the process. On the other hand, participation in the pilot phase had brought considerable benefits; for example, Sarah spoke of having become *'a better teacher.'*

As regards alternative formulations for the professional development provided, the teachers were not very specific, tending to talk of their personal roles (taking responsibility for helping) rather than what they would do if in charge of launching the project nation-wide. Sean and Sarah emphasised the need to be positive about the project for the students' sake. Brendan – *'I'm not in favour of Project Maths, but it's here'* – planned to offer courses to support teachers during implementation.

Conclusion

The six teachers interviewed were outstandingly thoughtful and insightful, committed to their students and passionate about what they were doing. It was a privilege to talk to them; their ideas can enrich the implementation of Project Maths and professional development in general. However, all six found challenges in implementing or planning to implement the curriculum, despite the support offered. The intended opportunities for pilot-school teachers to shape both the syllabus and the teaching resources were not found sufficiently rewarding in practice to compensate for the greatly increased workload. On a more positive note, all six teachers took considerable responsibility for their own professional development, and in different ways they benefited accordingly. Nonetheless, overall it can be said that in

balancing support, challenge and responsibility in professional development, at least for these teachers, Project Maths has erred on the side of imposing rather too great a challenge. This conclusion should be seen in the context of the findings on the teachers' conceptions of mathematics. All six teachers endorsed broadly Platonist or Problem-solving views of the subject, and overall were more process-oriented than product-oriented; that is, their philosophies of mathematics to differing degrees were consistent with the philosophy underpinning Project Maths. Some had reservations about aspects of its pedagogy, but nonetheless by comparison with the national sample studied by Close et al. (2004) they appear rather more 'progressive'. A further study including teachers with strongly Instrumentalist and product-oriented views (seeing the subject as static and arbitrary, hence out of tune with the project philosophy) would be of interest. Bearing in mind the earlier discussion of philosophy and learning, it can be conjectured that the challenges for such teachers would be considerably greater; they would probably need enhanced support, and might not be equipped to take as much responsibility for their own development. The point made by Prediger, Vigiani-Bicudo and Ernest (2008) with regard to the role of the philosophy of mathematics in teacher education courses, quoted in the Introduction, is very relevant here, and can be seen to apply to professional development as well as initial teacher education programmes.

The other main point emerging from this study is that much of the challenge stemmed from introducing new approaches near to a high-stakes examination. Introduction only into the Junior cycle would have obviated many of the problems; politics decreed otherwise. When political considerations allow, there is much to be said for taking adequate time over radical curriculum implementation. As the Latin tag states, *festina lente* – hasten slowly!

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Relationships Between Students' Reactions Towards Problem-Based Learning And Their Learning Styles: Implications for Science Teaching and Teacher Education

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Abstract

Learning may be conceptualized as the process whereby knowledge is created through the transformation of experience. The ways people use to learn depend on their learning style, being some of the learning styles better facilitators of autonomous learning than others. Kolb classifies people according to their learning styles, as follows: converger, a person whose greatest strength lies in the practical application of ideas; diverger, a person whose greatest strength lies in creativity and imaginative ability; assimilator, a person whose greatest strength lies in the ability to understand and create theories; accommodator, a person whose greatest strength lies in carrying out plans and experiments and involving themselves in new experiences. Honey-Alonso also classified people in categories according to their learning style. These categories relate to Kolb's ones as follows: convergers are pragmatic; assimilators are theoretical; divergers are reflective; and accommodators are active. Science problem based learning is a teaching approach that requires students to learn «new» ideas by solving problems. Hence, it requires students to engage actively in the learning tasks, to take initiative and to be reflective. However, the activities to be developed within a PBL setting may be more consistent with certain learning styles than with others. Bearing in mind that students usually feel uncomfortable with the lack of guidance given to them in PBL-based classroom settings, this paper tries to find out whether there is a relationship between learning styles and students' reactions towards PBL. Data were collected from 9th graders (two classes) that had learned the physical sciences topic Electricity through a PBL approach. The subjects answered to a questionnaire on pupils reactions towards PBL and to another questionnaire (CHEAE) on learning styles. Data analysis being carried out includes classification of students with regard to both their reactions towards PBL and their learning styles. Afterwards, the relationship between the two will be studied. The results of this study will be useful for teachers to deal with the diversity of students that will participate in future research focusing on PBL-based science learning, As this methodology match better to

certain learning styles than to others, teachers may need to find ways of attending to the diversity of their students' learning styles.

Introduction

Problem-Based Learning (PBL) is a teaching approach whereby learning occurs through students' problem solving. Students have to decide what to do and how to do it in order to find an answer to the problem being solved. Depending on the scope of the problem as well on the nature of the issue focused on it, students may need to perform a variety of activities, with diverse levels of complexity and degrees of openness. Some of those activities may be more structured and others more ill-defined. A consequence of this is that some students enjoy the challenge of PBL and others reject the teaching approach for the feeling of insecurity that it brings to them. As a matter of fact, students have different preferred Learning Styles (LS) and the activities that may be developed within a PBL setting may be more consistent with certain LS than with others. This LS based explanation may help one to understand the existence of different reactions towards PBL. A few research studies have started to explore possible relationships between PBL and LS. However, as far as it is known, none of them concentrated on science teaching in the secondary school. Bearing in mind that research indicates that some students feel uncomfortable with the lack of guidance given to them in PBL-based science classroom settings, and that this discomfort may impair learning to occur, it seems worthwhile investigating whether, or not, there is a relationship between LS and students' reactions towards science PBL in order to find the best ways of optimizing students' learning in science.

Objective

Based on the argument built in the previous section, the objective of this piece of research is to find out whether there seems to be a relationship between LS and junior high school students' reactions towards science PBL.

Theoretical background

Learning styles

One way of conceptualizing learning is as "the process whereby knowledge is created

through the transformation of experience” (Kolb 1984, 38). When doing that transformation people can use a multitude of approaches, namely: watching, listening, thinking, acting, visualizing, reasoning, memorizing, imagining and modelling (Felder and Silverman 1988). Nevertheless, they may use some approaches more than others, depending on what they feel about them in terms of the role they can play in successful learning achievement. As Kolb (1984) pointed out, each individual tends to find the best ways of learning from both formal and informal settings in order to survive in an ever-changing knowledge society. With regard to formal settings, the ways an individual tends to use to learn and their relative efficacy depend not only on the teaching contexts, on the characteristics of those contexts, or on student’s gender or motivation to learn, but also on his/her characteristics as a learner (Felder and Brent 2005). The Learning Style is one of the learners’ characteristics that affect both the process and the result of a learning process. According to Kolb (1984), LS are a sort of personal variables that lay somewhere between intelligence and personality and explain the individual different ways of approaching, planning, and answering to the learning challenges.

Several authors have concentrated on the study of LS and developed instruments to characterise individuals according to their preferred LS. Those studies led to the development of more than 70 instruments (Coffield et al. 2004; García Cué, Santizo Rincón and Alonso García 2009) although most of them are varieties of a rather smaller number of different instruments. The majority of such instruments are Likert-type questionnaires with dozens of items. According to García Cué, Santizo Rincón and Alonso García (2009), most of them are written in English and have been used in research studies carried out in countries like the USA, Canada, and Great-Britain. This group of Learning Styles Instruments includes the well-known Kolb’s Learning Style Inventory. In Ibero-American countries, the most used Learning Styles questionnaire is the *Cuestionário Honey-Alonso de Estilos de Aprendizaje* (CHAEA), which is also a Likert-Type questionnaire that was originally written in Spanish (Alonso, Gallego and Honey 1997) and later on was translated to Portuguese and validated to Portuguese higher education population by Miranda (2005).

In order to characterise people’s LS, Kolb developed a LSI based on the idea of a four phases learning process (Cassidy 2004), going from concrete to abstract reasoning, as follows: concrete experience; reflexive observation; abstract conceptualization; and active experimentation. Kolb (1984) classifies people according to their preferred LS, as follows: converger, a person whose greatest strength lies in the practical application of ideas; diverger, a person whose greatest strength lies in creativity and imaginative ability; assimilator, a person whose greatest strength lies in the ability to understand and create theories; accommodator, a person whose greatest strength lies in carrying out plans and experiments and involving themselves in new experiences. Although brief, these definitions

suggest that some of the LS may be better facilitators of autonomous learning than others. In order to classify people according to their preferred LS, Alonso, Gallego and Honey (1997) developed a questionnaire (CHAEA) based on things they believe one does when embedded into a learning situation, namely: live an experience; transmit the experience; draw conclusions from the experience; plan a follow-up experience. They classified people according to their predominant LS as follows: pragmatists value knowledge application; theoretical value knowledge generalization and hypothesis formulation; reflective value reflection upon experience; active value the living of an experience.

Kolb's and Honey-Alonso's LS taxonomies may be interrelated as shown in Table 1.

Table 1: Relationship between Kolb's and Honey-Alonso's LS categories

People LS classification		People's characteristics
Kolb (1984)	Alonso et al. (1997)	
Convergers	Pragmatists	Strength: practical application of ideas Value: knowledge application
Assimilators	Theoretic	Strength: understand and create theories Value: generalization and hypothesis formulation
Divergers	Reflexive	Strength: creativity and imaginative ability Value: reflection upon experience
Accommodators	Activists	Strength: carry out plans and experiments Value: the living of an experience

As individuals that prefer different LS have diverse strengths and value different learning experiences, because some are more willing to carry out autonomous learning than others, awareness of students' LS gives teachers some insight on how to develop their lifelong learning competences as well as their characteristics as future entrepreneurs.

As it is most probable that students preferring all the LS co-exist in a given classroom context, teachers need to be able to cope with and value this LS based diversity in their students. In fact, there is some evidence that dealing appropriately with the diversity of students' LS: fosters students' attitudes towards the school subject; has a positive effect on education; and enables educators to explore students' potential as learners. As different LS require different teaching resources and strategies, teachers may have to find the best ways to deal simultaneously with students that prefer the different LS.

Problem-based learning

PBL is an active learning and student-centred teaching approach that requires students to

learn «new» ideas by solving problems (Boud and Feletti 1997; Lambros 2004; Savin-Baden and Major 2004). A PBL sequence starts by students being asked to bring problems to the class or by the teacher choosing/preparing a scenario to present to the students (Leite and Afonso 2001). In the next step students share and reformulate their problems or formulate problems from the scenarios chosen/adapted by the teacher. Next, small groups of students make plans to solve problems, carry out such plans, and evaluate their own progress on the tasks (Goodnough and Cashion 2006). In the end, the whole class discusses the problem solutions and evaluates the problem-solving methodologies used for their relative efficacy (Barell 2007; Lambros 2004).

Hence, in a PBL setting problems is the starting point for students' learning (Watts 1991; Boud and Feletti 1997; Lambros 2004). Therefore, problems need to be carefully selected because they are the main determinants of the new ideas that students will learn. In fact, these ideas depend on the concepts and skills that are required to build up an answer to the problem (Akinoğlu and Tandoğan 2007; Dochy et al. 2005).

In a PBL learning environment, students are at the centre of the teaching and the learning processes because problems to be solved should be those that are of interest to students rather than those that are of interest to the teacher or to the curriculum developers. Therefore, problems selection should attend to the criteria of students' interest. To some authors (Akinoğlu and Tandoğan 2007; Barell 2007), this means that they should be, or at least should seem to be, real problems.

In addition, students play an active role in the learning process because it is up to them to find out an answer to the problem or even to conclude that the problem has no answer (Leite and Afonso 2001). The teacher will not be allowed to tell them the «right answer» partly because when real problems are at stake they do not have a single right answer (Grindstaff and Richmond, 2008).

Students do deep learning by solving problems because in order to overcome the barrier that the problem imposes to them they need to use previously acquired procedural and conceptual knowledge, to look for other relevant knowledge and to develop new procedural competences. Moreover, they need to integrate all these varieties of knowledge in a coherent system that makes sense to them, has no internal contradictions and is fruitful in the sense that it leads them to acquire new knowledge - the answer to the problem.

For what has been said so far, it turns evident that in a PBL setting, teachers do not teach in the usual sense (Lambros 2004; Woods 2000). As it has been argued by some authors (e.g., Bonals 2000; Lambros 2004; Savin-Baden and Major 2004), they rather: stimulate students' curiosity and provide them with learning opportunities, namely when they decide about the problems that will be solved and on the way they will be presented to the students; guide students' work towards learning, keeping them on the track during the work sessions, not

giving answers but rather asking questions; and ascertain that learning took place, namely when problem solutions are presented to the class and their discussion takes place.

Despite the fact that it started in medical schools, PBL has been introduced in an ever-growing diversity of subject areas, from the scientific to the humanities or the technical and professional ones (Camp 1996). It has also entered school science teaching (Gandra 2001; Esteves, Coimbra and Martins 2006; Carvalho 2009), namely into Portugal, although in a non-systematic way.

Research carried out so far indicates that not only students can learn science concepts through PBL but also that most science students seem to enjoy this teaching methodology (Esteves and Leite 2005; Esteves, Coimbra and Martins 2006). However, other students feel a bit uncomfortable with it for it is its low level of structure that makes them feel lost. As PBL requires students to engage actively in the learning tasks, to take initiative and to be reflective, students' adhesion to PBL may depend on their characteristics as learners, namely on their preferred Learning Styles.

Learning styles and problem-based learning

In a PBL learning environment students are required to perform a diversity of tasks in an autonomous basis. Some students enjoy it while others feel confused, anxious and even frustrated. Teachers' challenge when using PBL is to find the right balance between being supportive of students while stepping back from the instruction process (Pepper 2009). Hence, there is a question that deserves an answer: is success on PBL environments dependent on students' preferred LS or does PBL develop students' LS or both? Some authors believe that LS determines student acceptance of PBL (Olsen and Welke 2008). Based on this idea it could be argued that some LS may lead to more success in PBL settings than others.

Some research studies have concentrated on the relationship between LS and PBL. Most of them focused on health related areas, and diverse LS measuring instruments and used quite small and non-randomized samples.

Groves (2005) classified 77 medical students according to their predominant LS and correlated it to the exam results. They not only found no correlation between students' LS and their examination results but also noticed that students moved towards more superficial learning approaches during the period of study. This unexpected result contradicts previous conclusions on the effects of PBL on learning that indicate that students perform deep learning when they are engaged into PBL.

Novak et al. (2006) tried to find out whether or not PBL could change pharmacy students' LS. For a group of 118 pharmacy students, the authors obtained: a decrease in the scores of the

Participant LS students, that means students that are eager and take part in as much of the course activities as possible and an increase in the scores of the Avoidant LS students, that is the uninterested students. According to the authors, those unanticipated results may be a consequence of the difficulty in adapting to both the change in the most appropriate learning style when moving from didactic contexts to PBL environments and to group work, a way of working that was adopted in the PBL setting.

A similar study, done by Baker et al. (2007) with 29 Nursing Master students, showed that two semesters of PBL instruction increased students' preferences for the Kolb's conceptualizing-experiencing pole, meaning that their learning preferences progressed towards abstract conceptualization and active experimentation. Therefore, opposite to the previous one, this study suggests that PBL may have a positive influence on the individuals' preferred LS.

Focusing on a wildlife ecology and management course, Powell (2009) studied the relationship between 41 students' LS and their evaluations of PBL, with special reference to group work. He found that students with more active learning preferences found more value in group-work learning experiences while more reflective students felt frustrated with them. The results of this study are relevant for PBL as group work is a critical component of PBL courses. They suggest that active methodologies may not be equally suitable for all students. The fact that different studies used different LS instruments to collect their data together with the fact that the diverse LS instruments were not shown to be equivalent makes it difficult to securely compare results from different studies. Although the nature and size of the samples may impair results from being generalised and may partly explain some contradictions between results obtained with different studies, these studies may help to understand findings from similar studies dealing with science teaching contexts, as it is the case of the one reported in this paper.

Methodology

Data were collected from 31 ninth graders attending two classes of a secondary school in the North of Portugal. Students' ages ranged from 13 to 15 years, being 28 of them 14 years old. The majority of the students (61%) are female.

These students learned the physical sciences topic Electric Circuits through a PBL approach as described above. They worked into small groups (3 or 4 elements) for a total of nine hours in class (plus homework). Activities started with a scenario under the format of newspaper news dealing with the replacement of the lights series in a Christmas tree in a well-known town. Students were asked to formulate questions about things related to the scenario that

they would like to know. These were discussed in class and an agreement on a set of problems to be solved was reached. Then students were asked to solve the problems. To accomplish this task they did literature search, internet search, lab activities, etc. In the end, each group presented the result to the class under the format of an oral presentation and submitted a group portfolio to the teacher. The result and products of group work on the problems was discussed for conceptual accuracy.

Afterwards, subjects answered to a questionnaire on students' reactions towards PBL and to another questionnaire on LS. The former is a 16 items five points Likert-type questionnaire that was developed for the purpose of this study. The latter one is a Portuguese version of the 80 items four points Likert-type CHAEA questionnaire (Alonso, Gallego, and Honey, 1997) that had been previously translated to Portuguese by Miranda (2005). In order to assure data reliability, and due to the large number of items, the CHAEA questionnaire was divided into two parts (40 items each), handed out with an eight days interval, so that respondents did not get too tired.

Data analysis being carried out included classification of students with regard to both their reactions towards PBL and their LS followed by the analysis of the relationship between the two. As far as data on reactions towards PBL are concerned, students' scores were computed. They could range from 16 (16x1) to 80 (16x5). Missing values were made equal to the most frequent value of the subject. Each student's opinion was computed and recoded as follows: excellent: 80-73 points; very good: 72-64 points; good: 63-56 points; moderate: 55-48 points; poor: 47-16 points. With regard to LS, items were clustered by LS and students' scores in each LS were computed. They could range from 20 (20x1) to 80 (20x4). Missing values were made equal to the most frequent value of the subject in the LS. Each student's preference for each LS was computed and recoded as follows: very high preference: 80-71 points; high preference: 70-56 points; moderate preference: 55-45 points; low preference: 44-30 points; very low preference 29-20 points

Students' preferences towards the four learning styles were cross-tabulated with their opinions PBL. No further statistical analysis was done due to the reduced dimension of the sample.

Results

As far as LS are concerned, students did not show Very High or Very Low preferences for any of the LS. In fact, no student got scores higher than 70 or lower than 30 in any of the LS-related sub-set of items. The majority of the students tended to show High preference for the Active LS (61,3%) and/or for the Reflective LS (54,8%). The majority also shows medium

preferences for Theoretical (61,3%) or Pragmatic (51,6%) LS.

With regard to opinions on PBL, data show that only two students stated that PBL gave a Poor contribution to the development of the competences at stake, as they scored less than 48 points. About 20% of the students stated that PBL gave Very Good or Excellent contributions to the development of the competences that were under consideration, as they scored above 63 points. About 40% of the students stated that PBL gave Good contributions to the development of the competences that were at stake as they scored between 63 and 56 points. These results are in agreement with results from studies that show that some students enjoy PBL while others are not so enthusiastic about it.

Tables 2 to 5 show the cross-analysis of students' learning style preference and their opinions on PBL.

Table 2: Students' opinions on PBL versus their preferences for the Active LS

Opinion on PBL contribution	Active Learning Style			
	Low	Moderate	High	Total
Poor	0	1	1	2
Moderate	1	4	4	9
Good	0	5	8	13
Very Good	0	1	4	5
Excellent	0	0	2	2

Table 3: Students' opinions on PBL versus their preferences for the Reflexive LS

Opinion on PBL contribution	Reflexive Learning Style			
	Low	Moderate	High	Total
Poor	0	2	0	2
Moderate	2	5	2	9
Good	0	4	9	13
Very Good	0	1	4	5
Excellent	0	0	2	2

Table 4: Students' opinions on PBL versus their preferences for the Theoretical LS

Opinion on PBL	Theoretical Learning Style
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contribution	Low	Moderate	High	Total
Poor	1	1	0	2
Moderate	1	6	2	9
Good	0	9	4	13
Very Good	0	3	2	5
Excellent	0	0	2	2

Table 5: Students' opinions on PBL versus their preferences for the Pragmatic LS

Opinion on PBL contribution	Pragmatic Learning Style			
	Low	Moderate	High	Total
Poor	0	2	0	2
Moderate	1	4	4	9
Good	0	8	5	13
Very Good	0	2	3	5
Excellent	0	0	2	2

The reduced number of students and their dispersion for the diverse combinations of LS and opinions, make it difficult to find out patterns in the data obtained. However, some tendencies may be highlighted. Students with Excellent opinions on PBL show High preferences for active LS and reflexive LS. This result could be expected based on the characteristics of these two learning styles (as summarized in table 1) and on the requirements of PBL. This interpretation may be reinforced by the fact that students with Very Good opinions on PBL tend to show high preferences for the same LS, that is the active and the reflexive LS. Students with Good opinions on PBL tend to show: high preferences for Active and Reflexive LS; moderate preferences for Theoretical and Pragmatic LS. These results are partly in the line of the previous ones and they may also reinforce the idea that an opinion clearly favourable to PBL is associated with LS that are characterized by having creativity and imaginative ability (Reflexive) or ability to carry out plans and experiments (activist) as the main strength. In addition, they are consistent with those obtained by Baker et al. (2007) and Powell (2009) with older (university) students. Finally, it should be emphasised that an association between poor or moderate opinions on PBL and certain LS does not seem to emerge from this study.

Conclusions and implications

Despite the limitations imposed by the reduced size of the sample, the results of this study seem to indicate that students with clearly good opinions on PBL tend to have Active or Reflexive LS. However, more research is needed in order to eventually find stronger support for this statement. Also, research is needed in order to deeper explore the possible association between poor or moderate opinions on PBL and certain LS.

Despite the exploratory character of this study, their results may have some important implications for science teaching and science teacher education, namely with regard to putting PLB into practice. PBL requires students to imagine problem-solving strategies, to carry out plans to find out answers, and to draw conclusions, in an autonomous learning environment. Students that prefer the Reflexive and the Active Learning Styles (the majority in this study) may feel and reach good levels of success with PBL. Students with moderate preferences for the theoretical LS may feel it difficult to draw a conclusion or to reach the solution. Students with high preference for the pragmatic LS may feel uncomfortable with PBL because they value knowledge application rather than knowledge construction. Hence, as this teaching methodology matches certain learning styles better than others, teachers may need to find ways of attending to the diversity of their students' LS, doing it either within a PBL approach (differentiating problems and/or tasks according to students' LS) or using alternative teaching approaches in such a way as to attend to the different students' needs as learners.

Therefore, teacher education should prepare science teachers to deal with a diversity of ways of learning (LS) and to cope with students' preferences for different learning approaches. It is our belief that PBL can be used with different students for the diversity of tasks and activities that it requires (Leite and Esteves in press) and for the support that the members of the working group can give to each other (Esteves 2006; Leite and Esteves, 2009). Based on previous research (Baker et al. 2007), science education should also prepare teachers to help students to develop their LS, so that students can become more independent learners, as required by an ever-changing knowledge society.

However, in mind the limitations of the studies reviewed as well as those of the present study, the relationship between LS and PBL needs to be further investigated in order to find out how science students with different LS preferences cope with the diverse tasks in a PBL sequence and whether PBL develops students' preferred LS or whether success on PBL is rather determined by students' LS.

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TEACHER EDUCATION AND INFORMATION TECHNOLOGY

An Integrative Approach to Planning and Teaching Educational Programs Related to the Intelligent Use of the Internet in a Teachers' Training College

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Abstract

*Along with the internet's many advantages, there is a growing awareness of the risks involved in its use for children and youth. Although educational programs towards e-safety and intelligent use of the internet have recently been developed in several countries, the main question is **which** is the optimal pedagogical approach to teaching the subject?*

At an Israeli College of Education, 119 trainees developed and taught educational programs concerning intelligent use of the internet. The research examined the trainees' pedagogical approaches through a quantitative and qualitative analysis of their answers to reflective questionnaires.

The main findings show that there are differences in the trainees' approaches according to their courses of study. The findings also express advantages and disadvantages of negative, positive and balanced approaches. As a result of our research and discussion, we suggest an optimal systemic approach towards intelligent use of the internet in high schools, that is based on mutual experience from media education, ICT's education and critical thinking education.

Keywords: *intelligent use of the internet, critical pedagogy, digital literacy, ICTs in teachers' education, e-safety*

Introduction

Education towards intelligent use of the internet is a relatively new subject in teachers' education, in the world and in Israel. Byron's report (2008) recommends integrating

e-safety educational programs in Teachers' Education Colleges as well as across the curriculum. The report points out that pupils' attitudes towards the internet are relevant for planning e-safety educational programs and for the choice of pedagogical approaches.

Although there is a growing concern with the risks of internet use, researches show that most adults, youth and children perceive the advantages of the internet, as a means of learning, information, entertainment and communication, as overcoming its disadvantages (Lenhart, Rainie and Lewis 2001; Lenhart 2005; Livingstone and Bober 2005; Lemish, Ribak and Aloni 2009; Taylor and Kitter 2010).

A joint research that was conducted in 18 European countries (Livingstone and Haddon 2008) shows that different risks are relevant to different age groups. Risks relating to privacy and to exposure of contents are more relevant at the ages 6-8. Risks related to contact with people are more relevant to the age group of 12-17. Gaps were also discovered between concerns of children and adults. Children are more worried over viruses, bullying, identity theft, spam and racial hatred, while their parents are more worried over pornography and contact with strangers. According to Ofcom (2010a) research conducted among adults, the internet raises more concern than other media because of its interactivity. The perceived threats are (in descending order of importance): illegal and damaging contents, security and fraud, risks to individuals and to society, invasion of privacy and commercials. Jackson and others (2007) discovered that the perceived severity of the internet's risks and the moral legitimacy for its various uses among children, are culturally dependent.

Following Byron's report learning materials were developed, and workshops were held for students of education (Woolward et al. 2009). According to Ofcom (2010a; 2010b) researches learning how to use the internet is done in a variety of formal and auto deductive ways. In addition, education concerning e-safety contributes to the rise in awareness both of adults and of children as to the risks of the internet. It also contributes to a safer behavior on the internet.

In Israel, education towards intelligent use of the internet, including e-safety, is being developed as an integral part of ICT's and media education. Trainees of an Israeli College of Education developed and taught educational programs toward intelligent use of the internet (Wadmany and Zeichner, 2009). This research examines the pedagogical approaches as perceived by the trainees, in order to consolidate the optimal pedagogical approach.

Theoretical background

Pedagogical approaches in ICT's, media and critical thinking fields of education

The education towards intelligent use of the internet is a natural continuation of three fields: ICT's education, media education and critical thinking education (Buckingham 2007; Luke 2003). In each of these fields there are several inner pedagogical disputes between pedagogical approaches that are either teacher's centered or student's centered; between balanced critical approaches and ideological unilateral critical approaches. All approaches have convincing justifications, advantages and disadvantages.

Pedagogical approaches in ICT's education

Wadmany and Levin (2006) point out three approaches in ICT's education: The instrumental approach that perceives technology as a means of technical illustration; the behavioral approach which emphasizes the skills of technology usage and its relations to the aims of the usage. In contrast, the third constructivist approach is more student - centered and perceives technology as a partner of teaching and learning. This approach also has cooperative, intellectual, creative and social liberating aspects (Rovai, 2003). Salomon (2002) expresses disappointment from the gap between constructivist educational vision and the reality of ICT's education. A research conducted by the OECD (Trucano 2005) shows that although constructivist student-centered approaches are theoretically more favorable, actually most of the teachers use ICT's education to support existing teachers' centered practices. Pavlova and Middleton (2002) showed that the reference to ethics and social values in ICT's lessons is culture-dependent.

Pedagogical approaches in media education

In the field of media education the various teaching approaches are derived from assorted theoretical assumptions concerning the question of the media's effects. These approaches can be classified into three categories (Masterman 1997; Piette and Giroux 1997/2001, Wolf and Melamed 2008):

1. Approaches that are in favor of the media – approaches of practical production studies that favor the media and film industry's standards, its culture, genres and its great film directors.
2. Anti-media critical approaches – these teacher's centered critical and ideological approaches criticize the strong and negative effects of the media and perceive the student as a passive victim of the media's manipulations. These approaches expose the students to

negative and shocking media contents in order to deter media misuses, to improve morals and to create a social change.

3. Balanced and neutral approaches - enable an open and free dialogue in class about media effects, offering multilateral criticism, and supplying critical neutral tools of analysis. According to Hobbs (1998) critical ideological approaches expose the pupils to the negative contents of the media and ignore their need to enjoy it. On the other hand, approaches that are more balanced and dialogic don't take decisive and critical stands towards the negative aspects of media culture.

Critical thinking pedagogical approaches

Critical thinking approaches can be divided into humanistic liberating approaches which aim at social justice (Giroux 2009), critical logical approaches based on rhetorical and neutral analytical tools (Bowell and Kemp 2010), and constructivist approaches aimed at nurturing the independent thinker, creator and researcher (Brooks and Brooks, 1999). De Bono (1985) criticizes the negative and unilateral critical pedagogy. He suggested a more balanced critical approach (Six Thinking Hats) that evaluates the positive and negative aspects of solutions in order to avoid the negative side-effects of unbalanced criticism.

Methodology, research questions and tools of research

The aims of this research are to discover the optimal pedagogic approach to education towards intelligent use of the internet that will include maximum advantages and minimum disadvantages.

The research questions are:

- (1) What are the trainees' attitudes towards education for intelligent use of the internet?
- (2) Which pedagogical approaches (negative, positive or balanced) the trainees preferred in the development of educational programs and for teaching the subject?
- (3) How did the trainees grasp the advantages and disadvantages of the three approaches?
- (4) Are there any differences in the distribution of positive, negative and balanced approaches among trainees who take different courses of study?

The research population included 119 first year trainees (males and females) in a College of Teachers' Education in Israel. A joint project was conducted between the College of Education, Israeli Internet Association and several high schools.

After a preparation process, the trainees developed educational programs for intelligent use of the internet, and taught the lessons in high schools. At the end of the process the trainees

filled reflection questionnaires referring to learning and teaching the subject. The reflections' statements were analyzed by qualitative and quantitative methods. The trainees' statements were divided into three kinds of pedagogical approaches toward the internet: positive aspects, negative aspects and balanced aspects (including neutral). The qualitative analysis is based on the theoretical mapping of pedagogical approaches shown in table 1. A qualitative analysis was conducted of the perceived aims, means of teaching, kinds of examples, advantages and disadvantages of the pedagogical approaches.

Findings

Trainees' attitudes towards education of intelligent use of the internet

According to the analysis of the trainees' statements, the majority (87%) thought that education towards intelligent use of the internet is important and should be taught in schools. Half of the reasons they provided referred to the risks inherent in the use of the internet. Some of the reasons emphasized the benefits and relevance of the internet to youth' lives and its ability to arouse interest in adolescents.

However, 13% of the trainees claimed that education towards intelligent use of the internet is unnecessary. They claimed that the subject is trivial and there is nothing to renew; pupils learn from personal experience and it is doubtful whether education can change their surfing habits.

Some emphasized that the subject should be taught only for elementary school pupils as the older pupils are already aware of the risks. Some trainees claimed that the subject should be taught by experts or by parents. However, some trainees studying computers, media and cinema courses noted that they see the subject as a natural continuation of their professions. Most of the trainees agree that the subject is complex, sensitive, emotionally charged and involves an invasion of the pupil's privacy.

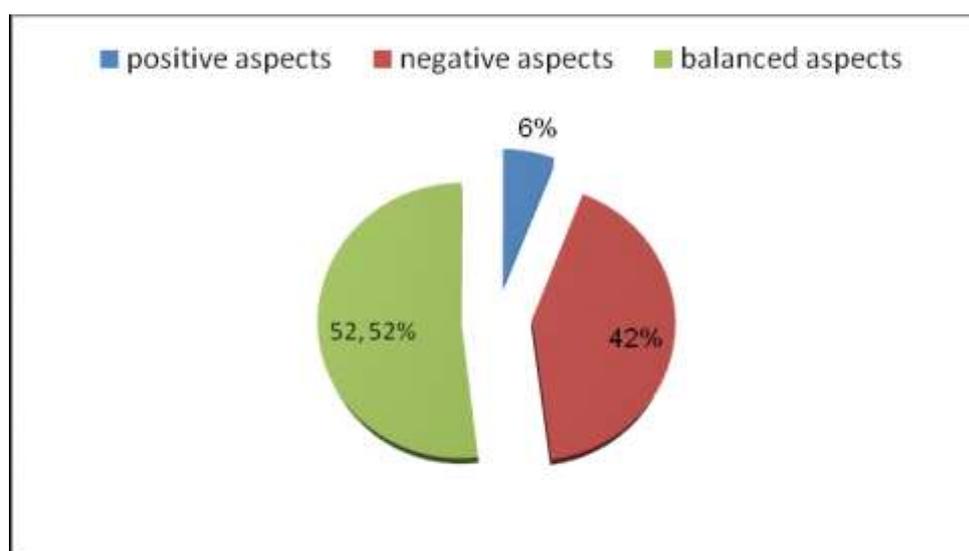
Quantitative analysis of positive, negative and balanced approaches

The quantitative analysis of the pedagogical approaches was done according to the mapping of the pedagogical approaches described in Table1.

Table 1: Theoretical mapping of pedagogical approaches

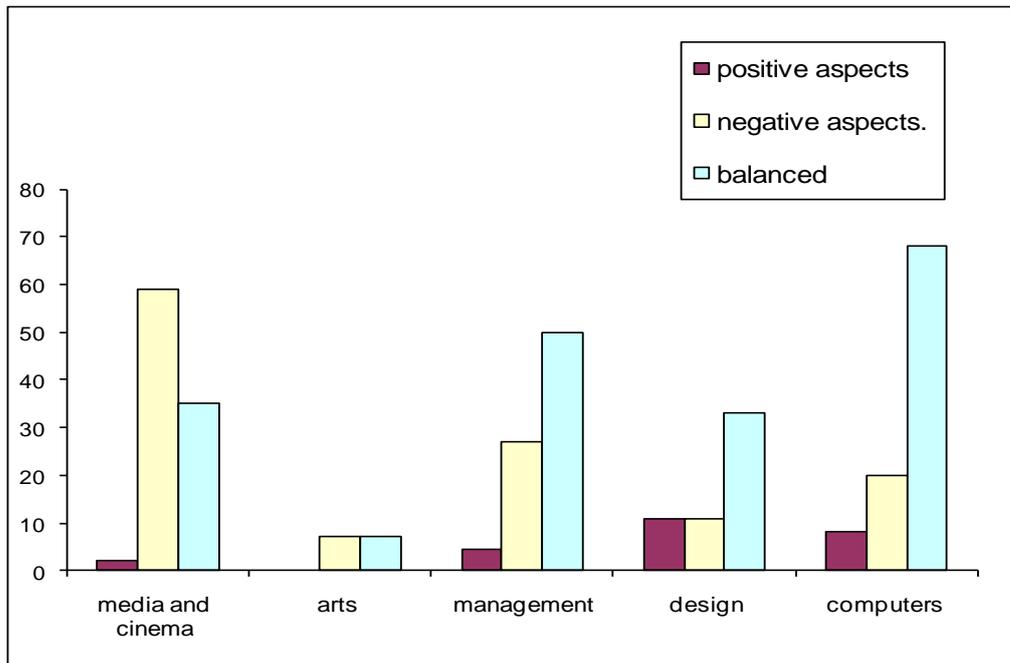
<i>Positive approaches</i>	<i>Negative approaches</i>	<i>Balanced and neutral approaches</i>
Popular arts approach	Hypodermic-needle approach	Conceptual-logical critical approaches (key aspects)
Behaviorist technological approach	Ideological critical thinking approaches (Marxist)	Constructivist technological and creative approaches
Production technological approach		Balanced critical thinking approaches (De Bono's)
		Dialogical interpretive approaches

Diagram 1: Distribution of trainees' pedagogical approaches



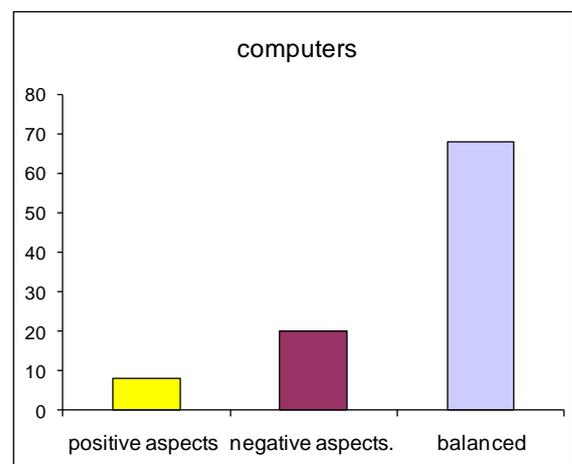
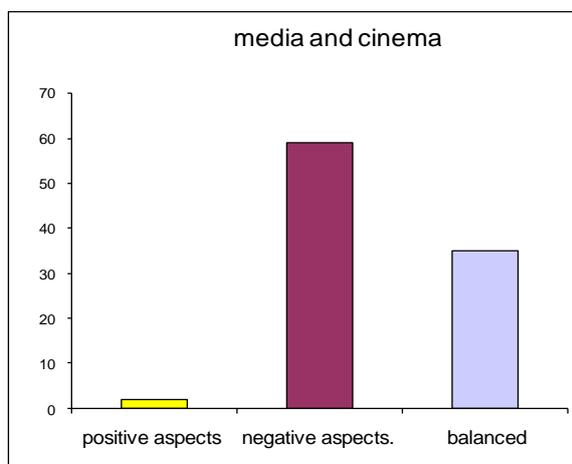
The diagram 1 shows that most trainees (52%) chose balanced approaches emphasizing both advantages and disadvantages of the internet. 42% chose negative approaches that emphasize only the internet's disadvantages. Just 6% chose positive approaches that emphasize only the internet's advantages.

Diagram 2: Distribution of trainees' approaches according to their courses of study



An analysis of the distribution of the trainees' approaches, according to their courses of study, shown in diagram no.2, indicates that in most of the courses the percentage of balanced approaches is higher than the percentage of negative approaches. However, in the media and cinema courses of study the relation between negative and balanced approaches is reversed.

Diagrams 3-4: Distribution of pedagogical approaches in Media -Cinema and Computers studies



Diagrams 3 and 4 show that 59% of the Media-Cinema trainees chose negative critical approaches, in comparison with 35% who chose balanced approaches. Among Computers

students the distribution is reversed; 68% chose balanced approaches in comparison with 20% who chose critical negative approaches.

One explanation for the high percentage of negative approaches in Media-Cinema course might be a critical personal or disciplinary bias. It seems from the theoretical background that media education is more critical towards the effects of communication technologies than the ICT's education. However further research is required in order to prove it.

Qualitative analysis of the characteristics of pedagogical approaches

In general the qualitative analysis supports Levin and Wadmany (2006) research results that trainees do not have cohesive pedagogical approaches. Yet, a qualitative analysis of the trainees' statements according to the mapping of approaches in table no. 1 reveals three main prototypes of lessons and approaches.

Characteristics of positive pedagogical approach

The trainees who chose a positive educational approach emphasized in their lessons the usefulness of the internet and the solutions for safe surfing. They did not expose the pupils to negative examples and behaviors.

The following educational targets were identified in the reflections' statements: teaching safe and efficient surfing, trusting the pupils, providing the pupils with tools that will protect them from the various risks, maximizing the advantages and minimizing the disadvantages of internet uses. In order to achieve these targets, trainees showed the pupils how to find information on the net effectively and referred the pupils to links of safe internet sites which contain useful and educational information.

According to this approach, a good lesson is one that demonstrates, through the use of the computer, and through a presentation of everyday examples, how the pupils could benefit from the internet; one that exposes them to positive, curious and important examples. One trainee noticed that examples of positive uses of the internet are not easy to find in the media and that there is a need to create them.

The perceived advantages of the positive approach are: maximizing the advantages of internet uses, enhancing pupils' interest due to active surfing, avoiding the side-effects of intimidation and avoiding the exposure to negative uses and to inappropriate contents.

Characteristics of negative critical pedagogical approaches

The trainees that chose negative critical approaches noted the following risks: exposure to violence in the computer games, danger of physical harm through interactions on chats with impersonating strangers who are actually sex offenders, swindlers or terrorists, over-

exposure of personal data, invasion of privacy, exposure to pornography, immoral contents, damage to copyrights, identity theft, credit card theft; encouragement of dangerous behaviors such as suicide, anorexia, drugs use, and addictions.

Two kinds of negative pedagogical approaches were identified in trainees' statements and in the lessons they planned; Hypodermic Needle and Marxist critical pedagogies. Both emphasized the negative and shocking aspects of internet use and expressed a clear value perception of what is permitted and what is prohibited. The educational aims related to both approaches were: to deter and to influence the pupils by shocking them through their exposure to extremist shocking stories, to instill in them educational morals and the right values and to acquire critical tools when using the internet. The difference between the two approaches was that critical ideological liberating approach strived to use the shock and the criticism as levers of awareness and behavioral change offering the solution of changing surfing habits. Trainees that chose both approaches used the shocking news story of Ophir Rahum who was murdered by a Palestinian terrorist after he was convinced to meet a Palestinian woman who posed as a Jewish girl on a chat.

Trainees provided a number of advantages to the negative approaches:

1. Generating interest through presentation of "dangerous cases that everybody can identify with."
2. Deterrence from misuses in the future.
3. Arousing cognitive dissonance and changing awareness and behavior – trainees reported that new contradictive knowledge caused them to recognize that the internet is dangerous, that they have to be more cautious and that downloading files is illegal and harmful.

Yet, the negative approaches that focus on the risks have many disadvantages that increase the opposition to teaching the subject and learning about it:

1. The contradiction between the trainees' positive approach toward downloading, sharing and uploading photos or files to the net, and the feeling that they are expected to focus on the negative aspects during the lessons, created, among some of the trainees, an opposition to teaching the subject.
2. Due to the pupils' positive experiences on the internet many trainees stated that their main problem was to prove that the risks of the internet do exist.
3. These gaps between one trainee's and one pupil's attitude toward the credibility of the risks, caused an unsolvable and frustrating conflict between them about sharing personal details and photos on the internet.
4. Some trainees mentioned that trivialization of the risks in the media makes it difficult to generate an interest and that the pupils usually feel it has been dealt with sufficiently.
5. Another difficulty was noted in placing clear boundaries in relation to the filtering of sexual and violent contents and to privacy issues.

6. A number of trainees were worried about intimidation and its side effects - such as helpless despair. They recommended not to use too many frightening examples.

7. Preaching causes defiance, as one trainee stated: "It is important that it does not feel like preaching but as a rational for a safer way of life...one should recommend safety rules not force them".

8. A number of trainees stated that it is difficult to criticize what children like to do on the internet as well as trying to prevent them from participating in dangerous but loved activities.

Characteristics of Balanced and Neutral Pedagogical approaches

The trainees mentioned the following aims of balanced approaches: to inform and to arouse thinking about and understanding of the problems caused by the internet and their ramifications; to enable class discussion over the advantages and disadvantages of the internet's uses and to draw independent conclusions from the discussion. As one trainee mentioned, "The aim is to inform, not to prevent, to provide subjects for thought."

Trainees who implemented balanced approaches suggested using balanced examples about people who were harmed by the internet and vice versa. Unlike the negative approaches, the balanced approaches trust the youth. Trainees consider pupils as equal partners and avoid patronizing them.

An example of an educational activity planned according to this approach is role playing: Internet on Trial; after hearing the claims of both sides the pupils judge what are the advantages and disadvantages of the internet and conclude which rules to adopt for safer surfing.

Trainees stated that a balanced good lesson is one where the class holds a discussion, the pupils present the advantages and disadvantage of internet use, the teacher is up-to-date, he speaks the pupils' language and his pupils are involved in the activities.

The perceived advantages of the balanced approaches are: arousing interest through active participation and dialogue and reducing opposition to learning. Since the pupils themselves reach the conclusions, the risks might be perceived as more reliable.

The disadvantages that were noted: life stories and stories from the media are not sufficient. Technological knowledge and technological solutions are necessary, as well as the possibility to incorporate active surfing in the computers' lab. These disadvantages were also mentioned in conjunction with the negative pedagogical approaches. The requirement of a wide cultural and legal knowledge was also mentioned.

Discussion and conclusions

The trainees' reflective statements show that education towards intelligent use of the internet is perceived as an important, sensitive and complex subject. It contains sub-themes that differ from each other in the measure of risks they contain, in the measure of agreement concerning them within the classroom and between the trainees and the pupils. The sub-themes differ also in the quantity and type of knowledge, personal experience and in the measure of intrusion of privacy; teaching how to chat safely is not the same as teaching copyright internet laws.

The trainees chose different pedagogical approaches and most of them preferred more balanced than negative approaches. A qualitative analysis showed that trainees who chose positive approaches emphasized only the advantages of the internet and avoided the possible negative side-effects of exposing the pupils to disadvantages. However they ignored the risks, which might create a dangerous illusion that the internet is a safe place. Leistyna and Alper (2009) and Greene (2009) claim that this approach introduces technological myths into the educational system without criticism or reflections.

The trainees who chose negative critical approaches had enormous advantages because intimidation is attention catching and might be followed by changes in awareness and surfing habits. However they, too, avoid the truth as they minimized the fact that most people perceive the internet as an essential and effective tool. This gap might raise conflicts between trainees and pupils, the risks might be perceived as untrustworthy, preaching and trivial. Over-intimidation also has negative side-effects such as despair, helplessness and denial. As a result, negative approaches might arouse more opposition to learning in comparison with the other approaches.

The solution several trainees offered was choosing a more balanced critical approach towards the internet, which might soften the disadvantages of the negative critical approaches and the opposition towards learning the subject. They noted that balanced approaches arouse interest through active participation and open dialogue. The pupils reach independently the understanding that there are risks in surfing the net and that they should change their net behavior.

Some trainees, who referred to all three approaches, noted that discussions and stories are not sufficient. They recommended combining active surfing the net during the lessons and providing technological, legal and cultural solutions combined with technological know-how, in order to strengthen the beliefs of pupils that learning is valuable.

The disadvantages of the negative critical approaches that were mentioned have been already known in the media and education research. The lack of credibility of the risks can be explained by the overall perception that internet advantages overcome its disadvantages.

Gal Ezer and Bar (2000) noted that unbalanced media criticism and the difficulty in criticizing the media the pupils love, are barriers of media education. The difficulties in placing defined boundaries for inappropriate contents are familiar difficulties in regulation of TV programs and internet sites for children (Lemish: 411-431 2002; Yaffe 2009). Friere (2009) has already identified the gap between intentions, words and acts as a barrier to teaching and learning.

The trainees pedagogical approaches reflect the discussed theoretical disputes in the fields of media and critical thinking and ICT's education. Disputes between critical ideological approaches possessing a certain moral and ideological agenda, along with balanced and constructivist approaches that are based on free dialogue, free creation, and neutral critical tools of analysis. We can conclude that the education towards intelligent use of the internet might be new but the pedagogical problems and arguments are old. It is possible, and desirable, to learn from the history of relevant educational fields.

Philosophers and researchers in the three fields of education, recognize the need of media and technology's teachers to combine wisely between different pedagogical approaches, tools and conceptual knowledge (Tyner 1991; Luke 2003). The question is how to choose or combine between approaches in order to educate towards intelligent use of the internet?

Byron (2008, 118-120) suggests adjusting the educational approach according to the level of pupils' awareness of the risks, and according to their age. Byron claims that approaches that use a sharp and shocking message are more suitable to pupils who are completely unaware of the risks. More balanced approaches that refer to the advantages and disadvantages of the internet and combine provision of knowledge and tools, are more suitable for those pupils who are already aware of the risks. Therefore, the most suitable approach for high school pupils, who are more aware of the internet risks than younger children, might be a more balanced approach.

We can see from these recommendations that an optimal systemic approach for teaching intelligent use of the internet should begin with getting to know the pupils' attitudes toward the internet, its perceived advantages and risks. The educational approach will be adjusted according to the stages of the pupils' awareness and behavior and according to the specific characteristics of the subjects.

As a result of our research and the discussion, we suggest an optimal systemic approach for education towards intelligent use of the internet in high schools that will include the following components: balanced examples and references of the negative and positive aspects of internet use; a class dialogue that enables free expression; constructive activities of research and creation, provision of technological, legal and cultural knowledge; provision of technological solutions, technological and analytical tools. This optimal systemic approach is subject to combining alternative evaluation methods and joining a new trend that views

education towards intelligent use of the internet as part of the emerging field of digital literacy that combines media education with ICT's education (Gee 2010).

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Improving Teachers' Professional Development: Factors That Facilitate or Hamper Teachers' Use Of ICT In School

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Abstract

The paper reports on an exploratory, longitudinal study, which examined six teachers' views on the factors that facilitate or hamper their use of technology in rich technology classrooms in grades 4 to 6. Three case studies were selected for analysis for exploring the relation between these views, and the changes that occurred in the teachers' educational beliefs and practices with technology-based instruction. The findings point to two developmental patterns in teachers' views on the factors affecting technology use in the classroom: the first is concerned with the source of influence on technology adoption, and focuses mainly on the human factor; The second is concerned with the nature of the influence when using technology in the classroom, ranging from technical to cognitive transformation. The three case studies reveal the complexity of the relations between teachers' views concerning the supporters and inhibitors of technology use, and the changes that occur in teachers' views and practices.

Keywords: *factors affecting technology use in schools, teachers' beliefs on ICT, technology integration, teachers' experience with technology.*

Introduction

Information technologies have grown increasingly universal, powerful, and adaptable. They challenge the educational field and educators wishing to harness the new opportunities inherent in ICT that make teaching and learning more rewarding. Specifically, new technologies and conceptualizations of learning, together with the individual school's educational vision, policies, and strategy present a new challenge to the traditional use of information technology in the classroom. However, technological innovation appears to leave education systems largely unchanged (Mann 2000). Despite significant investment, ICT

implementation proceeds at a slower rate than expected in the educational systems of many countries (Pelgrum and Anderson 1999). Furthermore, despite rapid improvement in terms of computers-per-student, there is still little use of computers in many curricular areas, with the obvious exception of courses on computer literacy and computer science (Khe and Brush 2007).

Although teachers have slowly incorporated a smattering of technologies in their repertoire, the use of powerful technologies is often limited to sustaining rather than transforming educational practice (Cuban, Kirkpatrick, and Peck 2001). For example, one serious problem is that many times, ICT applications are poorly attuned to the curriculum (Voogt 2003), and educational software is generally unrelated to and not integrated with the textbooks many teachers use. Moreover, educators, researchers, and above all, techno-reformers qualify the belief that technology can fuel innovation in school and schooling and that such innovations are possible, and admit that teaching with information technologies and incorporating them in schools and classrooms is a highly complex challenge, (Mills and Tincher 2003). The question of how to include information technologies in the curriculum asks educators etc., to reconsider the goals of education and the nature of interactions between teachers, students, educational and information resources, and curricular goals and materials (Voogt and Pelgrum 2005). Researchers and techno-reformers further admit that many questions regarding the effective use of information technologies are still unanswered.

It is therefore not surprising that despite the research accumulated over the past three decades we still have to ask “what can we do to increase the frequency and improve the quality of the use of technology in schools?” To influence the incorporation of information technology in schools calls for improved insights into teachers’ beliefs regarding the use of ICT in their classrooms (Ertmer 2006). This study addresses that question by investigating what teachers think about the factors that facilitate or hamper the use of technology in their classrooms and by acquiring a fuller understanding of how teachers’ views develop over the years.

Theoretical rationale

Numerous research studies provide a long list of factors that can potentially affect the use of technology in schools. These factors include lack of convenient access to computers, inadequate infrastructure, poor planning for the use of technology (Cuban 1986; Smerdon et al. 2000), and teachers’ inexperience in using technology as a productivity tool (Fethi 2009). Other relevant factors pertain to information and innovation overload and burnout (Lowther et al. 2008) ; limited and/or inadequate staff development versus properly planned staff

development (Robb 2000); lack of ongoing support, fragmented knowledge, ignorance of school needs, and poor leadership knowledge and support (Hardy 1998). Also affecting the use of technology in schools is the availability of guidance from specialist mentors and online resources (Sherry, et al, 2000); compatibility of technology-related innovation with the school's philosophy (Morrison et al. 2010), and finally, the changing nature of technology itself (Cuban 1999, Morrison et al. 2010).

According to some researchers, teachers have the most impact on the quality of technology use in schools and therefore, factors relating to teachers are most frequently cited as influencing technology use in schools. For example, Hardy's (1998) review of studies on teacher attitudes revealed that teacher confidence affects the use of technology more than variables such as access to equipment, administrative support, and time. Other researchers have noted various important, teacher-related variables that influence the effective adoption or implementation of information technology. For example, whether teachers are positive about technology (Becker 2000;); teachers' beliefs and views on information technologies (Ertmer 2006; Standholtz Ringstaff, and Dwyer 1997; Zhao and Cziko 2001); teachers' willingness to change their classroom role (Hardy 1998); teacher confidence to incorporate innovation (Parr, 1999), and ability to integrate technology (Khe and Brush 2007), prior experience of using technology as a productivity tool, and teachers' motivation and need to improve their computer technology skills and knowledge (Morrison et al. 2010).

If we conceptualize the adoption of technology as a learning process for individuals and organizations (Wilson et al. 2002), and if we acknowledge that the multiple factors affecting the adoption of technology reflect both individual and organizational variables as well as pedagogical and technology-related variables, then it becomes clear that simply examining isolated factors or variable lists and typologies will not further our understanding of technology use in the school. Moreover, the factors influencing the adoption of technology are often examined separately from one another and from the system in which they interact, whereas classroom technology usage illustrates a combination or network of factors within a particular environment. Zhao and Frank (2003) call this "the ecological system". In other words, a systemic perspective is needed to help us reach a better understanding of why teachers adopt or do not adopt classroom technologies.

However, although researchers have suggested numerous system-based conceptual frameworks of constructs that explain ICT use, not many studies have in fact explored the relationship between the factors that promote and detract from the quality of technology use in the classroom. Moreover, although the process of adopting technology is conceived as evolutionary (Zhao and Frank 2003), and although it is acknowledged that teachers' pedagogical philosophies and practices are not constant but rather affected by their

classroom experiences (Levin and Wadmany 2005), little research have longitudinally examined the introduction of technology. With the exception of the ACOT studies (Sandholtz, et al. 1997), most research has either investigated large survey groups of teachers or smaller samples, and based their analysis on existing models of change.

The present study addresses the gap in this regard. First, it documents teachers' opinions regarding the factors that supported and hampered their use of technology in the three consecutive years of experiencing teaching in a technology-rich environment. Secondly, it describes the interrelationship between the various aspects of the teacher's experience with technology: the teachers' views of the factors affecting their use of technology, the changes in their educational beliefs during their classroom experiences, their views on the technology they used, and the constituents of their classroom practices. The interrelationship between these different factors is clearly seen in the three case studies of teachers that are presented.

Methodology

The research encompassed a longitudinal study that lasted three years. It is a case study of one school with multiple case studies of teachers at the school. It mainly utilized qualitative methodology principles (Lincoln and Guba 2000). The methodology consists of a combined exploratory case study approach and a collective case study approach. It relates to each teacher as a separate case study, while simultaneously relating to all the teachers, holistically, as a group (Yin 1992). Six teachers, in grades 4 to 6, participated in the study.

Instruments

Four data sources were examined: open questionnaires, interviews, classroom observation, and closed questionnaires. The open questionnaires and interviews were mainly used to study explicit educational beliefs and knowledge; the classroom observations and weekly meetings with participating teachers enabled the researchers to study the teachers' practices in real life teaching and learning situations and provided indirect or implicit measures of the teachers' beliefs.

The open questionnaires were administered annually to teachers and the interviews followed researchers' observation of teachers in their classrooms and in the course of in-service training. The questionnaires and interviews probed teachers' opinions of the differences they had observed both in themselves and their professional environment and examined what they thought had assisted or impeded their classroom work. The closed questionnaire

structure was inspired by Chinn and Brewer's (1993) model of knowledge restructuring, which deals with dimensions relevant to the present study and was helpful in establishing a profile of the knowledge restructuring experienced by the individual teachers. Each dimension relating to this study was structured as a differential semantic scale.

The unique contribution of the questionnaire was that a) it provided a precise and concise picture of each teacher's experiences, b) it clarified the teachers' personal beliefs and feelings, and c) it provided a unique profile of the self-perceived change that each teacher underwent.

Data analysis

The data was analyzed in two stages: first, the researchers used the responses to the teachers' questionnaire to create a portrait of the individual teacher's views with regard to the factors that supported or hampered their teaching in a technology-rich environment. The analysis of the changes in each teacher's views at three points in time: the first, second, and third years of the study, allowed the researchers to identify critical dimensions in the professional development of the teachers as a group and pinpoint a developmental pattern in their views.

Stage two of the data analysis focused on three teachers in an effort to reach a deeper understanding of the relations between the individual teacher's profile of change in educational beliefs and practices during the study and her views on the factors furthering and inhibiting her efforts. The three teachers chosen had highly divergent change profiles in terms of their beliefs, knowledge restructuring, classroom practice, and views on technology. Their names were Zipi who only manifested surface change, and whose pedagogical views were mainly positivist and behaviorist-based; Zipora who evinced the greatest change and moved from a positivistic to a relativistic ideology; and Hadasa whose experiences reflected the most significant change by moving from a positivistic to a constructivist educational ideology (Wadmany and Levin 2004).

Results

1. On examining the teachers' views as a group with relation to the factors that enhanced their experiences in a technology-based learning environment, the study revealed a developmental pattern relating to **the source of influence** on technology adoption point to a move away from factors reflecting external legitimacy, reinforcement, encouragement, and emotional support (*"I needed the school principal to support the new educational ideas and*

encourage me through the difficulties"; *"The school superintendent's view affects the success of the change in the classroom – her participation in the workshops shows that she thinks the project is important"*, through factors emphasizing the benefit of learning with partners, colleagues, and students (*"Interacting with my colleagues, who were very supportive and important, helped me to understand things better"*; *"I became friendlier with my colleagues; working with them gave me the courage and confidence to try out new ideas"*); to factors involving the teacher's learning from her teaching experiences, her need for ongoing support, and the learning opportunities she encountered (*"My new experiences in the classroom, allowed me to see that my views on teaching had changed and that I had made a success of the project"*).

The developmental pattern exhibited by the teachers defines a continuum at one end of which lies the external influences on the teacher, and at the other end of which is the teacher's internal behaviors, in other words, her self-regulated, reflective behaviors. Between the two extremes lies the teachers' dialogue with colleagues and students, which the teachers' perceived as an important factor in helping them to implement the considerable innovation required by the project.

2. The factors teachers believe can encourage and inhibit teaching and learning in a technology-based classroom relates to ***the nature of influence*** required for technology adoption. The factors fall into three main categories. The first category relates to the technical and organizational aspects of introducing a new approach (*"There are inevitably technical hitches when working with computers, and this interferes with teaching and learning"*; *"The school didn't always have the right courseware for the curriculum"*). The second category relates to the interplay that occurs between the teacher's personal strengths and weaknesses when adopting an innovation; for example, her ability to deal with the unexpected; her sense of confidence or feelings of anxiety (*"I found it hard to plan lessons whose course was unpredictable"*; *"I had some difficulty understanding the sequence of the instructional design"*). The third category concerned the changes that occurred in conceptual thinking as a result of teaching in a technology-rich classroom and how those changes affected the regular school curriculum (*"I had to change my ideas about teaching and learning, which was hard"*; *"It is hard to accept the idea that a teacher no longer supplies knowledge, and that you are supposed to learn from your students"*).

Regarding the inhibiting factors, during the three-year study, the teachers' views showed no definitive development pattern. However, the teachers did realize that they found teaching in a rich technology-based classroom difficult because they needed to restructure their knowledge and alter their conceptions of teaching and learning. Most of the teachers expressed this idea, though only in the third year of the study. Even in the third year, not all

the teachers believed that the need for them to change their conceptions had inhibited the project's success. Furthermore, only some of the teachers realized that they had found teaching with technology difficult because of their lack of confidence and anxiety.

3. The study identified three profiles, which describe the relation between teachers' views on the factors affecting their use of technology in teaching and their change in educational beliefs and practice:

A. The first profile describes superficial change in educational beliefs, peripheral knowledge restructuring, a technical view of information technology, and regular use of direct instruction. According to this profile, traditional professional development and support from authorities are the main factors responsible for encouraging teaching in a technology-based classroom. Interaction with students is also an important factor that develops in this profile, although it only appears in the teacher's second or third year of experience.

B. The second profile involves significant change in the teacher's educational beliefs and considerable knowledge restructuring. This is combined with a shift away from a view of technology as an instrument that supports learning, towards a view of technology as a partner that empowers students and teachers. If the teacher is positive about learning from students and colleagues, then the above factors, along with a focus on collaborative learning can successfully support the use of technology in teaching and learning. These views also correlate with the teachers' strong awareness of the need for conceptual change regarding school learning. The teachers also believed in the importance of learning from personal experience, but only in the third year of the study.

C. The third and most radical change in the teachers' beliefs (reflecting a move from a positivist to a constructivist view) involved radical knowledge restructuring; a realization that technology is a partner in teaching and learning, and the use of classroom practices that promote discovery learning. In this case, the teacher perceives students as highly capable – not only of seizing open-ended, creative learning opportunities and employing diversified modes of learning – but of offering curriculum-related suggestions, helping with planning classroom activities, and supporting the teacher's experiences within an innovative environment. Radical change of this nature also correlates with a desire to continue learning “with and from colleagues” and “with and from” professional authorities. In this change scenario, the teacher is aware of the difficulty of changing conceptions and beliefs and overcoming anxiety.

4. The case studies illustrate the complex relation between the teachers' views on technology usage and the changes they experienced when working in a rich technology classroom. They also reflect the complex, internal, cognitive and emotional dialogue

underlying teachers' perceptions of pedagogical innovation as a professional learning process. This suggests that it is important to tolerate uncertainty and reflect (both during and concerning action) on personal beliefs during the activities and thinking required for technology-based classroom reform. The case studies also showed that tolerance of uncertainty and intolerance of dissonance (the gap between the desired and actual classroom processes and products), and appreciating the positive aspects of learning in a community of learners – colleagues or students – assists teachers in overcoming negative and discouraging emotions, such as anxiety and indecision.

Discussion

This research is important for understanding the way teachers' view and experience educational practices when technology is introduced into their classrooms. It shows that both the conditions teachers believe will facilitate the use of technology in teaching and the changes that occur in their beliefs and practices are linked to the different patterns of teachers' learning. The study thus emphasizes the importance of formally learning from experts, contextual and dialogical learning with colleagues and students, and self-learning based on one's classroom practices.

The teachers' views of the factors inhibiting and encouraging learning and teaching in a rich technology-based climate demonstrate that perceptions arise as a result of activities involving other people and situations, and are not simply confined to the individual's mind. This supports Engeström's (1987) activity theory, according to which humans learn through their actions and use what they have learned to plan and carry out other actions, which ultimately affect their beliefs and behaviors. It also supports the activity theory conception that internal-mental activities cannot be understood when analyzed in isolation from external activities due to mutual transformation between the two activities: internalization and externalization. Rather, the context of the activity determines when and why external activities become internal and vice versa, while the social context and interaction between actors and agents in the environment activates the internalization / externalization mechanisms.

Thus, the study demonstrates that not only computer technology but a complex web of interrelated factors and expectations, a didactic and pedagogical task structure, and an organizational and educational mindset, are required in order to ensure that computer technology is successfully introduced into the classroom with the desired effect. This study therefore supports the view that schools and classrooms can become learning communities of teachers, students, and experts (Levin 1999). It also recommends the use of tools that not

only influence teachers' outward behavior, but also their mental performance. In practical terms, the study suggests that when planning professional development for teachers, learning from experts, colleagues and self and experiencing different learning settings should be encouraged, planned, and supported (Balanskat et al. 2006; Fethi 2009; Sahin et al. 2007). It further suggests the most successful professional development models engage and empower teachers to have a stronger voice in directing their own learning (Fethi 2009; Robb 2000).

In addition, the results support the idea that when viewed within the teacher's broader belief profile, doubts, uncertainty, and lack of confidence can be regarded as an acceptable and normal part of a teacher's professional development. The results also endorse Saye's (1997) finding that for both students and teachers, comfort with uncertainty strongly relates to the ability to use technology innovatively. It also supports Dudley-Marling's (1999) conclusions that for teachers who are learners "Uncertainty is what keeps the inquiry process going" (p. 252), and therefore uncertainty encourages growth and renewal.

The findings regarding the three case studies imply that the "one size fits all" metaphor is inappropriate if we are to meaningfully influence teachers' use of technology in the classroom and develop their capabilities to work in technology-based environments. In fact, the study calls for technology-based and school-based reformers to reach the right balance between working with teachers individually and working with meaningful groups/communities of teachers. Moreover, with reference to Cuban (2002), who claims that factors inside and outside the school affect the ability of ICT-based innovation to diffuse into and improve the school, this study also adds that there is a need to consider personal variables. It demonstrates that not only should we consider the fit of technology use within the localized classroom setting of each teacher, but we should consider the broader profile of teachers' educational beliefs, their cognitive and emotional disposition to face novel, uncertain, situations, their actual teaching practices, and their views on technology and its supportive and restrictive nature.

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An Implementation Model for Integrating Technology into Initial Teacher Education

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Abstract

This paper summarises and discusses some of the findings of the evaluation of the Training Development Agency's (TDA) programme for funding ICT in Initial Teacher Education (ITE) in England. It focuses on the main impacts of the programme on trainers, trainees, schools and learners of this major ICT intervention project and uses these findings to outline a viable model for the implementation of ICT in initial teacher education (ITE). The evaluation involved 216 ITE providers and some 13,222 trainees who had direct involvement in, or were beneficiaries of, these projects. The evaluation involved analysis of ITE providers' application and evaluation documentation from the programme between 2005 and 2008; an online survey of 95 ITE providers in England undertaken in 2009; and the development of six narrative and video case studies of ITE providers.

Keywords: *ICT; teacher education; integration; implementation; evaluation*

Introduction

This report outlines the findings of the evaluation of the Training Development Agency's (TDA) programme for funding ICT in ITE in England between 2003 and 2008. Analysis of programme documentation indicated that 216 ITE providers received funding during this time. In the last year for which full data was available (2006-07), ITE providers reported that some 13,222 trainees had been directly involved in, or were beneficiaries of, these projects. The highest number of participants in one project was 904 with the mean being 189. In the TDA's programme, each year ITE providers in England were invited to bid for funding for projects relating to themes identified by TDA. In the early years of the

programme, these themes related to the provision of laptops and/or interactive whiteboards. In later years, their scope was expanded to included areas such as videoconferencing, virtual learning environments (VLEs) and digital media. Crucially, TDA specified the technologies they funded and the need for providers to submit an evaluation of their implementation but did not specify how the technologies were to be introduced. The evaluation focused on assessing the programme's impact on trainers and trainees and the organisations and schools in which they were based.

Methods

The evaluation, undertaken in 2009, focused on ICT-related projects funded by TDA between 2003 and 2008 and utilised three groups of data. The first was content analysis of 241 programme documents – applications for funding and summative evaluations from ITE providers. These were reviewed by pairs of researchers looking for evidence of impact using the frameworks identified below. The pairs compared findings and used the comparisons iteratively to identify themes and refine their approach. This initial analysis informed the development of an online questionnaire survey which was completed by 99 respondents from 70 providers, representing a response rate of 33% of ITE providers. Finally, exploratory analysis of the survey data informed the development of case studies of six providers, captured as narrative and video cases²⁰, in which survey findings about the development of the projects and their impact at a range of levels were explored in more depth. The case study sample was taken from survey respondents who volunteered to participate further in the research and selected to include the three types of providers funded by TDA: Higher Education Institutions (HEIs); School-centred Initial Teacher Training providers (SCITTs); and Education-based Initial Teacher Training providers (EBITTs). The narrative and video case reports were based on interviews undertaken with trainers, trainees and school mentors, supplemented by documentary analysis and the findings of the questionnaire survey.

In analysing the data collected, we used a combination of theoretical frameworks. Our overarching approach was based on Kirkpatrick's (1994) model for evaluating learning which has four levels:

- Engagement – focusing on how trainers and trainees involved in the project engaged with and used the technology being introduced

²⁰ These can be found at <http://www.ttrb.ac.uk/viewArticle2.aspx?contentId=15836>.

- Learning – looking at the resulting increase in knowledge and capability of trainers and trainees
- Behaviour – identifying changes to the practice of trainers and trainees
- Organisational impact – exploring the effects on the organisations and stakeholders involved, including ITE providers, employers and schools, as well as the impact on pupils in the short and longer term.

This was supplemented by Hooper and Reiber's (1995) framework for examining e-maturity and Shulman and Shulman's (2004) model of teacher learning to explore impact on trainers' and trainees' learning and professional practices. The following section draws on these frameworks and all the data collected to summarise the main impacts that were identified in ITE organisations involved in the programme. This is followed by the identification and discussion of some of the factors that contributed to these impacts.

Impacts on trainers, trainees and their organizations

Engagement with and use of the technology

ITE providers were asked to assess trainees' and organisations' use of a technology before and after the TDA-funded projects. Their assessments were analysed using a five point e-maturity scale derived from Hooper and Reiber (1995). In this model, the five stages of ICT use were identified as: familiarisation; utilisation; integration; reorientation; and evolution (see Figure 1).

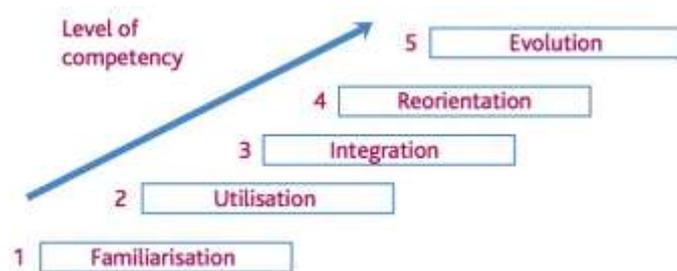


Figure 1. e-maturity scale (Hooper and Reiber 1995)

The overall shift for trainees and organisations brought about by the projects was from utilisation (stage 2) to integration (stage 3). This meant that they had moved from a point at which they had some experience of using the specific ICT to one where they had integrated it into their practice and it had enhanced teaching and learning. At the

beginning of the projects, 17% of respondents felt that their organisations were at a stage even before 'familiarisation' (stage 1), that is they were unaware of the potential benefits to practice of the ICT project in question before it began. After the projects 90% of trainees were thought to have moved into one of the higher three categories – integration, reorientation or evolution.

The most dramatic shifts in use by both trainees and organisations were associated with projects that focused on laptops in particular, and on interactive whiteboards (IWBs). These shifts were more common in SCITTs than other types of providers. Although this appears to contrast with research that has found that IWBs have had limited and variable impact on classroom practice and pupil learning (see, for example, Moss et al 2007; Somekh et al 2007), it should be emphasised that respondents were asked to report on a range of impacts, including attitudinal changes, and that improved use of IWBs may reflect emergent and/or latent expertise in that area that has developed since the earlier evaluations were conducted.

Finally, the fact that overall trainees involved in projects progressed more in their ICT use than ITE organisations did as a whole was held to be indicative of the issues involved in taking such projects to scale across an organisation.

Impacts on trainees' knowledge and practice

The survey asked providers to assess the impacts TDA-funded projects had had on trainees and trainers in a number of areas. Analysis revealed that impacts on trainees varied considerably and depended on a range of factors, notably the culture of placement schools and trainees' prior familiarisation with a technology and its potential applications. As might be expected, positive responses about impact clustered around trainees' increased awareness of the ICT funded by TDA (where 91% responded positively) and confidence in using it (where 97% responded positively). Overall impacts on trainees appeared to be less strong in EBITTs than in other types of ITE providers, particularly in relation to them having the opportunity to experience new models of teaching using the technology. This contrasted with the degree of impact on the organisation as a whole where smaller providers, such as EBITTs, were identified as being more likely to report dramatic shifts in ICT use. An ITE provider's capacity for change as an organisation was more important than its relative size overall in determining the impact funded projects had at different levels. Finally, as would be expected, projects involving large numbers of staff consistently reported higher levels of impact on trainees (and trainers).

Impacts on trainers' knowledge and practice

There were widespread variations in the impact projects had on trainers. Certain technologies, such as the use of video and other multimedia approaches, appeared to generate greater initial take-up by tutors, trainers and mentors. Similar impacts were effected through ICT-led enhancements to existing administration and support systems used by staff. Variations in impact were accounted for in terms of trainers' willingness (or resistance) to change. In comparison, variations in uptake and use among trainees were more likely to be associated with differences in their prior engagement with a technology or contextual factors in their placement schools. The data also indicated that projects had to focus on raising trainers' awareness of ICT before developing their confidence in using it.

An ITE provider's capacity for change as an organisation was found to be more important than its relative size overall in determining the impact funded projects had at different levels. Projects involving large numbers of staff consistently reported higher levels of impact on trainees. In general, projects had to focus on raising trainers' awareness of ICT before developing their confidence in using it.

Impact on schools and pupils

The survey also asked providers to indicate where TDA-funded projects had an impact on schools and pupils. There was limited evidence of widespread impact on pupils and schools, with 23% of providers stating they did not involve schools. Although there were some highly effective practices, many of the projects' aims in this area of impact remained aspirational. However, there was only limited evidence of trainees being able to act as significant change agents in schools. Approaches that appeared effective drew on pupils' digital habits and supported their desire to voice their views and create their own content.

School contexts and cultures in relation to ICT were more frequently described as moderating factors than as enablers with regard to supporting ICT innovation. They were more likely to be associated with inhibiting the transfer of practice than with supporting trainees to innovate. Schools' willingness to accommodate new approaches was a key factor in terms of impact. Where trainees were able to share new ideas and approaches

with peers and school colleagues, they appeared to be able not only to develop their own practice but also to change schools' views of ICT.

An implementation model for ICT in ITE

Analysis of the data collected allowed us to identify three generic groups of factors whose interaction determined the success of any implementation, as well as the impacts already discussed. As Figure 2 indicates, these were:

- the status of the technology being introduced
- the ITE organisation's capacity for innovation
- the degree of alignment between the innovation and the needs and concerns of individuals and teams in the organisation.

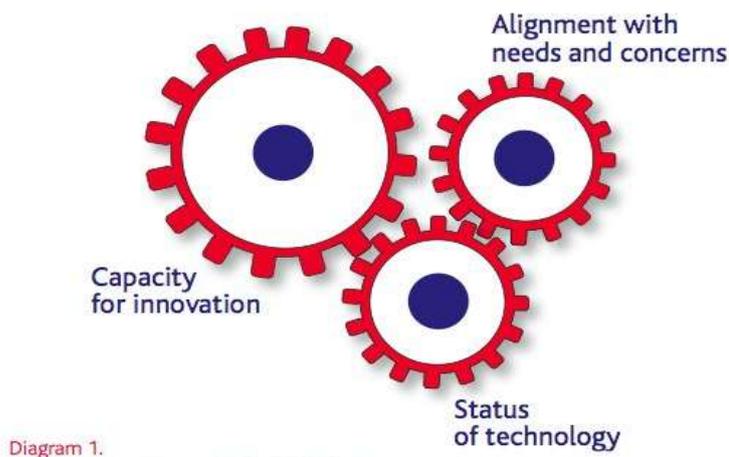


Figure 2. *An implementation model for ICT.*

This section will focus in detail on the importance of the status of the technologies introduced, before more briefly outlining the characteristics associated the other groups of factors.

The status of the technology being introduced

Unsurprisingly, the data initially indicated that the nature of the technology being introduced affected the likelihood that its implementation would be successful, and

therefore its chances of achieving the desired impact. Thus, our starting point was an exploration of the technical status of the technology being introduced.

The **technical status** of a technology refers to design affordances (McGrenere and Ho 2000; Bower 2008) related to its ease of use; its degree of compatibility with other forms of technology and existing ICT infrastructure; and its overall reliability and functionality. In the survey and case studies, instances of technical issues preventing an effective implementation were relatively few. This reflected the extent to which staff and teams with existing expertise in ICT training and support were involved in leading projects. Where technical issues were encountered, the extent to which they hampered implementation reflected the degree to which they were central to the stated project aims and technical support on offer in the organisation. Technical issues tended to be identified only when they acted as moderating factors, limiting the extent of implementation, rather than being directly cited as mediating factors, that supported the implementation process. As one trainer stated, *'It's about being willing and working with people. Yes, there are technical issues but I think if you find people willing, then things can be overcome'*.

In contrast, the **social status** of a technology, which relates to its popular image and the extent to which it has been taken up in wider society, was more variable and appeared to have a stronger bearing on the success of an implementation. Social status determines the initial acceptability of a technology and the degree to which individuals are (or become) familiar with it, factors which were often key in the initiation stages of a project.

Certain technologies vary widely in their levels of take up across different professional and social groups. Different groups can hold quite divergent perspectives on whether certain technologies are 'good' or 'bad', useful or not useful innovations. Such differences in perceived social status are particularly important in the implementation of ubiquitous technologies, rather than those with more specialised educational uses, such as visualisers. The evidence from this evaluation was that trainees increasingly came to regard having a laptop and using it in their everyday activities as part of their emergent professional identity:

It's like having a pen nowadays. Anyone who does any sort of work really, especially those in a managerial position (like teaching) where you are paid to get the job done rather than for the hours that you work, needs a laptop to do it. Otherwise you're stuck to one place and one desk. (Trainee)

Selecting a technology which was 'aspirant' or perceived positively was particularly important in engaging individuals reluctant to engage with new technologies or unable to see their potential for learning: '*This is the way it's going. Having a taste of how these learning platforms can work is quite good for us*' (Trainer). Individuals' existing levels of familiarity had an impact on the degree of development and training required in any implementation. Although some providers had VLEs for some time, it is hard to imagine, for example, that the current rapid take-up and enhanced use of VLEs by students and staff in ITE would have been possible without the widespread use of instant messaging and social networking sites that make the uploading and downloading of documents and participation in online discussion forums commonplace.

In particular, the informal learning about ICT that individuals had acquired outside their professional lives changed the ways they used ubiquitous technologies in educational settings. As a result, one of the biggest issues faced by those implementing ICT in ITE programmes was the difference in levels of familiarity with certain technologies that they encountered across and between groups, notably between trainers and younger trainees who had grown up using Web 2.0 technology for whom its flexible affordances are often second nature.

In some cases, providers were able to bring together the social status and the **learning status** of a technology. Learning status relates to a technology's perceived utility and applicability to individuals' own learning and its potential to support the learning of others. The learning status of a technology is based on an individual's views of what constitutes 'learning' and effective teaching and learning processes. These views have to be attuned to the affordances of each specific technology to support learning. For trainers the starting point for this process of attunement was their initial perception of how well a certain technology 'fitted' with their existing pedagogical approach and curricula, before going on to a consideration of how it might support changes and improvements. Here, one trainer describes initial misgivings around the potential uses of video conferencing, and ignorance of its multimodal nature, because its perceived passivity clashed with their conceptions of effective learning and teaching.

As primary scientists we are very aware that science should be as hands-on and interactive as possible. We weren't sure if we could use [video-conferencing] to enhance or enrich sessions and we weren't going to use it if it wasn't. My first impression, knowing nothing about it, was that you got a person quite distant at the end of a screen and a whole classroom of excited kids.

However, in other cases trainees felt frustrated by others' failure to recognise the learning potential of new technologies. This undermined their attempts to develop it in their own practice:

At first I thought it was going to be fantastic but then I just found myself duplicating everything, one copy for the VLE then one for mentor and assessor. My trainer prefers to have a hard copy that he can mark - he's not completely computer literate. (Trainee)

Finally, it is important to emphasise that although this paper focuses on the importance of taking the status of a technology into account, status does not function in isolation and ICT implementations also need to focus on the capacity for innovation and the degree of alignment between individuals and teams in an organisation.

Thus, to summarise, successful innovations were characterised by the following:

- movement from consideration of the technical status of the technology in isolation towards recognition of the role played by its social and learning status
- selection of a technology which had a high social status.
- challenging negative perceptions of a specific technology
- recognition of how differences in prior engagement with a technology or with functionally similar social software affect initial take-up and overall training and support needs
- utilisation of those with in-depth understanding of the learning potential of technologies to model to others.

Building and focusing the capacity for innovation

Capacity was examined at three levels - individual, team and organisational. Successful innovations were characterised by the following:

- recognition of individuals' existing understanding of the technology and encouragement for them to use this to support others
- sequential and focused support for a limited number of individuals who then mentored others
- integration of opportunities to model different uses of the technologies throughout existing provision and across the different contexts in which trainees operate

- encouraging teams to experiment and take risks
- building an ethos of openness and shared learning
- developing structures and process to support sharing between project participants
- providing discipline through enquiry and evaluation
- offering leadership support at all levels and creating additional leadership capacity.

Aligning the needs and concerns of individuals and teams

This group of factors appeared to have the greatest influence on whether an implementation was successful or not. The technology being implemented and how it was designed to be used had to meet a significant number of individuals' needs and add substantively to the quality of the core activities of key groups and teams. Specifically it was those factors which were key to the mobilisation of individuals and teams that appeared most important. Successful innovations were characterised by the following:

- they had to meet a range of individuals' specific needs
- in the context in which they were operating, they had to meet these needs more easily, or at less cost, than other existing or potential approaches
- they needed to add substantively to the quality of the core activities of key teams of trainers and groups of trainees
- they had to have a degree of congruence with the overall strategic aims of the ITE organisation
- they were underpinned by core educational values.

Achieving deep and sustained change

Analysis indicated that the TDA-funded projects had considerable impact upon ITE providers of all forms across the system, with some 216 different providers successfully applying for TDA funding from this programme over its last three years. Coburn's (2003) model for scaling up educational initiatives was adopted to address the question of how likely it was that the vast range of projects that have been funded would cumulatively lead to a profound impact upon ITE providers and their trainees. This model highlights the fact that for projects to become sustainable sources of change they need to have achieved a broad scope of implementation; a certain depth of change; and to have

transferred the ownership of the project from its initial enthusiasts to a broader group of participants.

Scope of implementation

As stated in the introduction, the analysis of both project documentation and the questionnaire survey indicated that in one year of funding (2006-07), providers reported some 13,222 trainees being directly involved in, or benefitting from, these projects. 56% of projects involved fewer than 100 trainees while 13% involved more than 500. Overall, 1,515 schools were said to have been directly involved in projects in that year. Analysis of providers raised two significant issues with regard to scope of involvement:

- Higher Education Institutions' (HEIs') larger size meant that they faced greater challenges than smaller ITE providers in engaging a critical mass of trainers, and particularly senior staff, within the time span of a single project. This problem was in part ameliorated by larger providers' ability to adopt more strategic and long-term approaches to developing ICT use.
- HEI providers benefited from having trainees who were involved in training over more extended periods of time than was the case for EBITTs and SCITTs. This allowed for the development of a critical mass over the longer term and for support to be offered by more experienced trainees.

Depth of engagement

If scope is concerned with the numbers of people involved in a project, depth focuses on the extent to which they became engaged in it. Again, there were two issues of particular relevance to the development of deeper engagement. The first of these was the variation between trainers and trainees in the take-up and application to practice of various technologies. A great deal of the variation in take-up could be accounted for by the fact that trainers and mentors were less likely to change or adapt their pedagogy in order to accommodate or make best use of 'new' technologies. Trainees who had not developed a 'habitual pedagogy' were more likely both to engage with 'new' technologies and to change their pedagogies to incorporate their use.

The second issue that particularly affected the depth of engagement of trainees was the consistency with which they encountered others using the technology and supportive individuals and contexts. Trainees experienced widespread variations in practice and ethos both across training providers and within schools. A key issue in terms of trainees

having an impact on schools and pupils was that ITE providers found it difficult to engineer widespread coordination of ICT developments with schools. This meant many trainees were unable to develop their practice in placement schools.

Transfer of ownership

The final strand in achieving sustainable change is to progress from a situation where an innovation is perceived as a project which is 'done' by some people to others to a way of working in which it is widely owned in an organisation. Project leaders were more successful in transferring ownership when they used technology which had a high social status, where trainees saw its use as a key part of becoming a 'teacher' rather than an imposition. Certain technologies, such as laptops and IWBs, have already reached the status of being professionally ubiquitous in that their absence in a professional context is more likely to be noticed than their presence. For pupils, high social status was associated with technologies that linked out of school learning with learning in school and which provided them with a range of opportunities to express their views and learning. One of the key factors in moving ICT development away from being a series of projects to an evolving and more integrated way of working was, in a number of instances, the development of a virtual learning environment (VLE) which could be used by trainees and mentors dispersed across schools. VLEs not only became a crunch point between those developing ICT for teacher trainees and those responsible for overall ICT strategy for their institution, but also provided an alternative ICT infrastructure that supported and enhanced other developments.

Conclusions

Successful projects were characterized by the movement from a focus on the technical status of the technology in isolation towards recognition of the role played by its social and learning status, along with the selection of technologies which had a high social status for at least one group involved. Project leaders were also able to challenge negative perceptions of the specific technology and consider how differential prior engagement with a technology affects initial take-up and overall training and support needs. They were also able to deploy individuals with in-depth understanding of the learning potential, or affordances of the technologies to model to others. This in turn led to the kinds of impacts on organisations, trainees, schools and pupils already highlighted. However, it was clear that trainers were often not aware of the learning

potential of key technologies or confident in their use. Targeting trainers with professional development opportunities such as mentoring or coaching and access to multimedia technologies which appeared to generate high levels of take-up and enthusiasm among both trainers and trainees may help to address this. In addition, the relative lack of success of trainees in acting as change agents in schools was associated with unsupportive school cultures. Encouraging collaboration among trainees and schools on ICT projects and creating more opportunities for trainees to share ideas and curriculum innovations in ICT with colleagues in school are ways which might begin to counter this tendency and build on the innovations found in successful ICT in ITE projects.

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Cyberbullying

From Needs Diagnosis to Compiling a Training Manual

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Abstract

The impact of the cyberbullying phenomenon on society and among children and young people, revealed as ever more complex as more sophisticated technological tools become available, has called attention to the importance, at the international level, of a definition of strategies for prevention and intervention among potential educational agents, i.e. to develop a proposal for CyberTraining, with a European dimension.

In this paper, after a brief presentation of the European project CyberTraining: A Research-based Training Manual On Cyberbullying²¹ there follows an outline of the contribution of technologies, including the Moodle platform, and within this, of the Forum tool, in supporting collaborative knowledge building around the cyberbullying concept as well as in needs analysis and in developing a training manual. After describing and analysing the communication that has taken place among 13 European trainers in the CyberTraining - Online Forum and among 45 European experts in the CyberTraining - Online Focus Group, the main insights from this group work in building an online training manual are highlighted.

Keywords: *bullying; cyberbullying, training, manual, cybertraining*

Introduction

The development of the new Information and Communication Technologies (ICTs) has added new dimensions and features to the problem of bullying.

²¹ European Project supported by the European Community (ref. 142237-LLP-1-2008-1-DE-LEONARDO-LMP, approved for financial support by the Education, Audiovisual and Culture Executive Agency - EACEA)

Bullying is a concept that refers to harmful behaviour that is repetitive (persecution, exclusion and persistent abuse, physical or psychological), by one or more students towards another colleague based on an asymmetrical power relationship. It is characterised, therefore, as a deliberate (intentional) assault, persisting over time (systematic), provoking physical or psychological suffering (hostile), committed by one or more perpetrators of equal status but where the offender 'outweighs' the victim from either psychologically or physically (Olweus 2000). As for the aggressor (or aggressors) he, she or they derive(s) great satisfaction²² from inflicting harm on the target of the hurtful behaviour (Haber and Glatzer 2009).

Email, SMS, online Chat, YouTube, and social networks such as Hi5 and Facebook, so significant for young people, in addition to the enormous benefits that they have brought in social relations, and the promotion and construction of knowledge, also turn out to be powerful instruments of aggression and persecution. Media reports have lately covered very serious situations relating to the use of these technological tools for illicit purposes, prominent among them their use by children and young people to systematically persecute and harass colleagues at school and elsewhere. By these means rumours are spread and threats uttered, in text and images, which remain in a virtually infinitely extensive shared public space for a period of time that we could say has no limit!

This amounts to an indirect form of *bullying* which has been referred to as *cyberbullying* (Belsey 2005; Smith et al. 2006; Hernández Prados and Solano Fernandez 2007).

However, *cyberbullying*, above all because it affords offenders *anonymity*; because it can be committed wherever the offender has access to the necessary resources (at school, at home or in the street); also because the victim cannot but continue to receive messages or emails wherever he or she is, even at home, with no possibility of escape or taking refuge; and also because the number of possible observers (*bystanders*) is unlimited, especially when this takes place on the Internet – is, potentially, much more destructive than traditional *bullying* (Hernández Prados and Solano Fernandez 2007).

The use of ICTs as a preferred medium for uttering and sending offensive messages adds to the profile of assailants and victims new peculiarities that need also to be set out in detail and understood. But research and scientific knowledge about the phenomenon are still in an embryonic – limited and exploratory - which, naturally, carries implications in terms of diagnosis, prevention and responses.

We shall turn now to a presentation of the European project entitled [CyberTraining: A Research-based Training Manual On Cyberbullying](#) which aims, using a participatory

²² The dichotomy between the 'aggression' and the 'satisfaction' derived from this behaviour is seen to be inherent in the word *bullying* when we consider its etymology. This dates from the 1600's with the word 'boel' or 'lover', a term transformed in 1721, into 'bailey' which in its turn became 'boolie' meaning 'beloved'. This latter term was also used to refer to one's brother or to the friendship between companions or 'bullies' (cf. Shariff, 2008).

research methodology for potential trainers and European experts in the area, and by collaborating - with technological support - in the production of a manual for trainers, to address the shortcomings of current knowledge regarding the concept of *cyberbullying* and training practices in this field.

The European project CyberTraining: a research-based training manual on cyberbullying

Although some national and European research on the topic of *cyberbullying* has been carried out, little is yet known about the phenomenon, its nature and effective means of prevention. In Europe, countries such as England have already done some research in this area whereas Germany, Spain and Portugal have only recently felt the need to intervene in this field. Research in this area is still nascent and exploratory and this has implications for devising strategies and intervention and training programmes.

It is in seeking answers to these concerns and addressing the lack of systematic and consolidated programmes in the diagnosis of the situation that the European project entitled *CyberTraining: A Research-based Training Manual On Cyberbullying* is justified.

It is a project supported by the European Community (ref. 142237-LLP-1-2008-1-DE-LEONARDO-LMP, approved for financial support by the Education, Audiovisual and Culture Executive Agency - EACEA). As well as the Portuguese team, various other European countries²³ have participated in the design and development of a Manual for Trainers dealing with *cyberbullying*, with an *eBook* edition, and printed in English, German, Portuguese and Spanish. Authorship and international coordination is the responsibility of one of this text's authors, Thomas Jäger, of the Zentrum für empirische pädagogische Forschung, at the University of Koblenz at Landau, Germany.

The CyberTraining project, which began in October 2008 and is now in its concluding phase, thus has the aim of developing a trainers' manual on *cyberbullying* based on and supported by research in which specialists, researchers and trainers themselves are participating.

²³ Germany co-ordinated the project through the Centre for Educational Research (Zentrum für empirische pädagogische Forschung, ZEPPF). Bulgaria, through Infoart which develops projects in electronic publishing technology, e-learning. Spain, through the Department of Developmental Psychology and Education at the University of Seville (U.S.), the Autonomous University of Madrid and the University of Cordoba. England, through the Faculty of Medical Sciences and Health at the University of Surrey. Ireland, through the Anti-Bullying Research and Resource Centre at Trinity College, Dublin. Switzerland, through Yinternet.org, an Institute dedicated to research and training in e-Culture which has participated in several lifelong learning programmes.

As stated above, the manual is aimed principally at trainers throughout Europe working with schools and who have responsibility for education, children and young people.

The development of a training manual

The development of the manual was thus based on a process of research with two key steps: a) the first year, from October 2008 to October 2009, with two major research areas: a.1.) needs assessment of trainers, a.2.) analysis from the perspective of experts in different countries, b) the second year, from October 2009 to the end of 2010, combines the steps necessary for the construction, validation and dissemination of the Training Manual in printed and digital (*eBook*) form.

The Portuguese team played a crucial role in step A, and did so in the first instance (a.1.) by means of a needs analysis, conducted using an open online questionnaire answered by 55 trainers from different countries, and subsequent discussion via an *Online Forum* supported by the Moodle platform.

The German team also played a crucial role in step A, and did so in the second phase (a.2) by means of an analysis of studies and projects connected with *cyberbullying* carried out in Europe, also using an open questionnaire, to which 48 specialists in this field submitted replies, as well as an online *focus group*, with a view to synthesising perspectives on the problem of *cyberbullying*.

Analysis of training requirements concerning cyberbullying at a European level

The analysis of requirements was a task co-ordinated by the Portuguese team, made up of teachers at the Faculty de Psychology and Educational Sciences at the University of Coimbra. The major aim was to obtain information about requirements relating to the training manual on *cyberbullying*. A methodological approach was designed incorporating various methods of a qualitative nature.

The subjects - a sample of trainers at European level

As we have mentioned, the diagnosis of requirements was carried out among potential trainers at a European level, a survey which operated at two levels: a) online questionnaire and b) online forum.

From the beginning full use was made of the online nature of the project, supported on the Moodle platform²⁴, to tackle in a collaborative way the issues which would enable us to define the significance and characteristics of a trainer.

Thus the first step was to launch the online forum with the aim of building up a '*Trainer Profile*'.

For the second step we sought the co-operation of all partners in the project so as to construct a representative European sample of potential trainers in the field of *cyberbullying* and we produced 6 lists of trainers: in Germany, Spain, Ireland, Portugal, Bulgaria e Switzerland.

The *trainer profile* (Table 1) was built up by collaboration and we thus obtained our final sample²⁵.

²⁴ <http://moodle.zepf.eu/course/view.php?id=2>

²⁵Initially we obtained a sample of 43 trainers who filled in an online questionnaire. In the second phase we included 12 other responses from a group of trainers from Switzerland, bringing the total number of respondents to 55. Of the 55 subjects who constituted our sample, most were female (63.6%; n = 35). Most trainers are European (94.5%; n = 52), including 21 Portuguese (38.1%). Switzerland was represented (21.8%; n = 12) as were Ireland (12.7%; n = 7) and Spain (9%; n = 5).

Table 1: The group of trainers – respondents to the Questionnaire and Forum

Groups of trainers	Subgroups	N- Online questionnaire	N- Online Forum
ICT trainers (educational technologists)	Companies	2	
	Experts-national initiatives	3	
	Individual trainers	2	
Research and training centres	Universities and other institutions	20	11
	Training centre	1	1
Police and law experts	Police	1	
School staff	Teachers	10	3
	Counselling psychologists	4	1
	Principal	2	
	Librarian	1	
Others	Youth house – social work	1	
	Foundations and associations	2	
	Church and School	1	
	Communication	4	
	Physics	1	
Total		55	16

The tools - the Questionnaire and the Online forum

The questionnaire was developed collaboratively, in a three-phase process, and supported by an online environment set up for the purpose by the project co-ordinator:

- a) The first phase consisted of the development of a *guidebook* in which the problem was formulated, the objectives and the issues set out in a logical or practical order. The development of this work of reference was also supported by a forum²⁶.
- b) The second phase consisted of the preparation of *the final version of the qualitative questionnaire*. The questionnaire contained eight open questions which had previously been discussed and developed in the forum.

²⁶ Moodle platform [CyberTraining - A Research-based Training Manual](#)

c) The third and final phase, involved the definition and implementation of the online version of the questionnaire²⁷.

The Online Forum²⁸ was designed for comments and discussion of the results of the online questionnaire, to gather additional information about the requirements and preferences of trainers and to give other trainers an opportunity to take part in the diagnosis of requirements and so participate in the development of the manual.

The questions on the online forum were defined in accord with the analysis of the content of replies to the online questionnaire. The main questionnaire results were chosen and structured into topics, categories and subcategories on which participants in the online community were then asked to comment.

The development and activating of the forum corresponded to the five-level model of G. Salmon (2000): a) *access and motivation* – an address and password were sent to all participants and motivation issues dealt with by means of a ‘welcome’ space available to the whole community; b) *socialisation* - a space and time were afforded within the forum so that all participants could state ‘who I am’ and so introduce themselves to others in a ‘natural’ way; c) *information exchange* – which consisted of task proposals based on materials developed for this purpose: three short texts and three powerpoint documents; d) *construction of knowledge* – design, development and activation of the discussion around the documents and materials supplied; e) *development* – of knowledge to support a definition of *cyberbullying*, of the elements of a training manual and of a trainer’s difficulties as well his or her main skills.

Processing information – content analysis

Content analysis allows raw text data to be transformed using precise rules of reduction, enumeration and aggregation, into indicators relevant to research (Amado, 2000; 2010).

Analysis of results

As regards the replies given to the Online Questionnaire and to the subsequent discussion on the Online forum, we shall note here the main results of the content analysis relating to the most salient aspects in terms of their importance in the development of the manual.

²⁷ <http://www2.fpce.uc.pt/form/ct/> pass: ct2009

²⁸ <http://moodle.fpce.uc.pt/course/view.php?id=6>. Password bully2009

The definition and characterisation of the cyberbullying phenomenon

It was considered crucial to make information available relating to the definition of the concept of *cyberbullying* (see Table 2), and its distinction from that of *bullying*.

Regarding the definition of *cyberbullying*, as put forward by respondents to the Questionnaire the Online forum, it was considered that account should be taken of six main aspects:

- type of action/message – from intimidation (‘invading another’s space’) to victimisation e aggression;
- characteristics of the action – a set of features that need to be identified and so might form the basis of a *check list* permitting differentiation between *cyberbullying* and traditional *bullying*;

Table 2: The nature of the concept of cyberbullying

Categories	Online Questionnaire Subcategories	On Line Forum Subcategories
Concept of <i>cyberbullying</i>	Definition	Definition
	Types of action	Types of action
	Characteristics of action	Characteristics of action
	Consequences of action	Consequences of action
	Characteristics of media used	Characteristics of media used
	Characteristics of target group	Characteristics of target group
		Profile of victims and aggressors

- consequences of the action – from feelings of guilt, to panic, or to various impacts diversos on self-image;
- means employed – from fixed or mobile telephone to the use of current social networks;
- the characteristics of targets of the action, whether ‘someone’ or ‘other people’, also needs, in the opinion of respondents, to be adequately delineated;
- information on the profiles of victims and offenders was considered necessary in order to arrive at pertinent diagnoses.

Cyberbullying: theoretical models

The manual ought to contain explanatory models of *cyberbullying*. Although this was emphasised in clear, accurate, simple and accessible language, a need was felt to for theoretical models to aid in understanding the problem and to allow it to be distinguished from similar phenomena, as well as in relation to a response based on the framework of Education for the Media or within the scope of Educational Technology.

In this context, information about policies on *cyberbullying* at local and European level was also considered relevant as too were statistical and demographic data on the impact of the phenomenon at the European level.

Main skills

The diversity of training situations of which the work in this area is made up, whether carried out by parents, teachers or students, relates to a variety of demands brought out in the responses from potential trainers. In Table 3 below are set out the skills mentioned by these subjects.

Table 3: Trainers' skills

Categories	Online Questionnaire Subcategories	On Line Forum Subcategories
Trainer's skills	Personal and interpersonal	Personal and interpersonal
	Cognitive	Cognitive
	Communication	Communication
	Technological-pedagogical skills	Technological-pedagogical skills
	Diagnosis and Evaluation	Diagnosis and Evaluation

As regards personal and interpersonal skills the need for the following capabilities is emphasised: empathy, assertiveness, openness, reflectiveness and the availability for group work. Communication skills were stressed, in particular, the ability to listen and to provide clear, non-judgmental information. Participants also attached importance to technical and teaching skills, that is, to the training necessary to impart information properly and to create contexts in which pertinent knowledge about the phenomenon may be built up by the trainer. With regard to cognitive skills, among the most often mentioned as fundamental, particular mention should be made of the need to know how to identify, predict and critically analyse, with reasons, the situations in which *cyberbullying* can occur.

Materials and Resources

According to the analysis, the subjects, as potential trainers, considered that the manual ought to contain certain important resources and materials.

So that the manual may guide the trainer towards a meaningful set of strategies for analysis, diagnosis and intervention in schools, with families and with young people in general, it should not only include relevant information regarding the phenomenon but also provide a set of materials and resources carefully selected and designed for that purpose. Indeed, as the subjects themselves have said, it is important to provide a set of resources required for action, such as (Table 4):

Table 4: Materials and Resources in the manual

Categories	Online Questionnaire	On Line Forum	
Research and observation measures	Diagnosis	Yes. Diagnosis tools.	
	Needs analysis	Yes	
Material and technological resources	General materials	Cartoons, ads, games	
	Narratives, cases	Good practices, general guidelines, real stories	
	Audiovisual resources	Films, videos, CDs, Power-point docs	
			http://video.google.es/videoplay?docid=7691208749829559495 http://video.google.es/videoplay?docid=-378372367544784610
	Digital resources	forum, blogs, sites http://www.psicoeeducacion.eu/?q=/node/9 - site bullying http://www.antibullyingcampaign.ie	
	Written documentation		
News			

As we have already pointed out in other works, (Amado et al.,2009; Matos et al., 2009) the importance of the manual incorporates, among other things:

- cases of *cyberbullying* composed either of real case histories or of fictional narratives – a resource suggested by a large number of respondents (12 subjects and 15 registration units);

- *audiovisual material* – which might include images and/or films to be used for various educational purposes (16 subjects and 18 units);
- *recursos digital*– blogs, sites, etc (11 subjects)

The contribution of specialists in the development of the manual

The Zentrum für empirische pädagogische Forschung (zefp) of the University of Koblenz, Landau, Germany invited about 120 specialists from all over Europe to take part in an online questionnaire²⁹ with five open questions, to which 45 usable responses were received³⁰. The replies were subjected to a content analysis³¹ which yielded a set of 866 registration units and which in turn were synthesised around three major issues or categories.

In summary we may say that the specialists identified the following issues underlying *cyberbullying* for inclusion in a training manual: a) causes or factors responsible for the development of *cyberbullying*, b) useful approaches to combating *cyberbullying* and c) elements which should be included in a training manual education on *cyberbullying* (Matos et al. 2009).

Causes of cyberbullying

The causes and nature of *cyberbullying* or our understanding of how it has developed entail, in the opinion of the specialists, an account of the following aspects or factors:

- New technological developments and new ways of using them (37³²) -
- Characteristics of ICTs (22).
- Factors motivating bullies (30)
- Ignorance and lack of education (22)
- Lack of laws, controls and records (18)
- Excessive parental protection (15)
- Factors similar to those that apply to traditional *bullying* (12)
- New lifestyle among young people (7)
- Factors within society (5)

²⁹ Using the Unipark survey software (www.unipark.info)

³⁰ In fact eight specialists from the UK, four from Germany and three from Greece, along with two from Lithuania and Portugal took part, as did two specialists from Australia, one from the USA and another from Japan.

³¹ The content analysis was carried out using dedicated software from MAXQDA

³² Number of instances registered

- Factors within the media (6)
- Factors within schools (6)

Approaches to dealing with cyberbullying

In specialists' opinions, the approaches likely to be most effective in understanding and dealing with *cyberbullying*, are as follows:

- Knowledge about ICTs (18) – better appreciation of the potentialities and dangers of various technological tools.
- Definition of rules, sanctions or punishments and monitoring their application (43) – specialists emphasised: the importance of legislation in this area, accountability of service providers, and definition of use policies .
- Measures to be taken by society and by the authorities, by businesses and service providers (22). Agreements such as the “*Safer Social Networking Principles for the EU*” between the European Commission and some of the larger social networks signed on Internet Security Day in Luxemburg in 2009, which is an example of a step towards a common global approach to the problem.
- Approaches targeted at children and young people (16) - an important strategy in combating this problem which will certainly involve initiatives for the *empowerment* of children and young people, both in enabling them to manage risks and in raising awareness of the need for responsible forms of communication with others. The “*CyberMentors*” initiative³³, is an example of an initiative that has been found effective in combating *cyberbullying*.
- Approaches targeted at parents and other adults (14).
- Approaches centred on schools (32).

Features of a training manual on cyberbullying

According to the specialists, the training manual on *cyberbullying* should be orientated essentially towards practical concerns. On the other hand, its content should include information on *cyberbullying* and ICTs and should clarify educational issues, such as those concerning practical suggestions and ‘tips’ on development of personal and interpersonal communication skills. More specifically, the manual:

³³ www.cybermentors.org.uk

- should contain a module with basic information on *cyberbullying*: definition and distinctions between it and traditional *bullying*, historical development of the concept, its causes, risk factors and incidence levels, types of *cyberbullying* and profiles of bullies and victims as well as the impact(s) that *cyberbullying* has;
- should contain a module on Educational Technology with basic information on the topic, as well as on recent technological developments and their impact on education and the lives of young people. It should contain another module centring on Education for the Media and on the safe responsible use of the various resources and software;
- should provide, in a practical form, basic and general methods of prevention and orientation citing examples of good practice, innovative approaches and small grants ;
- the manual should also include references to URLs of organisations e institutions concerned with prevention and responses at various levels in regard to *cyberbullying*. It should also contain hyperlinks to materials e resources of proven quality.

From analysis of requirements and evaluation of the state of the art to the development of the manual

- The main implications of the research work undertaken may be said to relate to the following aspects:
cyberbullying is a phenomenon at the interface between two traditionally separate areas of research and knowledge production: internet security, and violence and bullying at school:
- most manuals and guides on *cyberbullying* in different countries centres on topics related to internet security and have been developed by ICT specialists. In fact, these manuals have focused on such topics as: internet security, privacy and social networks, data protection education of the media. The issues most directly related to conflict resolution as well as social and emotional aspects linked to the new media have not been dealt with. It seems appropriate that the manual should incorporate these two dimensions or approaches and thus benefit from the experience and know-how that have been developed in these fields of knowledge.
- the main target group or groups for the manual are those trainers who, in their turn, will work with young people, parents, teachers and educationalists.

- the manual should consider trainers' requirements, both in its style or *layout* and in its contents, that is, it should be practical and easy to read and understand. It should answer to the requirements expressed in the needs analysis.
- the manual should include a module or section focused on basic information about and raising awareness of *cyberbullying*;
- the manual should provide basic information on ICTs so as to promote a closer understanding between generations.
- the manual should provide information of a legal nature to facilitate confronting the problems of *cyberbullying*;
 the manual should, as already mentioned, contain basic information on general approaches and strategies to allow prevention of and responses to *cyberbullying* as well as examples of good practices and innovative approaches (e.g. *CyberMentors* and *Beatbullying*).

Final thoughts

The Manual will include specific chapters on the following topics: general training issues; basic issues related to *cyberbullying*: aspects of the definition of *cyberbullying*, the various sub-types and forms of *cyberbullying*; a chapter on basic issues relating to ICTs; European strategies for confronting the problem of *cyberbullying*; strategies for working with parents, schools and with children and young people. The Manual will end with an exhaustive compilation of references, links e other resources for trainers.

To sum up, it is envisaged that the main result of this project will be a manual which effectively answers the various difficulties encountered by trainers in their training activity, and which will thus provide a useful and valid resource in the context of responses designed to prevent or combat the problem of *cyberbullying*.

The Manual will be published online at the end of 2010, in e-Book format.

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Training Teachers to Use Ict as an Integrated Part of Their Teaching

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Abstract

This article is based on an action research project at a lower secondary school in Hamar, Norway. The project tried out if ICT-supported learning processes based on a production perspective would lead to improved learning outcomes for students. In this article we want to discuss, on the basis of our experience, to what extent to conduct ICT training as an integral part of the professional development in a school will have lasting effects - beyond the project period - on the practice of the involved teachers. A main conclusion is that by being able to provide ICT support for teachers when they need, instead of general courses, the teachers has improved their ICT skills and got increased ICT confidence. We see that participation in the project have changed these teachers' practice because they have been given time to experience that ICT might improve the learning outcome for their students.

Keywords: *ICT, professional development, secondary school*

Introduction

School development in most countries has long been characterized by an increasing effort to integrate information and communication technology (ICT) in all teaching and learning. In Norway, this is most clearly reflected in the new curriculum from 2006 (Ministry of Education and Research 2004) where to use digital tools is one of five basic skills, equally important as to be able to express themselves verbally, to express themselves in writing, to read and to count and ICT shall be used in all academic subjects. Compared to previous curricula, this implies a substantially greater emphasis on ICT in schools. There are two main arguments for the heavy investment in ICT. One is that schools have to follow the technological development so that the students are prepared for a society where the use of digital tools is a natural part of life. The second argument is the assumed learning-enhancing effects of ICT.. The argument is based on an assumption that the systematic and professional use of ICT will

enhance academic learning. The problem with this argument is that despite extensive research over many years, we lack clear scientific evidence to support this assumption. It is argued that teachers with constructivist learning style are more positive towards ICT use than those with a more teacher-controlled vision (Windschilt and Sahl 2002, Webb and Cox 2004, Becker 1999). Many therefore believe that a constructivist, student-centred approach is appropriate when it comes to exploit the learning-enhancing potential of using ICT in schools. But it is not enough. To succeed with the integration of ICT in the subjects we need teachers who are digitally competent and able to make ICT a part of the learning process (Passey 2006). It has been given numerous ICT training for teachers to get them to increase their use of ICT in education without it, given the desired results. There are many who point out that this is because they have underestimated the challenges it is for a teacher to integrate ICT in their work in school (Hakkarinen et al. 2001, Wikan et al. 2010a). It is therefore our hypothesis that it is necessary to integrate ICT training as part of general professional development for teachers. We will also argue that changing teachers' practice is a time consuming process that can only be successful if they find that the new way of teaching will improve students' learning.

Professional development for teacher change

In what way one offer the most effective in-service training or professional development of teachers in the field of ICT and education is a central question. What one actually asks, then is how to offer professional development programmes that will change teachers' practice in the desired direction. With the desired direction, we mean here that the political authorities and leading educators at any time see as appropriate behaviour in the classroom (Griffin 1983). Thus the purpose of education is to change teachers' attitudes and beliefs about what leads to better learning outcomes for students (Strømstad et al. 2006).

These range from everything from short day courses, where teachers are taken out of the classroom on one end of the scale to training in the workplace. In addition, these programs may be short term or take place over a longer period. A common denominator for the various training programs in is that they usually are not very effective (Day and Sachs 2004). Training is ineffective because it is not taken into account what it is that motivates teachers to participate in continuing education and because it is not understood what is needed to achieve a change in a teacher's behaviour in the classroom (Guskey 2002). Study emphasizes that teachers attend courses because they want to learn something practical, or have any concrete knowledge that will make them better teachers (Fullan and Miles 1992). If they do not feel they get what they consider the course are wasted. Guskey (2002) said that

"a teacher first will change the way he or she teach if he or she has learned that this leads to better learning outcomes for students. We choose to use the learning outcomes of what a teacher at any time, believes it is showing that he or she does in the classroom works, ranging from better test results, more student activity, increased motivation and calmness in the classroom.

Guskey (2002) argues that those who create educational programs – in-service programmes - often take it for granted that the teacher's attitude to the new that comes first, and then changes into practice afterwards. He believes that this is wrong. Teachers are apparently positive for the new, but it will not permanently affect the way they teach before they have learned that it leads to better learning outcomes for students. This is why even if you have previously spent time to involve teachers in the design of the course and you are sure that it fills a need, it still will end up to have little lasting effect in the classroom practise. The main point is that it is not education in itself but the teachers 'experience of what she has learned that lead to the improvement of students' learning outcomes, which in turn will lead to changed attitudes and thereby changed practice (Malserez and Wedell 2007). A comprehensive study of education in English schools support this conclusion, the teachers changed practices because they saw that students had better learning outcome as a result of the new way of working (Deaney and Hennessy 2007). *So it is perhaps appropriate to talk about a cyclic path here, training, testing in practice, improved learning outcomes, change in teachers' attitudes that lead to sustained change in practice.* To succeed in changing a teacher's practice through continuing education the following should be considered to (Guskey 2002):

1. Recognize that change is a gradual and difficult process for teachers
 - a. Extra work in the beginning
 - b. Creates uncertainty, lack of coping, may seem threatening
 - c. Possibility of failure, at risk of spending time on something that does not work
2. Ensure that teachers receive regular feedback of students' learning outcomes
3. Provide ongoing supervision, support and pressure
 - a. The new must be a natural part of the teacher's repertoire
 - b. Important to follow-up because education must be seen as a process and not as an "event".

Research design and the action

The present article is based on both qualitative and quantitative data. Qualitative data was gathered from a selected group of teachers who took part in a project aimed at developing

their ICT skills. It was in collaboration with school leadership selected two teams of teachers, a total of 10. These were responsible for each group of students, 60 students in each group. It was established a working group consisting of the two team leaders and two from the research group that planned the action part of the project. The collaboration lasted three years, from fall 2007 to spring 2010 and the same group of students were followed from the beginning to the end 9.klasse 10.klasse.

At the start of the project we interviewed all teachers individually in order to identify their professional background and experience as well as any formal or informal competence in the use of ICT in teaching. It turned out that most of the teachers had attended computer courses, but that there were only three who felt very knowledgeable.

We agreed that teachers should be trained in MS Photo Story 3 and a simple animation program and that there were teachers who would teach the students. The Microsoft Photo Story 3 software was introduced to the teachers at the start of the project, encouraging them to apply this as a presentation tool. Ms Photo Story 3 is presentation software which enables the learners to present their work as short movies with pictures, music and recorded text. Before the school year started, training programs were conducted with the teachers involving digital storytelling as a particular genre and general software training.

At the initial stages of the project the majority of the teachers started out with a very enthusiastic attitude towards the idea of ICT- supported learning but gradually they became more reluctant to the whole project and at one stage almost negative. Many factors may explain these phenomena, but gradually it became apparent that the main problem was rooted in the lack of ICT competence among the teachers. This initiated a series of elementary upgrading courses offering training in basic ICT skills such as Windows office, file handling and internet ethics in order to boost both teachers' competence and confidence, which are considered as vital factors for the successful integration of ICT in their daily practice and The research team was regularly in school to support teachers in their use of ICT in teaching and was always available by mail and telephone if the teachers needed help. Teachers needed to be confident in the technical side of ICT use before they were confident enough to plan ICT use in their teaching. Initially, we underestimated the teachers' need for security on the computer technical field.

Focus-group meetings were used monthly in order to discuss the teachers' attitudes and discuss their experience with using ICT. The focus-group meetings lasted approximately 1.5 hours and with a few exceptions all the teachers attended the meetings and communicated their experience. Typically, the teachers came up with different examples related to their own subjects and elaborated on what impact ICT might have on teaching and learning. Between September 2007 and June 2009 two researchers conducted 20 individual teacher interviews and 10 focus-group interviews. We also asked the teachers to write reflection notes.

The data was analysed by sorting the answers and observations' into categories representing main themes that appeared on a regular basis. Some of the themes were later discussed with teachers and learners during interviews, and teachers were asked to consider them in their reflection notes. Recurring themes were the learning outcome of ICT, when and how teachers' used ICT, how they evaluated learners' attitude to school work when they used *ICT*, and their evaluations of how well the learners collaborated. The steps of analyses followed the principles in grounded theory, we developed analytical interpretations of the data and used these for further data collection in order to refine the theoretical analyses (Denzin and Lincoln 2003).

The quantitative survey was conducted at all three secondary schools in the municipality of Hamar. The survey was carried out during June 2009. 59 teachers filled in a questionnaire. This is 65 % of the total number of teachers in those schools. The data were analyzed using the Statistical Package for the Social Science (SPSS) and tested for representativeness. In the questionnaire we gathered information about age, subject of teaching, sex, attendance on ICT courses, and if and for what purposes they used ICT. We also asked them about their views on ICT and learning outcome. 58 % were women and 42 % men, 39 % were between 25 – 35 years old, 27 % between 35-45 and 34 % more than 45. This resembles the universe which means that our sample is representative.

How the project influenced use of ICT

At the end of the action research project, in June 2009, we tested all of the municipal school teachers, their attitudes to and use of ICT in teaching. The aim was to see whether the teachers who had received training, "project teachers, differed from the others in the community.

It turned out to be relatively large differences between the "project teachers and other school teachers in the use of ICT. 63% of the "project teachers' use of ICT frequently in their teaching, figures for the other was only 16%.Project teachers" seemed also more often to allow their pupils use ICT at school, the figures are 75% versus 42%. The results indicate that participation in the project, the training they have received and the experience they have done makes the "project teachers" see the benefits of using ICT in school more than the other teachers in the district.

Those teachers who have received systematic training and support in the use of ICT find ICT more useful as a leaning enhancing artefact than the teachers who have not been involved in the project (Table 1). The vast majority of teachers in the project argued that increased learning outcome is a result of the fact that the students are working harder when they are

allowed to use computer for school work and at school. In addition, the quality of submissions and presentations of home work is better. It is still a lot of wasted time with unfocused surfing the web and computer technology buzz, but this is offset by the fact that students are more motivated. Teachers in the project experienced that they could get students to work more systematically on the web when they gave them strict limits and complete URL address.

Table 1 Teachers' views on ICT and learning outcomes for students.

	improves performance	Increases learning outcomes	Learning more subjects	Motivates	Promotes collaborative learning
Continuing education project	75 %	62%	62%	75%	50%
Not included in the project	29%	58%	22%	76%	14%

Some teachers expressed specifically that to challenge students to create digital multimodal films gave higher learning outcome because the students became more motivated and that means they spend more time on schoolwork, work focused and through it learn more. Many emphasize that with these method pupils who have never submitted homework do so. Very often these are boys. Many of these have computer skills and spend much of their off school time in front of a screen. Now they could use this skill a school as well. The leisure competence of the students is drawn into the classroom and it allows more people to succeed in school.

Many teachers also believe that when students are allowed to produce their own digital multimodal texts they work much harder and more motivated and not least, work better. This means that the benefits of teamwork and project work is better and more after the intention with these working methods. A known problem with group and project work is that the students engaged in extensive division of labour and do not really cooperate not to say collaborate. When the presentation is to be a short film, they are forced to discuss and collaborated on the script and production. In the fact-finding phase that consists of surfing the web, more than reading the book, we still generally low and most cooperative labour, as one teacher put it:

Requires group collaboration in order to make a multimodal text, 2-3 must work together, they must also work at home. I think the group process is important for evaluating the complex texts they provide. But it is an important process, how to work with multiple digital tools in the same product. See more pupils deliver excellent products of group work and I do not think they could if they worked more traditionally, with pen and pencil I mean. (female teacher age 37).

The results of the quantitative study show that teachers who have participated in the project are more positive towards that ICT can improve learning outcomes than the other secondary school teachers in the municipality. Through the project, they have received support to try out different ways to use ICT with particular emphasis on putting students into production perspective. We the researchers have helped the teachers to overcome their lack of technical skill and encouraged them to try the use of ICT in their teaching. They have gotten feedback from their students that they liked to work with computers and they have seen that many students have delivered better products with greater academic insight than before. It is this experience that makes them more confident that the ICT used in a professional planned way, improve learning outcomes for students. Many of the other secondary school teachers had also undergone various computer courses before but it does not seem to have effect on their attitudes to and use of ICT in their teaching (Wikan et al. 2010b).

The teachers use of ICT one year after

One year after the project was finished, spring 2010, we carried out interviews of the teachers to see if they still used ICT in teaching. The purpose was to study whether the program had lasting effects on practice or whether teachers had fallen back to old practices when the project was over.

It was found that ICT use had changed from what it was before the project started in autumn 2007. All teachers except one said they either had used or had in the annual plans to use MS Photo Story 3 or similar program in this academic year. All said they also used other PC tools, and felt that the project had upgraded their skills that gave them confidence to choose to use ICT in teaching if it could lead to increased learning outcomes for students. They felt competent digital in the sense that they were able to assess the usefulness of ICT on a par with other tools they had available to promote student learning.

All but one teacher said they believe that by using ICT to put the learners in the production role leads to increased learning for many students. In addition some students can express themselves better when they get to work with digital productions.

One of the teachers who have always been sceptical about whether this was useful in her subjects have not yet found the time to use ICT to create multimodal texts, but as there is a separate learning goals in the Norwegian course she says she will use it, but then as digital storytelling in which students express their opinion. Another teacher who has been positive to the project but who have expressed a need for more training after the project was over, however, has ensured that the use of digital multimodal texts were given to her class by getting others to do so. One is the slightly older female teacher who needs a lot of support to even dare to use ICT. She says that she is now so old that it is not so easy to start something new. But because she has experienced that the new – ICT - is useful to improve learning outcomes for students, she makes sure she has others to help them, including teaching students in practice. The teacher in Norwegian is also typical of her profession. There are other studies that also show the mother tongue teachers is often sceptical to ICT and feel that they should represent a counterculture against all the new (Erstad 2004).

One other teacher came late into the project and had little training in ICT but has always been positive. He has not started according to himself to use ICT this year, but has plans for next year. Here he blames on the practical organization and cooperation with a new teacher who has used digital multimodal texts, he does not say that he did not think it can lead to more learning outcomes for students. Because he came into the project after it was founded, he has not been involved in the process by which the other teachers in the team and therefore not received the same training and follow-up from the researcher as the other teachers. There is reason to believe that he has not had enough time to go through the process necessary for that he should be able to take an independent position on ICT from his own experiences on students' learning. As one can see from the quote he has not taken the initiative to continue the program:

No not made such films, it was PowerPoint instead. Has set up a plan for digital storytelling, we will use it with the nine grade in Norwegian, good for writing and / or the presentation of a book (male teacher in 40-years).

Only one of the teachers said he had neither used what he had learned in the project, nor had plans to use it in his academic subjects. He teaches physical education and mathematics and he cannot see that digital multimodal texts lead to improved learning outcomes for his students. He is possibly the most computer literate teacher at school and he has been a driving force in the project and believes that multimodal texts produced by students can lead to increased learning in most subjects. This shows that it is not lack of ICT competence that hold him back from using ICT in the classroom, but lack of enhanced learning outcome for the students according to his experience.

The main impression is that most teachers have continued to use what they have learned through the project. They use it in their teaching because they have experienced through their teaching that the use of ICT such as digital multimodal texts can improve learning outcomes for some students. However they underline that students do not necessarily get enhanced learning outcome when using at a computer. ICT use must be planned well and to be an integrated part of the academic work for it to make sense in school. In the beginning, there were many teachers who said that it took more time than normal teaching. As one teacher put it:

But it does not come by itself it takes a lot of time in the beginning. One must be very aware of what is the goal, which is important and use time on content and not just on the technical (male teacher in 40-years).

Discussion

A year after the project collaboration was over there was a positive attitude among teachers who had been participating with the use of ICT in education in general and to the use of digital multimodal texts more specifically. They said that for them, ICT has become a natural part of the toolbox. All teachers use ICT in their teaching and all but one had used or would use digital multimodal texts as work requirements for students. An important reason why they would continue to use ICT was that they have seen that their students work harder, more focused and more motivated with school work. It was particularly pointed out that, for boys it worked well as a motivating factor. So, both directly and indirectly, the teachers said that they believe that ICT use in a production perspective can enhance learning outcomes for students.

It is interesting to see that teachers today are so positive given that they started out being very sceptical towards the usefulness of ICT as a learning artefact in their subject. Many of the teachers seemed to regret that they had let themselves be involved in the project. They claimed that ICT took too much time, it could be technical problems and they always had to schedule with back-up solutions (Wikan et al. 2010a). They also said that the project stole time from other academic work so that they had trouble getting through the curriculum. ICT was in other words, set up against learning objectives of the national curriculum, and was not initially seen as something that helped to achieve learning goals. It was the present of the researchers that pressed on by constantly asking what they had experienced since the last meeting, invited them to short up grading courses and laid plans for further progress was probably an important reason why they did not quit. It was only in the second year that the

teachers stopped to look at ICT as an issue. It turned out that many of these arguments against using ICT were forgotten as the teachers became more confident in their computer use. They experienced that the students worked hard, motivated and submitted good products. We experienced much the same as Guskey (2002) said; to change the way a teachers work in a classroom is a gradual and troublesome process. It takes a long time to change practice and it can only occur if the teachers themselves find that the new they have learned leads to improved learning outcomes for students. We as researchers had to give much more support in the use of ICT and also ideas for how it could integrate into the subject than we thought at the start of the project. Discussions with teachers in focus group meetings and also one to one, were useful forums for exchanging experiences and useful for the project took a shape and direction that gave meaning to the teachers in their daily work. We therefore believe that we can conclude that this way of conducting in-service training have a better potential to change practice than short courses. This is supported by most teachers at our school.

It is not possible for us to prove that the knowledge and experience that "our" teachers have been through trial, error and learning in the project have spread to their colleagues. There are a few of the teachers who have not been involved in the project who see benefits from working in the same way, that is use ICT to permit the pupils to produce multimodal texts. But it is uncertain whether this is a direct effect of the project. Most teachers at the school do not use this digital work method. Team organization can be a barrier to the spread of new working methods and techniques such as Photo Story 3 and the production perspective. The role of the headmaster and the rest of the school management must be vital to ensure that good practice is shared. They must have the responsibility to create an environment for continuous change and reflection on own work and a milieu for sharing (Fischer 2004).

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Online Dependence

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Abstract

The article discusses online tutoring. The research data was collected at the School of Vocational Teacher Education during an optional online course. The online environment is defined as an open learning environment. It is a pedagogically and technically appropriate environment for the student designed to be available on the data networks. Based on the model suggested by Anderson et al., Wang (2008) has further specified and outlined four dimensions of the tutor/tutoring, dividing the responsibilities and roles in tutoring into pedagogical, social, managerial and technical tutoring. These forms of tutoring are essential to the implementation of this research and the analysis of its results.

Keywords: *tutoring, online environment, teacher education*

The aim of this study

Describe the students' experiences of studies and tutoring in the course.

The course under study is an optional course at the School of Vocational Teacher Education.

The course has been constructed for the Blackboard learning platform.

The links on the course homepage: Curriculum, Learning materials, Tasks, Summary and printing, Links and literature, Discussions, E-mail, Calendar.

Approved completion of the course requires the completion of two written tasks and active participation (a minimum of six turns to 'speak') in discussion on two given topics. A week per topic is reserved for the discussions. The size of a discussion group is 10-12 students. The course lasts for about one and a half months.

The course has been available for five years. It has been modified somewhat upon the introduction of the Blackboard platform in 2007, for instance. Supplementary materials have also been updated. The student feedback that forms the research data was collected by a questionnaire including open-ended questions. Free-form written feedback has also been gathered from the students by e-mail. 40 random pieces of feedback were included in the analysis.

The responses to the questionnaire were analysed by themes using the cross-case analysis. Free-form feedback was also analysed based on the themes on the form. The responses were crystallised and an effort was made to reveal the essential issues. Authentic comments by the students are linked to the presentation of the results. Presentation of the results makes use of the four dimensions of tutoring tasks in online discussion as outlined by Wang (2008).

The results indicate that the biggest challenges are connected with the tutoring of online discussion. It was thought to be problematic to reach the level of dialogue. The applied nature of the learning tasks and written feedback were considered encouraging. The written learning materials constructed for the course were also thought to be good and tutorial.

Interaction in an online environment

The online environment is defined as an open learning environment. It is a pedagogically and technically appropriate environment for the student designed to be available on the data networks. In online studies, the materials, tasks and tutoring related to the studies are available to the participants on the network. There may be online interaction on various levels: between the teacher and student, between students, in the self-correcting multiple-choice questions built into the learning materials and in links to the worldwide network. (Matikainen and Manninen 2000, 154-155.)

Tutoring in an online environment

The tutor's tasks in an online environment may vary from technical assistance to providing content expertise. When the tutor is required to have content expertise, the tasks of the tutor and traditional teacher are very close to each other.

Anderson et al. (2001) have developed a model describing online education which encompasses three teacher roles that differ from one another: 1) cognitive presence, 2) social presence and 3) educational presence. Based on the model suggested by Anderson et al., Wang (2008) has further specified and outlined four dimensions of the tutor/tutoring, dividing the responsibilities and roles in tutoring into pedagogical, social, managerial and

technical tutoring. These forms of tutoring are essential to the implementation of this research and the analysis of its results.

Learning environment in the online course

The course under study is an optional course at the School of Vocational Teacher Education. The course has been constructed for the WebCT learning platform.

The links on the course homepage: Curriculum, Learning materials, Tasks, Summary and printing, Links and literature, Discussions, E-mail, Calendar.

Approved completion of the course requires the completion of two written tasks and active participation (a minimum of six turns to 'speak') in discussion on two given topics. A week per topic is reserved for the discussions. The size of a discussion group is 10-12 students. The course lasts for about one and a half months

Research implementation

The course has been available for five years. It has been modified somewhat upon the introduction of the Blackboard platform in 2007, for instance. Supplementary materials have also been updated. The student feedback that forms the research data was collected by a questionnaire including open-ended questions. Free-form written feedback has also been gathered from the students by e-mail. 40 random pieces of feedback were included in the analysis.

Analysis of student feedback

The responses to the questionnaire were analysed by themes using the cross-case analysis. Free-form feedback was also analysed based on the themes on the form. The responses were crystallised and an effort was made to reveal the essential issues. Authentic comments by the students are linked to the presentation of the results. Presentation of the results makes use of the four dimensions of tutoring tasks in online discussion as outlined by Wang (2008).

Research results

Student feedback was mostly about online discussion and its contribution in terms of content. There was less feedback on tutoring as such. As the learning environment had been constructed to be tutorial, all feedback is basically also related to tutoring.

Tutoring of online discussion (D)

The students were satisfied with the tutoring of online discussions, and they had a positive attitude towards the discussions on the whole.

The tutoring in the course was encouraging, knowledgeable and flexible. It was a pleasure to study on the learning platform (19)

Some of the students also considered tutoring more deeply from the viewpoints of pedagogical, managerial and social tutoring. Meanwhile the need for technical tutoring was not mentioned by them. There was also little need for technical tutoring in online discussions according to Wang's (2008) study.

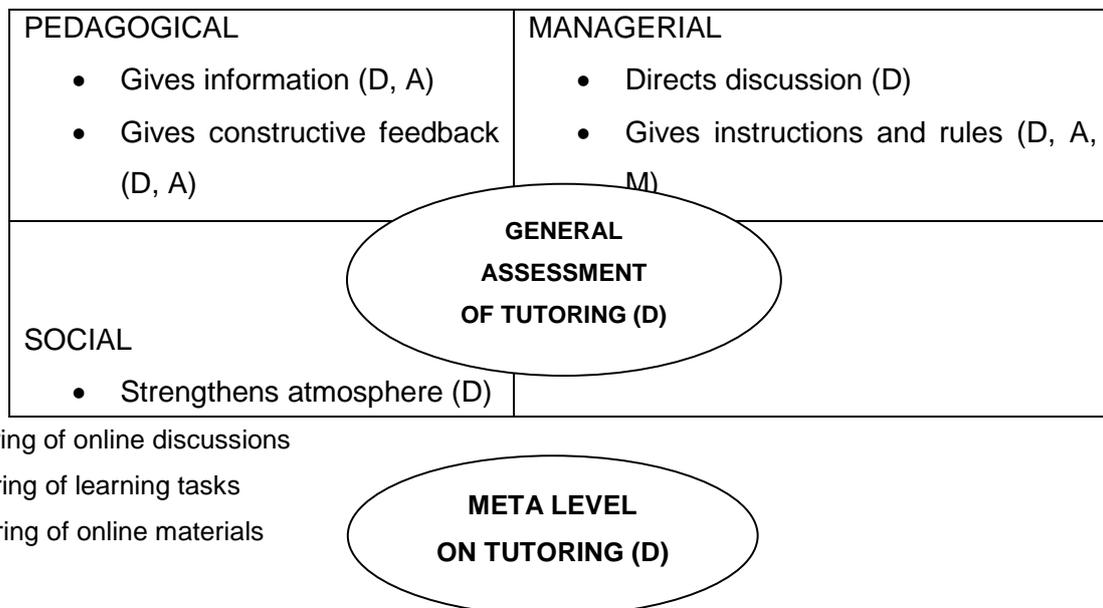


Fig. 1. Student feedback on tutoring based on the four dimensions suggested by Wang (2008).

The *intellectual* contribution included in the *pedagogical tutoring* of online discussions in this course was considered by the students from two different perspectives. Some of the students thought that the discussions were profound and provided new information, while others considered them to be more superficial. Studies show that the superficial nature of online discussions typically emerges as a problem (e.g. Koski, 2001). The choice of topic is essential in online discussions. The topics need to be authentic, significant and meaningful to the participants (Hung et al. 2005.)

Giving *constructive feedback* is also about *pedagogical tutoring*. The students need feedback on whether their comments are in the right direction and relevant to the topic of the discussion. This was mentioned several times in the student feedback.

There could have been more direction of the discussion, as now discussion depended too much on the students. (9)

On the other hand, the discussion had been directed quite well in the direction of the themes based on the feedback.

It is one of the tutor's important tasks to compile and compose summaries of the discussions. This form of pedagogical tutoring was also realised during this course. After each discussion, the tutor composed a summary of the discussion.

The discussion deepened and improved during the course – the tutor's summaries were good. (5)

The *social role of the tutor* is to create an encouraging and *interactive atmosphere*. Creating a warm atmosphere is especially important at the start of the course when the tutor welcomes the students. This was also verified in the current study.

You remembered to welcome the participants and answer any questions (2)

The social channel in this course is provided by the introduction forum and the small groups of around ten students formed for the discussions.

Managerial tutoring is another essential form of tutoring. In this kind of tutoring, the tutor draws up rules for the activities to help advancement in the direction of the goals. Another form of managerial tutoring is to make sure that all the participants have taken part in the discussions. This study highlighted *direction and focusing of the discussions*.

I think the discussion tended to jump away from the core topic, but that's what usually happens in a discussion! (5).

The provision of rules can already take place before the discussions, whereby the direction of discussion is helped by limiting the number of participants or *division of the themes of discussion* like below.

Dividing the discussion into two topics was a good idea and broke the train of thought conveniently; the discussion never came to a deadlock (7)

Tutoring of learning tasks

The intellectual contribution included in *pedagogical tutoring* was considered rewarding by the students. They also noted the significance of *feedback* as a factor that directed their own learning pedagogically.

The learning task gave the student an opportunity to apply what s/he had learnt and to process it further on the practical level. Verbal feedback on a task is much more fruitful than just a numerical assessment (3)

Learning materials in tutoring

In terms of the tutoring of materials, only managerial tutoring was present in the form of giving instructions. This is understandable as such, as it was the primary goal in the construction of the materials.

The learning materials of the online course also have a truly high quality, I will surely make use of them in the future as well”(18)

The online learning materials composed by the teachers for the course received praise from the students. The students were satisfied with the content and form of the materials.

I think they were quite exhaustive, approaching the topic from different points of view. Interspersed with good real-world examples.

Discussion

The data for the current study is limited to student feedback analysed from the different viewpoints of tutoring. In the future the research could be expanded to an analysis of online discussions. In the course studied here, it is possible, for instance, to compare the simultaneous discussions of two groups on the same topic. For one of the groups, the tutoring would be more intensive, while in the other the discussion would proceed more spontaneously led by the group. The meaningfulness of such comparison has emerged after years of tutoring experience, as it is not always clear at all that a more tightly guided discussion reaches a deeper level. In some cases, the tutor's tight involvement may tend to kill the discussion. Meanwhile discussion proceeding in a more self-directed manner can be really active.

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CURRICULA IN TEACHER EDUCATION

Building a Practice-Based Curriculum for Teacher Education

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Abstract

This paper describes the process of establishing a 21st Century Schools Partnership between a local school district and a college of education. The purpose of the partnership as well as the anticipated benefits to teacher education is explained. Challenges to and successes of the partnership for a practice-based curriculum are viewed through five separate lenses: collaboration, mentoring, curriculum, teacher education course alignment with field experiences, and leadership. Results indicate that constructing practice-based experiences for initial teacher education requires continuous professional engagement by all constituents. Through individual efforts to make the partnership succeed a dynamic, clinical learning experience for teacher education has emerged.

Introduction

In response to a call for more practice-based experiences for initial teacher education (AACTE, 2010), the Department of Curriculum and Instruction in the College of Education at the University of Nevada, Las Vegas (UNLV) has created and implemented a 21st Century Schools Partnership with Clark County School District to provide dynamic, clinical learning experiences for teacher education .

Time spent in K-12 classrooms learning the complexities of teaching are difficult if not impossible to duplicate in college classrooms. As a result, beginning teachers commonly state that field experiences are the most valuable component of their teacher education programs (Levine 2006). Mid- and second career teachers also indicate that practical experience in classrooms is central to their preparation (Haselkorn, and Hammerness, 2008). In fact, field-based learning is viewed as a way to better prepare teacher preparation to

support students' growth and development, (Levine 2009), and this view has led some researchers to perceive a "new epistemology" for teacher education (Zeichner 2010).

In addition to claims from novices regarding the worth of experiences in K-12 classrooms, three critical features of teacher preparation directly tied to practice are identified in the recent (March, 2010) policy brief from the American Association of Colleges for Teacher Education (AACTE). These features include: 1) integration among courses and between course work and clinical work in schools; 2) extensive and intensive supervision of clinical work; and 3) proactive relationships with schools to develop and model good teaching (Boyd, et.al, 2008). This paper describes the ways in which the 21st Century Schools Partnership facilitates the clinical practice of teacher education and achieves the critical components of practice-based teaching.

Teaching is a "multidimensional" (Doyle 1986) act that requires teachers know content, know how to teach it, and how to engage students in the process of learning. Such knowledge and skill cannot be learned merely through verbal exchanges (Ball 2009). Learning to teach is a process that requires the authenticity of working with students from diverse backgrounds and with a range of abilities in clinical settings, (Hart, Research Associates 2010). To that end, "the U.S. government has dedicated \$21 million to support teacher residency programs that give potential teachers hands-on training in real classrooms" (Wingert 2010). The 21st Century Schools Partnership offers opportunities to develop teaching knowledge and skill in the classrooms of experienced and effective teachers.

The 21st Century School Partnership

The 21st Century School Partnership began as a collaborative process through discussions among administrators, deans, chairs of departments and university faculty involved in preparing teachers and with superintendents and the director of professional development from the school district. The process resulted in a memorandum of understanding between the school district and the university and featured a system of planned evaluations, teacher education course alignment, and implementation of the goals of the partnership. Partnership features also included a support network established to facilitate teacher reflection on practice and on-going teacher assessment of student learning

The goals of the partnership are to provide:

- an innovative teacher education program
- a quality, intensive one-year internship for teacher education
- the opportunity to study and implement state-of-the-art teaching practices
- increased knowledge and implementation of results-driven instructional practices,

- an increased number of high-quality teachers, including those from under-represented groups,
- training for experienced teachers as preservice mentors and school-based teacher educators,
- increased collaboration efforts between UNLV and CCSD,
- continuity among stages of teacher professional development.

School sites and site facilitators

Meetings were conducted by the field placement representatives from both the school district and the university with school principals to describe the goals of the partnership and ask for volunteers to become partnership school sites. The criteria for school site selection were established jointly between CCSD and UNLV. Schools were expected to make a three year commitment and agree to an annual review process. Potential school sites were expected to demonstrate some of characteristics listed below.

- A visionary and shared instructional leadership
- A school culture conducive to professional development
- An interest in developing learning communities
- Evidence of reform-minded teaching
- A commitment to research-based practice toward closing the achievement gap
- Use of multiple assessments to evaluate student learning
- Possess a technology rich environment; and
- Have a population of high-poverty, diverse, ELL students in an inclusive environment

Sites in the first round of the partnership accepted anywhere from 8-12 teacher education candidates at each school site. These candidates participated in studying, practicing, and reflecting about teaching under the guidance of an experienced teacher designated as a Preservice Mentor Teacher (PMT). In turn, PMTs participated in mentor-teacher training that helped them guide the practice of the teacher education candidates.

A Lead Preservice Mentor (LPM) was also at each school site. This LPM was a veteran teacher who participated in intensive mentor-teacher preparation at UNLV. Following the mentor teacher training the LPM coordinated and facilitated the work at school sites with other LPMs and site facilitators. A site facilitator was a UNLV faculty member who coordinated the involvement of the university in the 21st Century Schools Partnership. These site facilitators planned and taught the internship seminar with the LPMs, and worked in partnership with the LPMs and PMTs on a regular basis. Teachers at each site and UNLV

faculty work as partners to solve educational problems, to study teaching, to conduct applied research, and to share the role of teacher educators and mentors.

From fall 2009 till spring 2010, eight 21st Century Schools were established; six elementary schools, one middle school, and one high school. Among the Lead Preservice Mentors and Site Facilitators, eight were selected from CCSD based on their teaching and supervision experience; four college faculty were selected in the consideration of their teacher education experience; and four doctoral students worked with faculty as graduate assistants.

Challenges to and Successes of Implementing the 21st Century School Partnership

Collaboration

The 21st Century Schools Partnership was undertaken with the goal to create an innovative practice based curriculum for teacher education. This partnership was developed through a shared agenda between the school district and the university. Development of the partnership took a year of building trusting relationships through multilevel and multi-channel meetings and activities that included steering committees, workshops and visiting school sites as a means of observing school cultures and creating a presence in the field. Activities were held around issues of curriculum, assessment and communication between university faculty members, site facilitators and classroom mentors. A steering committee was organized to deal with difficult issues that arose from the program implementation and to coordinate the partnership with issues before the elementary, secondary and teacher education committees at the university.

The multi-layer aspects of changed roles and responsibilities of the participants in the new programs often gave rise to misunderstandings and ambiguity. Problems arose when some sites that were thought to meet the criteria for the partnership did not and subsequently chose to be removed as a site or were encouraged to do so by both the district and the university. Problems also arose when mentor teachers did not clearly understand the importance of their changing roles or when conflicts arose between mentors and or site facilitators. Continuous collaboration among the school district representatives and the university field director made it possible to maintain a professional stance and work successfully through sensitive situations.

After a year of negotiation and meeting with school administrators a group of partnership schools has emerged as fulfilling the expectations for 21st Century Schools. Administrators and teachers from these schools are positive in expressing their hopes for the partnership and have become advocates in recruiting administrators from other schools to join the

partnership. An important part of the communication in the collaboration was the advent of a *Friday Flier* news letter sent to all site facilitators and mentors as well as administrators. This communication link served to keep everyone informed and apprised of future steps in the partnership.

Mentoring

A challenge inherent in any field component of teacher education is finding just the right teachers to act as classroom teacher educators and then to match these teachers with competent, conscientious candidates. A bigger challenge in the 21st Century Schools Partnership was the need to find classroom teachers who were willing to attend mentor training and to take on the extra mentoring responsibilities expected in the partnership. Traditionally, cooperating teachers are assigned by their school principal and their major role is to evaluate candidates' lesson plans and observe and rate candidates' teaching performance. In the partnership the role of the cooperating teaching, now called a PMT, changed dramatically.

An objective of the mentoring training was to help classroom teachers learn to develop reciprocal relationships with their assigned candidates through a common protocol for assessing teaching performance and addressing standards-based teaching practices. This represented quite a change from the more common relationship between a cooperating teacher and a teacher education candidate.

Mentoring in 21st Century School Partnership requires PMTs to meet weekly with UNLV site facilitators and LPMs. The focus of these meetings is to increase knowledge about mentoring. Participants discuss results-based instructional practices, ways to build collegial communities of mentors with a common language, use of actual experiences as case studies, and ways to make tacit knowledge explicit. In the 21st Century Schools Partnership mentors are expected to create positive and productive learning opportunities for the teacher education candidates. The responsibility of PMTs and LMTs for the preparation of the candidates is increased in order to assure consistency and quality of preparation.

Through this increased role responsibility teachers have opportunities to help prepare the next generation of teachers and to study practical and relevant problems in teaching and learning. UNLV faculty also become involved in linking the theoretical and practical aspects of teaching in meaningful ways and have the opportunity to influence as well as to learn from practicing teachers. The partnership emphasizes meaningful interactions between PMTs and through observation, communication and instruction. This added responsibility also places a great deal of extra work on the classroom teachers' plate. In an effort to match this added responsibility with support, two new areas of curriculum were introduced.

Curriculum

Because the 21st century schools were developed to increase candidate understanding of the complexities of teaching it was necessary to make certain time in classrooms was well spent. To that end, two new curricular tools were introduced as learning activities in the field experiences: The Collaborative Assessment Log (CAL) and Co-teaching. The CAL became the tool mentors used for formative assessment of teacher candidates. The CAL is an instrument to use during dialogue between mentors and co-teachers or teacher candidates as they reflect on various teaching responsibilities. The CAL includes four sections: What's Working, Current Focus-Challenges-Concerns, Candidates' Next Steps, and Mentor's Next Steps. By discussing and recording their interpretations of events the mentors and candidates began to form an evaluation loop that kept them on track as well as making the learning a shared experience. Workshops were conducted for district personnel and university faculty in the use of the CAL. These workshops included examples through videos, presentations and discussions.

Co-teaching models were also introduced during workshops with the mentors, site facilitators and university faculty. The workshops on co-teaching included seven models 1) one-teach-one-observe, 2) one-teach-one-drift, 3) station teaching, 4) parallel teaching, 5) supplemental teaching, 6) alternative teaching, and 7) team teaching. These models were developed by teacher education faculty at St. Cloud State University in 2006, as part of a U.S. Teacher Development Grant. The different approaches to co-teaching helped mentors understand ways that co-teaching could be achieved through different perspectives and how co-teaching could advance candidate learning of the dimensions of teaching.

One of the initial problems in implementing any field experience program is that not all participants may share a common vision of how to prepare teachers. It is essential for participants in a new program to understanding the ways their roles and responsibilities can change. Hence, workshops were organized to teach participants what the new curriculum would look like and why a collaborative, interactive relationship between mentors and site facilitators was essential to the success of the 21st Century Schools Partnership. A challenge at the beginning of the partnership was to find ways to make certain that mentors and site facilitators were clear about their roles. Strategies are still needed to help participants make the transition from the role of traditional cooperating teachers to mentors who co-plan and co-teach and then observe, analyze and interpret one another's teaching.

Teacher education course alignment with field experiences

Effective teacher education programs emphasize the connection between courses and field experiences to help students understand the relationships between theory and practice. Instructors teaching pedagogy courses had a responsibility to more closely connect course content to the experiences their students were having in the field. Since the schedule for elementary education course work had been blocked, and all students took the same courses the same semester it was possible to align what students were doing in university courses with what they were experiencing in the field. However, even though this idea of course alignment was widely discussed it was not always apparent in syllabi. Also, when syllabi did not clearly delineate learning assignments both mentors and the candidates were confused.

One new addition to the secondary general pedagogy course syllabus is a microteaching model developed through theory and practice. This model is performed through a plan-teach-feedback-re-teach-feedback-reflection cycle in three phases (see Fig.1). In Phase One, candidates plan and teach a 20-minute lesson in a university classroom. A particular feature of Phase One is the strong emphasis on oral as well as written feedback, which comes from peers and the university instructor. As l'Anson, Rodrigues, and Wilson (2003) observed, the practicum should place emphasis on "opportunities for dialogue with various others (peers, teacher fellow, tutors) for different understandings and perspectives" (pp. 195-196). For their teaching in Phase One, candidates should get oral and written evaluation from peers and the instructor for the demonstrated teaching skills as well as subject matter based on the evaluation protocol. The oral feedback allows teachers to organize discussions about how to teach instead of merely pointing out the presenters' weaknesses and strengths in the environment of peer support and reduced isolation. This feedback and discussion allows all the participants to reflect on their performance and critically evaluate their own teaching.

The oral and written feedback allows broad discussion opportunities of any teaching skills or content-related topics that are brought up from the compliments and suggestions listed in the evaluation protocol. The feedback allows candidates to examine and evaluate their own teaching behaviors, decision making, teaching knowledge, and reflections as well as their characteristics. Consequently, candidates better develop their confidence, and can develop "a more realistic perception of the requirements of teaching in a safe environment before they enter into the 'field of fire' in the actual classroom" (Wilkinson, 1996, p. 213). This microteaching activity also gets the candidates ready to participate in the CAL assessment they will encounter in their internship classroom.

Leadership

Site facilitators' roles include organizing regular meetings with mentors, dealing with their concerns, and coordinating with UNLV field experience office for related activities. This is a new role for site facilitators formerly called university supervisors. Traditionally, site facilitators' roles mainly focused on observing and evaluating lessons and conducting a post observation conference with mentors and the candidates. In the new program they become leaders to establish a collaborative and effective working environment. Site facilitators must also communicate to candidates and mentors the expectations for performance set down by the partnership goals and to help both the and the mentors establish goals to meet unmet expectations.

Site facilitators are not required to observe candidate teaching according to the guidelines of the partnership. However, observations help site facilitators better understand interns' progress and concerns. Without having first-hand knowledge of progress, site facilitators may lose some validity when communicating with and their mentors. Although the site facilitators understand the new forms of responsibility for mentors and the changes in mentor-candidate relationships, it can be challenging for site facilitators to assume a leadership role and share ideas through group meetings.

One of the biggest challenges site facilitators have is to set the agenda for meetings to schedule them and then to see that they are conducted in a professional manner especially when there are new tasks and new problems every week. Scheduling group meetings are necessary to enhance the communication between site facilitators and mentors and the communication among mentors. It is necessary for site facilitators to plan group meetings of mentors, to plan meaningful activities and to figure out the mentors' group dynamics as well. Additionally, sometimes it seems impossible to schedule group meetings that meet with everyone's teaching schedule.

Conclusion

This paper views the crucial aspects of 21st Century Schools Partnership through five lenses. These perspectives demonstrate that the partnership involved multi-layer institutes, personnel, and aspects, and it is characterized with the changes of ecologic contexts such as the roles and responsibilities. In the first year's (2009-2010) implementation challenges arose in the misunderstanding and ambiguity of roles and responsibilities, curriculum issues, and the problems of site selection. Nonetheless, the emphasis on practice-based

experiences for initial teacher education was strengthened and a dynamic, clinical learning experience for teacher education evolved through a continuous, collaborative process.

In this paper we describe several important aspects of the ongoing implementation of the 21st Century Schools Partnership. Although this partnership has unique characteristics that resulted from the social and cultural context of the school district and the university, the experiences we gained through the first year of implementation could provide meaningful insights for the teacher education development nationally and internationally.

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IN-SERVICE LEARNING AND THE DEVELOPMENT OF PRACTICE

Developing Teacher-Student Counselling Training in Oulu University of Applied Sciences- Knowledge Building through Collaboration

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Abstract

The purpose of this case study is to describe Teacher-Student Counselling Training. The counseling training was conducted in 2009-2010 in Oulu University of Applied Sciences, Finland. The training was included meetings and lectures about teacher student counselling in general, its target and challenges. Blogs were also used as a collaboration tool in educational contexts. Theoretical framework of this training was based on knowledge building community where teacher-student counsellors from different seven schools (from Oulu University of Applied Sciences) worked collaboratively to examine and improve ideas and practices. In personal level this training has a positive effect on teacher-student counsellors' self-confidence and their practices in daily counselling. Especially they have learned the meaning of listening. Positive finding was that the collaboration has an important meaning for teacher-student counsellors, they valued face-to-face meetings and felt that the training offered for them supervision of work.

Keywords: *counselling, teacher-student counsellor, training*

Introduction

Counselling frameworks are different in different countries and in different types of academic training programs. Therefore it is important that counselling and counselling training is reported and discussed. Much have reported for example the mentorship role concerning newly qualified teachers (e.g. Fransson 2010, Jones and Straker 2006), graduate school counselling (Taylor and Neimeyer 2009) or ideas about partnership in counselling initial

teacher education programme (Pitfield and Morrison 2009). In addition counselling in higher education has also been focus in some studies (Hewitt and Wheeler 2004), also in Finnish university context (Jääskelä and Böök 2010). However counselling in University of Applied Sciences context has not been reported much, although in these universities counselling is important subject teachers' task, for example in Finland. Therefore counselling and especially counselling training in University of Applied Sciences, Finland, is interest in this study.

In Finland teachers work in University of Applied Sciences is many-sided; among teaching their duties consist researching and increasingly students counselling tasks. Students might have problems with planning skills, motivation, inability to cope with the demands of the programme, problems with relationship and finance or for example course difficulty in relation to academic support and counselling available. The issues of completion, transition and progression in higher education are of prime relevance. (Taylor and Bedford 2004, 376.)

Institutions have increasingly turned to alternative strategies for advancing student learning (Taylor and Neimeyer 2009). One strategy is teacher-student counselling (e.g. Hewitt and Wheeler, 2004), which is the focus in this study. A number of researchers have sought to determine the factors associated with successful counselling or with an ideal counsellor. For example counsellor's credibility and goodwill, for example, have been identified as key components of effective counselling relationships, and these qualities are strongly correlated with the prote'ge' 's perceptions of cognitive learning, being in a successful counselling relationship, and experiencing the development of a deeper mentoring relationship (Taylor and Neimeyer 2009; Wrench and Punyanunt 2004).

In this study a teacher-student counsellor stands for a teacher of a Finnish University of Applied Sciences, whose task is in addition to their subject teaching to counsel some students with their university studies. The students we are talking about in this article study in the Oulu University of Applied Sciences in different units. The general principle of counselling is that a school counsellor has the main responsibility for study counselling as well as helping students to solve their questions of personal growth and development. Furthermore, teacher-student counsellor is responsible for guiding his/her students in study skills and drawing up their individual study plans. (e.g. Nissilä and Lairio 2005, Lairio and Nissilä 2002.) Different kind of counselling framework has carried out in other countries, where the teachers in schools are expected to provide guidance and support for their prote'ge's (Jones and Straker 2006; Tatar 2009; Wood and Rayle 2006). Moreover, counselling training is not yet a mandatory prerequisite for serving as a teacher-student counsellor. Most of the teacher-student counsellors have not yet been trained for the role and their counselling is generally based on their personal traits and professional experience.

A case study: Teacher-Student Counselling Development model in Oulu University of Applied Sciences

The purpose of this case study is to describe the counselling development model in Oulu University of Applied Sciences, Finland. The objectives of the paper will include the following:

- 1) What is the framework of teacher-student counselling training?
- 2) What are the benefits of the counselling training for teacher-students counsellors?
- 3) What are the future challenges for teacher-student counselling?

Background of counselling in Oulu University of Applied Sciences

Firstly we shortly describe students study path and some aspects of counselling in general. Oulu University of Applied Sciences (OAMK) responds to the business and employment needs of Northern Finland by arranging and developing training at the higher vocational education level. Students average age is about 19 to 24 years. The objectives of applied sciences studies are to provide the students with higher education qualifications and skills that are needed in working life. Degrees in universities of applied sciences are higher education (Bachelor's) degrees with a professional emphasis (see Figure 1). The degree programmes are divided into basic studies, professional studies, including practical training, free-choice studies and a Bachelor's thesis. Students work as trainees and prepare their Bachelor's theses in the partner enterprises and organisations of the Oulu University of Applied Sciences. The degree programmes are planned so that they meet the requirements and development needs set by working life. The degrees give students access to various professional expert positions in working life. (OAMK 2009.)

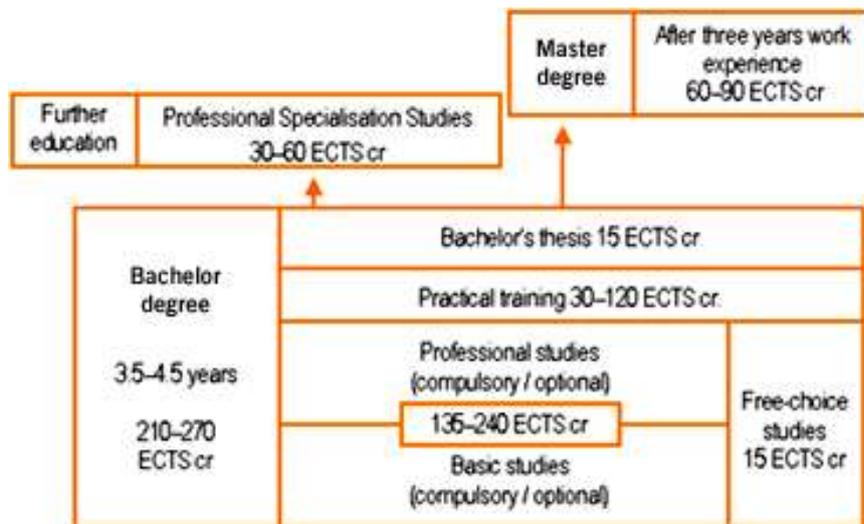


Figure 1. Structure of studies and degrees in universities of applied sciences

Students also meet challenges in their studies. Oulu University of Applied Sciences has taken attention to importance of students counselling and developed it goal-oriented. The aim of teacher-student counselling is to support students degree studies, professional development. These are main starting points to develop and study counselling in OAMK. Next we describe framework for teacher-student counselling training.

Framework for Teacher-Student Counselling Training and Research

Framework in this study is knowledge building theory (Scardamalia and Bereiter 2003). The term "knowledge building" is used commonly in the literature. We used the perspective that focuses on the production and continual improvement of ideas of value to a community (Scardamalia and Bereiter 2003). A knowledge building community is similar to a research community where members engage in progressive inquiry working at the edge of their understanding. Two key ideas are of particular importance: Ideas are improvable through progressive discourse, and members share collectively responsibility for improving not only their but others' understanding (see Game and Metcalfe 2009). The teacher-student counselling training was based on ideas of knowledge building theory. In addition emerging social networking technologies such as blogging offer potential to support professional learning through the development of like-minded communities (Luehlmann 2009). In this

study the community is formed inside Oulu University of Applied Sciences with using internal blogs.

The research has a qualitative approach. It has characteristics of action research. Action research is an interactive inquiry process that balances problem solving actions implemented in a collaborative context. Action research can be undertaken by institution, guided by professional researchers, with the aim of improving their strategies, practices, and knowledge of the environments within which they practice. (Reason and Bradbury, 2001). On the other hand, this study can also be characterized as a case study. The writers of this article are at the same time developing and researching the counselling in OAMK together with teacher-student councillors.

The teacher-student counselling training was conducted in 2009-2010 in Oulu University of Applied Sciences (Figure 2).

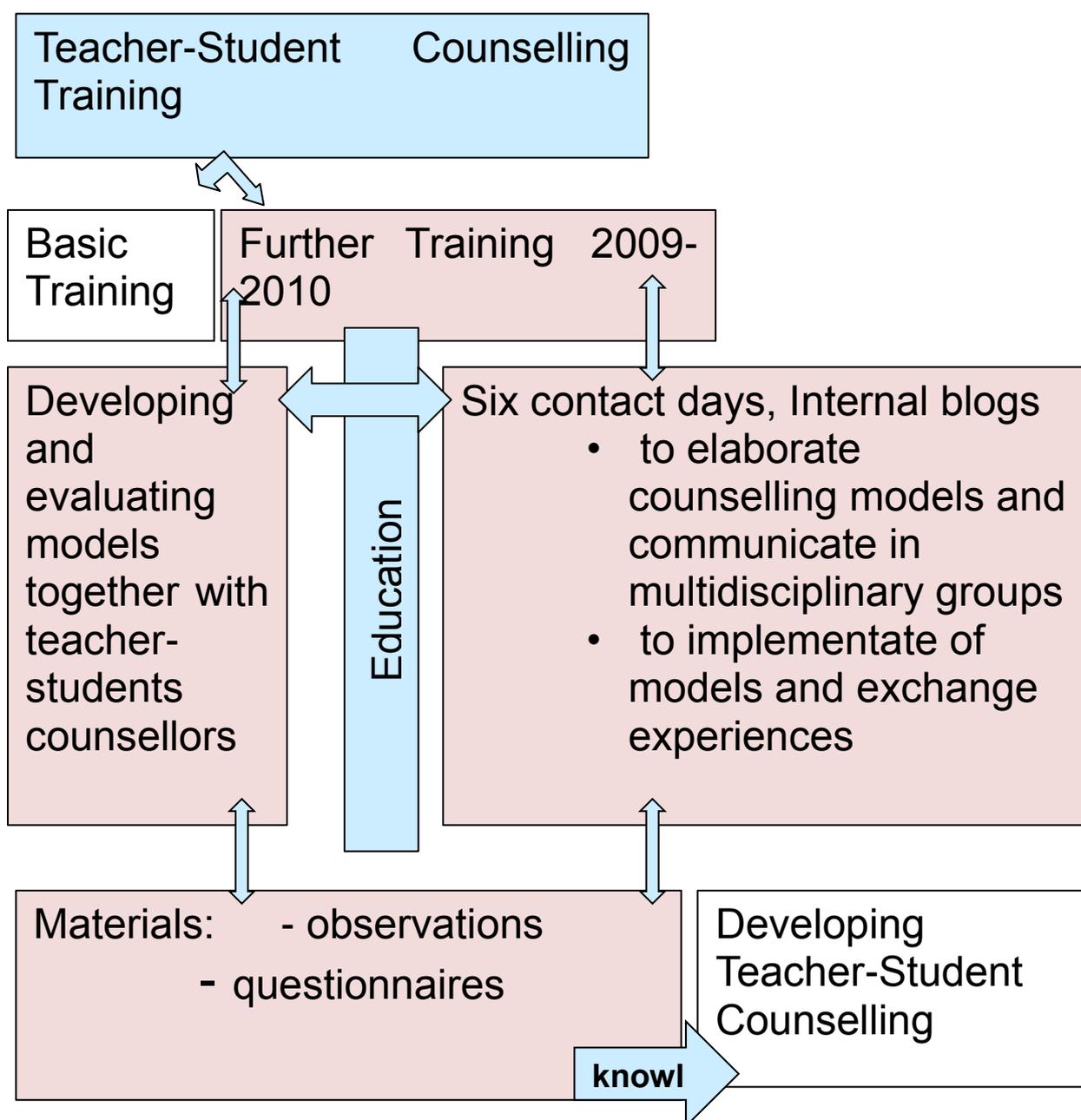


Figure 2. Framework of teacher-student counselling training.

The training was included six contact days including lectures and discussion about teacher student counselling in general, its target and challenges. Blogs were also used as a collaboration tool in educational contexts. Participants (14 teachers) were from seven different schools from Oulu University of Applied Sciences and they worked collaboratively to examine and improve counselling ideas and practices.

Data collection and the benefits of the counselling training for teacher-student counsellors

Data collection method was teacher-students' open-ended questionnaire, which was conducted in the beginning and in the end of the counselling training. Some of the questions in the open-ended questionnaires included also same questions.

Before the counselling training and the meetings teacher-student counsellors completed the questionnaire about teachers-student counselling in general and expectations for the training and returned them to the researchers by email. After the counselling training teacher-student counsellors completed and returned the questionnaire, which included eight open-ended questions about teachers-student counselling in general, their own development in teacher-student counselling and future plans. The teacher-student counsellors answered the questionnaire on computers on the last day of training, saving their answers directly on memory sticks. The respondents did not record their names in the questionnaire. They were given one hour to supply their answers.

The questions presented in the closing inquiry were as follows:

I Teacher-student counselling in general

- a) Which do you think are the main tasks of a teacher-student counsellor?
- b) Which things do you think are challenging in teacher-student counselling?
- c) Which things do you think are rewarding in teachers-student counselling?

II Teacher's own development in teacher-student counselling and meaning of counselling training

- d) Which are the competences of teacher –student counsellors?
- e) How do you see the tasks and role of the teacher-student counsellor now?
- f) What kind of developmental ideas/measures have you adopted in your own teacher-student counselling activities?
- g) How would you like teacher-student counselling training to be developed?

Next we are going to discuss these themes and questions in the order they are presented above.

I Teacher-student counselling in general

For the first three questions, comparisons are made between answers received to the same questions before and after the training.

a) Main tasks of a teacher counsellor

The teacher-students considered that the most important tasks of teacher-student counsellors were student counselling in all its ways, and offering various kinds of support to the students in different life problems. Like Tatas (2009), counsellors help students to understand their strengths and weaknesses, set realistic goals, and take action independently or with needed support. The teacher-student counsellors emphasised their own role of a listener, to listen and to be an adult. Among the tasks of the counsellor, they mentioned in particular mediation in conflict situations (teacher/student), personal teacher-student counselling discussions, supporting the learning process, motivation, guidance and development of the learning atmosphere in a favourable direction.

"To support the student in his or her studies. To tell him or her when to select a particular course and to tell him or her which options s/he can choose between. To help him or her to think about his or her own strengths. To shed confidence in studies if there are some delays. To help the student draw up an individual timetable if necessary. To give advice in practical learning techniques. To listen to the student and be an adult who is present in a way that is respectful of the student." (teacher-student counsellor 9)

"The most important tasks of the teacher-student counsellor include student motivation, support and guidance. In the early stages of studies in particular, so the studies get a fluent start. I think the teacher –student counsellor is also meant to integrate the students as part of his or her special community, which in turn promotes their professional growth. Another important task is also to help the students in planning their studies both early on and later in their studies. In other words, the newcomer students are acquainted with the construction of a personal study plan and whatever guides its construction." (teacher-student counsellor 8)

After the training, the picture of a teacher-student counsellor's work had expanded and become clarified. They felt they had a more important function than before. It was considered important to listen to the student, similarly to establishing collaboration among the students. All in all, the teacher-student counsellors were highly conscious of how demanding their task was, and they wanted to develop in it.

"The role has clarified and I have developed a more responsible grasp on my work. My approach is also more confident now that I have acquired information about various things (reading and writing tests) and access to various counselling tools." (teacher-student counsellor 8)

"Challenging. One thing I have certainly learnt is that I do not force my own solutions before the student has thought out his or hers. I pay more attention to listening (true listening, not thinking all the time what to say next) ..." (teacher-student counsellor 3)

"After this training I am thinking that the role of the teacher-student counsellor is more important and has a wider scope than I had thought before." (teacher-student counsellor 9)

b) Challenges in teacher-student counselling

Before the training, the teacher-student counsellors thought that the challenges included mediation between teacher and student, taking a stand on issues not related to studies (such as family relationships). They should also be versed in student guidance matters, and reaching a student was also thought to be a challenge. Those students in particular who are in need of counselling are not taking part in it. Another challenge was seen in the sensitivity to observe problems that hamper studies among students. The problems caused by paid jobs for extra money, neglected studies, the teacher-student counsellor also needs to have the patience to wait for the goals to be reached. It is also difficult to make up one's mind what kind of a role to take as a counsellor. Also other studies have reported many roles of counsellors. For example Wood and Rayle (2006) have given five primary roles for the school counselling: evaluator, adviser, coordinator, teacher, and mentor.

It is also challenging to keep the student motivated. Individualised solutions should be found for each student's problems. They also brought up practical problems that were related to the organisation of counselling meetings and problems in the teacher-student counselling system in general.

"At times it is challenging to know which role to be in (ie. when to function as a teacher, when as a teacher-student counsellor and when as a student affairs office)." (teacher-student counsellor 5)

"Student motivation. Finding individualised solutions to match each one's needs." (teacher-student counsellor 1)

"Implementing personal meetings with the students (practical arrangements)." (teacher-student counsellor 10)

After the training, the challenges had changed in nature more towards an analysis of the interaction between teacher-student counsellor and student. They felt that a challenge was caused by the development of skills of interaction, encountering the student and true presence in counselling situations. Above all, the counsellors "spoke" about how space should be allowed for the students' own thinking and decision making. The accessibility of students was once again felt to be a problem.

c) Rewards in teacher-student counselling

Before the training, it was thought to be rewarding when teacher-student counsellors saw a student succeed, and they were able to help him or her if there were any problems. Also Wood and Rayle (2006, 8) have reported that the adviser role can be conceptualized as that of an expert *consultant*. In this role, the counselor might assist with a menu of potential intervention options for a given student problem. According to teachers-student counsellors it was also considered rewarding to get to know a group of students, to group the students, the fact that the students were "empowered" one by the other, and that they supported each other. It was also rewarding to see how a student developed to take responsibility for his or her own things and doings. It was thought to be the most rewarding to see a student succeed. Also timely graduation etc., fruitful counselling discussions were rewarding to see. The student has had a moment of revelation – the teacher-student counsellor visit has solved a problem. The chance to get familiar with the group of students has also been considered rewarding. It is also rewarding to see how the students form groups, are empowered, have been able to promote their studies through their encouragement. Teacher-student counsellors joy of helping, the gratitude shown by the student and development of self-direction among students. The student is capable of assuming responsibility for his or her own decisions and goals. It is rewarding to encourage the students forward in their lives.

"When you get a student to take responsibility for his or her decisions and goals." (teacher-student counsellor 7)

"Successful discussions and discovery of solutions to the student's problems. It is easy to keep abreast of where the student is going in his or her life." (teacher-student counsellor 8)

"When a student says hello and smiles and when s/he is back in school studying actively. When s/he says after a counselling session that thanks this really helped" (teacher-student counsellor 3)"

After the training, one of the issues that were considered rewarding was that the teacher-student counsellors had been able to build a confidential relationship with the students as a counsellor. S/he had been able to help. It has been rewarding to follow a student's progress in his/her studies, working life and life in general. The teacher-student counsellor has had a chance to promote the emergence of a group spirit. "When you see that someone really understands his or her role and the studies get a good start."

II The teacher's own development in teacher-student counselling and meaning of counselling training

d) The teacher –student counsellor competence areas and own development

The teacher-student counsellors themselves elaborated the competence areas of teacher-student counsellor during the training and then evaluated their own competence in relation to them.

The competence areas of the teacher-student counsellor are as follows:

1. Self-development
2. Substance competence
3. Counselling and interaction skills
4. Fulfilment of ethical values in the teacher's own work
5. Organisational competence

After teacher-student counselling training the participants was *asked to* compare their own competence in relation to the teacher-student counsellor competence areas constructed by them. Based on this questionnaire, the teachers-student counsellors felt they mastered substance knowledge well or reasonably well. Many of the responses also pointed out their fulfilment of ethical values in their work and viewpoints of organisational competence. They also felt that they were to some degree in control of counselling and interaction skills. Descriptions of self-development were mentioned most seldom among the competence requirement descriptions.

"I guess one has some mastery of everything, one is not perfect in anything, but there is adequate control. " (teacher-student counsellor 8)

Areas to develop

Even though the teacher-student counsellors thought they mastered substance knowledge, they did express their desire to develop in the requirements of degree programmes and degrees, and in student counselling related to them. The development of curricula in relation to substance competence was also brought up. Attention was paid to the currency of their working life knowledge in their own field.

“As for substance competence: although I already know things like degree structure quite well, it is still challenging to support a student in vocational choices, for instance. I could also deepen my practical working life knowledge.” (teacher-student counsellor 2)

Attention was paid to *counselling and interaction skills*, including things such as interaction and encountering individual students. The meaning and use of groups in counselling was also specifically brought up in two responses.

Competence areas training help to develop

The focus of the teacher-student counselling training in terms of the development of competences was thought to cover all the competence areas except substance competence. Self-development emerged highest in the answers, and within it, identification of counselling, continuous self-development and, among other things, evaluation of one's own activities.

“Issues related to self-development, such as those related to teacher counselling, evaluation of one's own activities, use of peer support, setting of limits. “ (teacher-student counsellor 7)

The teacher-student counsellors highlighted the following issues in their answers. The training had supported the development of counselling and interaction skills (4); listening skills, situational sensitivity, identification of student needs, the idea of continuous self-development also as a counsellor (3), ethical issues (2), utilisation of peer support and setting limits to which the components of teacher-student counsellor are.

Task and the role of the teacher-student counsellor after the training

Due to the training the overall picture of a teacher-student counsellor's work has expanded and become clearer. The counsellors feel that they are in an increasingly important position. More emphasis than before is being placed on the importance of listening to the student and on collaboration.

The use of blogging during training had remained at a low level for most of the teacher-student counsellors. This was caused by lack of time. As they also had a chance to meet one-another face-to-face during contact days, the blog was not necessarily inspiring enough

to the hurried teacher. The teacher-student counsellors' attitudes to blogging were positive on the whole, and they saw various opportunities in it.

All of teacher-student counsellors thought that collaboration was very important in the teacher-student counselling training. It had been the "salt" in the training. Some of the participants summed up ideas as follows: "Membership and discussion in a group always bring new ideas and strength to continue forward. Motivation and trust in the need for one's own activity grows".

Concrete assets of the training

After training teacher-student counsellor emphasized that the importance of listening to the student has gained more importance compared to before. The training and colleagues had given the teacher-student counsellors lots of practical hints for the contents of counselling. In addition understanding the issues that make either a positive or negative impact on **student** success and drop-out is also pivotal (Walsh, .Larsen and Perry 2009). Many of teachers-student counsellors are using the framework of professional growth in their student interview situations. This framework of professional growth was studied during the training. Counsellors in higher education are expected to assist the student to make adjustment to life in the university or college of education and enabling him or her to make decisions consistent with immediate and long-range goals to higher education opportunity granted him or her (UNESCO 2009). Although this is not new aspect in counselling in general, it was noteworthy insight for teacher-student counsellors in this study. They perceived that their counselling had shifted from counselling to guidance.

e) The development of personal role

All in all, the teacher-student counsellor did not feel that their status had changed much during the training. It was mentioned in individual cases that the teacher-student counsellor had noticed that his or her self-confidence had increased, and there had been more discussion on counselling in the unit. The teacher –student counsellor may have experienced him-/herself as an important member of the community.

The participants had felt that the training had been highly appropriate. It was hoped that it would continue in one form or another in the future as well. It was also thought that a larger number of University of Applied Science teachers should be able to participate in this kind of teacher-student counselling training.

Discussion

The research results would appear to show that the teacher-student counselling training model that was implemented here works well. The training contributed in many ways to the teacher-student counsellors. Their skills improved, and above all, they had a chance to study in multidisciplinary groups, with people belonging to the staff of different units. Exchanging collaborative knowledge and ideas was fruitful. The teacher-student counsellors noticed that they were not wrestling alone with their problems related to counselling, as other counsellors also had similar problems. This has been a way to gain some understanding and practical hints for one's problems from the colleagues. The topics of counselling discussed in the training had been relevant. This counselling model or ideas of it could also be used in other countries and institutions.

Like Burgess and Mayes (2007), our analysis reveals how demanding and many-sided task counselling is. For example in this study the field of tasks faced by the teacher-student counsellors also seems wide in the competence area description constructed by them. These definitions are based on the teachers' own work as teacher-student counsellors. The competence area description can thus be regarded fully authentic. We may also assume that the teacher-student counsellors are more solidly committed to self-development in its various areas, as they have defined them themselves. The definition of competence areas has clarified the picture of a teacher-student counsellor's work, thus responding in part to the need expressed by teacher-student counsellors at the Oulu University of Applied Sciences (Martikainen, 2008) for clarification of their job descriptions. The questionnaire also provided interesting data on the importance of the training and its development in the future based on the competence area descriptions. Like Wood and Rayle (2006) , shared agreement about the competence areas, activities and expectations in counseling tasks are key to the successful counselling experience.

Although the exploratory nature of this study qualifies the interpretation of its results, future work may benefit from following up on its findings. The idea that teacher-student counselling may be different in different countries and in different types of academic training programs, and may predict levels of program satisfaction, may merit further attention in the literature. At the very least, however, the presented counselling training model provides some attention and direction to the required area of University of Applied Sciences counselling.

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Learning While Teaching: Embracing a Collaborative Action Research Project

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Abstract

In a context of swift and continuous scientific, technological, socio-economical and environmental change, teachers must become more and more aware of the complexity of the educational process and continually analyze their actions, responsibilities and roles.

Commonly, teachers regret the scarcity and inadequacy of lifelong training programs, the time they involve and the gap between theory and practice. They must understand they can better meet the educational challenges they face if they engage in collaborative research projects.

One of the greatest challenges teachers face daily has to do with students' lack of interest in learning what society thinks they should learn. In this paper, we present some data from a research project (Research for a Relevant Curriculum) that illustrates how collaborative action research can help teachers think their practices and improve their teaching skills aiming for their students' motivation and success (Sousa and Valadão, 2008).

RRC is a collaborative action research project developed in the Azores (Portugal). It involves twelve teachers of basic education from two islands of the Archipelago (São Miguel and Terceira) and four researchers from the University of Azores. In 2009, RRC established an international partnership with teachers and researchers from Bucharest, Romania (ENCUR), and, in July, 2010, organized the first Portuguese-Romanian Colloquium on Curriculum Issues, which took place in Terceira, Azores. The second edition is already being prepared and will take place in 2011, in Bucharest.

Keywords: *Action research; professional development; curriculum.*

Action research and professional development

Roldão (1999) defines teachers as those who «generate and manage ways of making others learn (...) something» (115). This bears all the complexity of education as it assigns teachers a tremendous responsibility.

Teachers do not only play a very important role in education, but a complex one also. They must be able to articulate scientific and pedagogical knowledge in a way that it is relevant and adequate to each particular context. Shulman (1987) names this a «pedagogical content knowledge». Sá-Chaves and Alarcão (1998) describe it as a

(...) reflective competence that articulates science and pedagogy, allowing teachers to make scientific content understandable to students, either through its (de)construction or through the knowledge and control of all the other teaching and learning dimensions. (n/p)

This knowledge includes both knowing which teaching approaches fit the content and how elements of the content can be arranged for better learning. Sá-Chaves and Alarcão (1998) say this competence is what distinguishes teachers from other professionals. Mastering it is no easy task, that's why teaching training programs, whether initial or continuous, must promote it and teachers, themselves, must take charge of their own training processes and become responsible for their own professional development (Day 2001).

Teachers must no longer be technicians who carry on the strategies and routines they learned during their initial training. Socioeconomic, cultural, scientific and technological developments demand that teachers continuously adjust to new roles and tasks and develop new skills. Following authors such as Schön (1983) and Zeichner (1993), we believe that can be better achieved if teachers think their practices in a critical manner, be open to change those and become active in seeking out answers to the problems they face in their classrooms, whether individually or in group.

As García (2009) states, when teachers question their practice, they unveil their ideas, beliefs, images and values, and engage in a professional and personal developmental process that both empowers them and helps schools develop and improve educational quality.. A reflective practice pushes teachers to be open, thorough and social conscious. It helps them deal with uncertainty in a positive manner and work on their daily problems, opening up to new working hypotheses, discovering new ways and building up new solutions. Furthermore, it enhances their ability to analyze and address the conflicts they face, defend their own values and commit to change (Zeichner and Liston, 1996).

Stenhouse (1984) points out that a reflective practice should be helped by research. Research promotes teachers' systematic analysis on their practices and problems and helps them improve their pedagogical intervention. Teachers must, then, become researchers in the natural environment where their practice takes place: their school and their classrooms in particular (Gómez 1997).

Action research seems to suit that purpose well. Sáez and Elliott (1989) argue action research helps teachers transform the learning set (the curriculum, teaching methods and school climate) in order to enable students to discover and develop themselves, their power and capabilities. As it provides teachers with knowledge about the contexts they work on, action research puts educational communities' ways of thinking and acting into question and helps them reconstruct their ways. It requires that teachers take responsibility for deciding what changes are needed and use their critical analysis as a basis for monitoring, evaluating and deciding on the research steps that follow (Ainscow, 2000). Furthermore, it broadens teachers' perspectives on teaching and learning and on society at large.

Therefore, action research, developed either individually or in group (collaborative action research), is already an internationally widespread teacher education and training strategy, whether in pre-service or in-service programs, in a lifelong learning perspective.

Great many studies give evidence of collaborative action research's success in promoting teachers' professional knowledge (Chou, 2010; Castro, 2005; Gonçalves and Araújo e Sá, 2005; Alonso, Magalhães, Portela and Lourenço, 2002; Leal and Martins, 2002; Oliveira, 1997) and reflection in action (Moran, 2007; Del Carlo, Hinkhouse and Isbell, 2009; Moreira and Alarcão, 1997). Moreover, they show it increases teachers' awareness of classroom problems and provides them with deeper knowledge about their students' interests, needs and ways of thinking, as it builds up teachers' confidence in their own abilities, renewing their commitment to their job (Megowan-Romanowics, 2010; Leal, Dinis, Massa and Rebelo, 2010; Chin et al, 2006). As it links theory and practice, it also upholds changes in teachers' beliefs, attitudes and teaching practices (Cain and Milovic, 2010; Leal, Machado, Monteiro and Rebelo, 2010; Leal and Araújo e Sá, 2005; Haggarty and Postlethwaite, 2003; Leal and Martins, 2002; Leal, 2000).

Action research in the classroom: Speaking of project RRC

Research for a Relevant Curriculum (RRC) is a collaborative action research project ongoing in the Archipelago of the Azores (Portugal), since 2007. It started in Terceira (one of the nine Azorean islands). It first integrated two school teachers and a professor from the University of the Azores. Since then, the team has been growing. In 2009, it welcomed a new team

located in S. Miguel (another island from the Azorean archipelago). It now brings together four professors from the University of the Azores and twelve school teachers (seven in Terceira and five in S. Miguel). In 2009 project RRC also established an international partnership with teachers and researchers from Bucharest, Romania (ENCUR)³⁴.

Facing teachers as active agents and acknowledging their crucial role in decision making, project RRC chooses collaborative action research as the main research strategy for educational intervention. Following other research projects, such as PROCUR (Alonso, Magalhães, Portela and Lourenço 2002), RRC focuses on teaching tasks and teachers' curriculum management practices. It encourages teachers' reflective attitude, as they select curricular content and teaching methods, in order to enhance students' perception of curricular relevance and promote meaningful learning.

Project RRC accepts that learning processes and results lie largely on students' perception of school relevance and need and on the way they relate to school curriculum and teaching practices. Hence, it aims to transform teachers' work with students whose interests, expectations and individual needs, school does not seem to meet.

Teachers are expected to anticipate the problematic situations that may occur in their class and guide and regulate their didactical action in a way that it does not marginalize students who face more difficulties in the learning process. That does not mean, however, teachers should simplify content or avoid complex content, but that they be aware of their own students' particularities, and become more and more capable of presenting content in ways that better suit their students' knowledge and capabilities, in order to improve the way these face school tasks and contents and promote significant learning processes.

Project RRC integrates a broader research project, named *Contexts and practices of collaborative research in basic education curriculum*, ongoing in Child Study Center from Minho University, which «investigates the nature of teachers' professional knowledge, as teachers themselves perceive it, and its relation to educational practice, in order to produce knowledge that can be invested in improving the quality of teachers' performance» (Sousa and Valadão 2008. Our translation).

Following a collaborative action research methodology, project RRC reinforces both teachers' individual autonomy and professional development and teams' collective responsibility. Its main goals are:

- to understand students' lack of interest for curriculum in general or for some curricular dimensions in particular;

³⁴ Project ENCUR (Enhancing Curricular Relevance) is based on a *Comenius Regio* partnership between the Regional Secretariat of Education (Azores, Portugal), the City Hall of District 6 (Bucharest, Romania), the University of the Azores, the University of Bucharest and some schools from both regions.

- to understand students' perception of curricular relevance;
- to relate students' perception of curricular relevance to teaching strategies;
- to promote teachers' reflective practice as they select content and teaching strategies;
- to encourage teaching practices that lead to meaningful learning.

Project RRC is structured in research cycles. Each cycle lasts one school year. The process starts with the identification and characterization of students from six to sixteen, who seem to lack interest and motivation for learning, who do not like school or take little or no satisfaction at all in learning processes or contents. It goes on with individual interviews to those students, aiming to understand their representations about school, school subjects, contents and teaching practices, as well as to identify their interests and expectations concerning future life. The following steps require that the research team analyzes the data and selects new teaching and learning strategies, evaluates its impact on students' motivation and performance throughout the school year. Adjustments may be done when needed and new strategies selected. By the end of the school year, each research team analyses the need to start up a new research cycle involving the same students or others that fit the research aims (see Fig. 1).

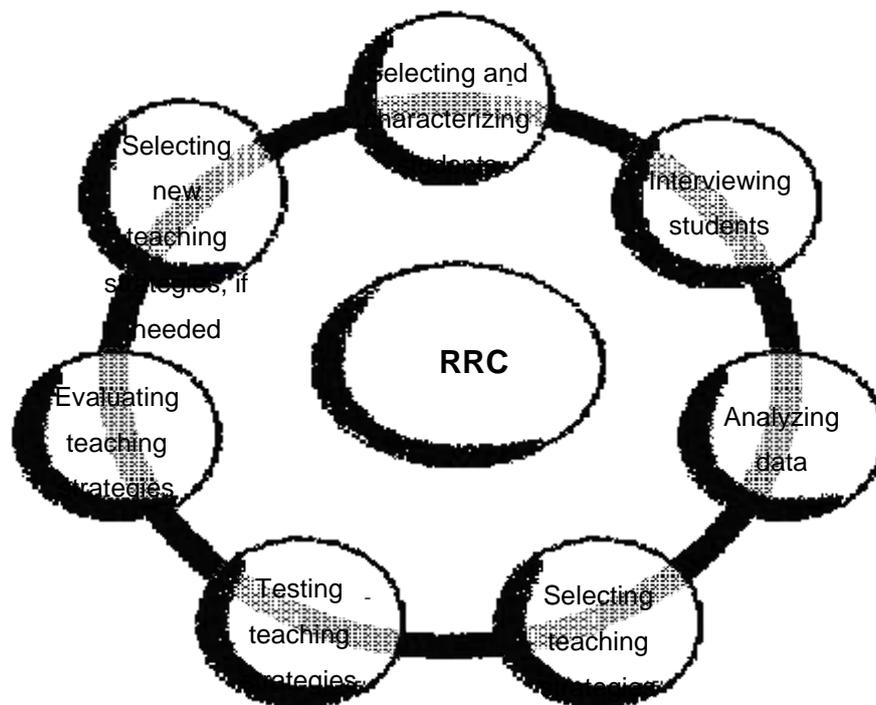


Fig. 1 – Project RRC's action research cycles (Leal, Sousa and Dinis, 2009).

RRC's impact on teachers' professional development

Some studies have pinpointed that teachers tend to face pressures to change their ways and practices depending on their evaluation of the adequacy and relevance of such changes to the problems and needs they face (Day 2001; Doyle and Ponder 1977-78), its complexity and durability (Duffy and Roehler 1986), its practicality (Ducros and Finkelstein 1990) and their perception of the intellectual or emotional costs and risks of such changes (Haggarty and Postlethwaite 2003; Doyle and Ponder 1977-78).

Developing action research projects demands, therefore, that we understand, for example: What leads teachers to join a specific research project? What encourages them to proceed or give up? How they evaluate its relevance and impact on their performance and professional development? In search for answers to these questions, we analyzed individual records of two school teachers involved in project RRC (T1 and T2), from the team located in S. Miguel.

In T2's written records we found the expression of many doubts about the actual value of joining an action research project. She wrote: «Is it worth it? Or is it just more theory, without any practical value?» We know these reservations are shared by many teachers who admit finding little or no use in research work. Research is often faced as something external to schools and teachers. Teachers often argue it does not answer their daily problems; it is mostly developed by specialists, who seem to worry more about building up theories than solving real problems.

When teachers are asked to participate, they sometimes excuse themselves with too much work already in school (that was sometimes the case when project RRC's researchers approached and invited some school teachers to integrate the project). Teachers often face research as an activity that adds more work to an already filled up agenda and consumes precious time. T2s' words express just that:

Will I have time to all that is asked (contacts with parents, interviews, transcriptions, analysis, and search for strategies that meet the students expectations...)? (T2)

Bearing that in mind, what then lead T2 to join project RRC? In her case, two factors seem to have dictated her decision to join the project. On the one hand, a previous action research experience, during her training year, which she found «very positive, despite the tremendous amount of work it implied, since all the theory [she] researched worked when put into practice!!!» (this fact points out the importance of introducing trainee teachers to research).

On the other hand, the «frustration» T2 experienced with students who did not respond positively to her teaching strategies and did not achieve success in school. As she states:

More than once I found myself thinking about my students' lack of interest, their poor enthusiasm and lack of motivation, questioning myself about what I was doing wrong. Through the years, I have rehearsed several strategies hoping to change this set, motivate my students and show them how important and beautiful knowledge is. I felt, inevitably, some frustration towards unsuccessful cases, but I managed to look for inspiration in successful cases. So, during the summer break, when I heard of RRC, I was compelled to embrace the project. (T2)

Identical motivations seem to have led T1 to join project RRC:

By involving myself in this project, I expect to learn more about my students and understand the reasons for their lack of interest in school, learning how to put an end to this lack of interest. (T1)

These teachers' words highlight the fact that action research projects must be meaningful to the teachers involved and must offer them opportunities to think their problems and search for answers to them in group, especially when their own strategies proved to be unsuccessful.

No matter how hopeful and enthusiastic teachers may be, we must recognize action research projects do demand extra work and real commitment:

I regret at this point [beginning of the second term], the lack of time I had to participate in the team meetings and carry on the investigation procedures... I felt overwhelmed with work at school and for school... (T2)

Teachers who join such projects must know that for a fact. They must be helped on the way, so that they won't give up easily. In respect to project RRC, what can we say about Teacher 1 and Teacher 2's motivations to proceed? T2 highlights team's support and understanding as an important factor to help face the difficulties teachers experiment over time and carry on with the project:

I felt a bit tired and with little motivation to do all the work that had to be done in school plus all the RRC chores. But the fact is that the team understood very well school demands and did not impose deadlines or increased pressure. (T2)

Although research teams' understanding and support seem to play an important role in keeping teachers faithful to project RRC's aims and procedures, it would probably not be enough if there weren't any positive results in their students' attitudes toward school and learning outcomes. Teachers expect and demand results when they engage in research projects, so that they feel their time and energy is well spent. Positive results are what they seem to find in project RRC. They say selected students feel teachers care and change their attitudes towards school tasks and contents:

In what concerns students directly involved in RRC, we must recognize their "pride" for being part of this project and their effort to live up to this responsibility. (T2)

The first stage (student's interviews) [...] had immediate impact on students' attitudes [...]. One of the selected students stood up and asked to sit away from her classmates. When I questioned her about it, she said "Here I know I can be more focused in the classroom and therefore earn the attention you are paying me." Even students with good school results, who used to show disrespect to their classmates with low academic performances, spontaneously offered to help them succeed and have been doing so since. (T1)

Although they perceive project RRC's impact on students' self-esteem and enthusiasm as a very important and immediate positive result from the project's procedures, they say its impact goes beyond that. It extends to classmates, who change their attitude towards the students directly involved in the project, former ignored or mistreated (classmates offer to help them with school tasks; some even ask to be part of the project), as well as these students' families, who, somehow, change their attitude towards school (parents thank teacher researchers for caring for their children and show increasing interest in their children's school progress).

One of project RRC's main aims is to help teachers get to know their students better so that they can find the teaching strategies that best suit those and help them understand school's relevance and improve academic performance. The interviews project RRC requires seem to suit that purpose well. Teachers testify to its importance in getting to know their students better (their interests, expectations, needs and social-economic background):

[...] this project [...] allowed me to know better some of my students, due to the interviews and the contacts with their families [...]. [The fact is that] the knowledge that you obtain from your students is much deeper and broader, what makes us (teachers)

much more effective in managing situations of indiscipline or lack of attention... We know what they like and do not like, we know what distracts them more. (T2)

Teachers often find out they knew little about their students. Students' reactions and performances often surprise them and go against their own ideas and beliefs:

I have also done some dictations, because they repeatedly said that they enjoyed doing it. I made sure that they knew that one of the main reasons why I was doing dictations was that students A, B and C considered it an important activity. A, B and C were all proud and for my particular delight the entire class was thrilled to do a simple dictation. (T1)

What shocked me the most in this all process was that some of these students really managed to surprise me (in a positive way). I thought they were incapable of performing better in class, but they proved me wrong by showing an enthusiasm and commitment that truly compensated all my hard work and dedication. (T2)

The fact does allow us to think that teachers act more according to their own representations about what they should teach and how, than in respect to what they know about their pedagogical contexts. We may then say project RRC can be of great help to teachers, as it provides them with deeper knowledge about their students. Teachers say this knowledge is a significant asset in what concerns their ability to manage the teaching and learning processes and introduce some changes in their pedagogical practices:

After analyzing the interviews, I checked these students' interests and conducted my classes based upon what they revealed. The strategies used were i) activities that allowed students to discover experimentally mathematical properties; ii) pair and group work; iii) usage of the computer (webquests); iv) and consolidation games. (T1)

[...] I have done an effort to integrate new technologies in the classroom, using a large diversity of materials that, fortunately, my school has to offer. My students answered multiple quizzes, using electronic devices, like videogames joysticks. The fact that they feel like TV stars, helps them to become top class stars. The students involved in the RRC project presented good results in these quizzes. (T2)

Even though project RRC focuses in some students in particular, aiming for teachers to select activities, contents, themes and materials, that better suit those students, it does not intend to exclude or pay less attention to the other students from the classes. As teachers learn more about the students they selected, they often realize those students share many needs, interests and expectations with their classmates , and that their new pedagogical options must be managed in such a way that all students should benefit from them. And so do teachers say:

[...] it is curious how the things that I learn with RRC's students allow me to create a better environment inside my classroom. [...] Because I am more aware of the importance of knowing kids better, I have created room for them to share their expectations and I value their experiences. I try to show them why school matters and why is it important to learn Portuguese for their daily lives. (T2)

According to these teachers, project RRC seems to have had a positive impact not only in students' attitudes, but in their academic performance as well. They say most students performed better. The new strategies implemented in class motivated them and helped them acquire knowledge and develop new skills (to learn more about these strategies one can read Leal, Machado, Monteiro and Rebelo 2010). Furthermore, students' improving results strengthened their own confidence in their capabilities and encouraged them to commit to learning.

We believe the results reported on a learning level could only be reached because project RRC's research methodology raises teacher-researchers' awareness of their teaching practices and promotes a more analytical and reflexive attitude. As we formerly stated, it is essential that teachers sustain a reflective posture in order to help improve the quality of educational processes. Project RRC seems to favor such an attitude:

In practical terms, this project [...] allowed me to be much more aware and conscious of my daily practices, identifying and enhancing moments in class that were involuntarily wasted before [...]. I notice that I have become more self-critical. For instance, in class, I often find myself identifying something I did wrong [...], looking for a solution and, amazingly, being able to find one. (T2)

Carrying out the investigation procedures in class presents us a good opportunity to think about it [...] because it is not a common thing and it involves complex processes, which can present dilemmas and conduct us to think on our own practice and clarify it. (T1)

Both T1 and T2 consider that one of project RRC's greatest benefits is its collaborative nature, either in presence, between S. Miguel's team members, or at a distance, with Terceira's team members, using Moodle as a tool to promote interaction and share data as well as pedagogical materials and strategies:

Reflection by itself is not enough, it has to have the strength in it to cause action, i.e., make the teacher an active agent in this process, lead him/her to rethink his/her practices and change them when needed [...]. This process can be enhanced if there is a propitious environment to collaborative work. It will certainly help its members to be more autonomous. (T1)

Final considerations

Project RRC believes teachers can play a major role in promoting the quality of educational processes and results. It then focuses on helping them learn more about their students, understand better what goes on in their classrooms, think on their practices in a critical manner and change them, in a process that is both progressive and collaborative.

Project RRC's main attention goes to those students who do not seem to find a special meaning or relevance in school, for it believes that is in part why they resist school and school tasks, often show a troublesome behavior and have poor academic results.

Teacher-researchers' testimonies we present in this paper tell of project RRC's impact both on those students' attitudes and results as on their classmates' attitudes and results and on teachers' practices and professional development. Their words illustrate project RRC helps teachers learn while teaching, as they get to know their students better, think their teaching practices and try to change them in order to better meet their students' interests and needs. These results prove to be both rewarding and encouraging to project RRC's team members.

We find teacher-researchers involved in project RRC goes on because, so far, the project has been able to meet their expectations and help them find solutions for some of the problems they face in their classes. Also, team's support and good working climate seems to play an important role in the process.

We find, however, it has not been an easy job, whether for each teacher-researcher in particular or for the research team as a whole. It is very difficult for team members to find time to meet and discuss; some tasks are not fulfilled in due time; some team members do not handle Moodle easily and their lack of time often keeps them away from online discussions or material sharing. Teachers' increasing working hours and their involvement in

a growing number of school tasks, usually of a bureaucratic nature, seems to take most of their time and energy. They find it hard to conciliate the research tasks with other professional tasks and responsibilities and their family life.

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Adaptive School as a Framework for School Innovation and Continuous Professional Development

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Abstract

Schooling has been facing new challenges and functions in the last decades such as international expectations, globalized evaluation, measurement politics and more heterogeneous school communities. A deeper situation analysis based on the international literature shows that traditional schooling is challenged by the cultural-societal changes in our globalized world. A modern institution has to live in a postmodern, multicultural society, among postmodern discourses and international neo-liberal pressure and rhetoric facing marginalization and inequality problems. Thus, the goal of our research and development is to give a possible concrete answer along the concept of adaptive and inclusive schools by elaborating some tools to support innovations in education. Based on a theoretical analysis this paper offers a conceptual framework for developing adaptive and inclusive schools. The values of our school concept are the following: - reacting to the context, - accepting the various and changing needs and aims, - valuing the differences of children, groups, and at the same time refusing to make inflexible categories of students (e.g. SEN students), - learning-centeredness, - school as a common sphere of groups, - innovative thinking and acting, and reflective planning and acting in a learning community. In this paper, we present our theoretical-conceptual approach and research study results based on a participatory case-study of the educational practices of ten Hungarian schools from the aspect of adaptive schooling. The three-phase case studies are conducted to form an active dialog and reflective interaction with the institutions.

A new concept

Recently, the terms adaptive school and inclusive school have been used more and more in educational research and development projects. Nevertheless, it is still not clear how these approaches can constitute a solid base, a theoretical framework for the innovation and

development of schools and at the same time for the continuous professional development (CPD) of teachers. In this paper, the main elements of a new concept of adaptive schools are presented. The new approach is considered to be a response to the challenges coming from the changing social, cultural and educational context: local and global context, and insufficient in-service teacher education. The concept is a fruit of an EU financed research and development project carried out by a group of researchers together with schools and teachers. It is a continuous process in which the concept and the tools for schools are continuously re-elaborated answering to the context, thinking together with the institutions and building a network of adaptive schools.

The main aspects of our concept of adaptive school are not unknown in pedagogical discourses, but the process and the results of our research and development can offer a new and more complex approach, deeper and more reflected understanding of adaptive school because:

- the school model is highly related to the changing social, cultural and educational context, and that means the reflection on context is an essential part of the adaptive school concept;
- the research and development processes are interrelated, and that yields a co-constructed knowledge of researchers and of practitioners;
- the framework of adaptive school is based on a detailed analysis of pedagogical theories and a deep analysis of adaptive school practices; the elements of the adaptive school concept are interconnected in a thoroughly planned way; the similarities of adaptive and inclusive school concept are interpreted;
- the school concept and the continuous professional development are planned together and thus the concept we developed is open to continuous critical interpretations.

As a consequence of the context-bounded nature of adaptive school concept, the project is strongly linked to the Hungarian context, but the main elements of the concept can be interesting for a more universal audience due to some very common global contextual dimensions. When we think the Hungarian context is not well-known for the readers we will introduce it to some degree.

Reasons for a new approach

The reasons for a new approach originate in two major sources. On the one hand, the **changing social context** and its effects on schooling, and on the other hand the **deficiency of in-service teacher education** can be described as the main roots of the emergence of a

new approach in schooling. Schooling and pedagogy traditionally connected to modernism face new challenges such as the phenomena of globalization and postmodernism (Burbules – Torres 2000; Amin 1997, Aronowitz and Giroux 1991). Just as, new worldwide policies are influencing schooling and teachers' everyday professional life. There are new and new requirements towards teachers and schools in order to continuously innovate their educational work. Such slogans as “knowledge society”, “life-long learning” and even “equity” offer the base of a clearly neo-liberal agenda of transformation of schooling translated into control practices and different accountability and measurement policies. At the same time, critical reflection on the historical roots of schooling and on its present material, economical and societal conditions are not part of mainstream trends in educational studies and practices (Popkewitz 2000).

Not only global, but **local problems** evoke a new approach too, and thus two characteristics of the Hungarian social context can be described in connection with the emergence of this new concept. The hierarchical society is reflected in a highly selective school system, and existing stereotypes and prejudices in society have a strong effect within the schools producing stigmas and categories used in the educational process.

Behind the insufficient in-service teacher education different contextual factors may be identified in Hungary:

- slow penetration of some worldwide tendencies in educational theory (gender issues, social constructivism, critical pedagogy etc.),
- scarcity of conceptual and theoretical background of in-service TE, and in general, of the school development and innovation processes,
- inclusion and adaptivity are divergent concepts of different theoretical and practical traditions, there is no serious dialogue between the two approaches,
- in-service TE programs are not related to institutions, communities, and in this way they cannot help the professional learning community itself,
- in-service TE are often without the mentality of continuous professional development,
- in educational practice (and sometimes even in theory) there is a lack of reflection on the social context.

The methodology of our research and development project

Our research and development has been constructed in the qualitative paradigm. We have committed ourselves to using methods of research and development that build on common interpretations, interaction and collaboration between researchers and teachers, and can be easily reshaped and meanwhile be essential part of the whole research and development

story. Based on these our methodology can be described as a story (Clandinin and Conelly 2000), as *our* story: activities, goals and future.

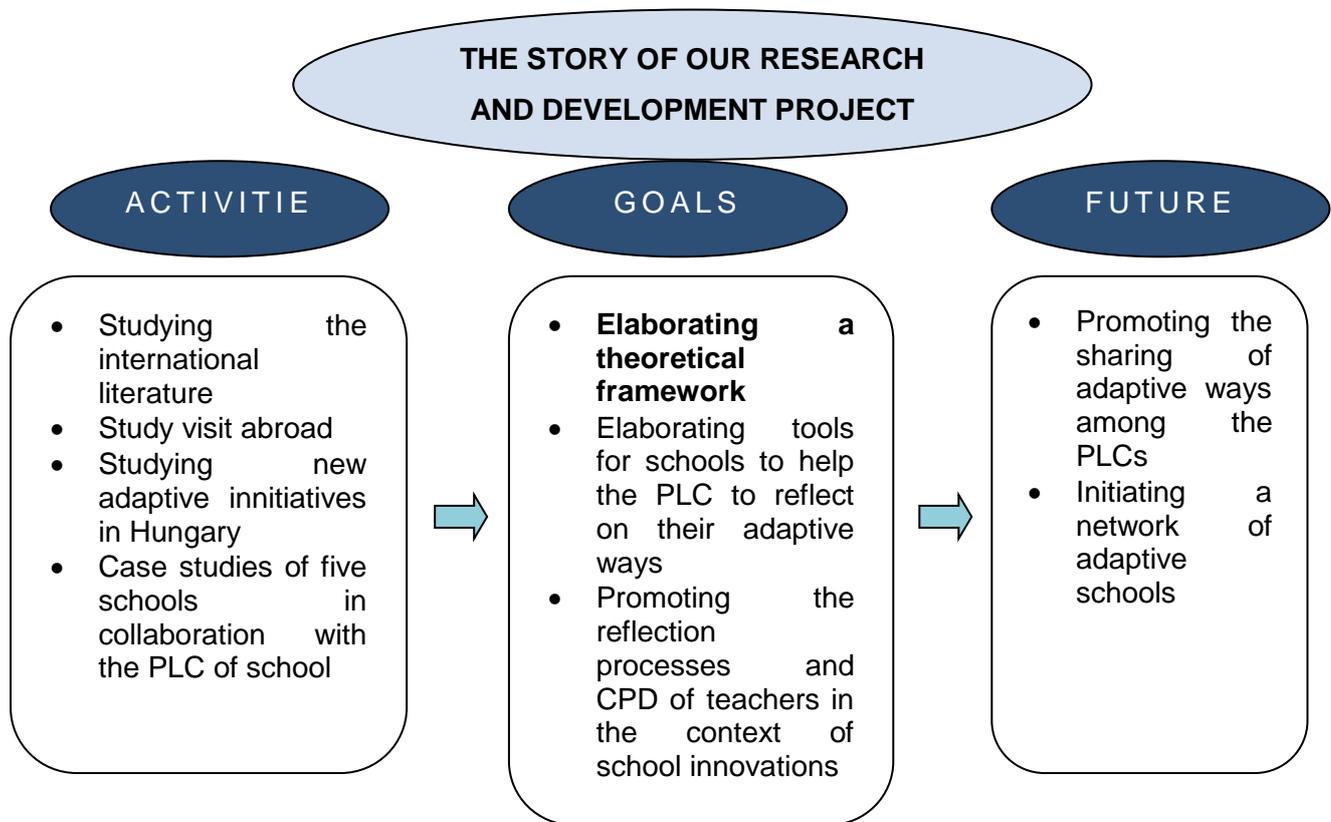


Figure 1. Our research and development project

As it is presented in *Figure 1*, our **future** vision in this story is the establishment of a school network of adaptive schools in which the PLC (professional learning communities) can share adaptive ways³⁵ (i.e. everyday practices, pedagogical processes etc.) among each other. The school network is still under construction, and our closer and present **goals** are the elaboration of a theoretical framework and some concrete supporting tools for adaptive schools, and with this elaboration together with the PLC, promoting the CPD of the teachers and the innovation of their institutions. *This present paper is limited to the presentation of the theoretical framework.* The concrete research and development goals were intended to be reached by the above listed **activities** (*Figure 1*): literature review, study visit (in Norway),

³⁵ In our project we call the practices of adaptivity “adaptive ways” because these practices are always in change, and we can learn more from the process and development themselves than from the results of the adaptive practices.

studying the recent Hungarian innovative initiatives and five case studies in collaboration with the PLC of schools considering themselves as adaptive institutions. A **three-phase case study** was conducted in these schools:

- in the first phase: observations, classroom observations, visual documentation (photos), introductory interviews with the principal and other teachers (general questions on the identity and history of the school) were made,
- in the second phase: further observations, classroom observations, visual documentation (photos), second interviews with the principal and other teachers (discussing on the main dimensions of our concept), focus group interview with pupils (about the main dimensions of the concept) were made, and
- in the third phase: on the basis of the two previous visits we elaborated a complex reflection on the institution as adaptive school, and we discussed it with the principal and the other members of the PLC.

The main dimensions of the adaptive school concept

During the above presented process, the main dimensions of our new concept have been crystallized. These dimensions are clearly values which constitute the adaptive schools. Even in a socio-cultural context which is considered postmodern, the values are still important in the constitution of school pedagogy. We have found four main values which constitute a framework for any adaptive school according to our literature review and common reflections. These interrelated dimensions are: adaptivity, school as community, diversity and fighting against categories, and learning centeredness.

In this paper these values will be presented delineating our school concept and focusing on the dimensions of the CPD of teachers. The study follows the same structure by answering different questions regarding each value:

- Why is the value important, what is the context (problems, challenges) from where it is emerged?
- What does the value mean in our interpretation?
- How is it presented in the lives of the schools we studied, what are the questions, problems related to the realization of the dimension?

Adaptivity

Adaptivity as a value was evoked by a complex and interrelating group of phenomena and problems defining the present scene in schooling and the future of education. Social, cultural

and economical changes raise more and more questions concerning the everyday practice of education within schools. One of the most influential challenges in the history of education is the accessibility of education for the masses, and it induces several questions:

- What (and how) has schooling learned from its own reactions to the issue of accessibility for all? (e.g. alternativty, personalized pedagogy, comprehensivity)
- What kind of knowledge has emerged from the concept of alternativty focusing on children's needs and learning centeredness?
- What kind of effects has personalized pedagogy on education as a reaction to the inefficiency of standardizing education?
- How did comprehensivity affect the effort to vanquish inequality in education?

Besides these historical perspectives, the above presented changes pose questions to the present, as well.

- How will schools, as the important social institutions of modernism, define their roles in a post- or a late-modern context (see also Aronowitz and Giroux 1991)?
- What kind of new challenges do globalization and localisation face schooling?

The cornerstone of our concept was the idea that schools must be intent on defining their own identity. However, as a conclusion of the theoretical and the empirical research we found that the above defined determining factors and the relating school development initiatives remain unreflected in practice. Consequently, the value of adaptivity is interpreted as a complex notion in our concept. Adaptivity can be described by the relationship of three different concepts: *changing, reflection and learning/innovation*, as illustrated in *Figure 2*.

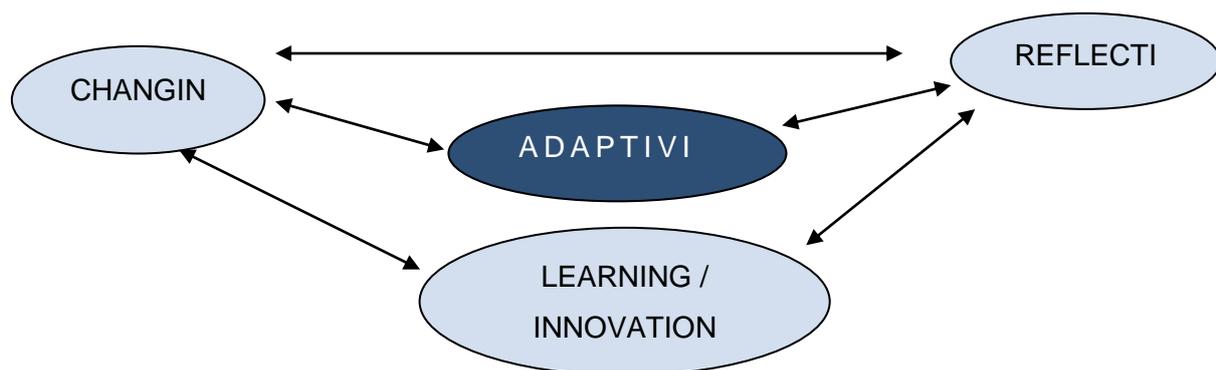


Figure 2. The concept of adaptivity

Changing and reflection dimension: In this dimension, the urge and the possibility for changing motivated by the social, cultural and economical changes can be examined. The macro, mezo and micro level reactions to these changes can serve as a basis for adaptivity.

At the same time, it must be emphasized that adaptivity does not equal with adaptation. The role of reflection is a key element in our definition of adaptivity, and thus it differs from other evolutionist approaches (e. g. *About adaptive schools*).

Changing – learning/innovation dimension³⁶: The continuously changing environment causes the change of contexts surrounding schools resulting in the emergence of more complex school systems. In an adaptive model, complexity - together with the need for learning/innovation-, as opposed to the illusion of stability, must be supported. Concerning the different models of interpreting learning and innovation, by innovation our concept is based on the social – interactionist approach (Cross 1999 quoted by [21st Century Learning...2008](#)), while learning is interpreted as based on the theory of social and individual knowledge construction (see also in this paper “*Learning-centeredness*”). The reason for these interpretations is that these approaches offer possibilities for handling change on an individual and social level.

Reflection – learning/innovation dimension: This aspect, on the one hand, strengthens the need for connecting past, present and future, and highlights its difficulties. On the other hand, it attracts the attention to the fact that the learning of a community, organisations and schools requires a shared learning space that is suitable for building relationships, and integrates individual-, group- and community- level learning into each other (Nonaka and Konno, 1998, quoted by Tynjälä, 2008).

Research in Hungary revealed some specific problems relating to the concept of adaptivity:

- Significant changes reflecting to the needs of the local community/environment can be observed in those institutions where the existence of the school was in danger, decisively because of the number of students (see also *Changing – learning/innovation dimension*).
- The sustainability of centrally directed developments is uncertain. One reason for that is the phenomenon that the development does not cover the school as the whole organisation, and thus the members participating in the development-process are isolated (see *Reflection – learning/innovation dimension*). Another reason is the lack of reflection, namely, that the different aspects of the development remain unreflected resulting in adaptation instead of adaptivity (see *Changing – reflection dimension*).
- Innovative schools can be characterized by the changes affecting the process of learning and teaching, as well, and the schools face the danger of isolation (within

³⁶ The present paper (because of limitations in length) does not discuss the differences and similarities between the concept of learning and innovation.

their social context). It evokes the question whether: *How are these schools able to reflect to the needs of their environments?* (see *Changing- reflection dimension*).

School as community

One characteristic of the postmodern social context is fragmentedness which - together with the consumer culture of the society - evokes individualisation and loneliness (Bauman, 2000). Therefore, the dimension of community comes to the front in every aspect of society including schooling and the focus of the relevant literatures, too (Giroux 1988; hooks 2003). School democracy, equality and equity have drawn significant attention in the last decades, especially in connection with comprehensive pedagogy and critical pedagogy.

The word **community** has specific and “spiritual” content. Accordingly, in our concept the word community is used intentionally and consciously. However, we are aware of the fact that from a sociological perspective the word organisation should be preferred. Nevertheless, by using the term community our concept can highlight the unavoidably personal and value-centred aspect of school contexts. This approach can be found at hooks (2003) and Bergmark (2009) as well. Several studies emphasize that schools are not only institutions but communities whose members are in an interpersonal relationship with each other. Sergiovanni (1994) argues that in the relevant pedagogical literature instead of the word organisation, the term community comes to the front. Consequently, the change of this metaphor brings the change of the approach.

By the use of the notion: community, the school - similarly to the family, friends and everyday relations - can be described by informal and personal aspects. Several attributes can be attached to the word. The following list presents those ones that are most directly can be linked to the concept of adaptive school:

- *Learning community* (Stoll et al. 2006): the community learns together along shared and common goals.
- *Ethical community* (Bergmark 2009): the basic dimension of the community is the ethical and moral activity.
- *Democratic community* (Dewey 1916/2007),
- *Open (lives in its environment) community* (Crowson and Goldring 2010): school community that reacts to its local environment/community and construct it as well (“new localism”).

Our concept describes school as a node (meeting point) in a complex relationship network: washing away the boundaries of outside and inside.

The case studies revealed that the schools consciously pay attention to the dimension of community, and community was considered to be equally important by the teachers and students. This phenomenon was strengthened by the following evidences:

- the importance and significance of informal relationship between teachers can be observed,
- the practice of common learning of teachers,
- the interpretation of schools as family-like communities,
- participation of students in decision-making processes (school democracy),
- participation in the local community life (e.g. inviting parents, fitness centre in the school).
- students' views also reflect the interpretation of school as community.

However problems were also revealed in the community dimension. Different schools present different problems within the community dimension:

- Students observe the community dimension of a school differently: part of them reports strong school community, others refuse to experience it. It depends on the teachers.
- In one of the schools, the school climate is very friendly and family-like, but the community works very hierarchically, and the teachers do not reflect on it.
- In one of the schools, the school makes conscious efforts to build a community, but it is characterized by a middle-class mentality in a block of flats context.

To sum up, one of the most important missing points in the community dimension is the lack of school integration into the local community life. This is not part of the Hungarian mentality yet. The other point is the lack of the professional learning community between teachers. In the Hungarian context (as a challenge) the successful facilitation of the establishment of professional learning communities can be the foundations of an ethical, democratic and learning school community.

The questioning of student categories and the value of student diversity

Integration has been one of the main focus points of innovation and changes affecting schools in Hungary in the last couple of years. Nevertheless, institutions have interpreted it and looked for solutions enhancing integration within their particular local circumstances. Several methodological improvements enriched the institutions; however, it seems that these changing processes have brought student categories into prominence, overshadowing the handling of students' diversity as a value and the interpretation of the student as a member of a community. The concept of adaptive schools intends to understand these problems by building on the basic principles of (a) postmodern and critical pedagogy, (b) personalized

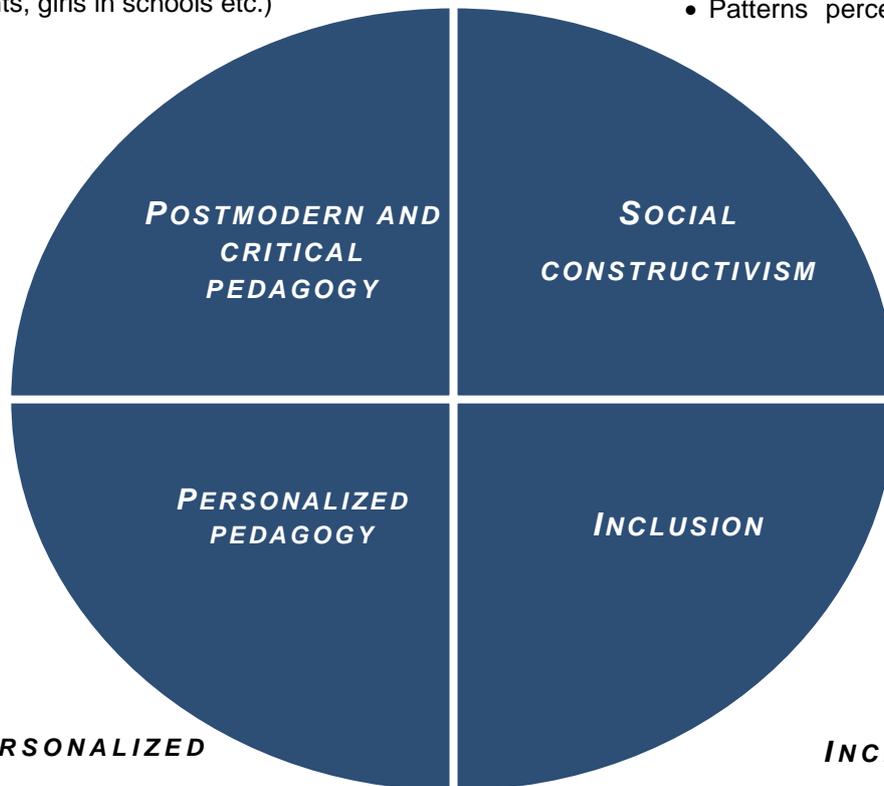
pedagogy, (c) social constructivism and (d) inclusion (see *Figure 3*): on the one hand, it questions the necessity of using student categories as well as what is considered to be their underlying content, on the other hand, it redefines the image of student, student identity by placing student diversity in the focus of attention.

**POSTMODERN AND
CRITICAL PEDAGOGY**

- Categories are relative and changing (social constructions)
- The need for breaking the categories
- There are no 'fixed' identities
- „New groups” (immigrants, gay students, girls in schools etc.)

**SOCIAL
CONSTRUCTIVISM**

- The individual is unique in their social-communal embeddedness
- They do not belong to categories but to communities
- Patterns perceived in changing



**PERSONALIZED
PEDAGOGY**

- Students' own voices and choices
- Individual learning path

INCLUSION

- Takes children's needs into consideration
- The focus is not on the deficits
- „School for all”

Figure 3. Principles of postmodern and critical pedagogy, personalized pedagogy, inclusion, and social constructivism in connection with students

Based on all these four main problems can be highlighted: (1) Categories are always social constructions (McLaren 1995; Burr 2003), and therefore can be considered relative, since – if it becomes rigid – it may serve discrimination and separation. (2) Application of categories narrows pedagogical thinking as they usually presume and thus ensure one or very few learning paths for the students. (3) Diverse attitudes, views, images of children lie behind the different student categories that are often misunderstandings (i.e. interpreting special educational needs (SEN) as handicap), and hence lead to false, inadapative solutions in the educational practice. Last, (4) it can be articulated that these student categories are based

on problems, disadvantages so can only lay the foundation of compensatory, correctional educational course of action for 'catching up'.

Thus, the questions raise: **how to think about student identity, how to understand student diversity in adaptive schools** instead of applying student categories. First of all, adaptive schools regard students as active participants, who are not only partakers, contributors and constructors of their learning process but also of their school community. We consider important the fact that every participant of the school view the student/children identity as continuously changing, and think about the students as individuals capable of changing, improving and learning, and whose identity develops in this dynamic process. In our concept we depict the students by their characteristics and not by their needs for the reason that this expression can give a better representation of the holistic image of the child. Hence, in accordance with it, we are thinking about the students attending adaptive schools as individuals with a myriad of permanent and temporary characteristics that may come to the surface, may become important in certain pedagogical situations, but we do not assume one to be more important (more significant) than the other.

In our research, we aimed to get familiar with the special learning, changing processes of the different institution, nevertheless, beside the individual particularities and progression, some general experiences typical of the majority of the schools can also be mentioned. **Every examined institution faces the problem of categorization, but does not have a really thorough strategic plan for reducing it**, or their efforts have not been successful. The attitude of the local community towards the school (e.g. negative, degrading interpretation of the special aspect of the school) strongly influences and restrains the institutional-level-based endeavours carried out to fight against student categories. The legal terms SEN and disadvantaged social situation are present in the everyday pedagogical practice, and the content of these expressions is only questioned in one or two institutions and only in relation to their own students and pupils. Finally, it has to be emphasised that as the schools often base the learning paths on categories, the repertoire of the offered, planned learning paths is especially narrow or there is only one, consequently the development of the different diverse students and personalized pedagogy are not supported enough.

As a result of the familiarization with the learning process of the "adaptive ways" of the schools, the following **questions** seem necessary to be raised:

- How can teachers be supported in recognizing and supporting the students' characteristics embedded in the community?
- How can we help the institutions in reflecting (better) on student categories and the dangers of applying them?
- What kind of not-problem-based characteristics are recognized/accepted by the institutions, and how can they get to know newer ones?

Learning-centeredness

In a postmodern and knowledge based society the value and the practice of learning-centeredness ensure that schools are capable of interpreting and reflecting on the changes of their new functions and roles. The value of learning-centeredness is also essential to make changes in school practice or even to develop, and innovate practice. In the last decade in Hungary several top-down developmental strategy (mainly EU funded projects) have been launched to disseminate new learning methods among schools, and also the in-service learning programmes of teachers have focused on the use of new learning methods in classrooms (e.g. cooperative learning, differentiation). Nevertheless, these new tendencies of learning-centeredness emphasize only the methodology of the learning process and mainly focus on the individual level of learning.

According to these special Hungarian problems we decided to build on a well-established learning theory which encompasses various factors of the learning process and which can define the learning goals and ways of schools, too. To interpret the multilevel nature of learning we decided to build on the **theories of social constructivism**. The cornerstones of social constructivism are (1) the importance of social and cultural context of learning which means that the diversity and openness of communities are an essential part of learning; (2) the various actors of the learning process (e.g. students, teachers, groups, professional learning communities and school, networks) with continuously changing and re-interpreted identity; (3) the interpretation of learning process such as learning as participation (Wenger, 1998), interaction and social construction (Littleton and Häkkinen 1999; Vygotsky 1986); and (4) a socially constructed concept of knowledge which is always in change, unfinished, implicit and situation-directed in certain aspects (Tynjälä 2008).

As the results of the case studies highlighted schools incorporate **many participants** into the learning process, and are not only dealing with the students' or teachers' learning, but with more or less consciousness also support the learning process of the parents, educational body and school organization, the learning process taking place between the different schools and that occurring between the school and the local level. Also, the institutions define **the learning context openly**: for example the learning activities leave the classroom, the parents can take part in the pedagogical development processes. The support of children's participation in their active learning processes appears and the importance of sharing knowledge between teachers and schools. Nonetheless, these learning ambitions rarely reach the state of accurate elaboration. It also became evident that **school seldom reflect on the learning processes**, it is often difficult to identify their way of thinking concerning learning. Furthermore, in most cases individual and communal learning

processes as well as the connection between the learning of the children and the adults are undiscovered.

The **system-level explanation of learning** is evidently complicated and difficult pedagogical work. One of the examined schools has been launched on the way of becoming adaptive: they do not only set supporting learning as a main goal, but they regularly reflect on the processes, they interpret and re-interpret school learning. Their short story is the following: the primary school established in 1997 aimed at helping pupils to become autonomous, intrinsically motivated and responsible learners. In that time they thought that their way to achieve these aims was students' project work. As the principal told us project work had been everything for them. Lately the school learned about the theory of self-regulation which helped them to reflect on the original goals of autonomous, motivated and responsible learner. Since then some teachers have tried to scaffold most of the steps of pupils' learning process in project work (e.g. how to choose tasks, which kind of processing strategies should be used, how to assess the learning outcomes). Also they started to develop a common understanding of learning with pupils and parents successfully. In the interviews pupils understood and explained accurately the main features of their school learning and they were able to reflect on their learning in classrooms, too. Parents regularly experienced the same learning processes as their children (e.g. cooperative learning in parents' meeting), which also helped them to co-construct the concept of learning with their children and the school.

Nowadays a new question about learning emerged in the school. The principal and some teachers visited other schools where they learned about the connection of individual and group learning in classroom. Reflecting on that experience they understood that they should develop their own practice from this perspective. Now they are thinking about new ways or strategies that can link the pupils' individual and group learning processes and outcomes, and this kind of systematic analysis of practice will soon lead to a new re-constructed meaning of learning in the primary school.

Based on the results of the case studies the following **questions** seem necessary to be put forward:

- How the learning concept of a school can be reflected both as a goal and a process?
- What factors can trigger and help the continuous and systematic co-construction of the learning concepts of the school?

How becoming an adaptive school can be learned?

The concept of adaptive schools aims to be a **supportive system** which assists the professional development of motivated schools. The key elements of this supportive system are: (1) the common learning process of the participants, (2) the open interpretation of the adaptive school concept, and (3) the network, community of adaptive schools. (1) The research process was designed in a way that the schools and the researchers both have been taking part in a **common learning process**. That is to say, the concept was shaped by the researchers' notions and by the conversations with the professionals. Furthermore, the planned network is also based on common understandings, sharing of knowledge and interaction. (2) To understand **the values of adaptive schools** we chose dimensions that could/can be the source of asking questions and can give aspects to re-think school practice and innovation, reflection. The results of the case studies show that even those schools, which interpret themselves as adaptive, are struggling with some of the values of adaptive school. The signs of adaptivity, school as community appeared more frequently than the values of diversity and learning-centeredness. Also the reflection and the interrelation of the values need to be further elaborated in these schools. Therefore, the learning method of "adaptive ways", which does not offer closed, ready-made good practices, but presents some schools' learning, thinking and changing processes, can be a successful tool for motivating their school and other schools to reflect. (3) Finally, we intend to launch a **network** organized voluntarily with diverse members (schools, civil organizations etc.) that can concentrate on both local and global challenges the given school faces as well as can support the elaboration of particular individual reactions and innovations. To satisfy this notion we found out the 'adoption system': a school and its problem can be adopted by another school – being on the way of becoming adaptive – that helps to solve its adopted school's problem. Hopefully this system ensures the personalized professional support of the schools and makes sure that the profit of the participants surpasses the invested amount of work – which is a basic condition of the functioning and sustainability of a network (Aalst, 2003).

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PROFESSIONAL DEVELOPMENT OF TEACHERS

Sustainable Professionalization in Dutch Schools

A Practical Approach of the Development of Teacher Professionalism

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Abstract

Dutch schools have more goals than in the past nowadays. Not only is the aim to give pupils and students a standard curriculum but also to offer them a good education and to coach them to become good members of the society as well. At the same time the concept of school-based teacher education becomes a reality in the Netherlands. Schools become more responsible for educating the future generations of teachers and they work in close connection with teacher education institutes to assure high quality delivery of a substantial part of the teacher education curriculum. A recent and exciting development is the introduction of practitioner research in schools and teacher training institutes. This kind of research is considered to belong to the full professionalism of a teacher in the near future. He or she is deemed to inquire and to improve his or her own practice by doing practitioner research. All this: education, training and research requires new expertise and new competencies inside schools. More autonomy gives schools an opportunity to search for more professionalism in their own way: how to activate and to reorganise your school for a process of sustainable professionalization? We present several cases and analyse the visions, the conditions, the processes, and the problems of a number of schools which are involved in new ways of professionalization. What are the perspectives and what are critical factors for success? How to gear education, training and research for one another and to get them in balance? How to organize knowledge management inside schools in such a way that teachers collaborate in their search of interesting and useful knowledge and to support the exchange of their experiences and reflections on a more permanent base.

Professionalization of teachers in the Netherlands: what's going on?

Many Dutch secondary schools are involved in different transformation processes at the same time. After a decade of experimentation with a variety of teaching methods and with a

more student-central curriculum, the focus is now on the widening of school functions and on the upgrading of the teacher profession.

The first priority of the current educational Dutch policy is to find and employ skilled teachers. The need is both quantitative and qualitative. To this end, several policy measures have been introduced to solve this problem. Schools for education determine teachers' continuing professional development needs associated with implementing competence-based education programs, so that these schools can develop better attuned HR policies.

The professional competency requirements should also encourage existing professionals to engage in further training. While the government is responsible for the professional competency requirements, it is up to the schools and the teaching profession themselves to fill in the details.

Teachers get more possibilities for developing and growing into a higher function. At individual level a teacher can use – just once in his career - a Teacher Grant for Education to extend their professional space, to broaden a professional niche or to specialize themselves. There are also many teachers on training for an executive function within the school. Initial teacher training courses for the various types of school are part of higher education, some being provided at institutes of higher professional education (HBO) and some at universities. Recently, the role of schools in teacher training has been growing in importance. A lot of schools participate in so-called network constructions with teacher training institutes and a substantial part of the teacher education curriculum is reallocated to schools now. A recent and exciting development is the introduction of practitioner research in schools and teacher training institutes. This kind of research is considered to belong to the full professionalism of teachers in the near future. They are deemed to inquire and to improve their own practice by doing practitioner research. All this: education, training and research requires new expertise and new competencies inside schools. More autonomy gives schools an opportunity to search for more professionalism in their own way: how to activate and to reorganise your school for a process of sustainable professionalization?

. Most of the educational research in the Netherlands is done in universities by means of experimental designs or surveys; schools are only sites for gathering data, which are mostly analysed and prepared for scientific publication in national and international journals. Results are seldom effectively distributed and communicated among school professionals. Consequently, academic research has come to be seen as something experts do and as having little practical relevance for teaching (cf. McNamara 2002).

Therefore, Dutch teachers and school management are not much inclined to take regular notice of scientific findings in order to improve and to innovate their classroom practices and beyond. They often find the academic knowledge rather abstract, not practice-oriented and not easily applicable in the complex social conditions of a school. Rather, they trust their own

experiences, insights and intuitions and those of their colleagues. (cf. Bransford, Brown and Cocking 2000)

Several years ago the most important educational advisory council for the Dutch government and administration (De Onderwijsraad, 2005, 2006) recorded a huge divide between academic research and the use of science-based knowledge by teachers and school management and at the same time identified serious tendencies of 'deprofessionalisation' among Dutch teachers. A lot of teachers were unable to profit from the merits of educational research and to judge the nature, the appropriateness and the quality of the research. In its turn, the academic community put hardly any efforts into collaboration with schools and educational institutions and into making their results more known to them.

In order to counteract the negative tendencies of 'deprofessionalisation' and academic isolation, the Dutch administration opted in favour of the development of so-called Academic Schools. This concept has been developed analogous to the Dutch academic hospitals and their history of close connections between practice, research and education. Teachers should be prepared for doing research into their own educational practice, for innovation and for organising their own professionalization.

We present two cases and analyse the visions, the conditions, the processes, and the problems of schools which are involved in new ways of professionalization. What are the perspectives and what are critical factors for success? How to gear education, training and research to one another and to get them in balance? How to organize knowledge management inside schools in a such way that teachers work together in knowledge searching and building and profit from each other experiences and reflections.

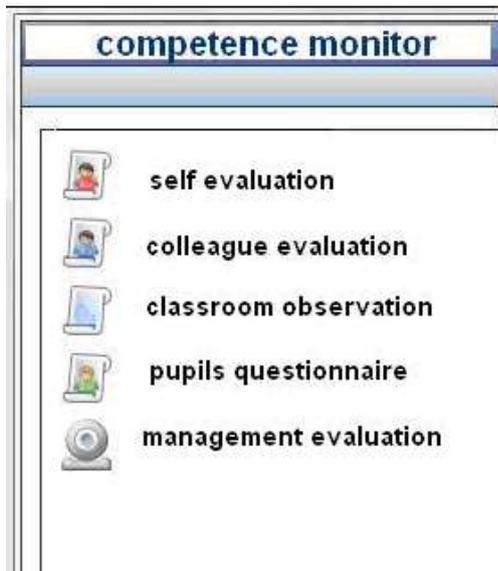
The Boor Academy

Boor is a School Board in the city of Rotterdam which represents 86 public schools. The Board has recently (2009) started their own training institute for their employees: the Boor Academy. The Boor Academy wants to examine how schools handle the professionalization of their teachers. How do schools tackle the competence-based training, how can the management link up the 360 degrees feedback system with their HR-policy, what are the critical success factors?

The "Ruud de Moorcentrum" (RdmC) - part of the Open University - is investigating at the moment the approach of professionalization within schools. The RdmC wants to acquire expertise with practice research in the role of 'critical friend' concerning processes of workplace learning. Which instruments can be used, which kind of support do schools need in order to improve the quality of their teachers? Developed expertise will be available to the

school field in the Netherlands. Research in two school projects delivers two (best) practices about professionalization activities at school level. The results will be placed on the Internet site of the Boor Academy.

The Boor Academy has introduced a Competence Monitor in their schools. The Competence Monitor is a digital tool for competence management within schools. The programme supports with different tools the practice of 360° evaluations, the organization of interviews and puts together the competence file. Reports give an overview of the personal development of the employees.



Selfevaluation: each teacher fills in a self evaluation form as preparation on the annual performance interview with the team leader.

Classroom observation: the team leader visits the class room to observe the teacher performance at least once a year.

Pupils questionnaire: pupils fill in a questionnaire about the performance of the teacher, the lessons, the assessment, the communication, feedback, et cetera. *Peer evaluation:* one or two colleagues fill in an evaluation form

Management evaluation: special attention on pupils outcomes, classroom management, communication e.g.

360 degree feedback is a tool which can be used to inform the development and the performance of leaders. It is a method and a tool that provides leaders with the opportunity to receive performance feedback from a range of colleagues including: his or her supervisor, team members (or direct reports), peers, clients or customers. The purpose of the 360 degree feedback is to assist each individual to understand his or her strengths, lesser strengths and development needs. 360 degree feedback can complement the Developing Performance process.

360 degrees is now being practiced in the education service and used imaginatively for professional development.

Practices at schools

Two current projects within the schools have been selected: the project Thorbecke Academy and the project Hoogvliet Talentontwikkeling (collaboration between 6 primary-schools and

one secondary school). In the first project our investigation has already been started; the second project follows in the autumn of 2010.

In the end (December 2010) we'll compare both projects on their teacher professionalization approach. The research method is the same for both projects. In this case only the Thorbecke-case will be described and the first impressions from the investigation as well.

The Thorbecke College

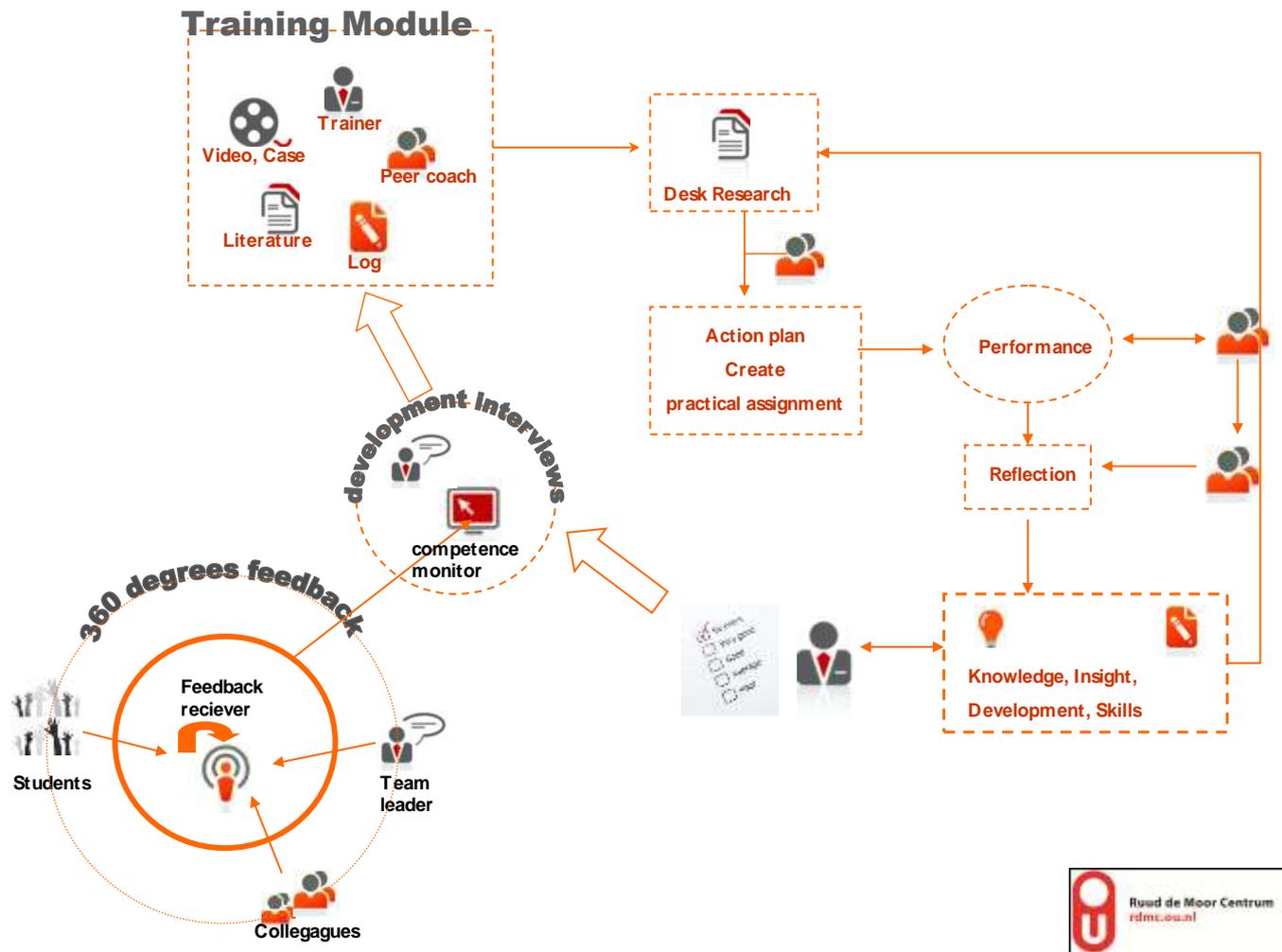
The Thorbecke College is a public school for secondary education. The school has four locations in the city of Rotterdam. All educational levels are available for 2000 pupils. The school has about 200 teachers. In the schools Academy an educational programme is developed for the teachers. The programme has to encourage a fluent follow up in career- and competence development of their teachers.

The Thorbecke Academy wants to support the professionalization of their teachers in a consistent manner. This means an effective education aimed at quality improvement, clear competence-profiles and a link with career planning.

In research we will be answering the overall question: How can the Thorbecke Academy support the professionalization of their teachers in consistency? This research question includes the following questions:

- How does the process of 360 degrees feedback contribute (and the use of the competence monitor) to develop interviews with the team leaders? The focus is on the professionalization of teachers.
- Which learning topics come out during the development interviews? How are these topics integrated in the Thorbecke training modules? What performance development can be reported as a result of the training?

In a framework the training activities are connected with the HR- activities at schools. This framework will be used to describe the organization of activities for teacher professional development. It can also be used by those who are studying teacher change (or growth) and who are responsible for the planning of teacher professional development.



Framework: 360 degrees feedback combined with HR-activities - (Bieke Schreurs 2010)

Some impressions so far

The research period will end December 2010, so the conclusions can't be presented yet. Nevertheless there are some general impressions to share.

- School management take their responsibility for professionalization of their staff with organizational actions like an academy of their own. Schools should develop HR policies that offer teachers CPD (competence profile development) activities in the crucial area of competence-based education. The frameworks presented in the case can be used to this end, by teacher educators as well as by HRD professionals interested in combining training programmes with employee learning.
- The training of teacher professionalization mainly takes place in their own school. Teachers seem to prefer their immediate working environment to train and develop their professional performance. Schools fill in their responsibility for career support and a constant competence development of their teachers by creating their own training area within an 'academy'.
- The model of 360 degrees feedback has been integrated in an instrumental – ict-way. The employees - team leaders as well as teachers - seem to need more training about several aspect of the 360 degrees feedback system Difficult areas are: giving feedback about your colleague; for the team leaders adjusting to each other in their approach and the (integrated) use of several tools.
- The case study shows the struggle that individual teachers are going through to get their every-day teaching repertoire more in line with new ideas on competence-based education. Learning topics seem to concentrate on basic [teacher] skills like coaching, use of ict, effective learning strategies, didactical approaches.

DaVinci college: focus on innovation and research

DaVinci college is a secondary school in the middle-sized town of Leiden in the Netherlands..

In the Dutch secondary school system, there are three different directions or tracks:

- *Pre-vocational secondary education (Voorbereidend Middelbaar Beroepsonderwijs/VMBO)*. Within this education, there are many directions and sub-directions that students can choose.
- *Senior general secondary education (Hoger Algemeen Voortgezet Onderwijs/HAVO)* : This education takes 5 years to complete and is meant as a preparation for a Bachelor's degree.

- *Pre-university education (Voorbereidend Wetenschappelijk Onderwijs/VWO)* : VWO takes 6 years to complete and is meant as preparation for a Master's degree.

The DaVinci college has all these different tracks housed in one building. The school is ambitious and proud of its reputation of being an innovative school. Constant participation in innovative projects gives the school a dynamic character. Besides offering a standard secondary education to pupils, the school organises a lot of extracurricular activities and projects. These fall outside the realm of the regular curriculum and require extra investment and development on the part of teachers.

Secondary schools in the Netherlands are challenged to profile themselves on a special domain. Examples of these are the Cultural Profile Schools. From the start of the school term 2004-2005, a subsidy scheme has been set up by the Dutch government. This scheme has enabled certain schools to present themselves as so-called 'cultural profile schools'. A cultural profile school's curriculum, policy plan and activities all pay significant attention to cultural heritage and art. Another characteristic of a cultural profile school is its structural cooperation with (cultural) partners in the area. Such schools offer extracurricular classes in creative subjects, professional artists are engaged, pupils are given the opportunity to rehearse musical and dramatic performances (for example not in the school's gym, but on a real stage).

Da Vinci College has profiled itself as a cultural school; It has already spent quite some time in developing and expanding projects in this field. To name but a few examples: pupils can follow art classes, the school organizes drama days annually and the school is designing a virtual museum.

Another distinguishing characteristic of the school is its commitment to practice-oriented academic research. The school participates in a program of the council for secondary education³⁷: Expedition dare, share and do (durven, delen, doen). Aim of the program is quality improvement in secondary education. Innovative plans originating in school are scientifically investigated and supported. Teachers in the school and researchers closely cooperate and have the chance to experiment with valuable innovations. Participation in the programme encourages that discussions in the school are more evidence-based conducted. So, at the DaVinci College a lot of teachers actively devote themselves to the cause of school development and school improvement.

³⁷ The council (VO-Raad) is the branch organization for secondary education in the Netherlands. It represents the collective interests of the schools, is close to the sector and offers services to boards and head teachers. Almost all of the secondary school boards are members of the VO-Raad. Expedition dare, share, do is financed by the Ministry of Education, Culture and Science.

(The top of) the DaVinci college has the ambition to implement a structural base for the ongoing development of expertise inside the school and the permanent professionalization of teachers. They think of quality circles, research programs and an academy of their own. The Ruud de Moor centre of the Open University NL participates in the investigation of the possibilities. It functions as a critical friend.

But this is only the innovation-driven side of the school. There is another more hidden side as well. The DaVinci college has a lot of teachers in charge. They are normally working together in subject-based curriculum groups. But the impression is that there are big differences in meeting frequency and quality of these groups. In addition to it, there are rare central meetings to inform the staff about school development and important issues. But beside these meetings, there are no other structural possibilities for meeting and discussion. For example, there are no multidisciplinary teams responsible for elementary or higher classes. Therefore there is little base for organising support for implementation of proven innovation. Another typical feature is the traditional way of teaching during the regular lessons. In classrooms a variety of teaching methods and strategies is generally not used to support student's learning: besides whole class teaching group work, pair work or individual teaching. Recently the Dutch inspectorate has recorded that students during the normal classes sprawl in school banks, are passive and little inclined to participate in lessons. The inspectorate has recommended to analyse this problem with teachers and to make new arrangements in order to improve the situation. However, the school management contends with the fact that teachers don't see the witness of the inspectorate as urgent and are not very inclined and prepared to analyse and change their behaviour in classrooms. In an attempt to budge the teachers, the school direction asked them by means of a survey what the teachers experienced as the greatest dilemmas in their school practice. In more than half of the answers the teachers solely attribute problems to student behaviour. They complain about sloppy homework, being too late for school and classes, attention deficit and forgetting school books on the part of students. They ask for research about what can be done to discipline the students?

A tentative analysis

- There seems to be a discrepancy between an active innovation- and research-driven part of the teaching staff and a bigger part of teachers who are more routine-oriented and relying on traditional teaching methods. In other words: a difference in orientation between a top involved in innovation and research and a bottom charged with the daily routine of regular teaching.

- There are indications that an inarticulate uneasiness exists, at least with a part of the teaching staff about the time-consuming investments in innovation and research.. In the Netherlands the work pressure for teachers is very high in comparison to other European countries. So there is among teachers a sensitivity about everything that increases pressure.
- The interfaces between top and bottom are weak. There are few structural possibilities for communication and exchange of orientations and ideas. The ‘top’ has few options for organising support on a permanent base. But also in the opposite direction, the ‘bottom’ has few opportunities to raise their voice and to voice the daily concerns of teaching. So there is the risk of a widening gap between a vanguard and the rear.

Discussion

Professionalization and research in schools that are performed by teachers themselves, is a relatively new phenomenon in Dutch education. Most teachers hardly got a research training in their professional education and are hardly prepared to develop and improve their own skills on a permanent base. They are poorly trained for activities as analysing their own practice and formulating and elaborating an innovation problem or a research question, gathering and analysing data and drawing evidence-based conclusions. They are not prepared for giving to and getting feedback from colleagues.

Moreover, they are not familiar with research literature. For lack of knowledge and of experience with research and innovation they can't profit from the results of educational research, let alone critically translate these results into their own teaching and school practices. In case of difficulties, solutions are often already chosen before problems or situations are adequately examined and analysed.

The new ambition is to change this school culture and to combine research, practice-orientation, teamwork and ongoing professionalization in the teacher profession. A great number of initiatives have been taken and several pilots have been carried out. But the reported studies showed that a lot of obstacles have to be negotiated. Although the management stimulates and organizes new policies, doing research or implementing innovation in teamwork has its own culture and logistics and these have to be joined with the daily practice of teaching. Teachers in the reported studies who are involved in both or one of these activities complain about the lack of time and the difficulties of combining these activities with their regular teaching.

But this is not the only problem. For all that the management tries hard, a second risk is that research or innovation in schools can decline to an isolated phenomenon done by a few teachers relieved from other tasks without enough relations to the regular activities of teaching and learning in the school.

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What Concerns Teacher Students in Teaching?

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Abstract

The expertise of a vocational teacher is versatile. In order to understand the multidimensional pedagogical expertise we should consider the character of pedagogical knowledge and its principal components. These components are practical, formal and metacognitive knowledge. At the School of Vocational Education this produces a lot of expectations for teachers' educators and challenges for teacher students. The aim of this study is to clarify teacher students' main concerns in teaching and to develop a tool in order to help them to develop their pedagogical knowledge. The result of this study shows that for vocational teacher students, the main concerns were connected to the level of formal knowledge, there were no clear concerns connected to practical knowledge and metacognitive knowledge.

Keywords: *beginning teacher, planning teaching process, support pedagogical development*

Expertise of teachers

Experts are people who have the ultimate skills and knowledge of their own field. They have a long working experience, and they are able to put their professional ability into practice. (Eteläpelto 1992, 32–33.) Experts in teaching are professionals in the pedagogical field working at the education sector in its various forms. The expertise of a vocational teacher is versatile. Vocational teachers need excellent cooperation skills and interaction skills, they have to be familiar with the working life and they need outstanding research and developing skills. In order to develop, also critical reflection skills are needed at the teacher's work. However, the main area of the expertise is pedagogical knowledge that includes the whole teaching process. It includes for example interactive skills, implementation of teaching, teacher's own thinking and also the concept of learning.

Principal components of pedagogical knowledge

Implementation of teaching is a multidimensional phenomenon that consists of e.g. planning, carrying out and evaluating learning processes. Teachers should be able to take many aspects into account: managing appropriate teaching and guiding methods, organizing a learning environment, and, for example, perceiving students with special needs. In order to understand the multidimensional pedagogical expertise we should consider the character of pedagogical knowledge and its principal components. These components are practical, formal and metacognitive knowledge. The components are essential and complement each other. (Bereiter and Scardamalia 1993, 43–75; Eteläpelto 1997, 97–99; Tynjälä 1999, 171; Tynjälä 2008; Tynjälä et al. 2006.)

Practical knowledge is informal and it differs from theoretical knowledge (Bereiter and Scardamalia 1993, 47; Tynjälä et al. 2006, 84–85). On the practical level a teacher's pedagogical knowledge appears as a pragmatic action. It is based on experience and it is often acquired in working life. Professionals learn a lot simply by doing. It means that teachers develop their expertise by teaching. Teacher's practical knowledge comes true in immediate interaction with students on a direct level. It includes interaction skills and pragmatic pedagogical skills. It is influenced by the teacher's own personal character. (Gholami 2009; Hoppo 2006; 118–129; Tynjälä et al. 2006.)

When people talk about "knowledge" they usually mean formal knowledge and refer to formal knowledge loosely as "*the kind of thing that is found in textbooks*". Although found from textbooks, formal knowledge is more than some kind of an abstraction existing in individual minds. Formal knowledge is important for communication, teaching, and learning. In order to communicate, teachers and students need a common language with a conceptual similarity. An important corollary is that it takes formal knowledge to get formal knowledge. Formal knowledge can also be created in social processes through critical thinking and argumentation. (Bereiter and Scardamalia 1993, 61–64; Tynjälä 2008.)

Formal knowledge provides starting points for the teacher's practical skills and promotes teacher's work on an indirect level. On this indirect level the teacher plans and coordinates upcoming implementation of teaching. S/he needs theoretical know-how about the learning process, the teaching process, psychology, educational laws etc. One of the major questions is how to translate formal knowledge into informal knowledge and skills. (Bereiter and Scardamalia 1993, 65). According to Bereiter and Scardamalia it seems plausible that formal knowledge is converted into a skill by using it to solve problems of a procedure. Formal knowledge is converted into informal knowledge by using it to solve problems of understanding. (Bereiter and Scardamalia 1993, 66.)

The third component of the pedagogical expertise is metacognitive knowledge which expresses awareness of the teacher's own thinking. The teacher's metacognitive knowledge consists of the concept of teaching and guiding, ethics and values. It includes knowledge about when and where to use particular strategies for example for learning or for problem solving. It is more about knowing how to manage yourself so that you can do the job in a particular way than knowing how to do a task. It is a question of self-regulatory knowledge. (Bereiter and Scardamalia 1993, 48–49; Eteläpelto 1997, 99; Tynjälä 2008.)

Practical, formal and metacognitive knowledge are essential in teaching and they complement each other. An expert teacher manages all the three components of pedagogical knowledge on every level of teaching and s/he is able to act appropriately in different contexts. (Figure 1.)

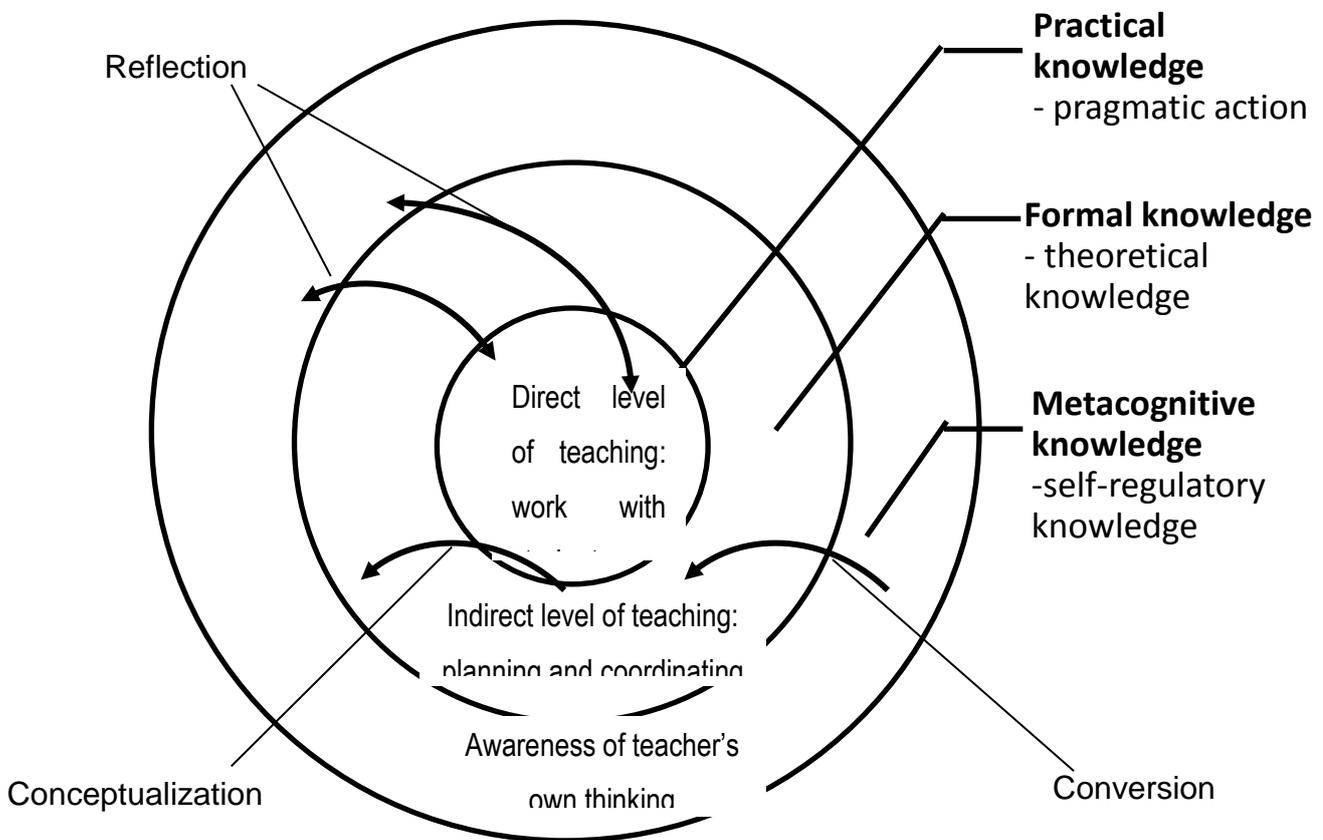


Figure 1. The principal components of teacher's pedagogical knowledge: practical knowledge, formal knowledge and metacognitive knowledge.

Practice of the research

The main area of expertise is pedagogical knowledge that has three principal components: practical, formal and metacognitive knowledge. At the School of Vocational Education this produces a lot of expectations for the teachers' educators and challenges for the teacher students.

The aim of this study is to clarify the teacher students' main concerns in teaching and to develop a tool to help them develop their pedagogical knowledge. Participants (n= 45) in this study are teacher students at the Oulu University of Applied Sciences, School of Vocational Teacher Education. The material of the study was gathered during the "Teaching ABC"-course in the academic term of 2009-2010. The focus of the study is to clarify:

1. What are the main concerns for teacher students in the implementation of teaching?
2. What kind of a tool was created to take into account the concerns of teacher students and to support their pedagogical development?

The study uses a qualitative approach. It can be characterized as a case study. The data collection method consisted of teacher students' open-ended questions. The teacher students were asked to make questions about their concerns in teaching. They brought up various questions about their developing needs and wrote them down at the beginning of the "Teaching ABC"-course.

The analysis was made by using a content analysis method based on the Bereiter and Scardamalia's (1993) and Tynjälä's (2008) framework of expertise.

Findings: teacher students' main concerns

Although the teacher students had different kinds of questions, the main concerns were connected with the level of formal knowledge, which could also be called as an indirect level of teaching. Formal knowledge provides starting points for the teachers' practical skills and correspondingly promotes teachers' work both on the indirect and direct level. On the indirect level the teacher plans and coordinates the upcoming implementation of teaching.

The concerns of the teacher students were various but they all had one common factor: everyone wanted to develop their pedagogical skills. Clearly the main concern was how to plan a compact lesson or a whole course.

How do I create and plan a single lesson and a whole teaching module?

There were worries about how to prepare oneself for the teaching action. The teacher students asked questions about the planning process.

How can I plan a well-designed teaching module where content and other things are in harmony?

They were concerned about how to choose appropriate teaching and evaluating methods. They also felt that they needed to develop their time management skills.

How to choose the appropriate teaching methods?

An interesting finding was that there were no questions concerning practical knowledge and how to interact with students or concerning metacognitive knowledge. Metacognitive knowledge in teaching means that the teachers learn to challenge their own teaching beliefs in a critical analysis, and that they become responsible for their actions. Critical reflection increases the teachers' awareness about their own teaching and triggers positive changes on their teaching. This thinking process is a necessary component of a teachers' professional development. (Korthagen 1993.)

To be able to plan out a teaching event, the teacher needs theoretical know-how about the learning process and the teaching process. The teacher students had that knowledge, but they were insecure about how to start their planning and how to take all aspects into account. They needed a tool for planning. This result inspired the teacher educators to create a planning model for teacher students. This would help them to analyze a teaching process and to pay attention to both entirety and all the details in the process.

Developing: a planning tool for teachers

The teacher educators wanted to make planning more concrete, and therefore they developed a framework for the planning of teaching. This planning model is a tool for a teacher to perceive all the details of the teaching process. It also guides a teacher to plan an instruction in a pedagogically appropriate way, and to notice the critical points of teaching. The planning model starts from the first contact with the students, and moves forward step by step to the reflection of the whole teaching process. It is partly based on Engeström's (1982) view of a learning process. This planning model can be utilized both for planning a whole course and for planning one teaching session. (Figure 2.)

The first step of the Planning Tool is to *Get-to-know-each-other*. The purpose of this stage is to create an atmosphere that promotes learning. The second step is *Motivation*, which is a prerequisite for effective learning. One of the teachers' duties is to create a learning oriented basis in which case students have a clear understanding on what they are studying and on why they are studying certain topics in a lesson or a course. This particular step is *Orientation*. Choosing an appropriate teaching method is one of the important factors in the whole teaching-learning process in order for it to be a success. It has an essential meaning in *Teaching a new knowledge/skill and applications*, which is the next step in this Planning Tool. The sequential step is *Conclusion*, where the teacher collects the core ideas and gathers knowledge of the studied topics. The second last step is *Evaluation*, which includes the process of evaluating the quality of the learning process. The last step *Reflection* consists of the teachers' reflective thinking after teaching. This consists of, for example, the evaluating appropriateness of the teaching methods and the accomplishments of the teaching goals. This helps the teacher to orientate himself/herself for the upcoming teaching session. Reflection includes also the students' reflection about their own learning process.

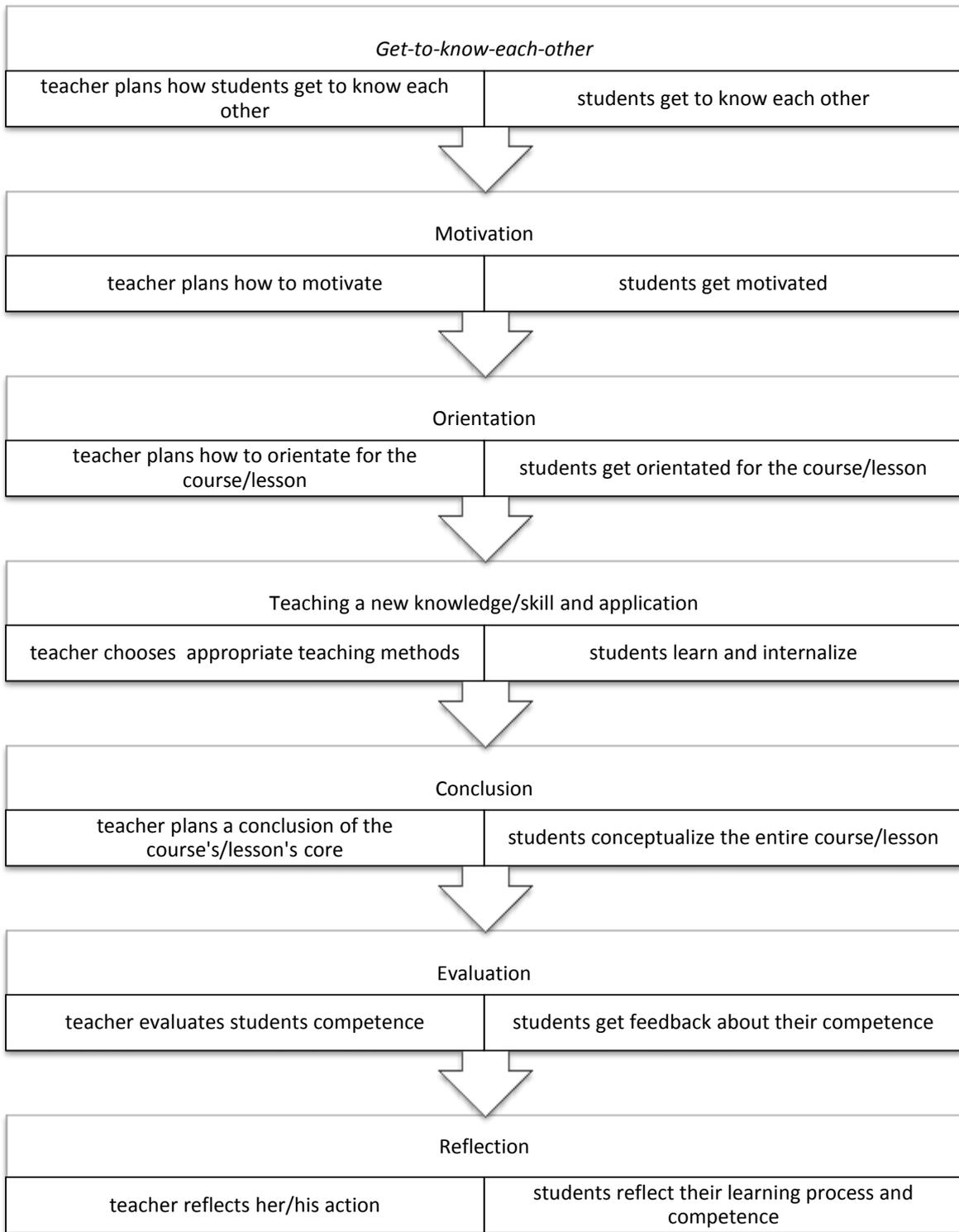


Figure 2. The Planning Tool for Teachers.

Conclusion

The result of this study shows that for vocational teacher students, the main concerns were connected to the level of formal knowledge. There were no clear concerns connected to practical knowledge or metacognitive knowledge. The teacher students were worried about the following aspects of teaching: how to plan, organize and evaluate learning processes and outcomes. Also worries about preparing oneself for teaching, and having the ability to choose good teaching methods came up. The teacher students did not highlight concerns about the teacher's ability to communicate with students and colleagues, on how to create a positive attitude towards students, how to understand various learning difficulties, or to give attention to individual students.

According to the findings, the teacher students were not worried about lacking content knowledge. This is understandable, taken into account our teacher students' backgrounds. They are specialists in their own field, as the general entrance requirement for the School of Vocational Teacher Education in Finland is a higher academic degree, or the highest vocational degree in the subject and a three-year work experience in their own field.

Although the teacher students did not mention any practical and metacognitive aspects of a teaching-learning process, it cannot be said that these concerns do not really exist. The lack of these could mean that they do not have enough metacognitive tools and experience to make their thinking visible through writing or discussions.

The developed Planning Tool for teacher students helps them to perceive all the details of a teaching process. The teacher educators noticed how important it is for a novice teacher to see teaching and learning processes in clear stages. In teacher education more attention should be paid to concrete examples and possibilities to train these stages in a safe and encouraging environment with peer teacher students. These steps make it possible for teacher students to discuss different aspects of the teaching process with common concepts, and that way to develop the metacognitive awareness of the teaching process at the same time.

The research findings of this qualitative study also give valuable knowledge which helps to create a picture of vocational teacher students in teacher education contexts. These findings give ideas on how to develop teacher education. It seems that more attention should be paid to teacher education in order to give a more versatile picture about the teachers' work. The core of teaching work certainly includes the practical pedagogical aspects of teaching. The work of a vocational teacher also includes, for example, the ability to plan and carry out various planning and developmental tasks in a work community, ability to create and develop connections with working life, as well as with other teachers and institutes.

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Why Do Teacher Trainees Prioritize Their Studies Differently?

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Abstract

Empirical studies of Norwegian teacher trainees have shown that many teacher trainees spend little time working with their studies (attending lectures, reading the curriculum etc.). This might be due to activities besides their studies, but low levels of work, educational and professional values might also be a factor. This paper investigates data from an empirical study of Norwegian teacher trainees. We will (1) investigate how much time teacher trainees spend time working with their studies, including their own assessment of their work effort. Thereafter we will (2) investigate if activities besides their teacher training affect how much teacher trainees prioritize their studies. Then we will (3) investigate the connection between values and teacher trainees' prioritization of their studies. Lastly (4) a concluding analysis will be presented in order to find out if values or activities besides their full time studies are what determine how much teacher trainees prioritize their studies.

Keywords: *teacher trainees, teacher education, students' behaviours and attitudes, work values, educational values, professional values.*

Introduction

Empirical studies of Norwegian students, including teacher trainees and other professional students, have shown that many students spend little time working with their studies (attending lectures, reading the curriculum etc.). The studies have shown that the variations both within and between student groups are large: The time spent working with their studies varies among teacher trainees, however teacher trainees spend on average less time working with their studies compared to many other student groups (Aamodt 2003). It has been suggested that this is due to students' activities besides their studies. This is in

particular related to part-time work as many students have a part time job but at the same time attend a full-time study program (Aamodt 2003).

However, in accordance to the general notion of generational value differences (cf. Inglehart 1990) one might suggest that young people's values concerning many life areas are different from the older generations (cf. Inglehart 1990, see also Arts et al. 2003, Arts and Halman 2004). One might suggest that the students' work, educational and professional values differ from the older generations (cf. Twenge et al. 2010), and that the students' values also could explain why many students spend little time working with their studies.

The aim of this paper is therefore to find out if values or activities besides their full time studies are what determine how much teacher trainees prioritize their studies.

Background

In Norway there has been a growing concern over the last decade about students' work effort on their studies. Empirical studies of Norwegian students, including teacher trainees and other professional students, have shown that many students spend little time working with their studies. A Norwegian study has shown that students from various professional educations have an average working week below 30 hours. However, there were large variations between the various professional students, but teacher trainees did not have working week which was much higher than this average (Aamodt 2003).

This is a general trend which one can see among many student groups in Norway: Many students are undertaking a full time study programme, but in practice they are not full time students, prioritizing having a part time job, family obligations, a social life, and so on, some times more than studying. This is in particular related to part-time work as many students have a part time job besides their studies (Aamodt 2003).

The fact that many students spend less time studying and more time pursuing activities outside their studies (such as having a part time job), might have consequences for all the students on campus, also among the students that spend much time working with their studies. Because many students spend little time on campus this in turn promotes a climate on campus that studying is not important, and gradually spending time on campus seems less attractive. Intentionally or not, this promotes a minimalistic behaviour among the students towards their studies, which in turn might also manifest its self in the students' attitudes and values. One might label students with these values, attitudes and behaviours as minimalistic students (Lindseth 2010).

One might predict that a typical minimalistic student will do exactly what is needed in his/hers studies but not more, will be on campus only when it is strictly necessary and will have a relaxed relationship to his/hers own achievements in his/hers studies. The typical minimalistic student will also often have paid work besides his/her studies and/or will spend much time with various social and hobby related activities outside the studies. The typical minimalistic student will also have a low level of professional commitment towards his/hers future profession and will not be quite sure if he/she will work in the profession he/she currently studies. Lastly, the typical minimalistic student will also often have attitudes and behaviour towards his/her education that are similar to a customers' (Lindseth 2010).

The theory of the minimalistic student is in accordance with the general assumption that work is not so important among young people. For young people life is primarily something other than work. Leisure activities and spending time with friends seems to be more important than work among young people (Almås et al. 1995). Young people states more clearly than older people that work is just for earning money and nothing else. For young people work is never a goal in its self (Furnham 1990).

These assumptions are supported by several findings in work values studies, for instance in a recent study of generational differences in work values in the US (Twenge et al. 2010). In this study three generations of US high school seniors were compared: (1) Baby boomers (born 1946 - 1964), (2) Generation X (born 1965 - 1981) and (3) Generation Me (born 1982 - 1999). The study found that Generation Me values leisure more than the other two generations. The Generation Me does not value altruistic and social sides of work more than the other generations, in fact these are valued somewhat less. The Generation Me values extrinsic sides of work more than the Baby boomers, but less than Generation X. The Generation Me do not value the intrinsic sides of work more than the other generations, in fact these are valued somewhat less (Twenge et al. 2010). One might therefore predict that the teacher trainees' work values will express that working is only is a way to earn a living, and that living is not primarily working.

The theory of the minimalistic student could also be viewed as in accordance with the findings and assumptions which are made concerning professionalism among young people. Development of professionalism is often assumed to be an important part and professional education as it strengthens the commitment towards the profession among the students and socializes professional students into professional values, first and foremost professional autonomy (Macdonald 1995, Snizek 1972, Wilensky 1964, Caspersen 2006, Jacobsen 2001).

An empirical study of Norwegian professional and non-professional students found that the professional students had a higher degree of professional values than the non-professional students. However, this study also suggested that people choose to start professional

training because they have professional values as professional values are internalised before starting the professional training (Jacobsen 2001). Another Norwegian study found that professional students (including teacher trainees) may be divided into four groups on the basis of their motivation towards their studies: (1) Insecure (47 % of students), (2) Dedicated (15 % of students, but 20 % among teacher trainees), (3) Engaged (25 % of students, but 30 % among teacher trainees), and (4) Distanced (13 % of students) (Dæhlen 2001).

These studies show clearly that teacher trainees (and other students) are not homogeneous, but quite multifaceted groups. Some teacher trainees might have the appropriate values and be quite motivated for their teacher education, while others might not. The reasons for variations in teacher trainees' achievements, commitment and motivation during teacher education are many, complicated and interlinked (cf. Dæhlen 2001; Aamodt and Terum 2003; Aamodt 2003; NOKUT 2006; Kunnskapsdepartementet 2009). Previous theories and investigations has emphasised various personal factors as explanatory factors, such as personal well-being, how well students feel they master their studies, their motivation and their work efforts (cf. Csikszentmihalyi 1985, Deci and Ryan 1985, 1991, Deci, Nezlek and Sheinman 1981, Harter 1992, Maehr and Braskamp 1986, Skaalvik and Skaalvik 1996, Lindseth and Smyth 2003). One might therefore predict that we will find professional values among teacher trainees, but that some teacher trainees have not adopted the professional values or might have developed alternative values. One might also assume that these values mirror certain motivations and certain educational experiences.

Today's teacher trainees are also individualistic because they emphasize a strong urge for self-realization and individual choices. For many personal experiences have priority over external authorities and the pursuit of personal authenticity is important (Jenssen 1990, Repstad 2002). One might therefore predict that the teacher trainees' individualism will express itself in their work, educational and professional values.

However, studies have shown large variations both within and between student groups concerning time spent working with their studies (cf. Aamodt 2003). One might also predict that the variations in students' work, educational and professional values also will vary accordingly. One might predict that the teacher trainees' time spent pursuing activities outside their studies and their work, educational and professional values all contribute in explaining the variations in the time teacher trainees spend working with their studies. Our aim in this paper is to determine if values or activities outside their full time studies are what determine how much teacher trainees prioritize their studies.

Data

Data that were analyzed for this article were collected among a sample of Norwegian teacher trainees in February and March 2009 by using a standardized questionnaire. The sample consisted of trainees from two teacher education (Early year teacher education and Primary school teacher education), and from two academic years (1st and 2nd year in both teacher education courses). The sample of early year teacher trainees (1st and 2nd year students in a 3 year program) consisted of 113 trainees. The sample of primary school teacher trainees (1st and 2nd year students in a 4 year program) consisted of 72 trainees. The sample consisted of 185 trainees in total and all trainees were full time trainees attending Hedmark University College in Hamar, Norway. Data was collected for a research project focusing on teacher trainees and their achievements, commitment and motivation during their teacher training, and the reasons for teacher trainees' dropout from teacher education.

Analysis

We will start the analysis with a presentation of how much time teacher trainees spend time working with their studies. In table 1 mean hours per week performing student activities is presented for the whole sample and for type of teacher training and academic year.

Table 1. Hours per week performing student activities. Mean hours by trainee group.

	Early Years nd 2 year	Primary nd 2 year	Early Years st 1 year	Primary st 1 year	All
Mean hours	21,5	22,0	26,1	24,2	23,6
N	60	25	53	47	185

We see that teacher trainees work on average around 24 hour per week with student activities. The first year trainees work somewhat more than second year trainees, but there are small differences between early year and primary school teacher trainees.

Table 2. Trainees saying they work with their studies only as much as they have to.

Percentages by trainee group.

	Early Years nd 2 year	Primary nd 2 year	Early Years st 1 year	Primary st 1 year	All
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Agree	36	46	30	44	38
N	66	28	57	50	201

In table 2 and 3 the teacher trainees' own assessment of their work effort as teacher trainees is presented. In table 2 we see that around 1/3 of trainees say they work with their studies only as much as they have to. More primary school teacher trainees than early year teacher trainees have a "minimalistic" approach to studying.

In table 3 we see that around 2/3 of trainees say they work with their studies about as much as their fellow trainees. Most trainees regulate their work effort towards a "common level of effort", which could be interpreted as a "minimalistic" approach to studying.

Table 3. Trainees saying they work with their studies about as much as most as their fellow trainees. Percentages by trainee group.

	Early Years nd 2 year	Primary nd 2 year	Early Years st 1 year	Primary st 1 year	All
Agree	76	64	81	80	77
N	66	28	57	50	201

In table 4 we see the connection between activities that teacher trainees have besides their teacher training and how much the teacher trainees prioritize their studies. We see that the teacher trainees' work with their studies increases somewhat when they have children (mean increase of 6 hours), and decreases somewhat when they have paid work (mean decrease of 3 hours).

Table 4. Hours per week performing student activities. Mean hours and Pearson's R correlations by private activities. All teacher trainees.

	No	Yes	Pearson's R	N
Have children	22,5	28,5	.18	183
Have paid work	25,3	22,4	-.11	185
Have unpaid work at home	23,5	24,1	.01	185
Participates in student organizations on campus	23,4	23,9	.02	164
Participates in other voluntary organizations outside campus	24,2	22,9	-.05	179

We also see that having unpaid work at home, participation in student organizations on campus, or participation in other voluntary organizations outside campus does not have minimal effects on how much teacher trainees prioritize their studies.

In order to isolate various dimensions of work, educational and professional values a factor analysis was performed. In the factor analysis 14 variables concerning the teacher trainees' work, educational and professional values were included. The factor analysis extracted five factors, which were the basis of the creation of five indexes which is presented in figure 1.

The first three indexes measures three dimensions of professional values and the last two indexes measures two dimensions of work and educational values. The value range of the five value indexes are shown in table 1. The factor analysis and the subsequent construction of the five value indexes were in accordance with other empirical findings using the same measurements but on another data of Norwegian teacher trainees (Lindseth 2005). (Further information on the operationalization of these five value indexes may be obtained from the author).

Figure 1. Results from the factor analysis: Five indexes concerning dimensions of work, educational and professional values.

Professional loyalty Index measuring the degree to which trainees are loyal and committed to the profession they are training for.	Range 4 - 20 4 = Lowest 20 = Highest
Professional standard Index measuring the degree to which trainees want to work according to the professional standard and according to what they have learned during their professional studies.	Range 2 - 10 2 = Lowest 10 = Highest
Professional obedience Index measuring the degree to which trainees are willing to comply with the demands of society and to their management's decisions, even if they might not find it right, or even if they disagree.	Range 2 - 10 2 = Lowest 10 = Highest
Extrinsic work and education Index measuring the degree to which trainees value the extrinsic sides of work, education and learning (work, education and learning only as means to other ends).	Range 3 - 15 3 = Lowest 15 = Highest
Intrinsic work and education Index measuring the degree to which trainees value the intrinsic sides of work, education and learning (work, education and learning as goals in themselves).	Range 3 - 15 3 = Lowest 15 = Highest

Our concern here is to investigate the connection between these five value dimensions and how much teacher trainees prioritize their studies. In table 5 a correlation analysis between hours per week performing student activities and value indexes is shown.

Table 5. Correlations between hours per week performing student activities and value indexes. Pearson's R correlations. All teacher trainees.

	Pearson's R	N
Professional loyalty	.12	181
Professional standard	.12	183
Professional obedience	.11	182
Extrinsic work and education	-.27	183
Intrinsic work and education	.21	184

We see that teacher trainees' work with their studies increases somewhat when having higher degree of professionalism (all three dimensions). The teacher trainees work with their studies also increases somewhat when valuing the intrinsic sides of work, education and learning, but decreases somewhat when valuing the extrinsic sides of work, education and learning.

Figure 2. Independent variables used in the concluding regression analysis.

Obligations besides studies	Have children
	Have paid work
	Have unpaid work at home
	Participates in student organizations on campus
	Participates in other voluntary organizations outside campus
Professional, work and educational values	Professional loyalty
	Professional standard
	Professional obedience
	Extrinsic work and education
	Intrinsic work and education
Various control variables	Type of teacher education (Early years or primary school)
	Academic year (1st year or 2nd year)
	Year born

Lastly, a regression analysis was performed in order to find out if values or activities besides their full time studies are what determine how much teacher trainees prioritize their studies.

The dependent variable in this regression analysis were hours per week performing student activities. Several independent variables were included in factor analysis. These independent variables are presented in figure 2 (Further information on the operationalization of all the independent variables and detailed results from the regression analysis may be obtained from the author).

Table 6. Regression analysis with hours per week performing student activities as dependent variable. All teacher trainees. Explained variance (Adjusted R^2) = 0.9. Only significant Beta scores are shown in the table.

	B	Beta	Significance level
Extrinsic work and education values (scale from 3 = Lowest to 15 = Highest)	- 2,0	-.22	.014
Student year st (1 year trainees = 0, 2 nd year trainees =1)	- 4,6	-.21	.008

A summary of the regression analysis is shown in table 6. One major finding of the analysis is that very few independent variables have any significant effect on the teacher trainees' student activity, measured as hours per week performing student activities. Out of the five value indexes only the extrinsic work and education values index had a significant effect on student activity. Surprisingly, none of the professional value indexes had any significant effect. Neither did the intrinsic work and education values index, which may be explained by the significant effect of the extrinsic scale as it measures the opposite of the intrinsic scale. Out of the five variables measuring obligations besides their studies none had any significant effect on the teacher trainees' student activity. Neither having children, having paid work, having unpaid work at home, or participation in student organizations or voluntary organizations outside campus had any significant effect on the teacher trainees' student activity. It seems that the relatively strong correlation found earlier between student activity and having children, and between student activity and having paid work has disappeared in the regression analysis.

Out of the three control variables included in the regressions analysis only 'academic year' had a significant effect on the teacher trainees' student activity. Neither type of teacher education or year born had any significant effect on the teacher trainees' student activity.

However, the major finding of this the regression analysis is that the most important factors in explaining how much time trainees work with student activities are if they value the extrinsic sides of work, education and learning, and the trainees' academic year. Valuing extrinsic sides of work, education and learning correlate negatively with student activity, which means

that the more teacher trainees endorse these values the more they are likely to prioritize down their student activities and thus work less hours per week with student activities. The lack of these extrinsic values (and the presence of intrinsic values) will have positive effect on student activity. Academic year also correlate negatively with student activity, which means that the teacher trainees work less with their studies in their second year as opposed to their first year. Both these variables have about the same explanatory effect on student activity.

Lastly, it should be mentioned that the explained variance in the regression model is quite low as it only explains around 10 % of the variance. This means that there are many other factors which explains variations in student activity, factors which we have not found, and that may have a greater explanatory effect on student activity.

Summary

This inquiry focused on why teacher trainees prioritize their studies differently. One major explanatory factor that has been proposed is that various obligations besides their studies (family, paid job, work in voluntary organizations etc.) explain the level of student activity. The fact that many students (including teacher trainees) have paid jobs beside their full time studies has been proposed as an important factor (Aamodt 2003). However, students' professional, work and educational values may also be suggested as an explanatory factor (cf. Inglehart 1990, Furnham 1990, Jacobsen 2001, Twenge et al. 2010). We also introduced the concept of the minimalistic student which could be the seen to be in accordance with certain professional, work and educational values (Lindseth 2010)

Our main findings was that the most important factors in explaining how much time trainees work with student activities are (1) extrinsic values concerning work, education and learning, and (2) academic year. Another finding is that teacher trainees are working on average around 24 hour per week with student activities. As all teacher trainees in this study are full time students, this implies that many students work 2/3 of a full week or less (setting a full working week to 40 hours). However, our study also shows no activities outside their full time studies are important in determining how much teacher trainees prioritize their studies. All these findings could be in accordance with a "minimalistic" approach to studying (cf. Lindseth 2010).

Discussion

The values teacher trainees endorse forms an important basis for the trainees' approach to studying and strengthens certain behaviours, such as in this case, student activity. Furthermore, being an experienced trainee means having certain experiences that makes it possible to adjust one's work effort in accordance to what is needed to reach one's study goals.

Our findings suggest that the teacher trainees' work effort is regulated by values (probably values developed before becoming a trainee, cf. Jacobsen 2001), and recent experiences made as trainees. However, previous values and recent experiences probably reinforce themselves: Entering teacher training with certain values will probably regulate both the trainees' actions and the interpretations of his/hers experiences as a trainee. The experiences that trainees makes will in turn probably have consequences for what choices trainees make during their teacher training and it will also enforce previous values or enforce new values, depending on what the trainee experiences. If certain values and behaviours are endorsed by a majority of fellow trainees, this may have an effect on all trainees. If the dominant culture on campus is the culture of the minimalistic student, every student and trainee on campus may be affected. If studying less and being engaged in activities outside campus more is the dominant trend on campus, being another type of student is a challenge. Other factors on campus may also contribute to the creation of the minimalistic student. The staff of the academic institutions must be aware of their own values concerning work and education, and how their behaviours may have an impact on their students. Could it be that the culture of minimalism found on many campuses is a result of a minimalistic culture in higher education where many of the staff teach and guide students towards only satisfactory results and not towards excellence or to the highest potential of the students? This concerns not only students' and trainees' values and behaviours, but also the values and behaviours of the academic institutions and their teaching staff.

Conclusions

It may not be that important when or where the trainees' values are developed. Whether values are developed before entering teacher training (cf. Jacobsen 2001), or during teacher training this may not be that important. This is because the teacher training institutions are only able to deal with the teacher trainees' values and behaviours during teacher training.

Teacher training institutions must therefore work actively with the trainees' values and their time spent on student activities. The fact that many students enter higher education with certain values and experiences is of importance, as this is what students bring with them into higher education. However, it is more important to focus on the student's values and

experiences as students, how they develop, how they affect the student's work effort and outcome, and how they can be changed in a more productive way for the students.

Teacher trainees' work effort is of great importance because it concerns their competences as professional teachers. As professionalism is developed during professional education one might wonder if the "minimalistic students" of today are in danger of becoming the "minimalistic professionals" of tomorrow.

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Living Conditions of Student Teachers in Norway

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Abstract

From literature we know that students work in order to cover or contribute to the basic costs of living. Several studies report conflicts between study and work. Paid work is an integrated part of today's student life. This is a fact that universities must consider with reference to provision for its students. We will study socioeconomic background and economic living conditions of Norwegian student teachers, and see if these factors have bearing on study progress and performance. Questionnaire and qualitative interview will be used.

Keywords: *Teacher education, socioeconomic background, work, study progress*

Introduction

Educational issues in Norway and particularly higher education is a subject of much public debate. Educational authorities, politicians and researchers have expressed concern about progression rates in higher education and its resultant societal and economic implications. There are many factors that explain poor progression rates which include lack of motivation, few hours put into studies and paid work during term. It is very difficult to track student populations that are transient and consequently they are often excluded from studies of poverty. Where studies do exist, it has emerged that the living conditions of low-income groups seemed better when students were excluded from the analysis (Normann 2009). The aim of our study is to analyse the relationship between student teachers' socioeconomic background and progression rates within higher education. The article will contextualise the study and present relevant literature of students living conditions, the research questions will be presented; the study design will be outlined and specific methodological questions will be considered.

Student economy

Students' living conditions have been examined in many countries. Public budgets often fall short; as a consequence students and their families have to contribute to the costs of higher education (Vossensteyn 2009). In UK financial support for higher education has transferred more responsibility to the individual (Moreau and Leathwood 2006). This implies that many students must take up paid work. From the literature it has emerged that working class students work more during term than students from better off families. In a study from Northern Ireland, Holmes (2008) found that 83 per cent of the students in that study were working out of necessity. As a consequence these students were more likely to find study demands stressful. In a New Zealand study students' reported that they spent 14 hours per week on average in paid employment (Manthei and Gilmore 2005). Curtis (2007) in a study from the UK found that students on average worked 15 hours per week.

Working for a large number of hours per week impacts significantly on academic performance and progression rates (Holmes 2008; Rochford, Connolly and Drennan 2009). Some students report that they had deliberately interrupted their studies or switched to part-time studies (Moreau and Leathwood 2006) as a result of their work commitments. Van der Berg and Hofman (2005) find that working more than 12 hours per week had a negative effect on study performance and progress.

For the most part university programmes do not take into consideration the economic circumstances of the majority of students. They favour students from middle- and upper-class background. Thereby existing inequalities are exacerbated according to Moreau and Leathwood (2006). In an era of lifelong learning and in the current economic downturn (2010) universities cannot continue to view their population as that of fulltime students. Students have a dual role, as workers and as students (Holmes 2008). This international context is replicated in Norway.

The Norwegian context

In this section we will present Norwegian data regarding students' economy, employment, time devoted to study and study progress.

In Norway there is a large body of research on living conditions in general, but only a few studies are focused on students. From the data that currently exists it can be concluded that students have lower income (loan and education grant included) than other groups (see Table 1). Every second student has minor or severe problems regarding running expenditures and the payment of fees (Løwe and Sæther 2007). An unexpected bill on 5000

NOK (around 600 Euros) is impossible to handle for the majority of the youngest students. It is also clear from existing research that students have more real and potential economic problems than other young people (ibid.)

Table 1. Income among students and non-students. Age 20-29 years. Income-year 2004.

Own income. Average. 1000 NOK.

	<i>Students</i>	<i>Non-students</i>
Total Income	104	227
Income after tax and interest expenditures including education-loan	132	163

Taken from Løwe and Sæther 2007, (op.cit) table 45, p. 64.

Loans and education grants are of paramount importance to students. In Norway 63 per cent of students depend on loans and grant as their main source of income (Ugreninov and Vaage 2006). Other sources of income come from employment opportunities and support from family.

The majority of students in Norway, 56 per cent, are employed. Among part-time students, 85 per cent are employed. The corresponding figure for full-time students is 52 per cent. This mirrors findings from international studies. Men and women work on average 9 hours per week (Ugreninov and Vaage 2006), less than some international studies report (Curtis 2007; Holmes 2008; Manthei and Gilmore 2005; Rochford, Connolly and Drennan 2009). Four out of ten students have a job unrelated to their area of study (Ugreninov and Vaage 2006). In Norway studies have also found that graduate students from upper-class background have significantly less income from work, than students from lower social class (Sodeland 2006).

More students are employed the longer they have been studying, and they also work more hours per week. The main reason to have paid work is that loan and grant is insufficient for living. Few students have loan and grant as the only source of living. In Norway it is common for students to work during holidays, as well as during study semesters. It is also quite common that students receive financial support from their parents. The socioeconomic background of the students might then have an impact on their living conditions. The likelihood of studying is higher the longer education the parents have. However, in the last

years we have seen an augmentation of students whose parents have no higher education (Statistics of Education 2010).

The average student in Norway studies for 30 hours per week. As table 2 indicates there are no differences between female and male students. Students with four or more terms of study use more time to self-study compared to organised lessons. This may have several reasons, for example family situation and for some study programs more independent work late in the study course.

Table 2. Study hours per week 2005

	<i>Lectures</i>	<i>Self-study/Group work</i>
Male	13	18
Female	13	18
< 25 yr	14	17
>=25 yr	12	19
<=4 terms	14	17
>4 terms	10	22

Taken from Ugreninov and Vaage 2006.

Hovdhaugen and Aamodt (2006) found that student teachers devoted 25 hours per week to course work. Gathering data in this area is problematic due to the inherent issues with self reporting; and whether students are full time or part time. It is always difficult to remember exactly, memory distortion is relevant here. In addition extra study-hours the last weeks before the exams will probably not be included. Hence, there might be severe reliability problems linked to these results.

Ugreninov and Vaage (2006) observed during the period 1998-2005 a decline in the progression rates of students within the expected timeframe. In 2005 seven out of ten students progressed within the expected period. The authors also found that among students aged 25 years and fewer than 90 per cent achieved expected progression rate. The study also revealed that mature students, those aged 30 years and over, took longer to progress through the programme. The issues that have emerged from both the international and national literature are interesting and merit further investigation and consideration.

Research questions

This study will focus on one university in Norway which has a total population of 5,000 students of which 1,400 are student teachers. The study will explore student teachers' socioeconomic background; economy, employment status, the number of hours that they spend on their course work and their rates of progression through various programmes. The study will explore the relationship between their socioeconomic background and their progression rates.

Study design

The study will employ a mixed methods approach using a structured questionnaire survey and semi structured interviews. It is envisaged that the survey will be carried out during spring 2011.

The quantitative approach is then combined with qualitative interviews. We need quantitative data to be able to investigate the general trends, and to compare the material with existing studies from international and national literature. It is also seen as important to explore the understanding by interviewing. A qualitative approach can bring additional understanding of great value.

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Violence Against Teachers. Teachers at Risk: Is Teaching in Ordinary Schools in Norway Risky?

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Abstract

Violence from students against teachers. What consequences do violence and threats from pupils have ones' professional identity? What support or lack of support do teachers encounter when they really need it? A high percentage of teachers in Europe experience violent acts or threats from pupils and students. Little focus has been on the vulnerability and well being of teachers in such situations. This paper focuses on what characterizes the effects of encounters between teachers and students, and how they are dealt with by administration and peers. Various explanations are presented and the experience of some of the 15 teachers interviewed are given.

Introduction

This paper is constructed on the theme "Challenge of violent against teachers. The loss of Safety". A small note in a Norwegian morning paper:

Student threatened teacher out of work

After a 16 year old (pupil) took a stranglehold and threatened to "demolish his face", the math teacher took a sick leave till the pupil quit school. In a sentence from Jæren court the 17 year old pupil was sentenced to 35 days conditional prison, including two years trial period, after the incident last January. After having completed a double lesson, the teacher left the school premises. His sick leave lasted the rest of the year, and he changed to another type of work afterwards. It appears from the verdict that the boy would have been sentenced to unconditional prison if he had been older.

(Aftenposten 2008)

The newspaper note is a proper illustration of what my issue will focus on, the risk of teaching which I claim is a neglected one. In this paper I will limit myself to discussing only one professional group and what risks they are exposed to and their loss of safety when being exposed to violent acts or threats from pupils. The little note deserves a front page, and from the little information we get, we can understand that a personal catastrophe in the professional life of one teacher has taken place. I think such small notes, of similar content may be found in many newspapers all over the Western World. This paper will dwell somewhat more on what is not disclosed in such tiny newspaper note as the example above.

I will draw on my own interviews with 14 different teachers to exemplify some of the points. Otherwise the paper is based on books that have been read during the last years. This subject caught my attention when I myself worked as a teacher in primary school and upper secondary schools for some years between two college jobs. Focus has traditionally been on students, while teachers often have been an ignored group when it comes to research on health situation relating to exposure to violence. I will in this paper try to bring teachers into focus and see how some of them react as individuals and how institutions where they work and society perceive their situation when confronted with risk when carrying out their ordinary teaching job.

My informants have been chosen by "the snowball-effect". Hearing of one, lead to hearing of other cases. I do not claim their cases to be representative of situation for teacher in Norway.

Definitons

I limit myself to just define the word violence, since that concept is the bases for my approach to risk, safety and thrust. "With violence we think of conduct with a physical and mental use of force against people or objects. Violence and aggressive conduct are corresponding concepts."p.25. (Lundström 2006)

The author goes on to claim that both more serious and minor incidents are included and that it is the exposed who are the one to judge. It is the exposed one to decide whether the act might be categorized as violence, (Lundström 2006) p14-15

Another definition of violence is WHO.

The intentional use of physical force or power, threatened or actual, against oneself, another person, or against a group or community, that either results in or has a high likelihood of resulting in injury, death, psychological harm, maldevelopment or deprivation. (WHO 2002)

To further elaborate on the definition of violence, I will use the book "Working with violence and threats" (Arbeid med vold og trusler) as a basis for defining and categorizing threats and violence, (Koren 2000)

Violence:

Expressive violence: the intent is to inflict damage in order to express one's rage.

Violence on purpose: using violence purposely to reach a goal. War, robbery..

Misplaced violence: when rage felt against society in general is directed towards a Teacher, Social Worker, General Practitioner, Police etc.

Provoked violence: When violence results from victim's irony, threats, use of violence, insult.

Threats:

Open: "I am going to get you"

Disguised: "So you dare to bicycle home today"

Verbal threats. Everything people say to each other.

Physical threats: Conduct which one experiences as threatening.

Below are listed some examples of violence or threats of violence I found in my material: I do not include any consequences of listed acts, or categorize them according to the list above.

1. - *punched in the face by a twelve year old boy, without any obvious reason.*
2. - *a blow towards the head when trying to interrupt two fighting pupils.*
3. - *hit on top of his head with a heavy iron bar.*
4. - *kicked in her ribs by a 9 years old pupil.*
5. - *telling teacher he would end up in hospital if they met outside the school premises..*
6. - *strong arguments between teacher and student where teacher had the impression that the student was on drugs, which she experienced threatening, knowing the student's history of being expelled due to violence.*
7. - *"defamation via net"; students putting female teacher on sex site on Internet, with full name and correct address, requesting younger sex-partners.*
8. - *telling teacher he will experience his fist (demonstrating)*
9. - *telling female teacher "you little whore!.. I will come to get you!"*
10. - *telling teacher he can do or say whatever he wants and declaring he will bring a bat to school and mash (Norwegian:" mose") teacher's knees.*

None of these above mentioned examples are acts we can allow any employee to accept. Koren states very clearly in his book that threats and violence are unacceptable, no matter in which context they appear, (Koren, 2000) p19

Numbers. How many and is it increasing?

I doubt teaching traditionally has been considered a risky occupation in peaceful countries. What is a fact however, is that surveys have shown that an increasing proportion of teachers are reporting being threatened or victims of violence. 57% of the teachers in Norway have during the last 5 years been in a situation involving violence or threatening situations in their school, (Utdanningsforbundet 2005) This is slightly higher than the average employee in Norway. In 2000 10 % of teachers reported to having been threatened or actually exposed to violence a couple of times pr. month. This is up from 6 % in 1989 and 8 % in 93. (Holte and Grimsmo, 2006). Grimsmo (Grimsmo, 2001) had some years earlier argued that teacher to a larger extent than other occupations experience acts which are characterized as violence.

This number is rather high compared to a US report from the Bureau of Justice Statistics which shows that of a population of 3704000 teachers, less than 10% have during the last 12 months been "threatened with injury" or "physically attacked" (Statistics 2006) However I find around 35000 teachers in the US alone to be alarmingly high.

In Denmark there is a union for police, teachers, nurses, recreational therapists, social workers, which report (Møller Christiansen 2005) an increase from 11% to 21% who have reported to have been subject to violence at work. An increase of almost 100 %. The question asked was whether one had been subject to violence during the last 12 months.

In my Google search, I get figures from many countries, counties and school district. (Google search: "violence against teachers", "attacks against teachers", "school violence"). Common for them is that on these sites I receive number of violent acts in schools showing an increase over last year. For instance in Belfast (McBride 2007) figures show a 57% increase of physical attacks over the previous year. Similar numbers can be found in many areas in Scotland, England, Ireland, Portugal and the US.

Is this increase correct, or is it due to better routines of registration and/or obtaining greater attention? These facts are uncertain in Norway (Pape and Stefansen 2004). There generally seems to be a trend to report violations more often than before and in Denmark figures show (Balvig, 2000) that during only 15 years people report physical aggression to the police twice as often as before. Gittins (Gittins and Council of 2006) states that there is little evidence that violence is escalating even though recent episodes and media generally draw another picture.

Other occupations than teachers exposed to violence are: Taxi drivers, bank employees, prison wardens, parking assistant. Medical doctors, city bus drivers, shop assistants are other occupations exposed to threats and violence. (Koren 2000)

A Swedish researcher who studied wardens at psychiatric institutions, found that 31 % had been subject to violent acts the last year.. He refers to another study which tells that 73,7 % of nurses/wardens had been subject to violent acts during the last 12 months. (Lundström, 2006, 13).

Balvig goes on describing how there appear to be a kind of existential anxiety where the questions “Whom can I Trust? Whom may I confide in? Whom may I reveal myself totally? Who is on my side?” are making us more uncertain, and possibly making us report more easily violent incidents. Balvig calls it existential loneliness.(Balvig 2000)

In my data which consist of 14 in dept interviews with teachers assaulted or threatened it is obvious what Harré (1998): “No two people are alike, yet all bear resemblances to one another” (2) It is important to take into account that there is great variation of what different individuals can handle before they feel threatened. (Koren 2000)

Angriness. The anger expressed from the victims are not directed against the leaders, but also to society in general. This has been described especially in the book “No escape male rape in US Prisons” (Mariner 2001) The victims are described as reacting with a rage against both the violator, then directed against the prison administration who were unable to protect them, then to society in general. (118) In my material I generally found the second to be most relevant, rage against the leaders and administration as a whole.

At risk – (lack of) support and aloneness.

However, I felt there and then that I wanted support at once, not after five days. (Informant)

Social support is defined as information leading the subject to believe that he or she is cared for. Loved, esteemed, and a member of a network of a mutual obligations (Cobb 1976, 300) Support from colleagues and administration has proved to be important. Eiklit (Eiklit 1993) states that the victims ordinary network normally is not qualified or trained at providing support needed by the victims. The authors states the “ Colleagues and work place are better suited at giving unconditional support after an incident of violence, than family and friends.” (152)

It was ok when you were there, because you did not do anything. The important thing is not what you do, but that you are present and hereby reducing the experience of loneliness amidst difficulties. (Bjørklund 1997, 54)

Peer support and support from supervisors have been viewed as important factors in relieving the effects of stress. In this case it is about police officers, but should be relevant to Levenson et al, 2003 quoted in the doctoral dissertation "Work stress.." (Berg 2005).

Social support both outside work and inside has proven relevant (Lundstrøm 2006 referring to Bolyle 1991). To be standing alone is what is pointed out as the most stressful of it all.

The author stresses the importance of debriefing where information from the victim could be given and thus handed over to superiors and collegians, (Lundstrøm 2006)

While my own data and the books I have read mainly focus on lack of support, especially from administration, a Norwegian survey reveals that 57% of the teachers subject to violence, (n=540) received some kind of support, and of these 87 % were contended. When asked who provided support, 52% said the administration, 6 % reported the union representative and 81 % colleagues, (Utdanningsforbundet 2005, 17).

These numbers are in contrast to information from my 14 informants, and also from an article from schools in Northern Norway, where teacher missed support from the administration after they had been exposed to violence (Johnsen 2007)

To play down the problem of the employees are rather common among leaders, according to employees calling a hotline number called "Working life telephone" (Tangen 2004)

Very few of the victims experience they receive the support from the management that are needed. They often describe how their leaders show an appearance of awkward embarrassment when dealing with the incident and soon a wall of silence arises. Breakwell (Breakwell and Skumsnes 1995)

The understanding of your own network is limited, and many exposed to violent acts and threats choose not to mention what has happened to them. Other victims will experience the impatience from their environment when talking about it. Dyregrov (Moen 2003)

One of my informants had being advised by his doctor to talk about the incident to his colleagues. So he did, and this was taken as an excuse from his union representative to not take the lack of support by the management to be discussed at a higher level. This writer himself heard the representative state: "I refuse to discuss it with the leadership since you have been talking around to each and every one of the teaching staff..." This was said in what I interpreted to be a tone of contempt, in accordance to how other perceive victims of violence according to Dyregrov (Moen, 2003), Breakwell (Breakwell and Skumsnes 1995), Rowett in Breakwell, (Breakwell and Skumsnes 1995)

From a colleague point of view it is difficult to find acceptable words. Dyregrov states that “it is important to remember that it is not the words which are important, but showing that one cares. Dyregrov (Moen, 2003):174. And how may you show that you are concerned with the wellbeing of your work mate. One of my informants demonstrates this by stating that what was most important to her just after the incident, was the one colleague who came over to her and offered her a cup of coffee, and then actually gave her one.

In Baltimore (Newspaper, 2007), teachers told the newspaper that high ranking administrators discourage teachers from filing reports in order to protect the school’s reputation.

One reader in Philadelphia (Mims 2007) states that:

Principals and administration desired to keep the statistics low, fearing questioning of their leadership. Why should we have to go through this lack of support, fear and intimidation for the sake of statistics?

Victim blaming and the secondary victimizing

Victim precipitated conduct. Some of my informants were subjected to an indirect accusation that they themselves had provoked the violent act. Lindgren (Lindgren, Pettersson, and Hägglund 2001) discuss this matter in their book; “Victim blaming. From theory to practice:” (“Brottsoffer: från teori till praktik.”) how people must be understood and met on the basis that they have different needs to be taken care of. Some of those needs might be described as knowing the world is safe, predictable og that people might be trusted. Experiencing violence might raze this illusion and result in a missing trust in the world in which they live.

In the same book Lindgren (Lindgren, et al. 2001) examines why and how the environment blame the victim. It is described as a process in which those who are not exposed to violence, blame the victim by the victim’s way of behaving and attitudes.

This explains why the victim has been exposed, and the world in which we live might continue to be safe, good and predictable for those in the collegium.

In our society the term Victim precipitated, which can be explained as they asked for it. (Walklate 2005)

Referring to Rowett’s data (Breakwell and Skumsnes 1995) about social workers who had been attacked by clients were estimated as more provoking, more incompetent, more authoritarian and less experienced. It was generally considered they themselves sought situations of risk, and challenged and confronted their clients unnecessarily. What is interesting is that also victims of violence supported these conceptions. This is contrast to the

facts that all victims strongly argued that they themselves never had full responsibility to the episodes they had been involved with.

Also Rowett 1986 (Breakwell and Skumsnes 1995)) states that the typical reactions when you have been exposed to risk is fear, then surprise and then anger. But soon after follows guilt. The feeling of guilt disturbs ones belief in oneself, and work can become a nightmare. How may this victim blaming be explained? If the victim is to blame, violence is not a coincidence, and the world can still be safe, since if you yourself act adequately, nothing evil of that sort will happen to you.

Aggravation . the victim will often feel very angry with the person who committed the act. However, this anger might be directed to other people, for instance the employers. (Lindgren, et al., 2001) This gives me more understanding for the anger I met among my interviewee. A majority of them were angry with their leaders.

This is in accordance with utterances from some of my informants. One of my informants says:

"the worst part was not the threats. The worst part was not to receive any assistance or help. ... I am not bitter at the pupil, but by God so angry I am with those "up there" (the administration)

Another informant states several times during the interview has lack of trust in the administration and their lack of support to him. He describes his former school as a "Hotel of Madness" and says that he did not feel he could continue working under such leadership.

Both of these informants were able to express words that are attached to feelings of anxiety Svensson (Svensson, 2006) discusses the real risk of being exposed to violence. After an incident the exposed person has a fundamental need for being met with respect, and give and obtain information. When this does not occur, they experience a secondary victimizing. The second is not to be met, to be received, to be respected, to be believed, to be heard. Secondary Victimization, the concept was coined in the book *Victims in the criminal justice system* more than two decades ago. (Shapland 1985)

One of my informants is very clear about this when she explained the way she was treated. The worst about that incident (where a pupil had threatened her) was to be met by the administration with such little degree of respect. They did not believe me! And I was not taken care of. That was the worst, those are the memories which still remains with me. If you can call them memories....

Then she goes on describing how she went to one in the administration, then sent on to another person, who she states "did not believe me" and who "got tiered of me". Then back to the first person who she explains "started laughing" when I asked to change classes after

an traumatic episode. (she repeats “started laughing two times). Her reaction to this treatment and lack of respect, she describes as:

“then I was so desperate that I started crying. I just run out (from her office) and started crying. But then I started thinking NO! NO! NO!”

My informant goes on to describe how she again was sent on from this first person “Because she would not treat me with respect. She was incapable of taking me seriously.” Then she was sent on to a third person in the administration (who at a later stage gave her valuable support, but only after himself having seen the pupil in action). This person sent her on to two experts from a counselling service. Also here she was not being received the way she had a need for at states that the two counsellors:

“- were just rolling their eyes over me. Yes, they were just rolling their eyes. Do you think it strange that I did not want anything more to do with the counsellors. ”.

This is in accordance with the account from many victims of violence who states that the great infringement is not the violent act or threats, but what follows. (Svensson 2006)

The risk of experiencing Loneliness

Many states that they experience loneliness, (Svensson 2006). That does not mean that they do not have a social network, but that they do not wish to put a strain on their closest family and friends. This is explained due to not wanting to expose their weakness to the existing network, and Svensson states on page 130 that that might even prove to be a correct strategy in order to remain strong, by not putting their weakness on display.

The feeling of loneliness is also described in an article by Johnsen (Johnsen, 2007) even if some of them expressed limited degrees of support. The feeling of loneliness also arises out of the fact that the victim does not (want to) talk about it. In Norway’s most populous school district, safety deputy Knut Enger declares that:

“Many regard it as a personal defeat and do not wish to tell anyone about it. (Aftenposten 1999).

The risk of not being believed

Who can define when it is an act of violence? As shown in the above interview abstracts from one of my informants, it becomes rather obvious that the teacher involved and the administration and experts, counsellors, have a deviant view whether my interviewee has been subject to a serious act of violence or not. In the book "Understanding and preventing violence", ("Forstå og forebyg vold) (Popp and Munch-Hansen, 2005)" the authors states that it is the experience of the employee whether he/she has been infringed which defines if it may be categorised as violence.

Interpretation of violent acts against professionals.

Feelings and uniqueness. How teachers experience violence from students.

At risk – feelings

Feelings has often been seen as something unacademic. In Fineman (Fineman 2000) the authors Sandelands,L.,E. and Boudens,C.C. have in their article 'Feeling at work ' stated:

Current concepts of feeling reflect a powerful tradition of Western culture that diminishes feeling in favor of reason. . In all but a few domains, emotion is regarded as the enemy of reason, as something to be managed and overcome. We have subordinated emotion to reason so completely and for so long. (47)

"People are their emotions", states Denzin (1984, 1). He goes on by stating that "emotions are embodies experiences" (30). All experience is situated. Situations envelop, enclose and capture individuals. (Denzin 1984) Emotionality and self are at the core of violence, (p169). (Denzin 1984)

Mykletun (Matthiesen and Roness 2002) discusses the special relationship between a student and a teacher. They are stuck with each other. The student is obliged to come to class, and the teacher to teach him, even though he has threatened him and the situation in the classroom seems to put the teacher at risk. This relationship is underestimated and not focused satisfactorily both in Norwegian and international research and in scientific literature.

To be struck by an act of violence by people you are put to help, will easily be looked upon as unfair. And you will feel helpless. Nussle in Krøvel (Krøvel, Rund, and Rør 2006) P277

In the book *Shame*, that special feeling which is a natural feeling exposure to violent incidents, are described as:

"Shame is the experience of your own unworthiness. The vicious circle of shame is that it is shameful to display the shame, the shame of shame. The person who experience anxiety or sorrow, may receive concern and thoughtful consideration. The shameful person expects contempt. That is the double burden of the deep shame. (Wyller 2001)

A Swedish social worker has properly distinguished between "victim" and "exposed to" by stating: A victim lies down on the ground and got no power. An exposed person (to a violent act) still got control. (Svensson 2006). Also Sandra Walklate (2005) dwells on the concept victim and ties it to powerlessness. Many teachers fear of being exposed to colleagues and displaying themselves as incompetent, both to themselves and to the others around. (Hargreaves 1996)

Most grown ups have worked hard to experience control, safety and security. Being exposed to violent acts takes away this illusion or feeling of control. (Koren, 2000) In the midst of feeling of guilt, there is a disappointment in oneself, for having failed according to a personal ideal, a standard etc. (Hargreaves 1996)

Most professionals have worked hard to obtain a feeling of control and a feeling of mastering their job. Being exposed to violence bring into being an impression of not having been able to obtain this control. (Koren 2000) In my material this became evident when a teacher said he could produce a paper within one day and night where 1000 parents would sign that he had done a good job teaching their son or daughter. Another informant stated she started contemplating whether to take a complete different type of work.

In Lundstrøm's data 57% of his informants described that they had experience anger. Even more described their reaction as feelings of impotence (61%) and feeling inadequate (77%). Lazarus explains the individual reaction of persons to stress when one is exposed to risk their experiences with violence and the following up afterwards. (Lazarus 2006) However my informants continued working as teachers at other schools.

It is hard to predict how much stress an individual is able to handle. My department leader in college told me that her father's cousin had been the one dragging our former Prime Minister Trygve Bratteli out from the heap of dead bodies. At that time, he had been the stronger, Bratteli the weaker. Later the roles changes, and our former Prime Minister's helper and saviour, was never able to lead a satisfactory life due to his war time experiences, while Trygve Bratteli prospered.

One of my informants was rather shaken after her incident with a violent boy. Then her superior stated that she has always been frail. Little did he know of what she had of other experiences which she carried along into that specific situation. Lazarus illustrates what I find very fitting the difference in what people may handle by comparing human people with iron. Even though both cast iron and steel are iron, the latter may withstand great pressure, while the former cracks easily. (Lazarus 2006)

He goes on to explain that it is the individuals construction and the meaning of that incident, that will decide which stress reactions it will provoke.

To me it gave meaning when Lazarus in his book shares research by the two psychiatrists Grinker and Spiegel who in 1945 published their work; "Men under Stress" on stress of pilots during war operations. When the crew were facing danger and possible loss of life, they experienced a mixture of anger and fear, and when that threat is no longer there, this lead to an aggressive activity combined with anger. (Lazarus 2006)

The author is occupied with how we traditionally have perceived feelings and stress as opposite to reason. He argues that feelings must be taken seriously and argues that feelings are a complex system of thoughts, motives, personal experiences which derives from our fight for survival.

To some, the unreflected fear of similar episodes to happen again, will possible lead to a continuous situation of stress and end with them being unable to continue working. . (Pedersen 2002). This is also the case listed at the very beginning of this paper where the Math teacher first took a sick leave, then changed to another type of work. In my own data, three of my informant quit their jobs shortly after the violent incidents linking this to their experiences with violence and the following up afterwards. However my informants continued working as teachers at other schools.

Conclusion

There are few studies of teachers exposed to violence, even though much attention has been given to it in the media. Further research and a mapping by interviews and questionnaires ought to be carried out to record the situation for teaches in Norway (and other countries as well). It is still a taboo to talk about being victimized by pupils. Culture maintains its taboos by showing contempt. Contempt leads to shame. Few will risk to expose such feelings, and therefore the norm of not making what is not seen, visible will live on if we do not give it more attention and do extensive research.

At a bigger conference in Stavanger (Taking fear out of) states that "Researchers are often preoccupied with the details of their research, and are simply unaware of the pressure on teachers." None of the more than 20 papers were about teachers' situation. It is time that extensive research is carried out in order to go deep into the matter of how teachers survive and suffers when being put at risk in their work with children and youth.

As I have tried to demonstrate in this paper, teachers are at risk when performing their work. The main risk is not the act of violence itself, but the risk of losing ones professional basic trust, of not experiencing support, of being blamed for the incident, and getting a major blow to the feeling of control, both in yourself and in the institution where you work and by perceiving society generally as a dangerous and risky place to live. Loosing ones basic thrust is the greatest risk from the incidents discussed above.

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Developing Teacher Students Co-operation Skills and Critical Thinking

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Abstract

The notion of learning through solving problems is not new. It is still important to examine the using of problem-based learning in different contexts and institutions. This case study examines the experiences of problem-based learning, which were conducted on the web-based platform in the context of Finnish vocational teacher's education. Research focused on whether the course was perceived as motivating and which aspects were found to be effective to learn co-operation skills. Aspect of tutoring is also discussed. The positive comments were mostly on that they had found information what they wanted and their small groups worked fine. Students perceived the course to be a valuable, realistic and motivating experience. Some of the students PBL method was a challenge way to study: hard work and confusion in the beginning. Their negative perceptions and suggestions provide useful information to further improve PBL methods and, more generally, course design in the School of Vocational Teacher Education for teacher students.

Keywords: *problem-based learning, web-based platform, teacher development*

Introduction

The notion of learning through solving problems is not new. Problem-based learning (PBL) is a student-centered instructional strategy in which students collaboratively solve problems and reflect on their experiences. Characteristics of PBL are: (a) Learning is driven by challenging, open-ended problems; (b) students work in small collaborative groups; (c) teachers take on the role as "facilitators" of learning. PBL focuses on independent and active search of information. The respective is that there is not a given answer to most questions.

Accordingly, students are encouraged to take responsibility for their group and organize and direct the learning process with support from a tutor or instructor. Advocates of PBL claim it can be used to enhance content knowledge and foster the development of communication, problem-solving, and self-directed learning skills. (Merrill 2007; Spinello and Fischbach 2004.)

Problem-based learning has much application. This study is based on Ebenezers (2003) idea about the steps of conducting PBL. The seven steps developed by Maastricht are still used curricula worldwide.

1. Clarify working definitions, unclear topics, concepts and context
2. Define problem (brainstorm)
3. Analyse and specify problem
4. Arrange explanation
5. Generate learning objectives
6. Research the objectives through private study
7. Report back, synthesise explanations and apply new information to the original problem

One of the difficulties in higher education is that many students seem to have lost the creativity and imagination that was encouraged for example in the early years of education. Although there are several articles of problem-based learning (PBL), cultures, institutions and professional bodies are all constrains that can affect the design of problem-based learning (Savin-Baden 2008). Therefore it is still important to examine the using of PBL in different contexts and institutions. Teacher has also a special role in PBL process. As a PBL tutor, the teacher's role changes from that of a disseminator of information to a facilitator of learning. In instance the facilitator skills of the teacher are central to the success of PBL. As a facilitator, the teacher challenges, questions, and stimulates the students in their thinking, problem solving and self-directed study. (Barrow and Kelsner 2009.) Although people have used various labels to represent the responsibilities of facilitators, they basically agree that facilitators play four interrelated roles: intellectual, social, managerial and technical. (Wang 2008, 860.)

In this article the higher education institution is School of Vocational Teacher Education. The School of Vocational Teacher Education in Oulu is the northernmost of Finland's five vocational teacher's education institutes and a part of the university of applied sciences in Oulu. In the last two decades the Finnish higher educational system has changed and been built on the so-called dual system model which consists both of universities and universities of applied sciences. The School of Vocational Teacher Education in Oulu is responsible for the pedagogical education (60 ECTS) of vocational teachers for institutes and universities of applied sciences, and gives a general pedagogical competence for secondary and higher

education teaching in the fields of majoring subjects. This case study examines the experiences of problem-based learning, which were conducted on the web-based platform in the context of Finnish vocational teacher's education.

Purpose of the study

Purpose of the study was to develop a web-based platform as an implementation of problem-based learning in teacher education course "Problem-based Learning in Higher Education". The study focused on whether the course was perceived as motivating and which aspects were found to be effective in learn co-operational skills and critical thinking. The objectives of the paper will include the following:

1. How did students evaluate co-operation skills and small group working?
2. What advantages and obstacles encountered during the implementation?

The results of the study will be used to make future design and technological modifications as part of an ongoing development process.

Methodology and group

21 teacher students at School of Vocational Teacher Education, Oulu participated in the course. Students formed seven groups, each consisting of three students. The School of Vocational Teacher Education in Oulu is multidisciplinary which means that the students in the course had different educational fields and backgrounds. The average age of the students was 38 age. The course was conducted in February 2008.

The research has a qualitative approach. The study can be characterized as a case study. Data collection method was teacher students' open-ended questionnaire. After the course the seven *small groups* completed and returned the questionnaire, which included six open-ended *questions about co-operation* in a small group: Did you find out what you wanted?; How did the division of tasks work?; What did you learn?; What kind of problems did you run into?; What would you do differently?; What things worked out in your small group and what didn't? In addition small groups answered three open-ended questions about *developing the course*: How to improve the course?; What changes could be made to improve the project as a learning experience?; What was good about the course? There was also an *individual evaluation questionnaire* where every student could evaluate the course; general impression, strengths, developing areas and special characteristic.

Categories were constructed for the teacher students' open-ended answers, in which they were describing a variety of things. The outcome providing a valuable starting point consisted of a structured summary of the questionnaire materials.

The course

The aim of the course "Problem-based Learning in Higher Education" was to work with different problem-based tasks, in which there were actual and important topics of higher education teacher's profession. The course was optional for teacher students. The course was build on the Blackboard environment and it was based on problem-based learning. The four weeks course contained two contact days; one of them was in the beginning of the course and the other one in the end of the course. Between the two contact days students worked in small groups in the Blackboard (BB) - platform. The teacher of the course was one of the writers of this article.

First contact day

There were different activities on the contact days. On the first contact day the teacher presented *the aim of the course*, timetable. In the beginning of the course the principles of PBL were presented and discussed with students. The whole course was based on working with PBL method in the BB platform. An important aim was also to *get to know each other*, because the group of students were working together and divided into small working groups during the first day. One of the interests of the study was to examine their experiences of co-operation. The technical role of teacher was to help group members get familiar and be comfortable with the BB platform. That was quite a easy task, because every student had used the platform before.

On the first day there was a *lesson about actual and important topics* of higher education teacher's profession conducted by a teacher. After that the whole group *carried out a brainstorm* and made ideas about interesting problems of the higher education in Finland. When the interesting problems were formed together, the students *divided into small groups*, *which* were named by students. The small groups chose one interesting problem to work with for next four weeks.

The *problems were formed in a question form* and they were presented to the whole group, so that everyone had an idea about what the problems were and how the small groups were working with them. The issue of what might count as a problem and the complexity of the problem design has an important and a challenging step in this course. The teacher needed

to give advice and support to the small groups. The issues of the problem recognition as well as problem-solving is vital in many professions, but it is considerable how this is taught and how it is learned (Savin-Baden 2008). In this course small groups' problems varied between the use of PBL method and the general issues of higher education teaching. The problems were for example: How to use PBL in the engineering teaching? or How to teach creativity in the media education? or How to motivate students to study in higher education?

The groups were completely responsible for their own learning. They all worked on their own topic, or major a problem area, but each group had to come up with their own problem statement. The formed small groups made a plan of how they would be working during next weeks, how they could solve the problem and how they would divide the tasks and the roles. This was a great challenge for the students since the problem statement had to be precise and to the point, and at the same time it had to cover the learning objectives. Of course the teacher has also roles. The intellectual and managerial role of teacher was to help to group members achieve predetermined learning objects; such as understanding critical concepts and the problem recognition. Members of the small groups had also three special roles to share: First role "organizer" took care of the organization and time management of the small group; second role "reporter" took care of collecting report, and third role "presenter" took special care of planning the presentation of the problem on the second contact day. So, small groups had also at least managerial and social roles in the learning process.

BB platform: four weeks of studying

BB platform contains:

- Introduction Forum: the whole group of students introduced themselves after the first contact day
- Discussion Forums of the small groups: Every small group had their own working forum where they could send messages, papers, ideas and communicate.
- Tutor forum: teacher had a forum where she/he could send message to the whole group
- Materials: links and materials, handouts of lessons

During the *four weeks the small groups worked with their problems*. They specified the problem when needed and sent messages to each other on their own discussion forum. Teacher participated in the discussions if needed and gave feedback about plans and ideas. Teacher also gave instructions, in the Tutor Forum for the whole group, when needed.

Problems were mainly solved by using books, articles or interviews of experts. Every small group made together *a report about their topic under study*. After three weeks of working the teacher divided the small groups into opponent pairs, which means that *every small group*

had to read another small groups' report and make at least three questions about the topic. These questions helped small groups focus on the presentation of the key themes. The final stage of the PBL process was a formal conclusion reached by the small group, a solution to the initial problem.

The second contact day

On the second contact day every *small group presented their answers to the problems; what they had found and what they had learned.* Each group presented their problem statement and findings in plenary to the rest of the class and to the teacher involved. The oral presentation of the report should have included a statement of the problem and the conclusion, summarizing the process they used, and difficulties encountered in the small group. Every small group had 20 minutes to present their topics. The idea of the presentations was to activate other learners and get them interested in the topic.

The report collection of the small groups' reports was placed in the BB-platform after the course and the reports would be *a material bank for the next studying group.* In that way the material bank is growing along the time and the reports are also in use after the course. Many times students' reports are used and available only to the member of the studying group, but are not widely used after courses.

Results of learning experiences

Evaluating of co-operation

The experiences of the courses were *mostly positive.* Most of the students stated that they did not experience much difficulty except for initially having minor problems with group work. The positive comments referred to the information that they had wanted and that their *small groups worked fine.* Another positive aspect was that the teacher's *instruction and aims of the course were clear.* Also the special roles in the small groups made working well. Some of the students' comments are listed below:

The topic worked out more wide-ranging as expected in the beginning. There was little laziness within our small group and no problems in keeping up the schedule. However, we made it. (Group 5)

We could trust each other, everybody did what they were accepted to. (Group 7)

The negative comments, on the other hand, highlighted difficulties to define their problem strictly. Some of the small groups pointed out that they *could get deeper information about the topic*. And they could *discuss more* together on the BB platform.

One more contact day in the middle of the course could be helpful. By talking about things could work easily. (Group 1)

Developing the course: advantages and obstacles

Students perceived the course as a *valuable, realistic and motivating* experience. They stated that the course had made a major contribution in increasing knowledge about the topic investigated. Also Chung and Chow (2004) reported that students' own evaluation of the skills developed through PBL and students found the experience rewarding and interesting. In this study teacher students thought that the course on the BB platform was also flexible and that it was also *alternative choice*. Students in the School of Vocational Teacher Education are adults and they value the flexibility in studying. There was some kind of independent studying in the BB platform, but of course they had to pledge to work in small groups.

I learned a lot about PBL and also about the topic I was studying with my small group. The BB platform was very suitable for learning. You could see how your own thinking and also the group's thinking was going on. (Student 1)

Most teacher students had a favorable attitude towards the PBL course and with an awareness of the purpose. For example some students thought that it was a new interesting experience and there was also time to process. They also gained satisfaction when their ideas were accepted by their team members.

I found that the PBL allowed me to learn more actively. I like that I had time to think when I was writing my part of the report. I liked this course. It was a valuable experience for me as a teacher. I also think as a future teacher that this kind of course should be planned carefully. (Student 12)

Some of the students PBL method was a *challenge way to study*: hard work and confusion in the beginning.

It was very hard work and time-consuming; I was wondering if it was too short course. I had problems with my own small group, everyone was not working as hard as I was. (Student 17)

Some negative attitudes have also been reported in previous studies. Stokes et al. (1999) reported that students found it difficult to cope with the heavy workload.

Students were asked to reflect firstly in small groups and then by themselves what it was like to work in small groups and how it worked. It was interesting that every small group evaluated that their small groups work well or pretty well, but at the same time some individual members of the small group might said that the small group didn't work so well and that the duties weren't done as well as it would have been possible. It was interesting that some the students could not say the same things in their own small group discussions.

Discussion

All the students gave positive perceptions of their PBL experience. It was encouraging to see that some respondents expressed positive attitudes towards this new experience. Finnish teachers mainly used computer to prepare lectures and assignments, acquire and process new information, to maintain contacts with their colleagues, and to conduct their own research, reluctance to test new innovative uses of e-learning in their own teaching. They are explained these things with lack of time and lack of pedagogical support and inadequate computer skills (Mällinen 2001). Therefore it is very important that in the teacher education students have the possibility to experience different kind of learning methods by themselves, for reading them in books is not effective enough.

In this course teachers' own experience was that the course promoted critical thinking and knowledge construction, to generate social interaction and collaborative activities among the students. It was also time-consuming to give comments to the students and the small groups. Diversity of approaches available indicates a need for considerable further research in PBL. Their negative perceptions and suggestions provide useful information for further improve of the PBL methods and, more generally, course design in the School of Vocational Teacher Education.

The result of this paper, being the personal experience of the writers, confirms that the PBL as an alternative tool in teaching education provides a good option to students. This ought to be positively considered by teachers, who wish their students to be critical thinkers and not just memorize the contents of the course.

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Teachers' Emotions and Feelings When Faced with the Teaching Career Statute

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Abstract

In this work, we intend to make public the emotions and feelings of secondary education teachers in the four years since the implementation of the educational reforms of the 17th Constitutional Government in Portugal, relating in particular to aspects of the Teaching Career Statute. This research was based on a) a documentary analysis of the Teaching Career Statute of 15 January 2007 within which we identified the main characteristics of and controversies aroused by those regulations, considered as indicators of the prevailing climate in public schools. b) an analysis of the results obtained from a semi-directive interview conducted with four teachers with different career histories.

A content analysis of the teachers' responses leads on to a description and interpretation of emotions and feelings of individuals. The main conclusions of the study show that, overall, teachers feel fear, a sense of uneasiness and unfairness, to mention only reactions most commonly expressed.

Keywords - Teaching Career Statute, assessing teacher performance, emotions, feelings

Introduction

The Teaching Career Statute, implemented by the XVII Constitutional Portuguese Government, was approved against a background of widespread opposition and conflict between Portuguese teachers and the Ministry of Education.

One of the major points of debate and contestation of this new Statute was the Division of teachers into two levels, resulting in a two-tier profession: teachers and “titular” teachers. This division was made according to the following rules: evaluation period limited to the last 7

years of career and taking into count administrative, non-pedagogical and scientific criteria. This highly controversial and, in teachers' opinion, unfair division has, as we will see below, conditioned the reception of the evaluation model proposed by the Ministry.

During the negotiation process, which lasted the four years of the XVII Government legislature, teachers felt wronged and accused the ministry of denigrating their professional image. "Thousands of pages of rules, regulations, orientations, standards, orders and instructions were produced with a sickening eagerness" (Barreto 2009) .

There were teachers who gave up, others who fought and some others who gave in, but the marks certainly endured.

In this study we try to showcase the emotions and feelings expressed by the teachers when faced with the Teaching Career Statute and the resulting teacher Evaluation Model imposed by the XVII Portuguese Constitutional Government, and try to understand how this model affected the working environment at school.

Evaluation Model

Before the implementation of the Statute in January 2007, teachers were already evaluated. Thus, whenever teachers were in conditions of progressing in their career, besides making proof of having attended and being approved in a mandatory minimum of continuous education hours of training, they would also have to deliver a critical reflection (self-evaluative) report of their teaching and non-teaching activities which would then be reviewed by the school management body where the teacher was placed and would also take into account the opinion of a teaching council committee, created for this purpose. From there, either the teacher got the qualitative endorsement "satisfactory" and progressed, ascending to the next career step or got the qualitative endorsement "non-satisfactory". In this case, a regional committee of evaluation was constituted and, after listening to all the stakeholders in the process, would deliberate on whether the "non-satisfactory" evaluation was to be confirmed. If the committee decided that it should be upheld, "the period for purposes of promotion and career progression (...)" (Article 46. Decree-Law No. 139-A/90) was not considered. Teachers evaluated as "satisfactory" could apply for a new critical reflection report on their performance, in order to be able to be granted evaluations of "good" and "very good". In order to do this, a new evaluation committee was constituted. Achieving an evaluation of "good" and "very good" would result, for career progression purposes, in a bonus of two years in the teacher's service time (article 50. of Decree-Law No. 1/98 of January 2).

Having established this factual background (since the Government, through the media, planted an image of the teacher in the public mind as someone who never was, nor wanted

to be, evaluated), we will now try to explain this new model of assessment, or if preferred, this new way of evaluating.

The Constitutional Government (XVII) implemented the Public Administration Reform, hoisting a standard of management by objectives with evaluation of staff performance and the results obtained by them. Moreover, its Programme for Education, notorious for its advocacy of a new model of teacher evaluation, reads: "The performance evaluation of teachers in this context must be accompanied by initiatives which enhance the motivation and self-esteem of teachers in the light of results obtained and good practices recognised by their peers "(44).

In fact, ever since the end of the last century, evaluation became, in most developed countries, and institutional imposition, the pioneers in the application of efficiency measure instruments being the Anglo-Saxon countries. With its arrival in our country we witnessed the birth of a "new" language in education. Therefore, we started hearing about differentiation through merit, merit quota, excellence paradigm, efficiency, flexibility... terms we used to hear when the subjects of debate were business companies but not schools or teachers. This being the case, we may conclude that these last years have seen the emergence of a performance culture "combined with a concept of education increasingly seen as an extension of economic calculation (...)" (Costa, 2007, p. 53).

It therefore reveals a State "that expresses itself by the promotion of a competitive ethos, expressed in external evaluation and in the predominance of an instrumental rationality, which overestimates the quantifiable and measurable" (Afonso 2001, quoted by Costa 2007, 52). We are witnessing, therefore, the substitution of an 'Educator-State' by an 'Evaluator-State'.

It is in the Base Law of the Educational System³⁸ and in the Integrated System of Public Administration Evaluation (SIADAP)³⁹ that are enshrined the principles of performance evaluation of teaching staff.

According to Article 42 of the statute of January 2007, the performance evaluation is made according to "pre-defined criteria that allow the assessment of quality standards of professional performance, taking into account the social and educational framework in which

³⁸ Relates career progression to the evaluation of teaching and non-teaching activity developed by the teacher, either individually or in groups and with professional, pedagogical and scientific qualifications acquired (Sanchez 2008).

³⁹ Its principles are, among others, results orientation, promoting excellence and a quality service; Recognition and motivation, ensuring the differentiation of performance and promoting a value management based on skills and merit; Transparency, relying on objective criteria, clear and widely disseminated rules (a), d) and e) of Art. 3 of Law No. 10/2004 of 22 March

the activity is evaluated" (Decree-Law No. 15/2007 of 19 January). To that end, and similar to what happens with any assessment, it is necessary to have references and a frame of reference.

Given that the frame of reference is a set of various data which includes the performance profile, it becomes important to define the profile of a "good teacher", thus making clear which features should be evidenced in that sense. And here begins, in our opinion, one of the great mental exercises of those who want to reach a concrete definition of what it seems difficult to define. Is a good teacher one whose students get high rankings at the end of the trimester? In this case, the possible meanings of the word "good" could suffer from a lack of wisdom, and then we would be seeking the definition of the profile of a "benevolent teacher." Is he the one whose students achieve high rankings in national exams? New confusion could arise, since we would be looking for the profile of a "good teacher", which takes into account the rounded education of the student, or a teacher who just prepares the student for a written test? Is this measurable through two or three classes attended by a colleague who just happens to be a "titular" teacher, who had no training as a supervisor, and through the assembling of an in-depth portfolio, but which has nothing to do with what actually happens in the classroom?

The evaluation process is by definition an "act by which a judgment of value is formulated", focusing on a particular subject (person, situation, action, project, etc.) by the means of a confrontation between two data series that are then related (...) "(Hadji 1994, 31). Or, as Mialaret said (1979), to evaluate is "to attribute judgments of value on the basis of precise criteria" (218-219, quot. by Barreira 2001, 9). Thus, strict criteria should be established and well formulated in order to attenuate the subjectivity of the process.

Successive simplifications of the evaluation model performed by the Ministry of Education in an attempt to end the protests of the professional class were made in an *ad hoc* manner, not changing the philosophy and principles underlying it. Furthermore, these changes, according to teachers, show a clear recognition on the part of the Ministry of the inadequacy and irrelevance of the pedagogical model. "It was necessary to observe classes (...) but it is not anymore. Only upon request for those who aspire to be excellent or very good (...). It was very important to follow pre-defined objectives, but it no longer is (...). It was a process for everyone, but it is not anymore" (Castilho 2008).

In fact, the effects of the simplification of the evaluation model with the career division into two categories do not end there, as it seems to us even more pernicious that it pits teachers against each other, since the teachers that play the role of evaluators will only be evaluated by the executive board of the school. The evaluation continues to be made by peers, "adding functional content that makes the pedagogical relationship, preparing lessons, teaching and evaluation of students more difficult and makes it impossible to guarantee objectivity and

impartiality" (Marques 2008) and the existence of quota still continues to be a part of this model. To Marques (2008), this is a bureaucratic model that "simplified or not, only has three purposes: to humiliate the teachers, increase the bad environment in schools and prevent two thirds of the teachers from progressing more than halfway up the career ladder." And with those two thirds of teachers in the middle of their career progression, this will result in a big economic saving for the government. Here is evidence of the cash-driven thinking behind this model.

The evaluators

"But, if evaluation is not everything, it is not to be undervalued either. It is actually something too important to be delivered to the evaluators. Because (...) one is never innocent when evaluating: whether you admit it or not, evaluation always refers to a referent. (...). Whoever is evaluating reveals their project ... or the one that was imposed by their prejudices, their concerns, their institution."(Hadji 1994, 13).

According to Article 12 of Regulatory Decree No 2 /2008, evaluators are the president of the executive council or the director and curriculum department coordinator, the latter being allowed to delegate his or her competence as evaluator to other teachers who for preference belong to the same recruitment group as the teachers to be evaluated.

The proposals of the individual objectives formulated by the evaluated teachers and, at the end of the year, the self-evaluation report are delivered to the president of the executive council or to the director.

The coordinator of the curriculum department has the job of observing the two or three classes necessary to obtain the classification of 'very good' or 'excellent'.

We can then say that this phase is closely linked to supervision. The process of supervision, according to Rocha (1984, quot. by Coelho and Rodrigues 2008) is a co-construction process of a vision that needs to be able to:

- Understand the full meaning of what is happening (insight).
- Predict what might happen (foresight).
- See what should have happened and did not happen (hindsight).
- Know how to get what should have (or have not) happened to happen (or not happen) (second sight).

In order for the evaluator and evaluatee to be able to get this construction will require "a dynamic interpersonal relationship, encouraging and facilitating a process of development and of conscious and committed learning" (Coelho and Rodrigues 2008, 51) and also, on the part of the evaluator, the capacity of observation in order to understand reasons and motivations, in an analytical slope of training and evaluation.

The primary role of the evaluator should be to promote the best practices in order to achieve continuing improvement in the quality of education. According to Alarcão and Tavares (2007), the supervisor should develop in the evaluated teacher the skills and attitudes capable of achieving excellence.

The department coordinator, or the teacher to whom he or she delegates, has a task composed of various aspects, having not only to operate the monitoring of educational practice through ranking the evaluatee, but also not neglecting the formative nature of supervision.

But the big problem that we face here concerns the fact that that the evaluators are teachers without preparation for that purpose and who are often less professionally qualified than the teachers who they are now going to evaluate and with whom they have been working as colleagues for many years, possibly even being friends or else perhaps having a less cordial relationship. Do preconceived ideas about the other person, differences in pedagogical point of view and many other factors not influence the evaluation?

And does the fact alone that a teacher is higher placed in their career (being a “titular” teacher) give them the preparation needed to be able to evaluate? Should the evaluator not have an adequate training in educational supervision?

Being an evaluator presupposes that he/she has the expertise, has mastered techniques of observing and recording classroom observation, knows methodologies of skills training, is aware and knows how to look at the evaluated teacher from several perspectives, and so on. An evaluator cannot emerge from a contest that resulted from points obtained from positions held over the past seven years, "because the evaluator must know how to verify not only what teachers do but also how they do it and simultaneously ensure the improvement of the quality of the teacher's intervention in the classroom as well as product quality, meaning by this, student learning "(Ruivo 2008). It is actually an OECD study that recommends the training and integration of external evaluators in the process (Santiago et al, 2009).

And, to borrow the words of Rocha (2009) posted in the De Rerum Natura blog, we ask: "is it by evaluating teachers like this that we qualitatively change Education and Teaching in Portugal, as suggested in the law setting up this evaluation model? Is it by this means that our students will start having better results in the international programmes and studies? (...) It is by publicly challenging a pillar of society, the teachers, that we will secure Education in Portugal?

Teachers' emotions and feelings

Since we want to know the emotions and feelings of teachers regarding the reforms instituted by the XVII Constitutional Government, particularly with regard to the changes to the model of teacher evaluation, it is appropriate to characterise some of those same emotions / feelings.

Damasio distinguishes emotions into two types: those that "we experience in childhood"⁴⁰ (Damásio 2001, 45) and that are easily explainable by the Jamesian theory and the ones "we experience as adults"⁴¹ (Damásio 2001, 145) and that were built in an evolutionary way, over the former.

We can, according to Damásio, conceptualise primary or universal emotions as a physiological process that involves an innate, pre-organised behaviour, able to respond to certain stimuli, and which is controlled by the limbic system⁴², particularly the amygdala.

For Damásio there are six primary emotions: joy, sadness, anger, surprise, fear and loathing. Of these, Damásio considers only joy and surprise positive.

As regards secondary emotions, Damásio does not clearly define them. From what we have been given to infer in the literature review undertaken, we can conceive them as being the result of a combination of physiological aspects of human values and the beliefs that have been acquired through education and culture. Such emotions already require the intervention of the prefrontal cortex and somatosensory systems. However, in order to be able to express their activity, the frontal cortices need the amygdala "(...) the secondary emotions use the machinery of primary emotions" (Damásio 2001, 151), thus exhibiting, as the author states on the same page, a "precedence-dependence relationship."

Secondary emotions proposed by Damásio (2000) are: Embarrassment, Shame, Jealousy, Guilt and Pride.

Unlike other authors, Damásio does not use the words emotion and feeling interchangeably, giving as a reason that although the emotions originate feelings, not all feelings come from emotions.

In Damásio's (2001) view, feelings are a kind of a register of emotions, "inner guides", "sensors" and "as cognitive as any other perception" (17).

⁴⁰ Damásio also calls them primary emotions.

⁴¹ Damásio also calls them secondary emotions.

⁴² It is the unit responsible for emotions. The region is composed of neurons, cells that form a gray mass called the limbic lobe.

As stated, there are many varieties of feelings. The first has to do with "more universal" emotions "Happiness, Sadness, Anger, Fear and Disgust" (Damásio 2001, 163). We can say that this variety of feelings corresponds to standard responses of the body state, which, according to the Jamesian conception, are essentially pre-arranged. Thus, "when the body conforms to the profiles of one of those emotions, we feel happy, sad, angry, afraid or disgusted" (Damásio 2001, 163). This first type of feeling is on the same page referred to by the author as "feelings of universal basic emotions."

Damásio (2001) calls the second variety of feelings "subtle feelings of universal emotions" (164). These are small nuances of the five basic universal emotions: euphoria and ecstasy are nuances of Happiness; panic and shyness are nuances of Fear, etc... "This second range of feeling is tuned by experience when subtle gradations of the cognitive state are connected with more subtle variations of an emotional state of the body" (Damásio 2001, 164).

Finally, Damásio proposes a third variety of feelings, which he calls "background feelings because they originate in bodily states of 'background' and not emotion." (164). These are the feelings that are most prominent in our life. Of them we cannot say that they are more or less negative, although we may immediately experience the pleasure or displeasure related to them. "A background feeling is not what we feel when "spilling joy" (Damásio 2001, 164), this would be a state of the emotional body. "The background feeling is the image of the landscape of our body when this landscape is not shaken by emotion" (Damásio 2001, 165). The background feelings which Damásio proposes are various: Fatigue, Energy, Excitement, Welfare, Malaise; Tension, Relaxation, Rapture, Disinterest, Stability, Instability, Equilibrium, Disequilibrium, Harmony, Discord, Anxiety, Apprehension (Damásio 2000).

In "The feeling of what happens", Damásio makes clear that "it is through the feelings, which are directed inwards in each one of us and which are private, that emotions, which are directed outwards and are public, begin their impact on the mind" (56). We may therefore distinguish emotion simply from feeling by saying that emotion is noise, explosion, leakage, while feeling is silence, is mutism, is restraint.

In this study we used the conceptualisation of emotions and feelings proposed by Damásio to analyse them, when considering the Teachers Career Statute and its main features.

Methodology

In our study we explored, described and interpreted the experiences of some teachers based on their personal experiences. It is, therefore, an investigation based on an exploratory, descriptive and interpretative method using an autobiographical interview, semi-structured,

for which a guide was prepared, carried out with teachers on different professional paths and belonging to different high schools.

After collecting the data, it was necessary to treat and interpret all the information collected. Of the various techniques used in the field of social sciences for information processing, content analysis seemed to us to be the best suited to our investigation. Having performed the steps involved in this analysis, we identified a set of indicators that characterise the emotions and feelings of the teachers when faced with the new the model of evaluation.

The data presented below are only part of a broader study, carried out by us, of the Teaching Career Statute (TCS) of January 2007 (Martins 2009).

Results

The analysis of results obtained identified a large number of indicators for the emotions and feelings experienced by teachers, expressed in the table below.

Table 1. Synthesis of emotions and feelings

Emotions/Feelings	TCS	Teacher's seriation	TEM	total
Fear	2	2	12	16
Anger	1	4		5
Injustice	1	12		13
Envy			2	2
Relief			3	3
Mistrust			6	6
Selfishness	1		5	6
Indecision			2	2
Humiliation		7		7
Superiority/inferiority		4		4
Anomie/Disillusionment	3	2	3	8
Instability	5	2		7
Tension		1	10	11
Malaise			19	19

Togetherness			6	6
Resilience			3	3
Disdain			5	5
Revulsion	4	3	5	12
Indignation			9	9
Total	17	37	90	140

Malaise is the indicator with the highest frequency (19), in addition to having been mentioned by all target-subjects.

"In my school there was a certain buzz in the beginning, when this process started (S1).

"(...) Since the beginning of the year there was always an uneasiness when we spoke of evaluation..." (S2).

"Look it's a very tense mood..." (S3).

"There is a malaise at the moment (...) there is now a great deal of pressure [at school]" (S4).

If the malaise resulting from the discomfort related to the distinction between teachers and "titular" teachers and the disagreement with the criteria of the contest was already quite evident, it seems to have worsened even more when it came time to deliver the individual objectives since this, in some schools, has contributed to the existence of a certain division among teachers.

"And that created some malaise within the school, the fact that a few, only a few, teachers delivered [individual targets]" (S4).

At the school of one of the interviewees, a list with the names of teachers who had delivered the individual objectives was made public in the teacher's room. This fact left our interviewee uncomfortable. We must not forget that this teacher is at an early stage of her career, when the impression given to one's peers is very important.

"I admitted what I had done, because I always said I would do it, but I did not understand the reason why everyone has to know who asked to have attended classes ... I felt observed (S2).

One interviewee mentioned indecision, a secondary emotion, "(...) people did not know if they should start making the portfolios or if they did not" (S4).

Another secondary emotion, mistrust, was mentioned with a frequency value of 6.

"(...) Not all people showed their hands... when I wondered whether they would deliver individual objectives they would said that they still did not know (...) [the climate is of] mistrust" (S3).

With the issue of the quota for the attribution of 'excellent' or 'very good' grades, we saw competition among teachers in some schools, which until then had never happened. Hence, as well as suspicion, other indicators also emerged, such as selfishness and envy, which are also secondary emotions.

"[To guard themselves against a possible evaluation] teachers stopped sharing (...)" (S1).

"(...) Unconsciously [teachers] want to always have better rankings than their peers" (S1).

"[The climate is of] jealousy" (S3).

Interestingly, and in contrast to the above, another background feeling emerged from the teachers union in opposition to the model.

"(...) Since student days, I hadn't been on strike... and now I did. At home everyone was stunned" (S3).

"(...) From the moment that we attended the first general meeting of teachers and in which (...) we found out that almost all of us shared the same opinion when discussing this way of evaluating, I felt that the school had united. (S1).

In fact, this whole conflict has produced a professional solidarity, which thus far, at least in this numerical scale, had never existed.

The tension was another background feeling, which obtained a high frequency value (10). The climate experienced in schools and described by the interviewees resulted in this feeling becoming part of everyday life for many teachers.

"(...) It's meeting after meeting (...) where people scream, get angry ... get divided... If I had to compare the school with something I think I would be comparing it to a volcano that is almost, almost about to erupt ... "(S3).

Fear, in different disguises, appears again.

"People are not afraid to be evaluated. (...) they are afraid of the subjectivity of this evaluation model (S1).

"I know there are schools (not mine) where people may be against the evaluation, but do not show it for fear of some reprisal" (S4).

"Because students see us as someone who already knows a lot and suddenly someone is going there..." (S2).

According to Fernandes (2008), it is common for teachers in the beginning of their careers to give great importance to the image that they transmit to their peers and to students, the same happening when they are in the first steps of the phase designated, by Huberman (1992), as stabilisation.

Relief, a secondary emotion, was the indicator that we found to express the way that interviewee S1 felt, the only target-subject with the function of evaluator:

"I'm an evaluator (...), with no one to evaluate, thank God. None of the people I was assigned to requested evaluation of their classes "(S1).

As with the subjects, the discomfort felt by the evaluators is also notorious. According to the report of the CCAP, there were "numerous situations in which the evaluators have refused to participate in the process of the organisation of teacher performance evaluation" (2009, 18-19). This became clear in the interview given by the target subject S1.

"(...) If any of the teachers who had been assigned to me had requested classroom observation I would have gone on the strike that is scheduled for Evaluators" (S1).

Outrage was another feeling (a feeling of universal emotion) that was also mentioned by four interviewees and with a frequency value of 9.

"(...) And indignation at the way we were treated from the start by this government and the Ministry of Education (S1).

"I felt indignant (...)" (S2).

"And then there's this whole idea that the ME and certain journalists want to propagate that teachers have never been evaluated and are unwilling to be assessed and that is a lie and it makes me angry" (S3).

"I was initially angry because these people have signed petitions (...) but then, when the time came, they felt that their career would be jeopardised and chose to deliver the objectives' (S4).

Despair and anger, as mentioned in the previous two categories, appear here with even greater intensity.

"(...) I feel some dismay for the public [i.e. state] school, and despite what they want to make it seem, they are not promoting quality, but quantity, and thus we cannot achieve a balance between quality and quantity" (S1).

"(...) Sometimes I think I could do things differently but I lack the motivation..." (S3).

"(...) I felt angry because I felt my name was being exposed there, in a weird way..." (S2).

"(...) This dissatisfaction and anger come home..." (S3).

Two interviewees mentioned disdain, a feeling of universal emotion. This feeling results from the way the interviewees saw the request for the assisted classes by their colleagues.

"(...) As there are shares and not so many people asking for observed classes, they have the opportunity, right now with some ease, to have 'very good' or 'excellent'" (S4).

"(...) Or because we also think that those people who gave and asked for attended classes are presently seeing some opportunities to have 'very good' and 'excellent' (...)" (S4).

The irony, which, according to Berne (1977, quoted by Schmidt 2006) is an emotion of disguise, appears with a frequency of 3:

"(...) it is funny... In the old times, people who had never participated in activities of the departments or of the students are now roaming the school, are very active and do exhibitions, field trips..." (S3).

Finally, resilience, a background feeling, was reported by two target-subjects.

"But if they think they can destroy us as teachers they are mistaken. I will fight until the end"(S1).

Final considerations

In our study it the strong predominance of negative emotions and feelings was evident. Indeed, fears, discomforts and injustices were systematically mentioned...

The main reason for teachers to not willingly accept this model of teacher evaluation is the conviction that this process is all that the rules say it should not be. The evaluation process should be beneficial and is linked to development and improvement programmes for teaching and this model, as noted in this study, lacks the training curve and adequate preparation of evaluators and evaluated teachers. It should not affect the morale and confidence of teachers, destroy relationships, discourage initiatives or diminish the sincere and spontaneous hard work that many professionals show in their daily school life. What we conclude from our study is that, in school, there is malaise, depression, stress and distrust. The teachers who joined this study would view with satisfaction the implementation of an evaluation model that focused on differentiating on merit. However, the subjectivity of the criteria of this model was considered a very negative aspect.

It was, moreover, noticeable in this study, that teachers do not accord legitimacy to evaluators, which has to do with doubting the scientific expertise and/or teaching capability of many of the evaluators, the proximity (or not) between evaluator and evaluatee, and the lack of specific training of evaluators. However, this cannot be acquired through intensive training, often given by teachers who themselves lack adequate training in educational supervision. It is therefore imperative to ensure the legitimacy of the evaluators, to consider "their credibility as effective managers and pedagogical supervisors, not just sticking to the usual externalist claim (...), which suggests a solution only based on an alleged specific training "(CCAP 2009 28).

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Encouraging Teachers to Become Research-active

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Abstract

In The Netherlands more emphasis is placed on the teacher as professional which also includes more attention for research skills. Though this seems to be a promising development, contemporary practice shows this is quite difficult to implement. This paper discusses a project that was carried out in three schools. Teachers received possibilities for participating in a research trajectory and received support of experts during the course of the trajectory.

The evaluation shows that in general teachers were quite content with their trajectories but the school managers were somewhat more reserved. They made critical remarks concerning the quality of the outcomes and the usability of the research products for the further development of their schools. The experts viewed their role was supportive but could have been more significant if there were more resources for supporting teachers. The paper concludes with some recommendations for further improvement of teachers' research trajectories.

Keywords: *teacher research, professional development, school development*

Introduction

To date it is broadly acknowledged that teaching should involve more than conducting lessons in the classroom in a prescribed manner. Being a genuine professional also implies reflection on one's own teaching, being informed about the latest developments, and contributing actively to increasing the evidence-based nature of teaching practices.

The stronger emphasis on the teacher as a research-active professional can be observed across Europe (European Commission 2005; 2007) and is broadly advocated by politicians,

professional bodies, committees, teacher education (OECD, 2005), but far less by teachers themselves.

Though the attention for the notion of the teacher as a research-active professional has been increased the literature suggests that there is far more attention for how to teach student teachers to conduct research than for how to increase the research competences of already qualified teachers. However, the attention for this latter group has been increased substantially, in practice and in research as well. A brief look at the literature shows some fundamental issues regarding the teacher as a research-active professional.

For example, the literature indicates that there are different opinions about what it actually means to be a research-active teacher. Some scholars emphasise that teacher research needs to be a, preferably collaborative, activity that allows teachers to inquire and improve their own practice (see for an example Ermeling, 2010), whereas other views explicitly or implicitly suggest that teachers need to be involved in academic research projects guided by professional researchers and thus restrict the teachers' role to merely a data collection tool (Martens, 2010), with doubtful implications for empowering teachers own teaching practices.

Approaches that are closely linked to the everyday world of teachers are presumably more beneficial for strengthening the relationship between professional development, improving teaching practice and school development, as the examples of professional development schools in the USA suggest. These examples have in common that communities exist in which teachers, teacher students, teacher educators, and researchers collaboratively work together (see for example Van Velzen, Bezzina and Lorist, 2009).

Another issue that deserves attention is that the contemporary discourse on the teacher as researcher easily overlooks that teaching and researching require different mind sets. Teaching differs from researching in the organisation and application of knowledge. Where teachers' knowledge about teaching is mainly organised from the learners' perspective and is used as a basis for helping students to understand specific concepts, researchers organise their knowledge in order to allow them to know what facts are already proven and what assumptions and hypotheses need further attention (Kinchin and Hay, 2007). In summary: though the notion of the teacher as researcher may be interesting from a professional point of view, in practice many obstacles and unsolved issues can be observed, which hampers the further development of the notion of the teacher as a research-active professional.

Research questions and methodology

This paper presents the findings of a project⁴³ that offered secondary school teachers within three secondary schools possibilities to conduct their own research. Teachers were invited to step forward with ideas. All ideas were allowed as long as it contributed to improving teaching practices. Teachers received coaching and support from two external experts from a teaching expertise agency and at the closing of their own research they all wrote a report and presented their findings during a meeting to their colleagues, school managers and a panel of external researchers.

As part of the project an evaluation was scheduled that focussed on how teachers and their school managers experienced this novelty and to collect recommendations for future teachers' research projects.

In total thirteen teachers, individually or in pairs, conducted small research projects. They all received a questionnaire with semi-structured questions allowing them to articulate their research experiences. They were invited to write down their answers and to mail the questionnaire to the researchers. Examples of questions included in the questionnaire were: Would you recommend your colleagues to attend future runs of this research trajectory? Why or why not? What would you like to change in this trajectory and what not? Please provide explanations and reasons to underpin your answer. Do you feel that the outcomes of your research trajectory are applicable in your own daily teaching practice?

In addition, responses of three school managers were received. Two of them were interviewed and the third one gave his reflections in written report. Beforehand they were invited to reflect on the goals, expectations, the course of the trajectory, usability of the outcomes of the trajectory for the further development of the school.

Finally, two experts involved in the coaching and evaluation of the teachers' trajectories were invited to reflect on their experiences on the same topics as the school managers.

⁴³ In 2008 the Dutch government, the unions and secondary schools signed the covenant *Leerkracht van Nederland* in which agreements were established to offer teachers better prospects in their career in order to counter impending shortages. A group of secondary schools asked the Ruud de Moor Centre of the Open University to design a trajectory to professionalise fully qualified teachers (in Dutch *eerstegraders*) with substantial experience in teaching. The trajectory was carried out in 2009. The participating teachers needed to apply for this trajectory. Admittance was partly based on a portfolio that interesting teachers needed to compose. In total 16 teachers were admitted, 13 of them finished the trajectory.

Findings teachers

In total 9 out of 13 questionnaires were returned by the teachers.

With regard to the valuation of the research trajectory six participants were positive about the entire trajectory, whereas two participants did not view this trajectory as recommendable for future implementations. Two participants were negative and one participant had mixed feelings and mentioned positive and negative gains at the same time.

It demands loads of time and energy, it results into negative comments of your fellow teachers, there was a lack of cooperation, there was lack of individual support concerning educational theory and research methods, the structure of the trajectory was insufficient and one participant even mentioned that her trajectory resulted into a conflict within their own teaching department.

Learning to conduct research, access to knowledge that supports you to improve your own daily practice as a teacher, more insight into how things are organised in the school, the opportunity to discuss topics with colleagues you usually do not meet, were just a few of the positive outcomes mentioned by the participants.

“I experienced this trajectory as an instrument to work on a product in a structured manner. The trajectory allows deepening your knowledge of a certain topic. You are forced to dedicate time to this trajectory on a regular basis, next to your daily hectic work as a teacher. It also enriches you as a person.” (participant 5)

Based on their own experiences the participants recommend the following improvements of their research trajectory that can be summarised into three topics.

The first topic concerns the lack of clarity of the trajectory. Participants mentioned that they felt in the first months of the trajectory it was not clear to them what the criteria were for their final product. Moreover participants mentioned that for them it was not clear how these products would play a role in the further development of their school. School managers did not clearly define what they expected as outcomes and how these products of the research trajectories would be implemented in daily practice.

The second topic concerns the lack of time. Participants received 150 hours, and sometimes even less, to dedicate to their trajectory, but most of them experienced this time as insufficient to achieve their intended results. It was not only the lack of sufficient hours as such but also it appeared to be difficult to combine research with other teaching duties.

The need for more support was the third topic mentioned by the participants. Participants mentioned they felt insufficiently supported by the external experts and also there was a lack

of appreciation of their fellow colleagues and the school managers for their research activities.

When participants were asked about the aspects that need to be unaltered in future runs of research trajectories, they most mentioned the freedom to choose a subject of their own. This allows participants to select a research topic that is closely linked to their own interests and daily teaching practice. This freedom also includes the liberty to select one's own research method. Also mentioned was the formal completion of their trajectories that consisted of a plenary meeting of all participants, colleagues and school managers. During this meeting the participants presented their product to this audience and to an external panel of researchers as well. Finally they mentioned the possibilities to contact the external researchers by mail, phone or by face-to-face meeting.

Participants were asked to mention their three main learning outcomes as a result of participating in this trajectory. In summary their learning outcomes can be grouped into three categories: professional, individual, and research. The first one concerns their professional growth as a teacher. Many participants mentioned that this trajectory supported them to take a critical stance toward their own daily practice and help to consider improvements.

“Working in a structured manner to solve a particular problem, based on own experiences and observations, increases your own consciousness as well as that of others that encourages change. The fact that you know the problem from your own teaching experiences, allows you to have a better insight into the problem you are researching. The trajectory was a mutual trajectory together with a colleague that enhances collaborative learning resulting into more insights and a richer understanding of the problem. Thus this trajectory also contributed to increasing my competence in working together with colleagues.” (participant 4)

Also mentioned were learning outcomes that can be regarded as personal growth, for example to learn to better cope with the stress of the daily duties, to improve the capacity to plan your own work, the feeling to become more secure and convinced about your work as a teacher. Though not mentioned by all participants a minority recognized there was a growth in their own research competence. During the trajectory they experienced that they became more research-minded.

With the exception of one participant, all participants mentioned that they view that their research product can be implemented into their own daily practice. Some of them already did this; others view good opportunities in the coming months. One participant did not see any possibilities because of the reluctance of the colleagues in her department and the inconsistent behaviour of her principal.

A majority of the participants experience that there is attention for their product. Some participants informed their own colleagues whereas in some cases colleagues asked themselves for more information and how their products can be implemented in daily practice.

Some participants were pessimistic about the possibilities for further development and implementation of their products. According to them they view their principals were rather reluctant and did not really support the implementation of their research products.

Finally participants were asked to reflect on their ability to conduct research on their own without any support of external researchers. Most participants felt they are able to do so. Some of them mentioned they already worked quite independently during the trajectory. Two participants have doubts about their ability to research without any external support.

“During this trajectory we received some support, though not very much. Since our external researcher pointed at the pitfalls during our trajectory, I assume that I’m able to avoid them in my future research.” (participant 2)

Findings school managers

In general the three school managers were satisfied with the entire set up and the implementation of the trajectory. Two of them were really impressed by the presentations and reports of their teachers at the closing of the trajectory. They experienced immediate progress in some daily school matters as a result of the trajectory:

“ I think this is a good concept. It challenges teachers to demonstrate their competences what they are able to and to further develop themselves. And not unimportant the trajectory offers the teachers support in this. The role of the external agency (RdMC) could have been slightly better with respect to supporting teachers in methodological issues. Since research is not the core business of teachers they should receive more support. For example with offering a comprehensive course in research skills and knowledge”.

They also observed changes in the behaviour of teachers that did not participate in the trajectory. This was most significant when teachers who participated in the trajectory organised sessions to inform their colleagues about the findings and the results of the trajectories.

The third school manager was more critical. He viewed that some participating teachers did not really composed a comprehensive research plan in the early stage of the trajectory resulting in some less optimal results and findings at the end. In addition, he viewed the feedback of the external panel on teachers' final presentations at the closing of the trajectory as rather mild which caused that some of the participating teachers overestimated their own research performance as too optimistic.

Findings experts

Both experts from the external agency emphasised that the circumstances were not adequate for achieving high quality outcomes since teachers are novices in research the outcomes were as could be expected. Moreover, it was not only a new endeavour for the teachers but also for their school managers who were not used to design trajectories from human resource management perspective. Especially the fact how to combine the individual professionalization of teachers with school development appeared to be rather problematic. For example, school managers did not beforehand realise how much time and support teachers really need to conduct some research. Also school managers did not discuss with their teachers individually how this research fits into the teachers own tasks and their career intentions.

On the other hand the experts viewed that the teachers themselves were not fully aware of their own (lack of) research skills, their professional needs and their career intentions. This hampered the set up and implementation of teachers own research plans in the early stage of the trajectory. In addition, the amount of time available for teachers to conduct their research differed per teacher. In general the available amount of time was not sufficient. Lack of time was not only an obstacle for the teachers but also for the experts that were involved to support the teachers in coaching during the trajectory. The experts viewed that it is not just a lack of proper circumstances and resources but also schools have no tradition in conducting research and human resource management and therefore it is not embedded in the minds and behaviour of all participants.

Conclusion and discussion

This evaluation was set up to collect data on teachers 'research trajectories' within three secondary schools. Since research trajectories for teachers are a new phenomenon in the Netherlands the goal of this evaluation was to collect information that can be used for the

design of future runs of research trajectories. Therefore data was collected in a rather structured manner from all participants: teachers, their school managers and external experts from an agency (RdMC). In total 9 of the 13 participating teachers mailed their questionnaire, three school managers and two external experts were involved in the evaluation.

The first conclusion is that participating teachers succeeded in conducting some research within their own practice. In general they view the results and the findings of their research as satisfactory. With regard of the process of their trajectories they viewed that more support could be beneficial for speeding up and improving the quality of their trajectories. They experienced their research trajectories were rather individual and solitaire endeavours and they had to conduct research quite in relative solitude. Support is perceived as more support from their own managers and the external experts with respect to research skills and knowledge.

The second conclusion is that school managers did not have clear views on what is needed to make these trajectories successful. In addition, they had different goals. The first goal was to increase the research competences of their teachers and the second goal is that the teachers' research performance was used as one of the criteria for appointing teachers in senior job positions. These mixed goals blurred the set up and implementation of the trajectories. Not at least since all participating teachers were also aware of the existence of these different goals. It is quite likely that this affected the behaviour of the teachers as well. For example, asking for additional support could be considered as a lack of capacity in the eyes of the school managers. In general school managers were satisfied with the course and results of the research trajectories though critical remarks were made concerning the quality of the outcomes and the usability of the products for the future school development.

The third conclusion concerns the role of the experts during the set up and implementation of the trajectories. They viewed their role was supporting but could have been more significant if there were more resources for supporting teachers and school managers as well.

Though this evaluation provided interesting insights into the research trajectories there are some shortcomings that need to be mentioned. For example, not all participating teachers were included in the evaluation and the request for an evaluation was made after the trajectories were almost finished which hampers the collection of data during the trajectory.

Therefore these results offer an interesting insight into an emerging research practice but are only of limited value when generalisation of the findings is at stake.

Nevertheless, the findings do offer information that can be used for increasing future trajectories. Here the main recommendations are briefly summarised.

Many things were not clear beforehand and needed to be solved during the course of the trajectories. It is essential that there is a clear design of the trajectory that meets the intended goals. That also allows seeing whether there are conflicting interests as were observed now

in the trajectory. Clear procedures for admittance, and the expected outcomes, milestones of the trajectory are necessary. It is recommendable to design the trajectory with the school managers beforehand and to assure that the commitment of teachers and other stakeholders (like the human resource management department) is guaranteed.

A broader view on what it means to conduct research is necessary. It is not sufficient to seek for solutions how to improve teachers' research skills but also it is required to dedicate attention to additional knowledge and skills. For example, writing skills, information-seeking skills, and project management skills. Moreover, there needs to be clarity about what research actually means. Some teachers see reading an interesting article already as doing research, while others see research as more academic research and want to collect rather impressive data but do not know how to set this up, analyse the findings and so on. A trajectory like this should be preceded by a course in appropriate research skills and additional skills and knowledge.

The findings indicate that among teachers there were different mental frameworks on what research means. Also school managers had their own opinions about this. This should not be addressed as a problem as long as there is no awareness of the fact that views on research can differ quite strongly. This awareness need to be an issue in the training and coaching of teachers and school managers and by doing so this will offer interesting discussions that allow participants to take into account other research views as well which may support teachers in choosing an appropriate set up of their own research. Appropriate means not just appropriate from a research point of view but appropriate also means that the research is well embedded in the development and innovation of the school and their own teaching practices.

Altogether the findings are quite promising but there is need to increase the efforts to design research trajectories for teachers and to collect data on these endeavours to further improve the design and implementation of these trajectories. Associations like the ATEE can play an important role in the further professional development of these kinds of trajectories.

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Teachers Life-long Professional Development between Environmental and Multicultural Education: an Italian Research

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Abstract

The article shows a study carried out during the last few years about two main challenges: multicultural and environmental education. The hypothesis of the research is as follows: the environmental education can represent the way to develop and improve meaningful multicultural interactions among the students. We have chosen a sample formed by 29 primary and lower secondary schools and 15 environmental education centers. We have carried out questionnaires and interviews to collect quantitative and qualitative data. The study reports the results of the relationship between the development of environmental and multicultural education. In addition, the article underlines the guidelines to support the teachers in planning and designing educational activities in natural environment, directed towards the creation of a meaningful group of students. Finally, the authors indicate the structure of a refresher course for in-service teachers connected with the degree course for pre-service teachers.

Keywords: *Environmental education, Multicultural education, Teaching methods*

Introduction

The research aims at relating Education for Sustainable Development (ESD), best practices of environmental education and multicultural education.

The hypothesis of the research is as follows: the environmental education can represent the way to develop and improve meaningful multicultural interactions among the students. The natural environment can be the common meeting place, without (or with low) cultural implications, in which it is possible to understand, create and learn together. The learning is facilitated by the creation of meaningful interactions and a sense of community referable to

principles of equality and respect. Environmental education and sustainable development become the patterns to plan various educational activities directed towards this perspective.

The research starts from the definition of sustainability and sustainable education born in Rio de Janeiro (1992), is defined in Johannesburg (2002) and today is enriched by the contributions of the studies of Stephen Sterling (2006) and Daniella Tilbury (2009):

- The key focus of sustainability is for better quality of life. Quality of life can be defined differently by different people. Hence visions for sustainability will be different.
- People have different assumptions about how to achieve sustainability.
- The process of achieving sustainability is a negotiated one.
- Sustainability is a contested concept incorporating key themes such as ecological sustainability, intergenerational equity, social justice, cultural diversity, intercultural understanding, equality, fair distribution of wealth and resources, democracy and peace.
- For people to fully participate, Education for sustainability must be able to provide the knowledge and skills for empowerment, public participation, futures thinking, visioning, action, critical reflection, values clarification, partnerships, collaboration, cross-cultural communication, multistakeholder dialogue.

In essence, ESD is about learning for change. It motivates, equips and involves people in making informed decisions. Originally perceived as education about sustainability, it is being increasingly recognised that the ESD process goes beyond dissemination of knowledge to widening people's capacity to take action and make practical changes. ESD is not confined to educating people about ecology, nor is it only about educating people for economic development, although they are both inextricably linked to this process of social change. It promotes an integrated assessment of economic goals, social neESD, and ecological responsibility (Tilbury 2005).

The relationship between environmental considerations and environmental and multicultural implications are already clear in Declaration of the United Nations Conference on the Human Environment (1972). The Declaration states that «Man has the fundamental right to freedom, equality and adequate conditions of life, in an environment of a quality that permits a life of dignity and well-being, and he bears a solemn responsibility to protect and improve the environment for present and future generations. In this respect, policies promoting or perpetuating apartheid, racial segregation, discrimination, colonial and other forms of oppression and foreign domination stand condemned and must be eliminated» (principle 1). Twenty years later The Rio Declaration On Environment And Development (1992) confirmed some of the commitments of the international community: «Human beings are at the centre of concerns for sustainable development. They are entitled to a healthy and productive life in harmony with nature» (principle 1) and «Peace, development and environmental protection

are interdependent and indivisible» (principle 25). With the Johannesburg Declaration on Sustainable Development (2002) the governments of the world powers have confirmed their commitment to sustainable development «Recognizing the importance of building human solidarity, we urge the promotion of dialogue and cooperation among the world’s civilizations and peoples, irrespective of race, disabilities, religion, language, culture or tradition».

Finally, The Earth Charter (2000) proclaims certain principles as “natural”; and the specific relationship between man and environment in the social community:

- Build democratic societies that are just, participatory, sustainable, and peaceful (principle 3);
- Eradicate poverty as an ethical, social, and environmental imperative (principle 9);
- Uphold the right of all, without discrimination, to a natural and social environment supportive of human dignity, bodily health, and spiritual well-being, with special attention to the rights of indigenous peoples and minorities (principle 12);
- Promote a culture of tolerance, nonviolence, and peace (principle 16).

In Italy in documents that deal with multicultural: Charter on the values and significance of citizenship and integration (2007) we find clear references to the close relationship between environment and intercultural dimension: «Italy carries out a policy of peace and respect towards all people in the world to promote the peaceful coexistence between nations and defeat war and terrorism. At an international level Italy is committed to safeguarding the environment and wealth of life on the planet» (item 27).

Despite the good intentions of documents the reality of Italian schools shows a growing difficulty teaching and teacher education in relation to foreign students. The high number of foreign students and intercultural and social issues forcing teachers to change their teaching methods and content.

The numbers and data of the migration situation in Italian schools align Italy with the European average. Over the past five years the number of foreign students has doubled from 3.5% to 7%. Is the same index in all types of schools. Very impressive is the gap between the end of the nineties. In 1997 the incidence was 0.7%, corresponding to 59,389 students, compared to over six hundred thousand in 2009.

Table 1a. Presence of foreign students in Italian schools

School year	Aggregate	Infant school	Primary school	Lower secondary school	Upper secondary school
1996/1997	59.389	12.809	26.752	11.991	7.837
...					

2001/2002	196.414	39.445	84.122	45.253	27.594
2002/2003	239.808	48.072	100.939	55.907	34.890
2003/2004	307.141	59.500	123.814	71.447	52.380
2004/2005	370.803	74.348	147.633	84.989	63.833
2005/2006	431.211	84.058	165.951	98.150	83.052
2006/2007	501.420	94.712	190.803	113.076	102.829
2007/2008	574.133	111.044	217.716	126.396	118.977
2008/2009	629.360	125.092	234.206	140.050	130.012

Table 1b. The percentage of foreign students in Italian schools

School year	Aggregate (%)	Infant school (%)	Primary school (%)	Lower secondary school (%)	Upper secondary school (%)
1996/1997	0,7	0,8	1,0	0,6	0,3
...					
2001/2002	2,2	2,5	3,0	2,5	1,1
2002/2003	2,7	3,0	3,7	3,1	1,3
2003/2004	3,5	3,6	4,5	4,0	2,0
2004/2005	4,2	4,5	5,3	4,7	2,4
2005/2006	4,8	5,0	5,9	5,6	3,1
2006/2007	5,6	5,7	6,8	6,5	3,8
2007/2008	6,4	6,7	7,7	7,3	4,3
2008/2009	7,0	7,6	8,3	8,0	4,8

Source: Department of Education (december 2009)

In the 2009/2010 school year only 12.6% of the classes of primary school and 10.4% of the classes of secondary school have no foreigners students. 69% of primary school classes have an attendance rate below 15% foreign and 2.4% of classes have a wide presence from 30 to 45%. The trend also appears in middle school classes.

Table 2a . Percentage of classroom with foreigners (Primary School)

Italy	Foreigners in primary school						
	Zero	<15%	15-30%	30-45%	45-60%	>60%	Aggr.
Number of classrooms	1.953	10.675	2.355	368	89	20	15.460
	12,6 %	69 %	15,2 %	2,4 %	0,6 %	0,1 %	100 %

Table 2b . Percentage of classroom with foreigners (Secondary School)

Italy	Foreigners in secondary school						
	Zero	<15%	15-30%	30-45%	45-60%	>60%	Aggr.
Number of classrooms	723	4,933	1.145	123	16	3	6.943
	10,4 %	71 %	16,5 %	1,8 %	0,2 %	0	100

Source: Department of Education (march 2010)

Theoretical framework

Recent education for sustainability literature advocates holistic integrated concepts of sustainability that include the social, economic, political, cultural and ecological dimensions of the environment and sustainability, along with teaching and learning pedagogies that are process-oriented and seek to develop critical thinking skills and actively engage learners (Tilbury et al. 2005). That teacher professional development should be enquiry-based, participatory, community and action-based, collaborative, and reflective in practice. The most successful, widespread and long-lasting initiatives we reviewed were those that reflected environmental education and/or education for sustainability 'best practice' in both program focus and pedagogy.

Another factor critical to the success of the initiatives reviewed was the congruence between the teaching and learning processes promoted and the principles of environmental education and/or education for sustainability. These principles call for the development of:

- critical, creative and futures thinking skills to develop alternative and innovative solutions to sustainability issues;
- ESD assessment and action-oriented skills to motivate, manage and measure change towards sustainability;
- interpersonal and intercultural skills in order to redefine relationships amongst the various stakeholders;
- confidence and skills to deal with uncertainty;
- learning through engaging with real and specific problems or tasks; and
- learning about and for sustainability (Tilbury, Podger and Reid 2004, p. 7).

The purpose of school is the formation of an environmental conscience. In this way the child interprets and thinks for connections and interconnections (Pinto Minerva, 2008).

Research methods

Research questions

The research aims to determine whether the teaching methodology, principles and outcomes produced Education for Sustainable Development (ESD) promote processes of integration and multi-culture in different frameworks:

- The environment is natural context for the relationship between people? (environmental and social framework)
- What's skills of EE and of intercultural education are related in the drafts ESD (educational and cultural framework)?
- Students participating in projects of ESD develop social skills that improve the outcomes of processes of integration / intercultural? (Social framework)
- What teaching skills and education needed for environmental educators to improve their actions? (Educational framework)
- What skills are needed for teachers to do educational projects at school? (Educational framework)
- The schools organize ESD projects have benefits for the processes of integration and interculturalism? (social and educational framework).

Also, in adherence to the draft regional environmental education, to emphasize and highlight the role of environment as a social and community dimension, the research aims to verify the achievement of general objectives:

- raise awareness on climate change and their social implications;
- achieving integration between school size and good governance and virtuous;
- build coherence between educational practice and management of the concrete reality of life for the whole school community;

seek and strengthen common meanings and background regarding environmental education and sustainability.

Research design

Research was held in the school years 2009-2010 (first phase of implementation of environmental education projects in the schools) and the first part of the school year 2010-2011 (closure of projects and collection of outcomes) which provides:

- analysis of models of teaching of ESD;
- analysis of the cultural context and paths of integration / interculturalism;

- administering questionnaires to teachers and environmental educators;
- identify target schools with significant percentages of foreign students who have done projects for ESD;
- interviews with teachers and environmental educators;
- identifying links between ESD and intercultural processes.

Table 3 . Subjects involved in research and survey instruments

	survey instruments	Data collection
students involved in EE projects (a sample of eight target schools)	Focus group (Agenda21 model)	A collection of useful data to highlight the categories that connect the ESD and intercultural dynamics. Organisation of focus groups on two frameworks: environmental and intercultural.
school teachers who have subscribed to the regional draft of EE	Questionnaires (entire sample) and interviews (significant sample)	Comparison of methodologies and teaching strategies on ESD and intercultural education, including in relation to classroom climate and interpersonal relationships.
environmental educators and referents of structures that have developed projects EE	Questionnaires (entire sample) and interviews (significant sample)	Analysis of the contents and methodologies of projects and their reading in a intercultural logic. Analysis of teaching methods and pedagogical considerations.

Research context and setting

The search is on the Ligurian territory and involves 15 environmental education centers and a sample of 29 schools (21 primary and 8 lower secondary schools) involved in the regional project:

Province of Imperia: 2 environmental education centers and 2 schools

Province of Savona: 5 environmental education centers and 9 schools

Province of Genoa: 5 environmental education centers and 11 schools

Province of La Spezia: 3 environmental education centers and 7 schools

Eight target schools were chosen to study the issues on the basis of variables: number of foreign students and important projects (for the duration and territorial importance) of ESD.

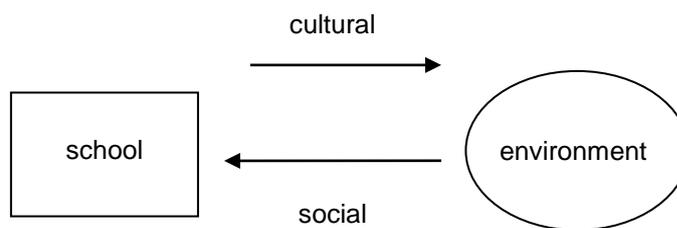
The data collection

The first part of the research analyzed the responses of teachers in schools and environmental educators who designed and conducted environmental education activities in the classroom. Qualitative data collected can be grouped into three areas:

- social and cultural context
- environmental framework
- educational framework

The relationship between the school and the environment (natural) is reinforced by the responses of teachers and educators. The school defines environment with educational and cultural meanings. Nature becomes: relational space, the pool of exhaustible resources, new and renewable resources, cultural object (ecology, energy, immigration, human rights, economic, philosophical reflections, ethical and theological). The environment is a social space with many possibilities and differences. The school must use this space as an educational resource. EE projects must come within the school based on cultural and disciplinary reasons.

Figure 1. The relationship between school and environment



The connections that emerge between environmental education projects and principles of intercultural education (table 4) highlight the enormous educational potential of the projects. Students have so many opportunities, spaces and tools to build knowledge and skills that will lead them to pursue a full social participation. Participation in civic life warrants the exercise of the human person in relation to the environment and the community.

Table 4. Connections between the educations

<i>education for sustainable development</i>	<i>intercultural education</i>
environment as a system of relations	equal access to resources
man as part of the ecosystem	community
diversity and relationships in a systemic logic	Citizenship and individual and collective responsibility

participation and democracy	Peace, justice and freedom
intergenerational equity	Life Project
quality of life	Right to health and education
rights of the living	Human Rights

The responses of teachers and environmental educators have been grouped in four areas of skills and knowledge: knowledge of ESD, skills of ESD, educational skills, educational design skills. The figure 2 shows, with different widths of the rims, the skill levels of the two professions. The arrows indicate the possible exchanges between teachers and educators. The data collected did not show significant differences between primary and lower secondary teachers.

The educational skills of teachers must pass to environmental educators. In this way they will improve their professional skills of ESD. It is important that the skills are well identified and translated into meaningful activities and products. The school has become the context in which born the ESD projects, based on the interests of students and cultural and historical variables. The scientific training of environmental educators, weak in the educational and pedagogical dimension, is an important resource for teachers. Science and environment issues offer concrete themes, easy to understand by students. Education for Sustainable Development is able to combine and match all these variables (figure 3).

Figure 2. Skills gaps and debts between teachers and environmental educators

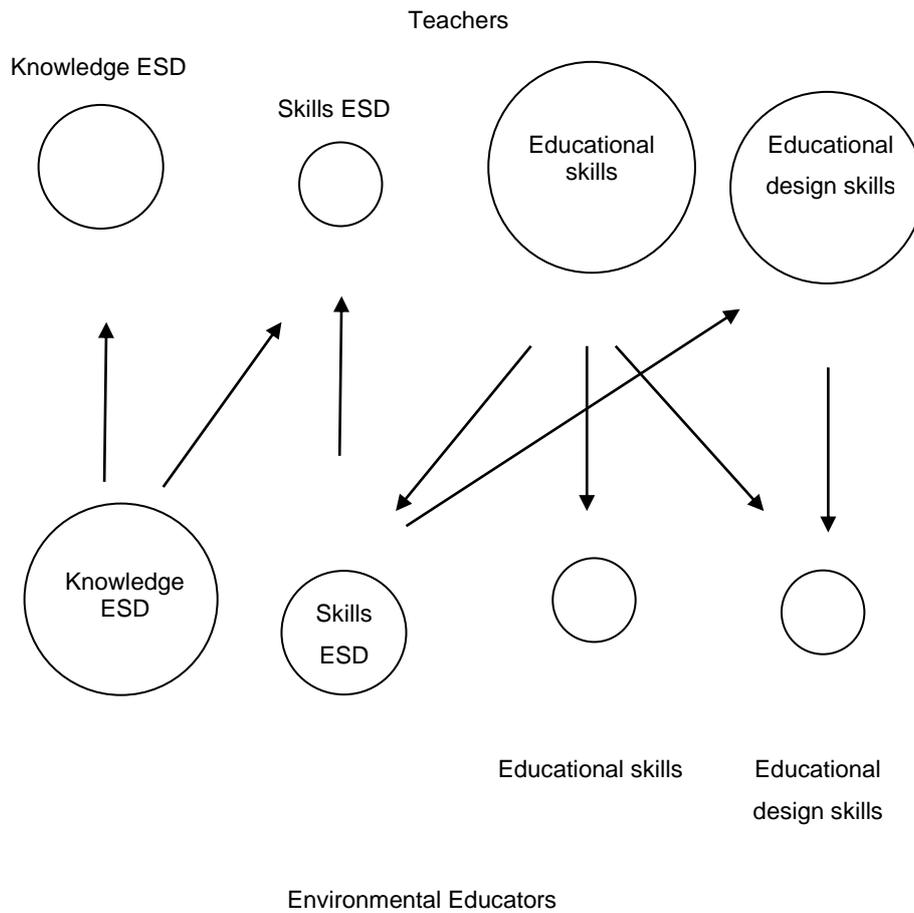


Figure 3. Dimensions and indicators of sustainability

<p>SUSTAINABILITY OF KNOWLEDGE</p> <p>Interdisciplinarity</p> <p>Contemporary</p> <p>Attention to risk and uncertainty</p>	
<p>SOCIAL AND INSTITUTIONAL SUSTAINABILITY</p> <p>relationship with the territory</p> <p>Participation Democratic</p> <p>Self-Assessment</p> <p>Research</p> <p>Conflict management</p>	<p>EDUCATIONAL SUSTAINABILITY</p> <p>experience and reflection</p> <p>flexibility and diversity</p> <p>integration</p> <p>exchange between cultures</p>
<p>ECOLOGICAL AND ECONOMIC SUSTAINABILITY</p> <p>report local / global</p> <p>report environmental / re source</p> <p>Sustainability and respect of the limits and time</p> <p>Emergency Management</p>	

Source: (Varani 2008, 154)

Results

The scientific debate still revolves around the possibility, or convenience, that environmental education can become a discipline. In this way the position of ESD would be the center of learning. This report (internal-external) determines the characteristics of ESD:

- interaction between school and territory (exchange of experiences and cooperation, even in politics);
- "working and experience", living the size thoughtful, sensitive and emotional;
- research and action to be shared between students, teachers and educators;
- interdisciplinarity;
- value differences;
- flexibility;
- to produce change in behavior and values.

Proponents of the position outside the school, programs and content, but stresses the leading role of observer and transverse. ESD is a living part of life, everyday problems and emergencies, resources and future space. From outside the ESD can observe and coordinate the interests of the social community, the choices and the actions.

A tool that could bring the two neighboring positions is teacher training. Teacher education is widely recognised as a key strategy that is yet to be effectively utilised to embed environmental education and/or education for sustainability in schools.

Discussion: designing and assessing between environmental and multicultural education

From data obtained by the survey, we can indicate the benchmarks and the guidelines to support the teachers in planning and designing educational activities in natural environment, directed towards the integration of foreign pupils and the creation of a meaningful group of students. This paragraph is aimed at highlighting the most suitable teaching methods to create an environmental and multicultural classroom. For these reasons, we are focusing on some pairs of words which show the path to design and assess the school activities directed toward those purposes.

- Multicultural-Individual class. A class is always a multicultural class even if there are not any foreign students. In this case too, the pupils are different in their learning level, their previous experiences and their future chances of learning development. Therefore, teachers must manage the class as a multicultural environment trying to create many opportunities to link the individuals and create an interactive context.

- Natural-artificial class. The class lives and develops the relationship among its members in a certain environment, the classroom and the school, probably. To design meaningful activities between environmental and multicultural education, teachers must consider the features of both natural and artificial environments and they must try to think about the connection among them: the changes caused by mankind, the sustainable exploitation, the different impacts on natural surroundings of various cultures, the different ways of life in relation to the use of both natural and energy resources, etc. Lessons must be designed so that experiences in natural environment can solicit and focus the relationship between the cultural origins and the relation with nature. In this manner, teachers and students can build a common background where they underline both shared visions and critical point of various lifestyles originating in several environments and cultures.
- Storytelling-silence. To connect environment and multicultural features of their class, teachers must design activities where students can experiment many opportunities to tell their own experiences. The interaction among pupils is the basic option to build a complete learning context. In particular, the survey shows that the activities in natural environment facilitate the development of interaction among students and, consequently, teachers can deal with multicultural issues better in that context. The data proves that natural environment supports the narration of pupils about their experiences but, as we underlined in the previous point, it is important that teachers link the activities in the natural environment to ones in the classroom to create a cohesive learning environment and continue the building of the group begun out of the school.
- Cohesion-fragmentation. The development of the group of the students is the main indicator to assess the validity of the activities carried out between natural environment and the classroom. If the cohesion of the group increases, it means that the interaction support the multicultural growth of the class. So, the cultural differences don't disappear but students can integrate them in an educational framework.
- Learning-learning cultures. Any instructional design focuses and deals with many elements: knowledge, skills, social aspects, educational aims, disciplinary topics, etc. Learning in the multicultural classroom is not only directed toward the knowledge of the costumes and traditions of a country but also to the development of the different learning cultures. Mind processes are culturally situated because they are developed in different contexts and situations (Nigris 1996). Teachers must face the various cognitive features that the different cultural models of origin shaped in every students to orientate them toward the creation of common skills. In particular, teachers can

observe the development and the changes in the “environment learning” that is if the students change actually their everyday behaviour as regards the issues concerning the environmental education.

As the reader can note, we have written these pairs to help teachers in designing and assessing their educational and instructional activities. So, the words have to be used as benchmarks for the action of teachers in and out of the classroom, toward the building of an integrated learning environment where "learning" can have the following meanings: cognitive, social, multicultural, interactive, emotional, environmental learning.

Conclusion: new guidelines for in-service and pre-service Teacher Education

«In a world trying to come to grips with a major financial and economic crisis, with environmental degradation and climate change, with social tensions and conflict, there is growing global consensus that the international community must unite to prepare for a better common future. This consensus was anticipated by the decision of the UN General Assembly to create a Decade of Education for Sustainable Development (DESD), running from 2005 to 2014, in recognition of the critical role that education plays in development. But it is not just any kind of education. It is about learning for change and about learning to change. In particular, it is about the content and processes of education that will help us to learn to live together sustainably and teachers are the cornerstone of education for sustainable development» (Matsuura 2009).

This quotation by UNESCO Director-General at Bonn World Conference, underlines some basic points suitable for building an educational path for both in-service and pre-service teachers. As a matter of fact, in the last paragraph, we want to indicate some guidelines for the creation of a refresher course where teachers with many years of experience on workplace can discuss and debate with student teachers.

The data emerged from the survey and the suggestions of UNESCO Director, underline the basic points indicated as follows.

- Sustainability linked to inter-dependence: closely linked to the idea of sustainability is the concept of inter-dependence, so teachers have to arrange lessons on environmental education where the students can interact among themselves and further authorities (municipalities, ministry, etc.), agencies (people in charge of wildlife reserve, educators working in multicultural settings, etc.) or scholars.
- Multi-stakeholder partnerships: consequently, a course for pre-service and in-service teachers must solicit in the participants, the creation of an educational project where environmental and multicultural education are dealt with together and connected with many public and private actors.

- Community projects: the course must be directed to the building of a project that involves the community of participants. This is important because, when the teachers work in the classroom, they have to stimulate the growth of a community among students, schools, parents, etc.
- Not limited to particular topics or curriculum contents: the course must not be limited to particular topics. Environmental and multicultural education are two transversal aims which are obviously involved in the teaching other subjects. For this reason, the activities of the course (and ones that teachers will carry out at school) must be interconnected and linked with the different activities of science, history, geography, etc.
- All levels and modalities of learning: the suggestions arising from the course can be applied at all school levels and they can solicit various kind of learning (interactive, metacognitive, structural, individual, team, etc.)
- Agent of change: environmental and multicultural education can be read as an agent of change in the relationships in the classroom but also in school, families and local, regional, national and international communities. The main objective of the course is the change of the everyday behaviour of the students as regards the environment and the idea of the relationship between native and foreign people.

Along with these overall benchmarks, the refresher course can be structured in the following manner. The learning environment must be managed as a workshop with different moments:

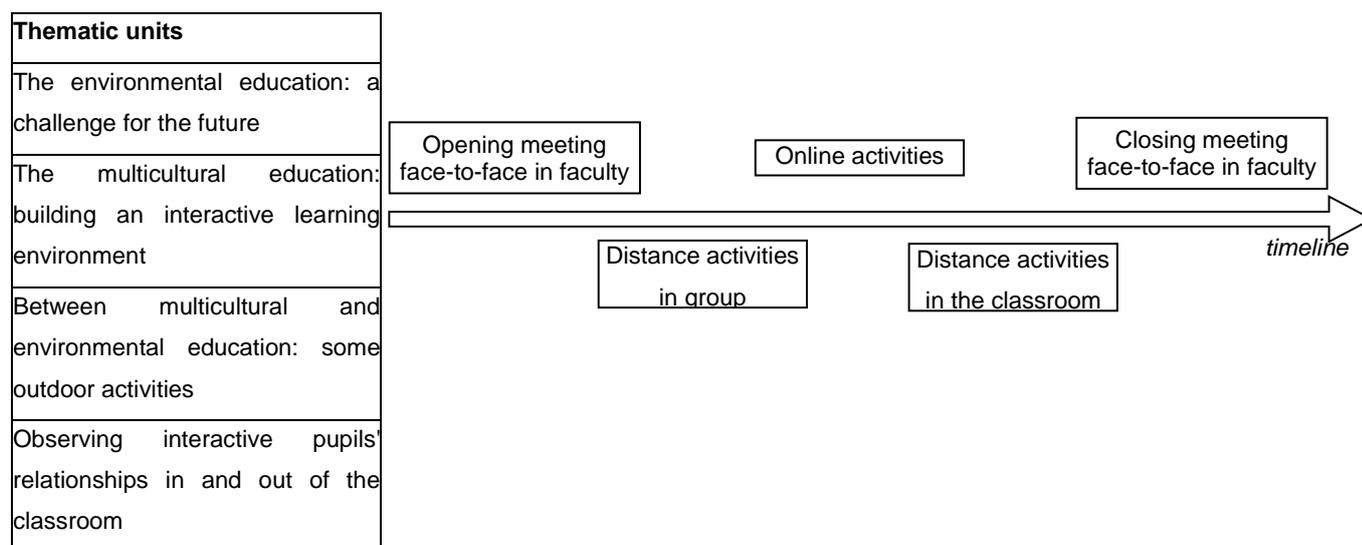
- Partition of activities into thematic units: the course is divided into some units as those indicated in the following table. The units must focus the main topics about environmental and multicultural education highlighting, above all, the relationships between these approaches. Outdoor activities represent the key-point for the course but it is also important to train the teachers to observe the pupils' behaviour both in and out of the classroom. As a matter of fact, the most important feature is to create an interactive environment where native and foreign students can build and develop meaningful relationships continuously in two ways: from outdoor activities to the classroom and vice versa.
- Meetings face-to-face: the course provides an opening and a closing meeting face-to-face in the faculty for each thematic units. During the first one, professors can start the unit and explain the topics which the teachers will analyse during the unit. The second aim is oriented to the presentation of theoretical frameworks, the discussion of them and the beginning of the organization of distance activities. The closing meeting is useful to debate problematic aspects surfaced during distance activities and online discussions. During the closing meeting, professors and student teachers can analyse and review the symmetric knowledge advancement (see Scardamalia 2002) to check

both the individual and team learning. Of course, it is possible to add some additional meetings in presence if the participants have too many difficulties in carrying out the activities in group and in the classroom because the online support is not enough.

- Distance activities in group: after the opening lesson, professors divide the participants into small groups (4-6 members). Each group has to develop three points:
 - study the topics thoroughly by reading articles, papers, books and report of school experiences;
 - discuss them to identify the guidelines for improving their own planning and assessment skills;
 - arrange the activities to be carried out in the schools afterwards.
 - Each group must upload its tasks on the e-learning platform to communicate and share the results with other groups.
- Distance activities in the classroom: each member has to put into practice the activities designed during work group. Probably, they will manage outdoor activities with students about the environmental education arranging tasks in small groups formed of Italian and foreign students, so they can interact.
- Online activities: during the distance activities both in group and in the classroom, professors have to support the participants' activities through the e-learning platform. They exhort them to debate online so that difficulties and features can emerge, so they can monitor the activities to emphasize mainly the unexpected difficulties. In addition, they can suggest some activities to be carried out in the classroom or they can improve the ones already arranged by the teachers.

The last figure shows an example for a schedule of the course integrating moments dedicated to reflection, planning, action, assessment.

Figure 4. Schedule of refresher course



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Teacher trainees' Work Effort. What can University Colleges Do to support Students in Their Efforts to Follow the Prescribed Progression of the Study Programme?

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Abstract

Teacher training in Norway involves school teacher and pre-school teacher education. In these courses, the students are now using more time to complete their studies than before. It is therefore crucial to find out what the institutions can do to counteract this tendency. In this connection we felt it important that the students evaluate their own efforts and the study programme.

In this article we will therefore investigate those two main issues: (1) The students' evaluation of the programme. (2) What can university colleges do to support students in their efforts to follow the prescribed progression of the study programme? These research questions will be explored by analysing data gathered from a survey of 230 students in teacher training and some other studies (social studies etc.) and semi-structured annual interviews of a group of teacher trainees which have been conducted over a three-year period from 2006 - 2009.

Keywords: *Teacher training, work effort, motivation, progression*

Introduction

The quality of education is in focus all over Europe. One part of this discussion in Norway often ends up in a definition of the quality of teacher education (pre-school teacher and school teacher). Over the last years it has been commonly acknowledged that students are taking more time to finish their studies than expected. It has also been said by several sources that the quality of both those who are accepted for teacher training courses and

those who graduate from teacher education is not satisfactory. The content, structure and length of the teacher training has also been debated and criticised. A new model for teacher training in Norway has been initiated in the autumn of 2010. The major changes include the transition from one to two avenues to attain teaching degrees. Previously, we had a school teacher education that covered primary and secondary school, ages 6 to 16 years. Today we have two degree courses: one for those aspiring to teach pupils in the 6-12 year old bracket, and one for 10-16 year-olds. In addition, we have the NOKUT (Norwegian Agency for Quality Assurance in Education) assessment of pre-school teacher education that will lead to some changes at a number of education institutions. Our data are taken from a period before these changes.

Issues

It seems important to investigate what happens to the teacher trainees during their teacher training, especially in terms of competence and motivation. In this article we look at the following issues:

1. Students' evaluation of the programme, including their mastery of the course and their motivation.
2. What can the College do to ensure that student teachers complete the program?

“Mastery” is about how students evaluate their own work effort.

“Motivation” includes how satisfied students are with different parts of the programme.

Research methods

This research project started in the academic year 2007-2008 and will continue through the academic year 2010-2011. In the spring of 2009, we conducted a survey among 139 pre-school students (Bachelor), 126 teacher students (4th-year), 23 students on the bachelor's degree in globalisation and 16 students on the bachelor's degree in agricultural engineering. The overall response rate was 75%. The results in this article are mainly based on this study. From 2007-2010, semi-structured interviews with 7 teacher students who had left the college and 12 teacher students who were taking the Teacher Education programme were also carried out. The interviews were carried out once a year during three years. The questions

from these two surveys were partly overlapping, and some results from the interviews will also be presented in this article.

Weaknesses and strengths of the study

As mentioned, this survey was conducted in the spring of 2009 and the response rate was 75%. The reason why it was so high was that it was carried out on paper and filled out in compulsory classes. In the interview survey those who wanted to participate were chosen. It was not a random selection, but participation was voluntary. This has led to the fact that the selection was skewed in the sense that it appears that the best students were over-represented. The strength of this selection is that students are strongly motivated to being interviewed. Despite this imbalance, we believe that we have obtained important information about students' efforts. And because some of the questions in the survey and the interviews are the same, this potential weakness is to a certain extent minimised when we analyse the results from the survey.

Theory basis

As mentioned in the introduction, we will in this article consider the teacher and pre-school teacher students' work effort, and what colleges can do to get more students to complete their education within the prescribed time. Theoretically, we will therefore look at the social psychological and cultural sociological theory for this study.

Maehr and Braskamp (1986) examine personal investment, and Deci and Ryan (1985; 1991) examine self-determination and motivation. Maehr and Braskamp's theory emphasises that the effort a student makes in a programme or profession is a result of the individual's own feeling of competence, self-perception, i.e. the feeling of knowing and mastering their studies or profession. A pre-school teacher trainee or a school teacher trainee who has inner motivation is primarily motivated for the study and the profession and the tasks due to the fact that the teaching profession and the ensuing tasks are rewarding and interesting in themselves. This does not mean that other external factors, such as wages and working conditions, are of no importance. For other pre-school teachers and school teachers, external motivation may be the most important. Maehr considers the personal investment in the profession to be the core of social motivation, how the person invests his resources, such as time, skills and efforts. Personal investment is a result of the inner motivation a person has for the programme or profession; his personal "investment". According to Maehr, the

experience of gaining professional expertise is what gives meaning to a person in their study or work situation. How meaningful he experiences the situation will be crucial for his personal investment.

E.L. Deci and R.M. Ryan (1985; 1991) have based their theory about inner motivation on a broad sense of learning, where they include the cognitive and affective dimensions and interaction. They look upon learning as a process that stimulates the best in situations where a person's autonomous choice, competence and emotional sense of belonging are well supported. The importance of self-perception or appreciation of a person's own skills (feeling of competence) is shared by Maehr and Braskamp's theory. Deci and Ryan see the self as an active entity and emphasise that it is primarily the motivation processes that lies behind the inner growth one talks about when one uses the terms "self-determination" or "self". They consider that inner motivation is characterised by:

- Behaviour with no form of external reward present
- Activities which the person engages in for pure interest
- Activities that are optimally challenging
- Behaviour or activities that have a basis in psychological needs

Moreover, Deci and Ryan consider that there are three main groups of psychological needs that form the basis for internal motivation:

- The need to be competent (competency requirements)
- The need for self-determination (the need to realise oneself)
- The need for belonging (social and cultural)

Other surveys

Dæhlen conducted a survey in 2000 about the motivation for the choice of study. She distinguishes between uncertain, dedicated, committed and distant students. She found that just under half of the new students were uncertain of their education choice, 15% were dedicated, 40% were engaged and 13% were distant. The largest share of dedicated and enthusiastic students she found among the teacher trainee students. She also found that about 82% of the teacher trainee students in the beginning of the programme had rejected other programmes. It may indicate that they were relatively well motivated for carrying through with their teacher trainee studies (Dæhlen 2001).

There are a number of other studies that deal with students' work and time spent (Kvalbein 1999, Hovdhaugen og Aamodt 2006, Bratterud m.fl. 2003 og Steen Olsen 1997). These will be referred to later in the article.

Results and discussion

We have in this result and discussion section chosen to focus mainly on the following:

- Students' assessment of their mastery of the course.
- Students' motivation for the study

To provide a background for how students evaluate their own mastery, we first asked the students about how many hours they work with programmes per week. The chart below shows what they answered this question.

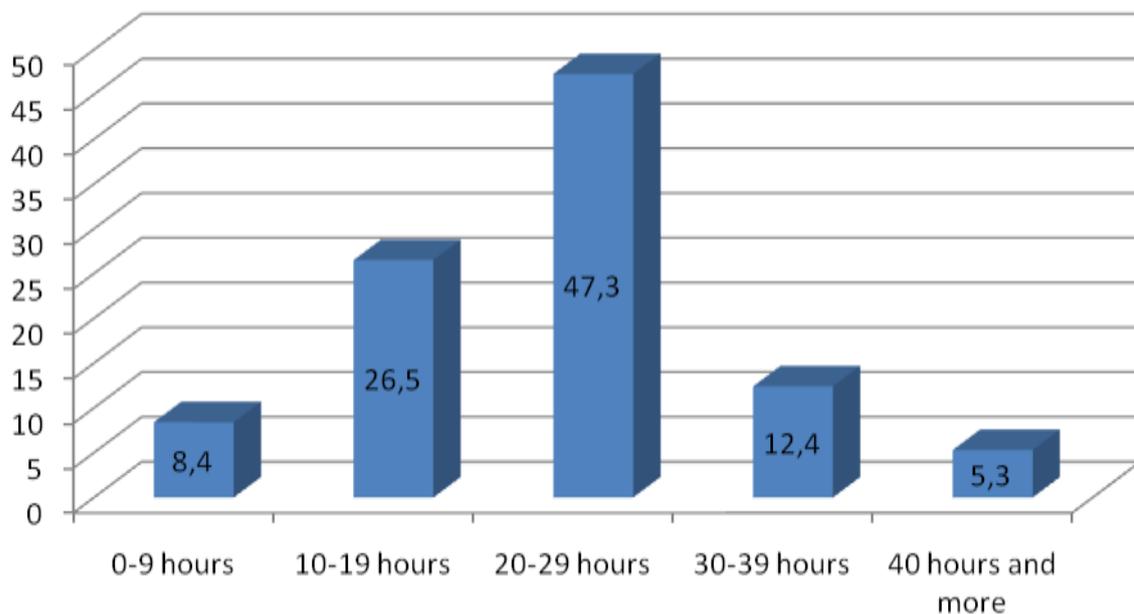


Figure 1. Hours per week spent on study.

Here we can see that just under half the students said they spent between 20 and 29 hours per week on their studies. The average is approximately 23 hours. In the interview survey the students answered that they worked between 30 and 40 hours a week with their studies. The selection in this study was, as mentioned earlier, possibly skewed because they volunteered to participate, and it is reasonable to assume that many of the participants were "strong" students.

Figures from the survey, however, match with previous surveys. Kvalbein and Hovdehaugen and Aamodt found that many teacher students worked a total of between 20 and 25 hours of study per week (Kvalbein 1999) (Hovdehaugen and Aamodt 2006). Steen-Olsen found in a study from 1997 that the time spent among university and college students from different

course of study on average was 31 hours per week. She points out that teacher trainees were the lowest and thus lower than 31 hours. She also refers to similar studies that do not deviate greatly from her findings. (Steen-Olsen 2000). Another interesting survey by Marianne Dæhlen at Oslo University College shows that 25.9% of student teachers **expected** that they would have to work 21-30 hours a week on their studies. It would seem that these students have an expectation of a similar effort in relation to the effort they actually do later (Dæhlen 2001).

An important consideration in this context is how much paid-work students have outside of their studies. Of the 142 students who answered this question, 21% answered 1-9 hours, 26% 10-19 hours, 14% 20-29 hours and 4% 30 hours or more. In the interview survey, we did not ask directly if they had work outside of their studies, but on the question as to whether they faced financial obstacles in the study, some of them answered that they did have paid work.

Students' assessment of their mastery of the course.

We asked the question as to how well the students felt that they generally mastered the programme. The chart below shows the results.

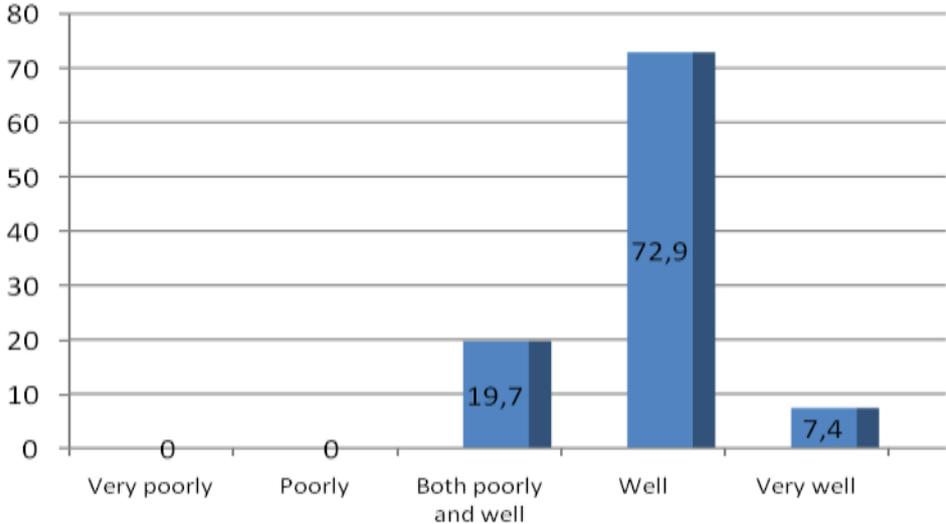


Figure 2. General mastery

It turned out that none of the 229 students felt that they mastered the program poorly. 73% felt that they mastered the course well, but not many responded very well. The fact that nearly 20% reported “both poorly and well”, may be an indication that they make a distinction between mastering the different parts of the program. The fact that the students say they have mastered the study so well is interesting in relation to the fact that they are not using too many hours on their studies and the fact that many of them have a considerable amount of paid work alongside.

As we approached the details, it appeared that the students felt that they mastered the studies better in collaboration with others than by working independently. 73% answered well / very well at mastering the course through cooperation, while 60% answered well / very well at mastering it independently. In the interviews, the answers were almost 50/50. When it came to mastering theory versus practice in the study, 61% answered well / very well at mastering the theoretical aspects of the study, while 86% said the same on the mastery of practice. That is a significant difference. In the interviews, a few more said that they mastered practice best. As one said: *"Yes, it's much easier to learn when you attend the practice - rather than to sitting alone and trying to grasp the theories."*

In this context, it was also interesting to learn about students' attendance in classes at the college. It turned out that 94% of students said they often or always attended the scheduled classes. In the interviews, most of the students said that they almost always attended classes. Both pre-school teachers and teacher students have to meet the requirements for attendance at compulsory classes, which may explain some of the high attendance rate, but the figure seems high compared with the impressions of colleagues who claim that the attendance has at times been poor in recent years.

We asked the students to say something about the reasons for their absence. We had offered a number of options, and it turned out that the following response options had the highest score: "Teaching is not interesting" (78 of 200), "Teacher(s) are not competent enough" (66 of 200) and "Teacher(s) is/are not inspiring" (62 of 200). It may seem that these are high numbers, but we should remember that the attendance rate was in general high as mentioned above, and this was what they said **if** they were not present. Paid employment was also mentioned. The options that received the lowest score were "poor or no learning environment" and "Studying without attending the classes." In the interviews, many said that illness is the main cause of absence from teaching. Some said that the quality of teaching was a vital factor, while some said that they sometimes had to prioritize other things, such as writing assignments and family tasks. *"There are some days ... when the classes are not compulsory and you feel there are things at home that have a slightly higher priority on that particular day. Apart from that, I've been here almost every day. "*

Motivation

We have been concerned with students' assessments of satisfaction and achievement in the study. We believe that the experience of satisfaction and mastering are two important parameters for students' motivation for studying. The quantitative data show that we have students who are highly motivated to study.

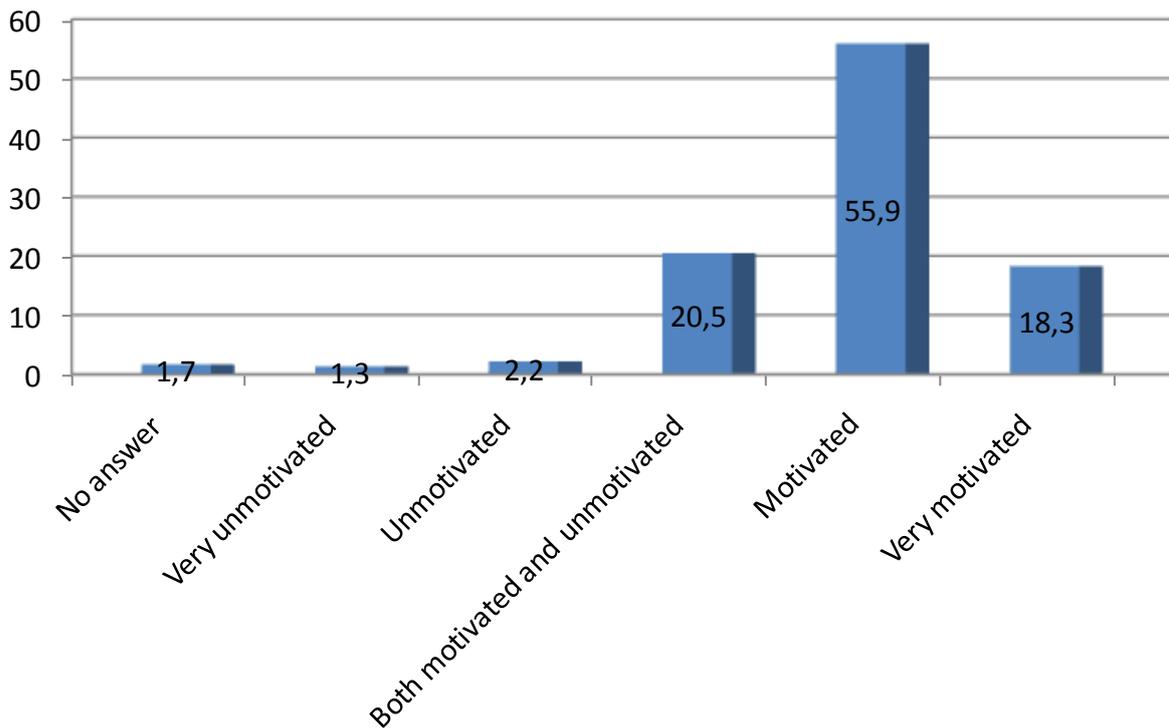


Figure 3. Motivation for the study.

The chart above shows that we have almost 75% of the students who are "motivated" or "very motivated" for their studies. Only 3.5% are "unmotivated" or "very unmotivated." These are very positive results for the college. The qualitative data from the interviews matched very well with the quantitative. One of the students put it this way in answer to the question about what motivated him for the studies: *"To reach goals - knowing that I can master more things - that I learn more things - and that I develop as a person - that I learn things that I can use"*. Several students pointed out that the inner motivation was more important than the outer.

In a survey from 2003, the data show that 64% of preschool teacher students had a high level of motivation in the first year, while the percentage had decreased to 50% in the second year (Bratterud et al 2003).

Our students are very motivated to start working as teachers (see the chart below). As many as 86% are "motivated" or "very motivated". One of the students interviewed put it this way: *"The fact that this is what I'm interested in - that this is what I've wanted all my life, really. But I have not had the opportunity until now. This is what I want to work with - then that will be motivation in itself."* Another student said that motivation is *"...to come out and be the most fantastic teacher anyone could imagine."*

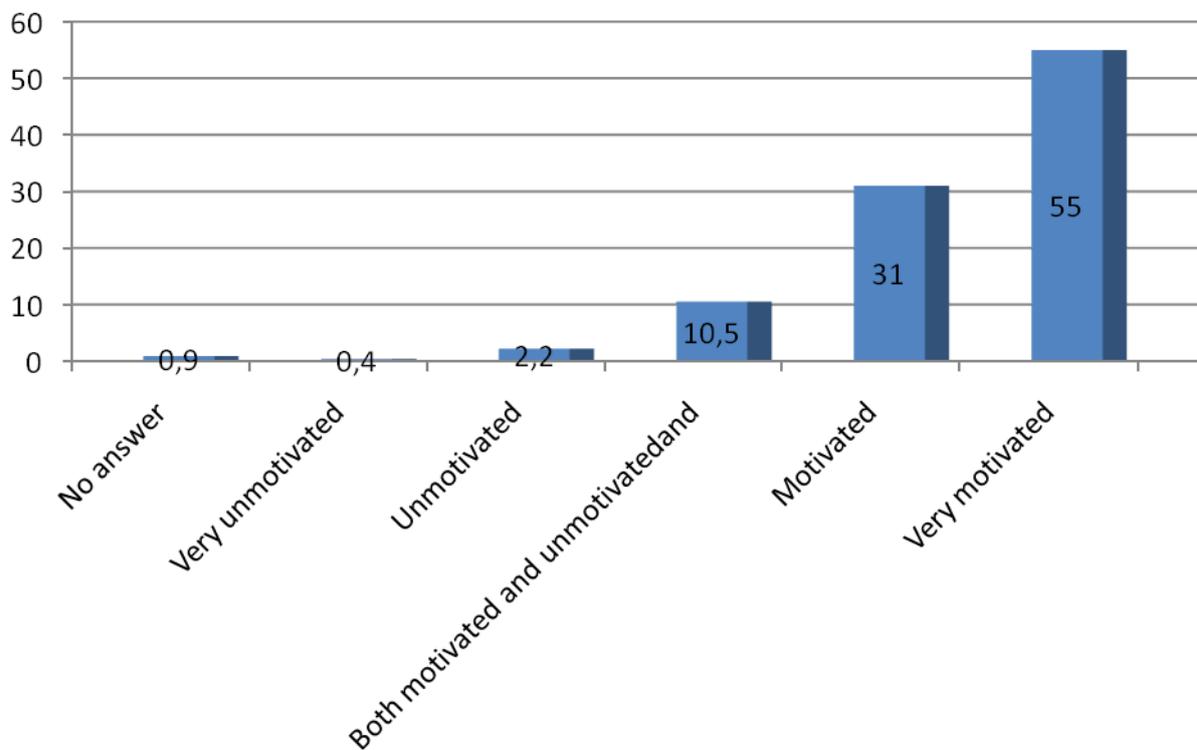


Figure 4. Motivation for work after study

Students' evaluation of the program

In our quantitative study, we wanted to include information about how well our students were satisfied with various parts of the program. The first question dealt with teaching. 58% answered that they were "satisfied" or "very satisfied". Nearly 40% answered "both and". The remaining 2% answered "not satisfied." We have a large percentage of students who are

satisfied with the teaching they receive and this is naturally very positive. But we also have a high percentage who answer "both and".

If we look at the responses from the qualitative data, we can get an idea of this "both and" category. One of the first year students pointed out the lack of updated material from teachers. *"It (the article) was written in 1991 and it is the year I started in first grade (in the primary school). And from this (outdated article) we were supposed to discuss the "good teacher" in 2007 and I think this was wrong"*. Another first year student pointed out the teachers' competence in communicating: *"Yes, the lectures have been very good. There are some of them I'm getting a little strained relationship to – that's not personal - but in the context of lectures, for there are some (teachers) that are extremely bad at articulating and getting their message across"*.

It may seem as if students were more satisfied with teaching and teachers by the end of the program. One of the third year students said: *"This year (...) I am satisfied with the teaching. I think we've been lucky with the teachers, and they have been quick to assist us when we needed it. I'm talking about the third year as a whole."* Another third year student was very pleased: *"Right now after Christmas has been absolutely phenomenal"*. One of the first year students offered some advice about the variation in teaching activities: S/he felt that there should be *"variation. That there should be both written work and lectures and that there are a variety of activities."* Several students pointed out that they wanted variation in the lectures. In the interviews, we asked directly about satisfaction with the teachers. The students were generally very satisfied. Here are a couple of answers that are representative of the students: *"Yes I feel that everyone takes good care of us. But I noticed as soon as I started here that we were taken care of and welcomed". "I have been very positive to the lecturers and think they are very good speakers"*.

The students receive a great deal of guidance from the teachers throughout the program in relation to projects, assignments etc. and from practice teachers when students are in practice in the schools and in the kindergartens. The quantitative data show that students are more satisfied with the guidance they get in practice than the guidance they receive in the college. 77% are "satisfied" or "very satisfied" with the guidance from practice teachers. Approx. 15% answered "both and". There are fewer than 2% who are dissatisfied. These are very positive results for our teaching practice program.

When it comes to guidance from teachers at the college, nearly 54% said that they were "satisfied" or "very satisfied". Nearly 40% answered "both and" and 7% were "dissatisfied". The answers can be interpreted in several ways. We have for many years trained the school and kindergarten teachers in guiding the students; many of them are well trained. This fact can of course be very important for the executive supervision of the students. Most teaching staff at the college have no formal training in guidance and from the students' point of view

this may be perceived that they get better guidance from practice teachers than from the teachers at the college.

These responses can be viewed in the context that there are approximately 50 students of 140 who answered that they want more practical instruction and more practice. From these answers we can speculate as to whether students are ready to accept guidance from a more theoretical perspective.

If we look at the responses from the qualitative data, the students were more positive to the guidance they got in the college. None of these students was dissatisfied. One of the students answered: *"Yes, I have really been very happy with (the guidance) - got something out of it"*. Another student said: *"She was very good at saying what we should do and not do and she pointed out that we should understand what was wrong"*. Both of these examples were from the first year students. It is important for the college that students get good advice at an early stage in the program. If this is the case, more students might successfully complete their studies.

As we have pointed out earlier, the students who participated in the qualitative survey wanted to be included as informants in this research project. This somewhat selective sample of students can mean that it is precisely the enterprising and interested students who were our informants in the qualitative survey. These students were perhaps more able to receive the guidance they received than the average student.

In the quantitative survey, we also asked a more general question about satisfaction. "How satisfied are you with the program as a whole"? More than 76% were "satisfied" or "very satisfied" with their studies. More than 21% answered "both and" and less than 2% were "dissatisfied". These are positive figures for the college, but the challenge exists of course in relation to those who answered "both and".

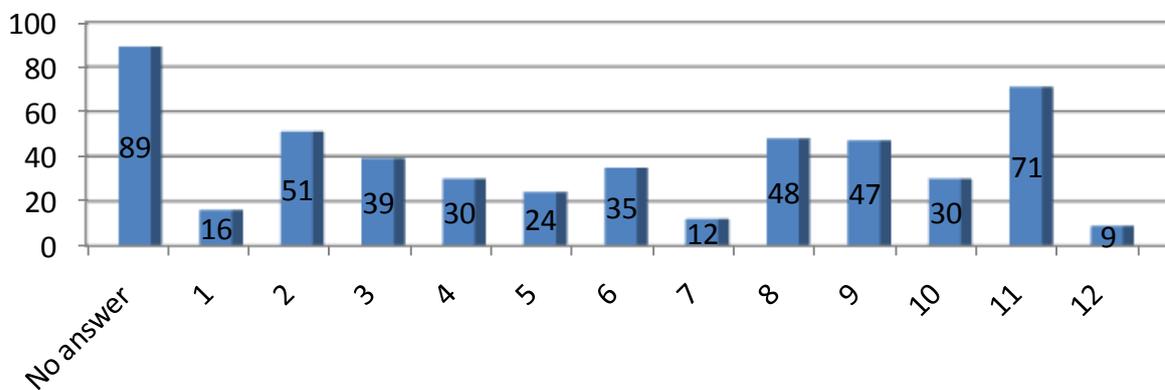
In the qualitative survey, we asked students: "To what extent do you find the work tasks in the program as meaningful?" The responses show that the students in general found the tasks meaningful. One of the students replied: *"Everything is fine"*. Another: *"I think it's good to have written exercises. That means you need to work on it, and I have to read and then I learn. I find it more rewarding to actually read for doing writing exercises than to read before a lecture"*.

These responses were from the interviews of the first year students. As we commented on satisfaction in relation to guidance, it is important for the college that the students experience the tasks of the program as meaningful straight from the first part of their studies.

What can the college do?

Our data show that we have highly motivated students. It is also consistent with the fact that 85% answered that they "never" or "rarely" have considered quitting their studies, while 12% answered "sometimes". When asked what reasons there could be if they were to stop, the students cited private reasons such as: personal relationships, family and friends. The college could not have an influence on such reasons. 89% were confident that they would complete the program.

For more information about what the college could do to help the students to complete we asked the following question: "Which of these measures will help you to complete the program?"



1. Conversation with teachers in groups throughout the program
2. Conversation with the teacher individually throughout the program
3. More compulsory attendance at classes
4. More compulsory assignments, exercises
5. More written work
6. More practical work
7. More theoretical teaching
8. More practical teaching
9. More practice
10. Better group processes (in seminars, in study groups, etc.)
11. Closer monitoring of teachers throughout the program
12. Other

We had 11 options, and finally the category "other". For this question, it was possible to respond with more options. 71 students wanted closer monitoring from the teachers, and 51

said they preferred individual interviews with teachers throughout the program. We have over the years been required to teach larger classes, which means we have less contact with each individual student than we had a few years back. Whether it is possible to meet the needs of the students in this area is a financial and administrative issue as well as it is a pedagogical matter.

Conclusion

We can conclude that our students spend somewhere between 20 and 25 hours per week on their studies, a finding which does not deviate much from similar surveys in recent years. Most students believe that they master their studies well and that they mostly attend classes. Absence may be because they are not satisfied with the teachers and the teaching. Most students are motivated to study and to start their working careers after finishing their studies. Many students are satisfied with some parts of the program, but for some students, this varies a little. Students are also more satisfied with the guidance they receive in practice compared with the guidance they receive in college. Students agree on the fact that talks with the teachers both individually and in groups, along with closer monitoring by teachers, are important points that the college can provide to help them through the program. The students want to "be seen". This is consistent with Hovdehaugen, Frølich and Aamodt's (2008) survey where they found that nearly 70% of the students said that better monitoring could have prevented dropout. Although "dropout" is not the same as "not completing" it still gives some indication

The need for further research to identify key motivational factors and any possible connections with interruption of study

Our work on this study and the issues we have dealt with have shown us the need for further research along several axes.

The first is further exploration of the possible correlation between mastery and motivation in relation to the factors surveyed in the study. These may be factors such as attendance percentage and number of hours of paid work, etc. Based on the results we would seek to determine whether it is appropriate or at all possible to regulate or influence such factors if these prove to be significantly correlated with any of the topics mentioned.

The second axis of interest could be to test the hypothesis as to whether there is a correlation between motivation and mastering early in the program and the probability of

interruption of the study at a later stage. If such a hypothesis should turn out to be true, it would further underline the importance of the work along the first axis concerning parameters that affect the student's mastery and motivation.

In addition, we envisage several other potential areas for further research in this field. Interruption of a higher education course of study has quite far-reaching consequences not only for the student but also for several other stakeholders. For the individual student involved this may have personal as well as social and financial consequences. Furthermore, this can have financial consequences for the university college involved because the financial system is result-oriented. In addition it may have financial significance since the spending of public resources fails to produce the desired results for the student and the educational institution as well as society in general.

On this basis, further investigation into this topic should be of interest to all parties concerned. There is a need to verify or invalidate the findings and possible theses on causality through further research with a higher number of respondents, with a lower risk of pre-bias in the selection of participants. For instance, the participants in our survey had all expressed their own interest in contributing.

Based on responses to the survey's questions about students' reasons for absenteeism, it may also be relevant to look into the question of the teaching skills of the academic staff. For instance, are the right topics focused and are they approached in a way that is perceived as relevant and useful to the students? A further study on quality-assurance of teaching and investigation into possible links between motivation and various presentation methods may be an appropriate approach. It may also be relevant to bring didactic aspects into this context.

On several occasions during the project we have discussed the desirability of examining these topics and their causalities as part of a larger system not limited to the situation at the specific educational institution and the students' subjective evaluation of the circumstances. In our opinion there are a large number of extra factors and conditions which may have a considerable impact on the feeling of mastery and motivation. These include factors and conditions related to the school as well as the students. For instance we consider it relevant to examine aspects of home conditions, demographic factors, development of relational patterns, experiences and results from previous education, changes in social and welfare issues after the start of higher education and a number of other factors. By exploring aspects such as those mentioned above we expect to clarify to what extent motivation and mastering and possibly dropping out can be related to such external factors. The need to elaborate this as a part of a larger system is also actualized by the fact that our study mainly focuses on the student's personal experience but only to a limited extent on external factors and causal relations within the university college as an educational institution.

In addition to expanding the scope as indicated above we would also consider including students from other educational institutions, including foreign institutions, to identify any differences between them. If significant differences occur it would be of interest to examine whether these differences can be linked to identifiable factors that distinguish the different institution from each other, or whether the main causes are outside the institutions.

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Incorporating the Findings of a Research Project on the Successfulness of Teachers into the Teacher of Engineering Program

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Abstract

The paper discusses the findings of a research project on the successfulness of the teacher's activities, as well as the use of these findings in practice. The findings have been incorporated in the practice of the teaching of certain courses in the teacher of engineering programme at the Óbuda University.

The examination of the successfulness of teachers was based on the assumption that the quality and effectiveness of education primarily depends on teachers, and that the sense of success is indispensable for the preservation of their psychological well-being and endeavour for self-development. The empirical research was aimed at a better understanding of the intrapersonal factors that enable teachers to perform their work despite the unfavourable conditions, and that this should be manifested also in the performance of their students.

In the course of the research project, those teachers were regarded as successful who considered teaching as a self-realization process, were liked by their students and whose students had good results. A total of 375 students and 31 teachers were involved in the research. The results gathered by way of questionnaires, interviews were analysed using both quantitative and qualitative methods. We have also taken and incorporated some of the findings of the research project into the concept and methods of the Pedagogy and Didactics courses in the 2009-2010 academic year.

On the basis of our findings, more effective teachers are those who discover many similarities between themselves and their students. The popularity of teachers shows a significant correlation with how important they regard being on the same emotional and intellectual wavelength as their students. It seems essential that teacher candidates should be able to adopt their students' perspective. Therefore, we analysed classroom situations and patterns of teacher behaviours from the point of view of how they would perceive and

react to them as students. Adapting to given student characteristics, teacher candidates drew up alternative teaching and development plans for a freely chosen lesson.

Our research also showed that successful teachers have the courage to change the course of a class session and use their intuition in departing from their original lesson plans. Furthermore, methods requiring the active participation of students will more likely cause a flow experience to the teachers. Elevating the level of consciousness concerning emotions and activities related to teaching (e.g. the choice of methods used) was also among our aims, in the interest of which teacher candidates could have access not only to the material to be taught, but also to the lesson plans and other notes of the teacher. Thus, at the end of the sessions, they were able to analyse the teaching process together, going through it several times from planning to self-reflection.

We examined the effect of the methods among the students attending the courses transformed on the basis of the research findings. We asked them about their perception of the specific elements of approach and methodology used, and whether these caused any change in their own perception and practice.

Introduction

The paper discusses the findings of a research project on the successfulness of the teachers, as well as the use of these findings in practice. The findings have been incorporated in the practice of the teaching of certain courses in the teacher of engineering programme at the Óbuda University. The effect of the new attitudinal elements, methods and tasks on students was examined by way of a survey conducted among them.

Methodology of the research on the successfulness of teachers

The examination of the successfulness of teachers was based on the assumption that the quality and effectiveness of education primarily depends on teachers. Therefore, the empirical research was aimed at a better understanding of the intrapersonal factors that enable teachers to perform their work despite the unfavourable conditions, and that this should be manifested also in the performance of their students.

It was our belief that in order to achieve this it was indispensable to experience the feeling of success.

In the course of the research project carried out in 2007, we regarded those teachers as successful who were liked by their students and whose students had good results, and who, in addition, also considered teaching as a self-realisation process. From among the factors

influencing successfulness, we examined the attitude of the teacher toward the students and the teaching activity, as well as the processing of the experiences as a teacher and the practical utilisation of these.

A total of 375 students and 31 teachers at a school were involved in the research project. The results gathered by way of questionnaires, interviews and classroom visits were analysed using both quantitative and qualitative methods.

The pupils' questionnaire was used for examining the popularity and the successfulness of their teachers. The pupils were asked to evaluate their academic performance, level of activity in the classroom and their general relationship to the subject on a 5-point Likert scale in connection with their most and least favourite teachers.

The teachers' questionnaire included 5-point attitude scales related to the main areas of the research project: the teachers' own sense of well-being, level or popularity and effectiveness in their own opinion, attitude to pupils, characteristics of the processing of school-related experiences, the methods used in education, and the characteristics of the preparation for the lessons. These were supplemented by metaphors and open-ended questions designed to reveal the content of the school-related experiences.

The application of the questionnaires was justified in case of the pupils by the large number of people from whom we collected data, while in case of the teachers by the fact that this way we were able to obtain data that can also be processed using statistical methods; at the same time, these also served as the foundation for the personal interviews. In connection with the abovementioned topics, we also conducted semi-structured interviews with the most and the least favourite teachers of the pupils. In the course of analysing the content of these interview texts, we examined in particular the word usage of the subjects and the coherence of their responses.

We observed the lessons of teachers who received outstandingly high or low results. In the centre of the analysis was the examination of how the pupils experienced the work and behaviour of the teacher, and what elements of the teachers' activity served as the foundation for their effectiveness which can also be identified in the performance of their pupils.

We linked the data collected from the pupils and the teachers, this way making it possible to compare the points of view of the pupils and of the teachers. On the basis of the results of the mathematical-statistical analysis aiming at drawing general conclusions, and the individual profiles drawn up of the teachers, we attempted to define those elements that can be incorporated into the teacher training which can contribute to the effectiveness of the teacher's work.

The educational concept supplemented with the results of the research

The results of the research project carried out in 2007 were incorporated into the educational concept of the Pedagogy and Didactics courses, which were introduced in the autumn of 2009. These are the commencing and root-subjects of the post graduate teacher of engineering master's programme of Óbuda University (besides psychology).

In the following, the general, theoretical foundations of the abovementioned subject will be briefly described first, which are independent of the research project, following which the methodological elements based on the research findings will be discussed in the individual subsections.

The majority of students in the teacher of engineering programme have engineering degrees. Most of them already work as teachers, but have no degrees in pedagogy or teaching certification. This is why it is important that the classroom discussion of the theoretical material of the various subjects should be related to the problems experienced in everyday life. It should explain and interpret this information, make it more clear, and offer solutions. The function of the pedagogical subjects is to supplement the practical experiences of the students with theoretical knowledge, as well as to systematise the same.

We are discussing this theoretical knowledge with the students on the basis of a constructivist approach (Glaserfeld 1995; Vermunt 1998). The lectures are based on dialogue, as well as the discussion of problems raised by the students. We strive to achieve identification with the objectives, an openness for reception by way of allowing students to formulate their questions, doubts and problems at the beginning of the semester, or at any other time during the semester, for which they hope to receive solutions from this subject. The course material was discussed in such a way that it was linked to the problems raised by the students.

We believe that the mere conveying of knowledge is less suitable for encouraging the use of varied educational methods. Teachers are motivated to use a diversity of teaching methods if they obtain positive personal impressions and experiences about them. Our intention was to help teacher candidates find out, in the form of their own experiences, how it feels to participate in group work, projects, debates from the perspective of their pupils. For this reason, in the course of the small-group exercises, we used as many educational methods that we also expected future teachers to use as possible. (For example project, cooperative teaching-learning, group and individual work, role play, making experiments, preparing presentation, demonstration, disputation, using e-learning tools as well as chalk and blackboard.) In these sessions, the instructor of the course primarily just moderated the activities of the students, and helped them think over important topics and professional issues in depth. The use of varied methods created an opportunity for students to get

acquainted with the largest possible number of “tricks of the trade,” which they can either adapt or derive ideas from them for their own work.

We wanted to help students to perceive teaching as a flow experience (Csikszentmihalyi 1991), for which reason the joint work was characterised by authentic, sincere expressions of the self.

The role and development of identification with the pupils

On the basis of our research, teachers who in the course of their preparation for the lessons considered it more important to get in tune with the specific pupils/groups of pupils (than, for example, reviewing the material or preparing visual aids) are more popular among their pupils ($r=0.323$ $p<0.05$) (Füzi 2007/a); and they are open toward their students and consider their presence as an inspiration, as well as discover many similarities between themselves and their students, are more effective.

In the light of the above it seems essential that teacher candidates should be able to adopt and identify with their pupils' perspective. It contributes to the development of teachers' work if they are able to see their own activities also from the perspective of their pupils, and thereby they are able to correctly interpret and accept feedback from them.

Elements introduced in the discussion of the course materials:

We identified the motivations for problematic student behaviour in the framework of case discussion groups. Participants were faced with what motivations, in addition to those they had previously assumed, may be in the background of their pupils' behaviour.

With the help of films such as *Harry Potter* or *Dead Poets Society*, classroom situations, as well as the behaviour and teaching style of teachers were analysed. We presented scenes to the teacher candidates that primarily prompt viewers to identify with the pupils. The following questions were in the focus of the film analyses: How would we feel if participated in the given class as pupils? What is the style of the teacher like? What could the teacher think of the pupils? What elements of the teacher's behaviour reveal his or her attitude toward the pupils?

The students drew up educational and development plans for a lesson of their choice, which had to be adjusted to a set of subsequently and randomly received characteristics of the class and of individual pupils. The teacher candidates had to think over the relationships between the pupils' characteristics, the teaching methods, the explanations and the checking and evaluation.

In the framework of classroom events, such as examining pupils, organising field trips, teacher candidates were able to put on the role of various students or a teacher using his or her power. In the course of a role-play demonstrating how self-fulfilling prophecies work, in

about 10-15 minutes it became perceptible to students playing the roles of the pupils what presumptions a teacher and one's peers have concerning their capabilities and personalities. After these role-play exercises, students playing pupils reported back to the others on what effect the behaviour of the teacher or their peers had on them.

In the exercise aimed at the planning of the educational work, each student was to select a value that he or she considered important in education. They would then collect information and draw up plans concerning how and by what means the given value can be made attractive to young people today.

The relationship between reflection and success

Our research reinforced that the depth and time frame of thinking over events and experiences lived through as teachers is a factor determining the successfulness – that is, the popularity, effectiveness and general sense of well-being – of teachers.

The pupils of those teachers who were more willing to change the course of their lessons when they felt necessary in the given moment performed better ($r=0.46$ $p=0.01$), had a more positive attitude to the subject concerned ($r=0.56$ $p<0.01$). (Fúzi 2007/b)

Those teachers had more courage to modify their activities promptly, as necessary, who placed more emphasis on the planning of the pupils activities in the course of their preparation for the lesson ($r=0.386$ $p<0.05$). (Fúzi 2007/b) (Here, once again appears the role of adapting to pupils' characteristic features, which was already discussed in the previous chapter.)

Those who ponder much about their work also in their free time have a flow experience more frequently ($r=0.665$ $p<0.01$) during teaching. (Fúzi 2007/b)

The development of self-reflection, the increasing of the level of self-awareness, therefore, demands a special emphasis in the teaching of pedagogical subjects. These were served in the course of the teacher training by the following methods:

The drawing up of a future image of oneself as a teacher. After a few minutes of using their imagination, the students were asked to make a drawing on how they perceive themselves in a few years' time during their work. On the basis of these drawings we analysed individually what teacher-pupil relationship and role interpretation they used in the drawings. We strove to identify what role models and experiences serve as input to these ideas, and whether they still consider them as things to follow after consciously thinking over and analysing them. For the objectives identified in the drawings, we also prepared action plans toward the attainment of the necessary knowledge and skills. (The message of the drawing could be used on several occasions during the teacher training programme in the evaluation of the student's development.)

In the interesting of elevating the level of consciousness concerning emotions and activities related to teaching (e.g. the choice of methods used), the teacher candidates could have access not only to the course materials of the Pedagogy and Didactics courses, but also the lesson plans and other notes of the instructors of the courses. Thus, at the end of the sessions, we were able to analyse the teaching process together, going through it several times from planning to self-reflection.

In the exercise called "Examination", three volunteering students were asked to prepare from the content of a short science article in order to be then examined by the rest of the group. All members of the group had a chance to read the article, and everyone could formulate a question in connection with it, at the same time also deciding and writing down in advance what they would accept as the correct answer. In the course of the examination, the members of the group took turns asking their questions, and as the questions were running out they were assigning their grades. It turned out that each examination was evaluated with at least three different grades. When looking for the reasons, the students recognised and expressed the various factors that influenced, in a concealed way, and distorted their evaluation. For example, good grades were not given to those who knew the most, but to those who did not talk back or ask questions, responded confidently, did not use any aids, which were otherwise allowed, etc. In this exercise the teacher candidates also had an opportunity to experience the situation of their pupils, while at the same time be confronted with the criteria that they (would) enforce when evaluating performances, but in fact do not really agree with or admit during the exercise that their application is not justifiable.

The role of educational methods in successful teaching

According to our research findings, an important role is played in the success of teachers by their choice of educational methods, with special attention to the questions of how much room is allowed to activities by pupils and whether the chosen method allows real cooperation with the teacher.

In connection with certain educational methods building on pupils' activity (debates, projects) we were able to demonstrate that teachers have flow experiences more frequently during lessons that are taught with the involvement and cooperation of pupils ($r_{\text{debate}}=0.4$ $p<0.05$ and $r_{\text{project}}=0.486$ $p<0.01$). (Fúzi 2007/a)

Teachers who also pay attention to planning the atmosphere of the lessons use methods building on the activities of pupils, e.g. the project method, significantly more frequently ($r=0.526$ $p<0.01$). (Fúzi 2007/a)

The popularity of teachers shows a correlation with the frequency with which they use discussion of the material as a method of teaching ($r=0.444$ $p<0.05$). This means that the

pupils can be partners of not only their peers, but also of the teacher, and this also provides an opportunity for getting to know the pupils. (Fúzi 2007/a)

We desired to enhance the students' level of methodological preparation with some special elements.

In the interest of creating a harmonious, cooperative relationship with pupils, we practiced and tested with our students joint rule-making and contract-signing, including the individual and group versions.

We asked the teacher candidates to recall their own experiences about the effective and ineffective educational and pedagogical experiments of their own parents and teachers.

Over and beyond the elaboration of educational-pedagogical plans taking into consideration the characteristic features of pupils, teacher candidates had to map, in connection with some notoriously difficult parts of the material, the reasons for difficulties in learning and comprehension, and taking these into consideration, alternative plans were drawn up. The feasibility of the plans drawn up was checked with the help of fellow students who are less proficient in the given subject area.

One of the tasks of the students was to consider the possibilities of making the methods based on teacher's activities (lecturing, providing explanations, demonstrating) more "pupil-friendly."

The effects of taking the Pedagogy and Didactics courses on the students

The effects of taking the courses modified with attention to the results of the research project on teachers' successfulness was examined among the students in the 2009-10 academic year, in the summer of 2010. We used surveys to find out about their perceptions of the specific elements of theoretical approach and methodology.

At the end of the semester, knowing that they would not meet the instructor again, students in the teacher of engineering programme were asked to fill in a questionnaire on the internet. The web-based questionnaire provided an opportunity for anonymous and voluntary completion.

The questionnaire consisted of a few multiple-choice and several open-ended, a total of 25 questions, and it consisted of three main parts. The first part was aimed at what the main message of the courses was for the students, and to what extent they were able to identify with the objectives perceived, how much they were able to make use of it. In the second part, metaphors had to be created, which provided an opportunity to examine the current attitudes of the students. In the third part of the questionnaire, the students had to evaluate whether

they had experienced any change in themselves in the areas they considered important and wished to develop.

From the 50 students of the course, 24 filled in the questionnaire. 9 of the respondents were women and 15 were men. 17 of them had no teaching certification, but currently work as teachers, while 7 have neither certification nor experience.

The average of the respondents' age was 36.5 years.

From among those currently teaching, 6 are in the early stage of their career (teaching for 1-3 years). An additional 11 respondents had more (4-17 years of) teaching experience. Half of the respondents who are currently teachers are involved with the teaching of secondary school pupils, while the other half partly secondary school and partly adult learners.

From the message to the usability of the courses

There was considerable overlap between the responses given to questions concerning the message of the Pedagogy and Didactics courses and those concerning the perceived objectives of the instructor; therefore, we treated these together.

Despite the fact that we did not inform the students about the research-based elements of the concept and the special development objectives, these have become tangible and expressible for them, as can be seen from their responses [Figure 1]. All of this indicates that the content and methods of the courses were properly organised in the service of the objectives. The concept was also convincing for the students.

The knowledge of the aims, in itself, was not sufficient, however; agreement with the objectives and identification were indispensable to achieve significant changes in the attitudes. These emotional conditions for receiving the message of the courses were given on the part of the students, since on a scale of five (where 5 means the most important), the respondents attributed 4.6 to the above objectives. Our calculations prove that more intensive identification with the objectives leads to development also perceptible in practice in several areas ($r=0.593$ $p=0.002$).

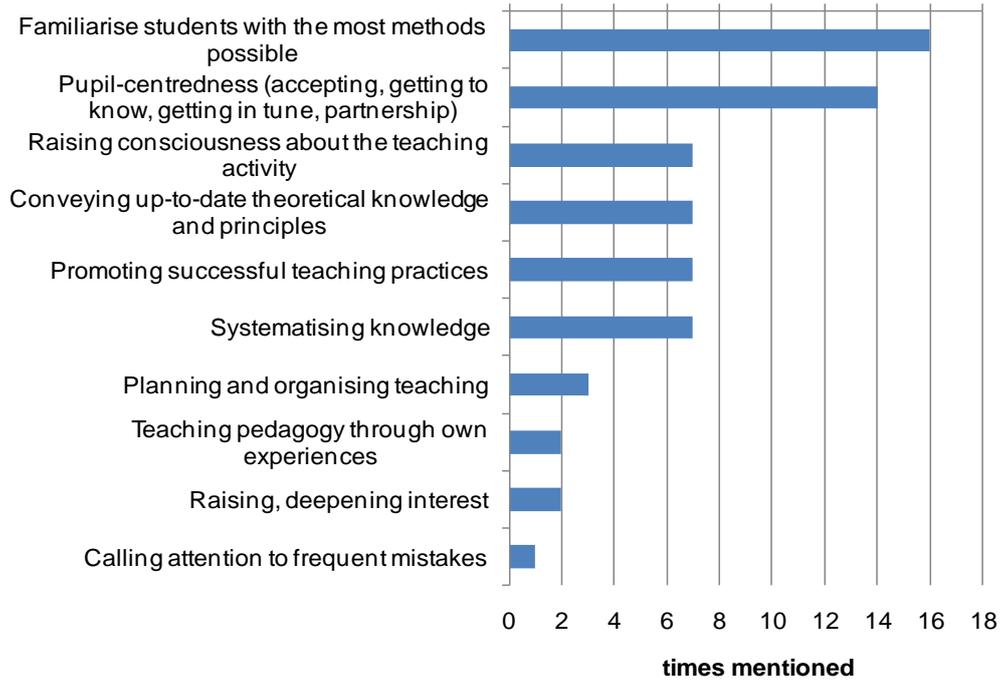


Figure 1. According to the students, the message of the Pedagogy and Didactics courses and the objective of the subjects

A total of 21 of the respondents (87.5%) feels that the courses changed their attitudes, while 20 students (83%) reported that they believe taking the Pedagogy and Didactics courses changed their teaching activity. The responses given to the questions examining the changes in the attitudes and teaching activities showed significant overlap, and therefore, the summary of the results are shown below [Figure 2].

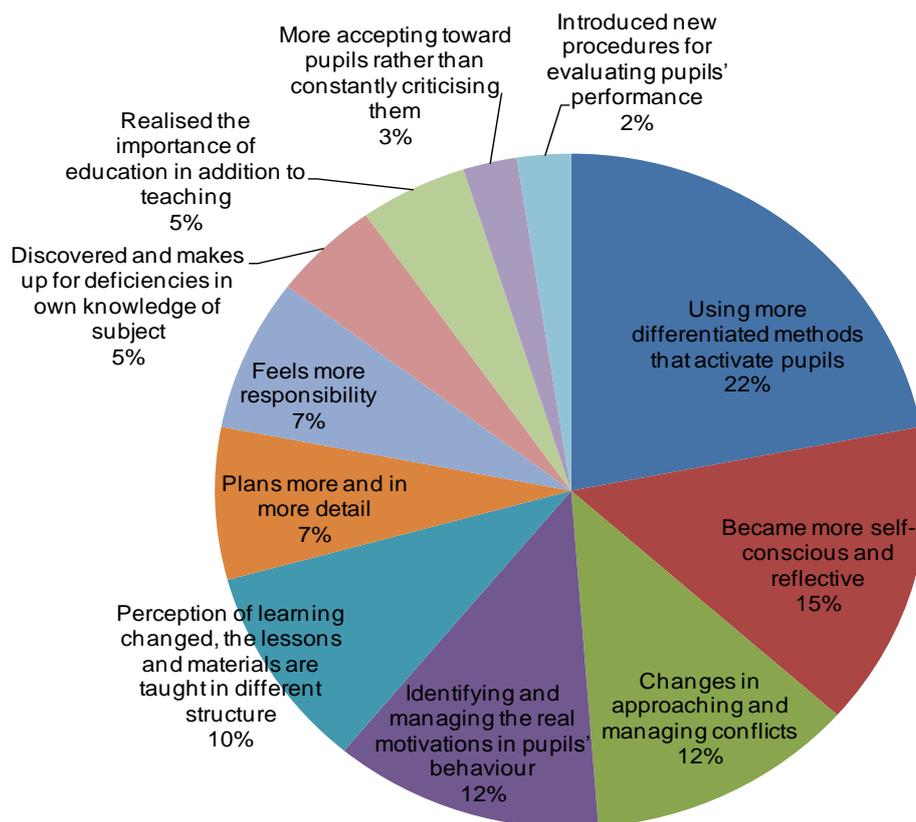


Figure 2. Areas of change in attitude/activities

Fifteen of the respondents also working currently as teachers (88%) tested in practice at least one of the methods learnt. Only 8 respondents explained in more detail what elements and with what results they used, which are only listed below.

The supplementation of quantifiable performance evaluation with textual evaluations, and the interpretation of the same together with the pupils. Group work, projects, independent forms of learning, differentiated organisation of learning. Concluding contracts with problematic classes or pupils. Violence-free communication. Conflict-management techniques. The incorporation of more feedback opportunities for the pupils during the learning process and the discussion of the materials, for keeping track of their progress.

We were curious whether the courses were of use to the respondents in solving their current school-related problems. From the 17 respondents working as teachers 10 (60%) were able to use the newly learnt methods immediately. For all of the six teachers who were in the early stage of their careers said that the course was useful in handling some school-related problem. It was primarily in managing conflicts with pupils, and in one case also in settling regularly erupting debates, that they were able to put the newly acquired knowledge to use.

Four of the respondents (16%) thought that there were parts of the courses that were superfluous. According to the responses: the references to the history of education cannot be

put to practical use, and could, therefore, be omitted, and the textbook was also not received well. One respondent thought that the detailed discussion of the education-related documents was not useful, while another respondent disagreed with the approach to the organisation of group work.

Twenty two respondents (92%) were able to use at least one method of the methods used in the teaching of the Pedagogy and Didactics course in their own work as teachers [Figure 3].

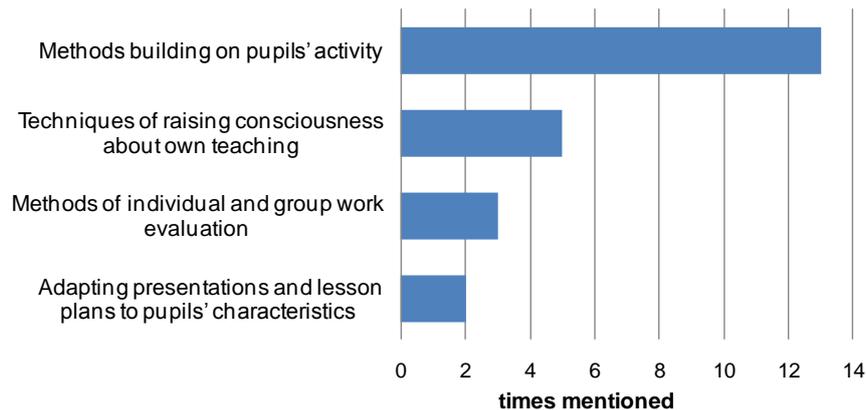


Figure 3. Theoretical or methodological element of the teaching of the Pedagogy and Didactics course that the teacher candidate intends to use

Although the limitations of the authenticity of responses based on self-completed questionnaires are well-known, the responses of practicing teachers in connection with the above questions deserve special attention, since they are able to evaluate the changes in their activities and reaction in the course of their classroom practice. In our case, the distortion of the responses was not justified by any external circumstance. On the basis of the above, we assume that through the structure and methods of the Pedagogy and Didactics courses we tested, significant development can be achieved in the proposed areas – getting in tune with the pupils, reflectivity, enriched methodological preparation – in the perception and activity of teachers.

We were interested in whether we can also find evidence for the development in perception identified by the respondents in the metaphors used to describe their views.

Metaphors

The importance of metaphors lies in the fact that the teaching philosophy and way of thinking appearing in them is presumably rooted deeper than the conscious level. Here are presented the most interesting metaphors only.

The respondents had to complete the following sentence with a metaphor: "Pupils are like ... because ..."

Categorising the metaphors on the basis of their superficial traits, we can differentiate between animal, plant, concept, material and object metaphors, but the comments added to them often significantly modify the meaning of the image. Therefore, it was mainly by way of relying on the explanations that we tried to identify how the metaphors created may refer to the role and tasks of the teacher and the attitudes toward the pupils.

On the basis of the explanations, the metaphors can be placed in three groups:

Metaphors concentrating on features of the pupils – character, capabilities, intentions.

Negative: *"...like small elephants, because they learn with difficulty and forget easily."*

Positive: *"...like sponges, because they are able to learn anything."* Realistic-neutral: *"...like unripe fruit, because they still need to change"*

Metaphors describing the attitude of the teacher toward the students – what they mean and how they have an effect on the teacher. For example: identifying with them because recognising one's characteristics at a younger age; regarding cooperating with them as an adventure and challenge or pupils help in the more realistic evaluation of the teacher's work.

Metaphors describing the pupils thought the tasks of the teacher related to them – formulating general notions about the essence of education and teaching. Some of these, even as specific action plans, could even serve as philosophies.

The teacher as a helper, supporter, which reflects the acknowledgement of emotions and the role of acceptance.

The primary task of the teacher is getting to know the pupils and motivating, mobilising the dormant energies. *"...My job is simply to achieve that they trust in a positive future on their own, and take steps for it."*

"I create" metaphors: the pupil is the subject of the process of creation, and his or her participation and activity in the process is secondary. Earlier we clearly thought that these were negative metaphors because they magnify the significance of the teacher; however, it is possible that they derive from an increased experience of the responsibility of the teacher.

In summary, the analysis of the metaphors reveals that for the most part positive images of students and teaching emerged. It is important, however, that in the course of the training programme, more opportunities should be allowed for the newly acquired theoretical elements to become properly embedded, so that they would appear not only on the level of the intellect, but also on the level of emotions. This internalisation is a time-consuming process, which can only be successful if in the given institution it is enforced in the approach used in the majority of the subjects.

In order to be able to trace the shaping of the perception of the teacher candidates, it is worth asking them for such metaphors at the beginning and also at several points in the course of

their training. On the basis of the responses and metaphors of the teacher candidates we can identify the direction and content of their development, and in the following we try to determine the extent of this development.

The extent of development in the areas examined

The direction of the development actually achieved with the teaching and learning of the Pedagogy and Didactics courses can be clearly seen, even though the extent of this development is hard to measure objectively. With a view to the fact that a considerable part of the respondents are practicing teachers, it is our belief that they are able to judge whether they experienced positive changes in their classroom work. Therefore, in evaluating the extent of development, we primarily based our conclusions on their responses. In seven questions, we asked the respondents to evaluate whether the development can be perceived or assumed or has it failed to happen [Figure 4].

Four of the respondents (16%) reported that they developed in all the areas examined. Six said that they perceived they had developed in at least five of the seven areas. Three believed that the courses had no effect in two of the seven areas, and four said that there was one area that was not affected. Neither of the respondents reported no development in any of the areas.

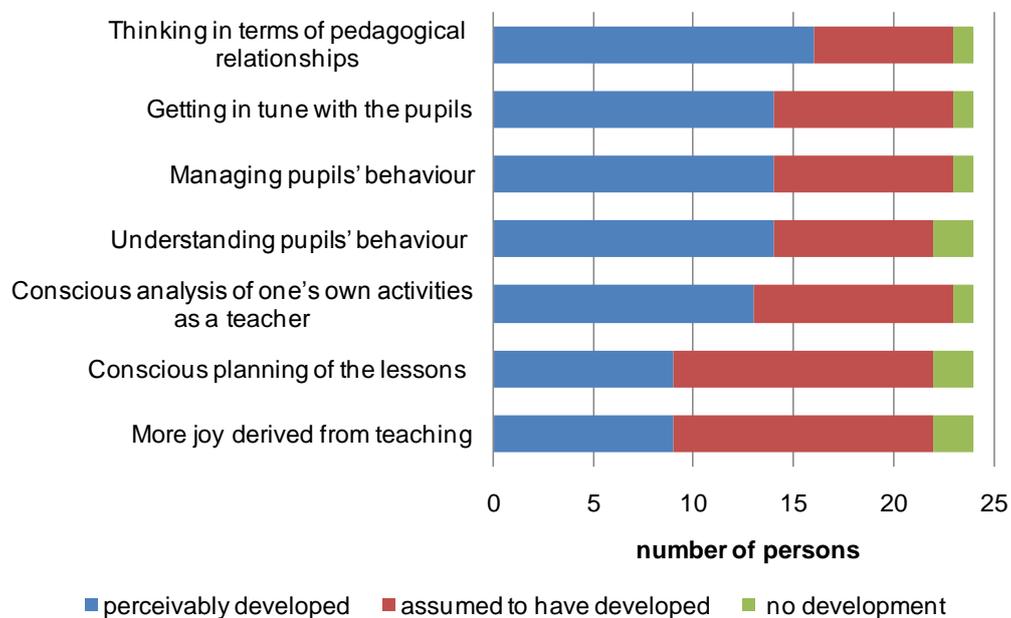


Figure 4. Areas developed

On the whole, the perceivable development was measured in 53%, assumed development in 41% and no development in 6% of the responses.

Surprisingly, those who have been teaching for ten years or more felt development in the most areas, followed by those with no teaching experience, and then, in equal proportions, the group of career starters and those with four to six years of teaching experience.

It was also determined that gender, age and length of teaching experience show no close correlation to the extent of development.

Using cross-table analysis and chi-square test, we examined the relationship between the change in attitude and the areas showing most development. Many felt that the change of attitudes as a result of the courses was mostly accompanied by development in the areas of getting in tune with the pupils ($\chi^2=9,778$, $df= 2$, $p=0,008$), understanding pupils' behaviour ($\chi^2=15,51$, $df= 2$, $p=0,0001$) and thinking in terms of pedagogical relationships ($\chi^2=10,939$, $df= 2$, $p=0,004$).

Summary

Using the findings of the research project concerning teacher's successfulness, we have changed the educational concept and methods of the Pedagogy and Didactics courses.

Our basic principle was to teach the teaching candidates in the way that we expect them to teach later. The theoretical lectures were organised mostly around problems raised by the students. Then, in the practical sessions they had an opportunity to experience how the different educational methods work in practice. We wished to lay special emphasis on the development of the teacher candidates in the areas of getting in tune with the pupils, self-reflection and the use of varied methods.

At the end of the semester, we conducted a questionnaire-based survey among the students to find out about the effects of the courses. On the basis of the results, we can conclude that the concept and methods of the courses have won the esteem of the students, and they were able to identify with the objectives set. The majority of the respondents experienced positive changes in the areas we aimed to develop. For example, 88% of the students working as practicing teachers reported that they were able to successfully use some element of their learning in their own work. The authenticity and value of the responses was enhanced by the fact that the majority of the respondents were able to evaluate the "use value" of the newly acquired knowledge as practicing teachers.

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Funding and Effectiveness of Staff Development in Three Texas Districts

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Abstract

This study focused on three aspects of staff development in North Texas: 1) funding sources, 2) types of professional learning programs, and 3) teachers' views of the effectiveness of the funded programs. Qualitative data came from interviews with nine district administrators concerning funding sources and how those resources enhanced teacher skills. Quantitative data came from 1,277 responses from teachers regarding their background and perceptions about staff development. Practitioners reported that sufficient opportunity and time to collaborate with colleagues about learning initiatives was more valuable than teaching materials. Teacher questionnaires were analyzed for possible relationships between participant variables and responses. Practitioner experience and graduate degrees were not related to teachers' knowledge about financial constraints or implementation of professional learning. Most teachers connected professional learning with improved teaching practices but few attributed student achievement to their professional learning. The majority considered collaborative learning settings to elicit the most personal professional growth.

Keywords: *staff development, professional learning communities, district funding*

Introduction

One obligation of any public school district is to fund professional development opportunities that target the continual development of teachers and that focus on improving student performance. Ongoing teacher development is a major component of school funding as districts strive to find necessary fiscal resources for appropriate educational programs and for increasing pupil achievement.

Although educational and public expectations generally associate professional development of teachers with improved student performance, few people know how school districts fund professional learning, or even if educational training elicits better student capabilities (Miles et al. 2004). The recent freeze of funding for the Texas Permanent School Fund (PSF) Bond Guarantee Program (BGP) and the slumping market economy demonstrate difficulties that Texas school districts have in financially supporting basic and supplementary educational programs. Local education agencies (LEAs) then must assume responsibility for understanding and administering funds that are designated to improve student achievement. Administrators and practitioners who respect and familiarize themselves with district financial decisions regarding professional learning might be more inclined to implement new knowledge in classrooms, enhancing the impact that professional development has on student learning.

Regardless of the degree of knowledge educators have concerning staff development funding, more practitioners enhance their career knowledge through professional development opportunities than other sources. Therefore, districts must capitalize on developing educators' professional knowledge and ensure that staff experience quality training, based on researched practices.

This qualitative study had three purposes: 1) to determine sources of funding for staff development in three North Texas school districts, 2) to describe the types of funded professional development participant districts provide teachers, and 3) to examine how teachers view the effectiveness of staff development supported by district funds. Professional development opportunities considered included educators collaborating concerning focused goals, mentor and mentee relationships, presentations or conferences, group book studies, and online learning sessions. Effective staff development was identified as professional learning that influenced teachers in making positive pedagogical changes so that student learning was enhanced.

Methodology

Participants in the study

Three suburban North Texas districts constituted the convenient sample (Gall, Gall, and Borg 2007) and were targeted based on student populations exceeding 15,000 and geographic proximity to one another. The districts were referred to as A, B, and C in order to conceal identifying information. All three districts were publicly funded and served students of both genders and various ethnicities in grades pre-kindergarten through 12.

District A, located north of Dallas, served 17,500 students across 20 campuses within 29 square miles during the 2009-2010 school year. District A earned a Recognized rating from the Texas Education Agency (TEA) for student achievement during the 2008-2009 school year. Its mission is to provide every student engaging work and the highest quality education. District B is slightly larger, encompassing just over 53 square miles in Northwest Dallas County. Because boundaries of Texas school districts do not directly coincide with city borders, students from five cities comprise this district's population. The 26,170 students enrolled were spread among 43 campuses. District B earned a TEA Academically Acceptable rating performance during 2008-2009. The district mission includes committing all resources to guiding each student in learning and graduating as responsible, passionate, life-long learners. Diversity among students is valued.

District C was experiencing rapid growth in its student population and was the largest district studied. Located north of Dallas, this district encompasses 75 square miles and contains 46 campuses and has grown between 12% and 30% annually since 2000. Students from four cities and two counties converged for a 2009-2010 student population just under 34,000. In 2008-2009, District C earned a TEA Recognized rating for student performance on standardized tests. District C commits itself to enabling students to continue learning and to achieve aspirations beyond school.

Design

This qualitative study used process diagrams to describe funding, implementing, and evaluating professional development (Strauss and Corbin 1990). Administrative personnel responsible for funding and implementing district professional learning programs and district teachers were surveyed about their knowledge of funding for staff development and their viewpoints regarding effective practices. Although teacher participants qualitatively ranked their perspectives concerning the effectiveness of district-funded professional development,

collected data were quantified with nonparametric tests. The mode of teacher responses was determined, and such results were compared across the three participating school districts.

The study answered three research questions:

1. In what ways do three Texas school districts fund professional development for instructional improvement?
2. How do three Texas school districts use funds to develop staff professionally?
3. What are teachers' views on the effectiveness of staff development in three Texas school districts?

In order to answer question 1, the chief financial officer in each district was interviewed. The five-question interview was audio taped then transcribed by hand to establish patterns amongst interviewee responses. Immediately afterwards, transcripts were repeatedly read and codes were created from participant responses.

To answer the second research question, assistant superintendents of learner services and directors of professional development in each of the districts were interviewed; all were asked identical questions. For each interview, participant responses were audio taped and transcribed, then coded to ascertain patterns.

Question three was answered by evaluating electronic survey responses from teachers in Districts A, B, and C. Teachers received a hyperlink that connected them to a 15-question electronic questionnaire. Respondents rated their understanding of district funding processes used to implement professional development for practitioners. Teacher insight was sought to provide evidence regarding whether professional learning impacted student success and if accountability measures were linked to professional learning experiences. The survey asked participants to rate the degree that having access to more resources, such as time to collaborate and additional instructional materials, impacted how successfully teachers implemented professional learning. Participants were asked about modes of professional learning believed to most impact student success. The electronic survey was intended to determine if practitioners perceived that professional learning positively affects student success, and to understand how teachers confirm their perceptions.

Quantitative measures were used to describe how participants in the three school districts compared in terms of knowledge about resources needed for staff development and demonstrating professional learning. Comparisons across districts were based on three characteristics of teacher participants: years of teaching experience, degree attained, and grade level taught.

Procedure

The process of gathering data took two months and occurred during the middle of the 2009-2010 school year. The procedure consisted of seven separate and one combined interview with three district administrators within the participating school districts. Axial codes (Strauss and Corbin 1990) were determined to focus the interviewer mentally as the dialogue occurred. For interviews with chief financial officers, several axial codes were anticipated to arise, including funding processes; sources of funding; financial constraints involved with planning, implementing, and evaluating staff development; dividing resources for professional learning among the district; and measures the district took to evaluate the effectiveness of staff development.

Axial codes that developed through interviews with the assistant superintendent of learner services and the director of professional development differed from those with district chief financial officers. These codes included types of professional development districts offered, district goals for staff development, challenges associated with planning and implementing staff development, and evidence proving that teachers learned from staff development. Other codes that emerged include classroom teacher accountability for professional learning and teacher knowledge of how central office evaluates the impact of professional development.

The procedure for gathering data to determine teacher perspectives about resources for staff development and how effectively funded staff development programs helped teachers impact student learning differed by district. For District A, all teachers were e-mailed to explain the purpose of the study and to inform potential respondents of assurances, while soliciting participation. The e-mail contained a hyperlink that directly connected teachers to the questionnaire.

District B required that individual campus principals approve the research before teachers were contacted to participate, stipulating that approval forms signed by building administrators were necessary. Once principals approved the research and signed the consent form, all teachers in these eight campuses were contacted via e-mail that contained the same components received by teachers in District A. In District C, the assistant superintendent of learner services forwarded her own electronic message to all teachers, to solicit participation based on information the researcher provided. This message contained the purpose of the study, an electronic letter of research consent, and a hyperlink connecting teachers to the Web-based questionnaire. Teachers in all three districts received an electronic reminder directly from the researcher three days before the survey window closed.

Data collection

Data were collected through key informant interviews with people who possessed knowledge of district processes (Gall, Gall, and Borg 2007). The interviews occurred during December of 2009 and January of 2010. Interviewees included the district chief financial officers, the assistant superintendent for learner services/curriculum and instruction, and directors of professional development. By interviewing administrative personnel through open-response questions, employees could respond more freely than with pre-contrived answer options. Thus, answers more likely had richer data than if responses were elicited through guided parameters.

The hyperlink teacher participants received directed them to an electronic survey created through a Web-based provider to collect teacher perspectives regarding district staff development programs. Survey instruments were identical for the three districts, with the exception of a separate numerical code which allowed for categorizing participant responses by district. All teachers received the hyperlink in late January of 2010 and were given two weeks to respond. Completion of the survey was expected to require approximately ten minutes, according to field testers. Teachers were asked to rate perspectives concerning resources for staff development and opinions regarding the effectiveness of professional learning in eliciting improved student progress. Participants answered five questions using a Likert scale consisting of four options, including high, satisfactory, limited, and none. The questionnaire exercised four ranking options so that participants positively or negatively identified with questions and did not have the opportunity to remain neutral as in surveys with three-five options (Fowler 1993). Participants answered the remaining questions by selecting multiple choices. In several instances, teachers chose the "other" answer option and offered information that did not conform to responses provided on the questionnaire.

Data analysis

The researcher qualitatively reviewed the data derived from the nine individual interviews to answer questions 1 and 2.

1: In what ways do three Texas school districts fund professional development for instructional improvement?

2: How do three Texas school districts use funds to develop staff professionally?

Interview transcripts were coded by hand and patterns within administrator responses were determined. Repeated concepts found in participant responses signified links in district processes for funding, implementing, and monitoring the effect of professional learning on

student outcomes. Axial phrases, verbal patterns alluding to affinities regarding how districts funded staff development practices, were grouped into two main categories: budgeting and allocating resources (Strauss and Corbin 1990; Grbich 2007). All recurring ideas were identified, according to an organizational paradigm, concerning how participating districts funded staff development. Thus, codes were categorized according to the features of the paradigm, including conditions, phenomenon, context, actions, and consequences. Finally, the phrases were incorporated into process diagrams.

Links were found among the processes districts had for funding, implementing, and monitoring the effect that professional learning had on student outcomes, based on teachers implementing new learning. Three overarching concepts evolved from the transcriptions. Planning, implementing, and evaluating staff development constituted the phenomena for which the organizational paradigms were based (Strauss and Corbin 1990). The components of the paradigm were then used to create process diagrams for individual phenomena. More specifically, interviews with administrators allowed for topological review of the district systems for funding and developing staff professionally. In this way, patterns were linked in an abstract way among administrator insight concerning the processes for each district function (Strauss and Corbin 1990; Glaser and Strauss 1967). Data analysis of interviews followed Glaser and Strauss' (1967) Grounded Theory. Theories about the processes districts used to fund, plan, implement, and evaluate staff development programs were developed inductively. Initially, similarities were found within participant responses on a general level. Once ideas that were non-relevant were removed from consideration, concepts were filtered into a list that was more exclusive to the research questions.

3: What are teachers' views on the effectiveness of staff development in three Texas school districts? Data collected to answer question 3 underwent qualitative and quantitative review.

Data were reviewed from a macro to a micro perspective. Initially, data were cross tabulated (Faherty 2008) for descriptive frequencies of responses among the teacher population as a whole. Then, participant answers were analyzed by demographic variables, including educational degree attained, grade range taught, and years of teaching experience. The tendencies of respondents to answer questions in a particular manner were reviewed, by district, through Chi-square tests. In this way, it became apparent if teachers in a particular district were significantly more likely to respond to survey questions in a certain manner as opposed to teachers in the other districts.

Parametric tests determined the mode among the teacher responses from the participating districts, when answering each question. Gall, Gall, and Borg (2007) suggest using parametric tests to examine data that are not homogeneous because data that veer slightly from the mean do not significantly affect parametric values. The variance in teacher

populations from the three districts was distributed normally in terms of degrees held, grade ranges taught, and teacher years of experience.

Discussion

Question 1. This question was answered by coding interviews with district financial officers. Codes were categorized and analyzed regarding processes districts underwent when funding staff development efforts. Process diagrams (Strauss and Corbin 1990) showed how changing conditions associated with funding staff development over time led to specific actions that district personnel took to obtain the end result, initiatives that were fiscally supported. Funding was critical to sustaining learning initiatives and was considered an investment that fortified student achievement through job-embedded teacher training. Two components arose when analyzing district actions taken to fund staff development: 1) budgeting money for staff development and 2) allocating funds to departments and campuses for professional learning. Money was budgeted so that central office expectations for growth could be met while supporting campus actions to attain goals. Funds available to develop staff were figured by determining the amount of state money the district was given, subtracting operating costs and money that needed to be allocated to other programs, and pulling the cost of developing staff professionally away from state funds.

Administrator and teacher participants repeatedly noted time as a lacking resource. The fact that time was considered by staff as more valuable than purchased supplies or materials correlated with Grubb (2010), who stated that school districts need more than money to develop staff professionally and who emphasized the importance of using resources efficiently to improve education. Simply providing administrators and teachers with more money does not result in better student achievement; planning, implementing, and evaluating how resources are spent on learner gains are also important.

District administrators' priority in allocating funds for staff development to content area departments and campuses was to dedicate as many resources to campuses as possible. Administrators analyzed district and school achievement data in order to scrutinize the appropriateness and equality of fund distribution. Another district priority was equalizing campus access to funds needed to enhance faculty expertise. The process for allocating funds was perpetual because district and campus administrators adjusted achievement goals continually as student achievement outcomes changed. The fluidity of the process of funding staff development was repeatedly subjected to environmental considerations that affected the amount of fiscal resources districts had available. Factors that impacted the supply of funds included federal and state grants received, local property tax and student enrollment,

and legislative restrictions on district abilities to raise money. Participating districts recognized such intangible resources as positive school climates, time managed effectively, engaging pedagogy, cooperative spirits, unified visions, staff persistence, and collegial trust. Districts were financially constrained when funding staff development because plans for initiatives were audited for quality learning opportunities. Blueprints for sessions that included ineffective designs were discarded. Since the volume of learning opportunities that district officials wanted to provide staff outweighed available resources, administrators considered poor-quality training to be an inefficient use of funds. These actions coincide with Grubb's (2010) assertion that schools should conduct waste assessments involving thoroughly reviewing if expenditures align with district and campus goals, decentralizing decision making processes, and allowing teacher input regarding campus budgets. This advice directly pertains to the purpose of the present study, as faculty who understood financial constraints associated with developing expertise could tailor their actions to efficiently capitalize on district investments.

In-district officials held one another accountable for the money spent on staff development by controlling resource distribution. Campuses were ensured equal access to fiscal resources if money that was spent on professional development connected with district goals for student achievement. Data were reviewed by administrators to see if student progress correlated with professional learning initiatives. Finally, central office administrators cross-checked spending patterns for staff development against those of districts with similar enrollment.

Question 2. Three phenomena arose pertaining to districts developing staff expertise. The major ideas from interviews with district directors of staff development and assistant superintendents for learner services included planning, implementing, and evaluating staff development. Administrators adhered to factors Bubb and Earley (2009) noted as contributing to positive outcomes associated with creating staff development that improves student success. Included were explicitly defining the purpose of staff development, linking goals to a needs analysis, and monitoring and evaluating the impact of learning initiatives. The processes involved with each phenomenon were charted as process diagrams (Strauss and Corbin 1990).

The planning phase of developing staff professionally involved central office administrators understanding state mandates regarding student instruction as well as district academic goals. Central office administrators referenced data to determine district as well as campus content area needs. Individuals in charge of content areas made decisions according to these foci and principals were trained to push instructional initiatives (DuFour and Marzano 2009). Data obtained from state assessments and district benchmark tests were referenced regularly so that plans for developing staff professionally were modified to match mandates.

The desired outcome related to developing staff expertise was having teachers who improved instructional practices students experienced.

Three changing conditions affected how districts implemented staff development. District officials recognized that opportunities for staff development must meet teacher learning needs and that staff needed to be motivated to implement learning from professional development. Districts had to adapt to growth in their surrounding community. District officials ensured that professional sessions accommodated adult learning preferences and were interactive, engaging, and offered in a variety of formats. It was necessary for administrators and instructional coaches to balance the support and pressure participants experienced so that learning was implemented. District administrators motivated teachers to implement strategies learned by allowing them to choose the sessions attended and celebrated participant accomplishments pertaining to professional development. Administrators cultivated teacher motivation for implementing learning by designing professional development that was based on achievement data. Participants were empowered to implement professional learning because teachers helped develop and present learning opportunities to colleagues. As districts experienced fluctuating growth, teachers were challenged to openly discuss and exhibit instructional practices. District and campus administrators referenced student achievement data to guide participants in selecting professional development based on pupil needs. Districts secured funds necessary for aligning staff expertise with district expectations to continually support staff in developing professionally and to improve teacher capacity to meet student needs.

Three variables were associated with evaluating the effectiveness of staff development programs: 1) measuring the program's worth, 2) obtaining evidence of teachers implementing learning, and 3) holding participants accountable for using strategies learned. These variables occurred perpetually throughout a school year, with the intended result of students receiving research-based instruction.

When measuring the effectiveness of staff development programs, district officials assembled a study team that consisted of assistant superintendents, the director of staff development, and content coordinators. Five levels of evaluation Guskey (1998) were referenced when reflecting on the programs and devising recommendations to improve future efforts. Programs specifically designed to meet district learning goals were reviewed in terms of participant reactions and learning, organizational support and change, participant implementation, and student learning outcomes. In gathering evidence of incorporation of learning into pedagogical practices, administrators expected teachers to articulate how learning would enhance instruction. Principals monitored lesson plans to review how faculty incorporated learned strategies into classroom practices. Campus administrators met with grade level teams and listened to collaborative sessions to determine how teachers intended

to incorporate professional learning into instruction. District administrators reviewed student data and conferred with campus principals to determine improvements related to increased teacher expertise. In turn, principals led campuses in discussions aimed at evaluating the impact professional learning had on student achievement. District officials indirectly held teachers accountable for implementing professional learning. Every campus was considered a Professional Learning Community (PLC), involving each staff member continuously and actively in pursuit of a better student education experience. Campus administrators conducted routine instructional observations to document instruction related to district and school initiatives (Protheroe 2009). Anonymous results were disaggregated and shared with faculty. Central office administrators visited campuses to see pedagogical practices and to discuss observations with campus leaders. In addition, faculty who attended development experiences completed questionnaires pertaining to their learning, in order to obtain credit for attending. Participants rated the program based on its instructional relevance to student needs and offered personal reflections and suggestions for improving future sessions. District administrators and the director of staff development synthesized the results with observations and evidence related to faculty implementation of professional learning. Study teams reported district progress to district improvement committees, including the local superintendent. When evaluating implemented staff development programs, the previously described actions contributed to teachers incorporating developed expertise into classroom practices. Ultimately, students received research-based instruction that was appropriate for academic needs.

Central office and campus leaders focused on district educational goals and how teacher professional growth impacted students achieving those targets. Administrators who planned, implemented, and evaluated staff learning experiences recognized Guskey's (2002) assertion that altered teacher pedagogical beliefs render changed instructional habits. District leaders who participated in this study viewed teacher motivation as an important changing condition that must be addressed when implementing staff development. Therefore, teachers were empowered to help create staff learning programs that aligned with district needs and served as instructors who facilitated many professional learning sessions for colleagues. Campus leaders publically celebrated teachers who implemented professional learning to motivate instructors to incorporate learning into pedagogical practices.

Question 3. The final question was answered quantitatively through an electronic survey distributed to teachers in participating school districts. A Chi-square test determined if teachers from one district might more likely respond to a question in a manner that differed from the others. The Chi-square analysis revealed that demographic variables of participants (school district, grade range taught, degree of education held, and years of experience) did

not impact teacher responses. The frequency was noted for each item. Since respondents were allowed to select multiple options for the last survey questions, a Chi-square analysis would not have been logical.

The degree of knowledge teachers had about financial constraints involved with professional development was assessed. Approximately half of all teacher participants considered themselves to have limited awareness of fiscal burdens. Many teachers, 38.3% (n=447), believed that understanding financial matters related to professional development would impact teaching practices to a limited extent. Only 3.1% (n=36) responded that having fiscal knowledge about budget constraints would significantly change teaching practices. Teachers generally did not know much about financially supporting staff development, yet there was a common belief that such information would not greatly enhance pedagogical abilities.

Professional learning was a concept generally appreciated by all teacher participants. Almost half, 42% (n=489), indicated that developed expertise impacted teaching performance to a high degree. A slightly smaller amount, 39.9% (n=464), thought that professional learning affected students to a large extent. Only 1.0% (n=11) believed that developed expertise had no impact on student achievement. Generally, teachers across the participating districts valued professional learning as a tool to improve instructional performance, but fewer (n=25) connected personally improved pedagogical abilities with better student outcomes. Respondents stated that conclusions about the degree to which professional learning impacted pupil achievement were based primarily on a combination of methods. Most respondents, 58.0% (n=671), relied on documentation, assessment data, and conferences with learners to determine if professional development affected student outcomes. The fewest number, 1.6% (n=18), cited documentation or note keeping as the means for determining related conclusions. Since teachers needed resources associated with professional learning to enable implementation to occur, participants were asked what means were most critical for incorporating new learning into classroom practices. The majority, 52.8% (n=612), cited that having time to plan how to use strategies was most important. Giving teachers time to observe other colleagues and collaborate regarding new strategies was the most important resource for 36.4% (n=421) of the participants. Only 10.8% (n=125) stated that materials were most important. Time was an intangible need listed on the questionnaire. Yet, the need for time far outweighed tangible supplies such as workbooks, texts, and manipulatives from learning sessions attended.

Finally, teacher opinions about the best professional development format were queried. The majority of participants, 54.1% (n=630), selected group or collaborative study from other options. Only 1.8% (n=21) reported that online learning situations, involving limited contact with colleagues, was the format facilitating the most professional gain. These findings further

solidify the need to establish campuses as PLCs, as such environments facilitate staff actively and collaboratively improving student outcomes (DuFour 2004).

Conclusions

District personnel who worked with planning, implementing, and evaluating staff development experiences adhered to Bellanca's (2009) assertion that professional learning should follow a collaborative goal with measurable outcomes. The districts reviewed implemented programs regarding the quality of learning that adults experienced rather than relying on participant narratives. As Guskey and Yoon (2009) recommended, district and campus administrators led staff in discussing student assessment results and based conclusions on achievement scores regarding practitioners expanding expertise. District administrators communicated the purpose of staff development sessions to all hierarchical levels so that participants identified with the intent of the initiative. Campus principals correlated student academic needs with necessary professional growth. Central office administrators recognized the needs of teachers as adult learners. Adult social needs were recognized as administrators dedicated time for social collaboration and varied instructional formats so that participant interest and motivation were maintained.

Two attributes of effective staff development that Quick, Holtzman, and Chaney (2009) noted coincide with the findings of this study: 1) teachers having ample time to collaborate with peers, and 2) instructors modeling pedagogical strategies and providing feedback when peers implement learning. Lujan and Day (2010) determined that a limited time for teachers to work together and school conditions that seclude staff constrain teachers' collaboration. Therefore, school leaders should prioritize providing staff with ample opportunities to work together. Quick, Holtzman, and Chaney (2009) suggested that presentation style workshops positively correlate with instruction that stimulates higher student comprehension. In this study, 25.3% (n=295) of teachers learned the most from presentation style workshops. This percentage is second only to group or collaborative formats of professional development.

Two of the most common constraints that Chval and others (2008) determined to hinder teachers implementing professional development coincide with findings in the present study. In this study, teachers noted their dissatisfaction with the limited amount of time provided for collaborating and the repetition of subject matter offered. Lujan and Day (2010) found that PLCs provide teachers time to collaborate and plan lessons, while simultaneously cultivating relational bonds among staff and maintaining the sacredness of collaborative time. Li and Chan (2007) suggested that instructional coaches work regularly with teachers to discuss instructional needs and progress when implementing reform. These findings support

participating teacher perspectives that working and studying collaboratively elicit the most professional growth.

Recommendations

Educational entities should consider Guskey's (1998) program evaluation for learning initiatives, defined as purposeful, routine actions to determine merit or worth. Multiple sources should be used to conclude whether professional learning experiences elicit intended outcomes. Personnel in charge of staff development in this study thoroughly considered blueprints for professional learning experiences. Leaders should conduct routine, formative evaluations to detect potential problems with the effectiveness of staff development and make needed corrections. Administrators and facilitators must use data obtained from formative evaluations of professional development sessions to positively influence the success of staff learning initiatives. Administrators must continually strive to evaluate staff development programs, as suggested by Guskey. Reactions to the learning experience and surveys that query practitioners about the perceived worth of learning and usefulness of information gained are critical. Despite the simplistic nature of such evaluations, Guskey iterated the importance of gleaning such information so that learning designs match participant needs.

Much literature exists regarding appropriate practices for developing teacher expertise; however, more research is needed that addresses how effectively staff development is implemented and to what extent that development impacts student achievement. Such studies should evaluate processes that districts have in place for developing staff professionally. Ideally, practitioners are intrinsically motivated to continually develop themselves as educators who influence pupils' minds; however, research-based practices are needed that validate the most fiscally sound experiences.

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School Advisors as Supporters of Teacher's Professional development: the Greek Case

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Abstract

This paper presents the results of an investigation into the way in which Greek School Advisors perceive their role regarding the scientific and pedagogical guidance of teachers. The findings indicate that the preferred practices of Greek School Advisors are: discussions with teachers, the dissemination of innovative teaching methods and the promotion of training programmes. On the other hand, they seem to avoid classroom observations, the organisation of exemplary teachings, as well as the promotion of the curriculum and education policy. Finally, the findings were interpreted within a framework based on the history of the institution of the School Advisor and the specific organisational and administrative particularities of the Greek education system.

Keywords: School Advisor, guidance practices, teacher's professional development, teacher's evaluation

Introduction

In the Greek education system, School Advisors are responsible for teachers' scientific and pedagogical guidance. These are experienced and qualified professionals, selected for a four-year period, from amongst the body of teachers to be exclusively employed in providing support to their colleagues to improve the pedagogical and teaching act. School Advisors are, therefore, supervisors of instruction (Pawlas and Oliva 2007; Beach and Reinhartz 2000; Wiles 1989).

In the present study the way which School Advisors perceive their role regarding the scientific and pedagogical guidance, as well as, their evaluation of teachers was examined. The latter aspect is of particular importance since, despite the fact that the legislated responsibilities of the Greek School Advisors include evaluating teachers, for almost 30

years this has not as yet been instigated, due largely to teachers' reactions concerning the actual conditions and procedures of its implementation (Bagakis 1999, 131). Consequently, in the Greek educational system there is no assessment of teachers' professional competence, which also undermines their scientific and pedagogical guidance.

This research was instigated, mainly through the European Project *TISSNTE (Teacher Induction: Supporting the Supporters of Novice Teachers in Europe)*, which aimed at producing educational material for supporting the work of mentors throughout Europe, having previously explored their needs with a common research tool. The project's target group included Greek School Advisors, as due to the absence of mentors in the Greek educational system, the onus to provide guidance to novice teachers also falls on them (www.tissnte.eu). Within this context, a pilot study was conducted where a small sample of School Advisors was addressed in order to identify their training needs. In the present research the sample was larger and the questionnaire more detailed.

Theoretical framework

Before proceeding to the research findings, a short informative presentation on the interesting course of instructional supervision in Greece is given here, to better understand the concerns that accompany teacher guidance.

The inspectors and the conditions that led to the advent of school advisors

The institution of the School Advisor is in its third decade of existence, having been introduced in 1982. Nevertheless, supervision of instruction has been inherent in the educational system of the Modern Greek state which was established in 1830. During this protracted period of over 150 years, the prevailing emphasis of supervision was on inspection rather than on guidance. The basic body consisted of the Inspector, who would monitor the implementation of teaching methods and then pass judgment on the suitability of teachers, often, with often a disastrous impact on their careers.

The institution of the school Inspector has been harshly criticised by the vast majority in the education sector. This has largely been due to the predominance of official control at the expense of scientific guidance, the lack of objectivity, and its being employed as an instrument of exploitation for ideological enforcement (Giokarinis 2000; Katsikas et al 2007; Papavassiliou 2008).

Replacing the Inspectors with School Advisors was the cumulative result of teacher opposition that had culminated following the collapse of the Colonel's dictatorship in 1974, as

well as, the change of government in 1981. Among other things, the Law established 300 positions for School Advisors in Primary Education, who are the study subjects.

Duties of school advisors

The School Advisor's task for the guidance of teachers can be summarised as follows (Laws 1304/82, 2525/97 and 2986/02, MD 353.1/324/105657/2002):

- To ensure the implementation of educational policy and promote educational innovations in schools.
- To propose and coordinate the implementation plan for the curriculum or to ensure the implementation of the curriculum proposed by the Pedagogical Institute.
- To collaborate with teachers on all educational and teaching issues, to monitor teachings after having notified teachers and to organise exemplary teachings lessons.
- To superintend teachers' in-service training.
- To propose personalized training programmes for teachers who may prove to be inefficient.
- To evaluate the scientific, educational and teaching competence of teachers. In order to assess, School Advisors are expected to take into account: a) teacher's active participation in training and other meetings; b) specific information obtained from monitoring at least two lessons during the school year. As previously stated, this function of the School Advisor is still inoperative.

The subsequent development of the institution

Initially, there was enthusiastic reception of School Advisors on the part of teachers. Not long after, however, the climate altered to such a degree that by the second half of the 1980s it was argued that the reform measure had already been nullified (Andreou 1986).

The root cause of the friction was the issue concerning evaluation. The prospect of it being instigated through the application of School Advisors as the actual assessors of teachers' pedagogical and teaching competence triggered a strong reaction by the latter which undermined the supervisor-supervisee relationship. The basis for this was the fear that the institution of inspection would be re-established in an underhand way (Mavrogiorgos 1994). Indicative is the fact that the Teachers' Association urged its members to oppose the School Advisor's visits to their classrooms, unless, of course, they themselves wanted to be

monitored (Karageorgos 1994). In a nutshell, despite the fact that by 2002 the state had adopted three laws and two presidential decrees for the introduction of teacher evaluation, protest action in the form of strikes and strong criticism, coupled with the government's timidity and recurrent parliamentary elections frustrated their being implemented.

Moreover, mention needs to be made of the other problems that led to the initial enthusiasm being suppressed: namely, the training of School Advisors in instructional supervision was inadequate; the mindset of the 'isolation' of teachers in their classrooms; the considerable number of teachers that each Advisor was responsible for guiding; the lack of funds for teacher training; and the centralized structure of the education system that left little or no room for innovations.

Today, the tension of the initial period described above appears to have subsided, though not because the differences have been bridged, but on account of the fact that the institution has been reduced to a common public service level (Giokarinis 2000) which does not disturb the Greek educational system in any substantial way (ibid.), nor does it constitute a significant reform (Katsikas et al. 2007). School Advisors themselves claim that their neglect by the state has undermined and discredited the institution (PESS 2009)

Research framework

The need for the research

As seen above, in the current educational reality, the School Advisor is the only body leading and guiding teachers in Greece. The way in which School Advisors consider that they should perform their role, is a matter of great scientific interest, even when taking into account the fact that the institution has not measured up to the expectations that accompanied its introduction, meaning that teachers do not have adequate support. Furthermore, today the institution of the School Advisor is the focus of both education policy and public interest due to the three following factors:

- Though legislated, because of ineffective government operations and the resulting reactions of teachers, assessment in Greece has been inactive for decades.
- The recent introduction of Law 3848/2010 has reinstigated the implementation of teacher evaluation.
- The issue of evaluation performed by the instructional leaders has preoccupied the international education community, as the relationship of trust which is required in the guiding function runs the risk of being undermined (Carroll 1996, 71; Moir and Baron 2002; Pawlas and Oliva 2007, 14).

The research methodology

The survey was conducted early in 2010. A questionnaire based on the one related to the TISSNTE project was adapted to the particularity of the Greek School Advisor. The sample consisted of 137 (from a total number of 299 or 45.7%) School Advisors employed in primary school education. The sample is representative of those currently working as Advisors, both in terms of gender and geographical location.

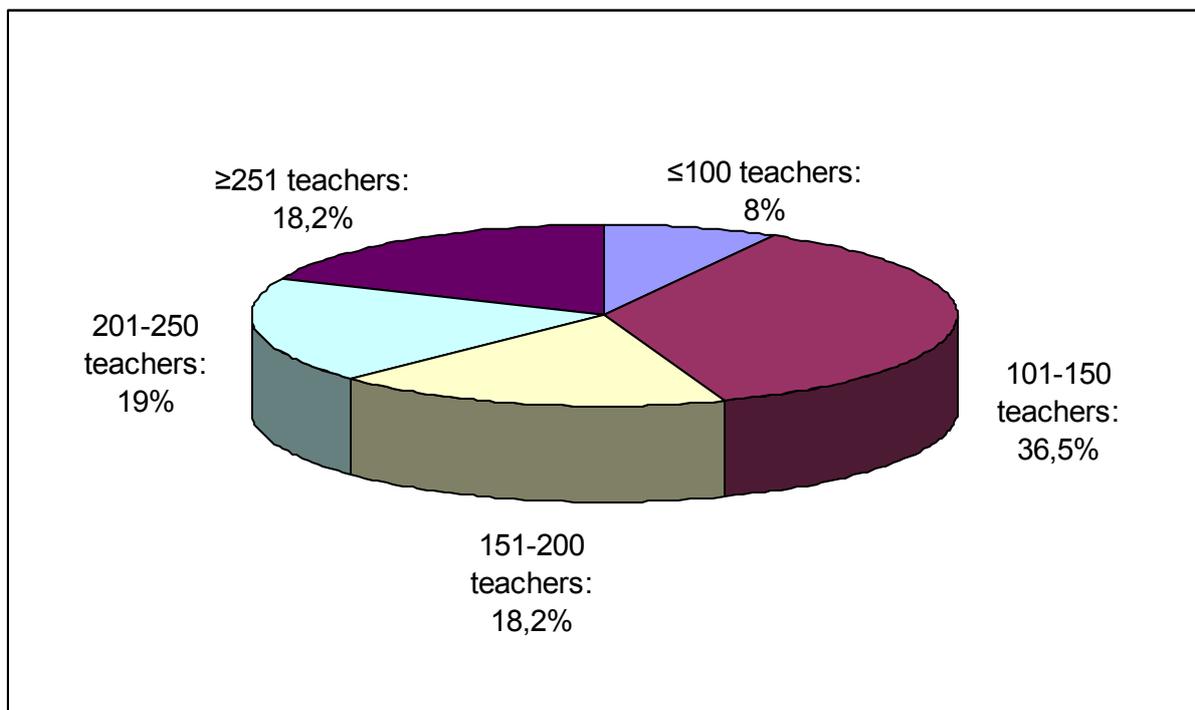
Results

Personal, educational and occupational characteristics

Of the 137 participants, 79 (57.7%) were male and 58 (42.3%) female. The two major age groups were 48-52 (45.2%) and 43-47 (32.6%) respectively.

Regarding the Advisors' educational level, the vast majority (89.1%) indicated that they had completed postgraduate studies (M.Sc. and/or Ph.D.). Indicatively, 40.9% of the sample had a Ph.D.

Figure 1. Number of teachers within the jurisdiction of School Advisors



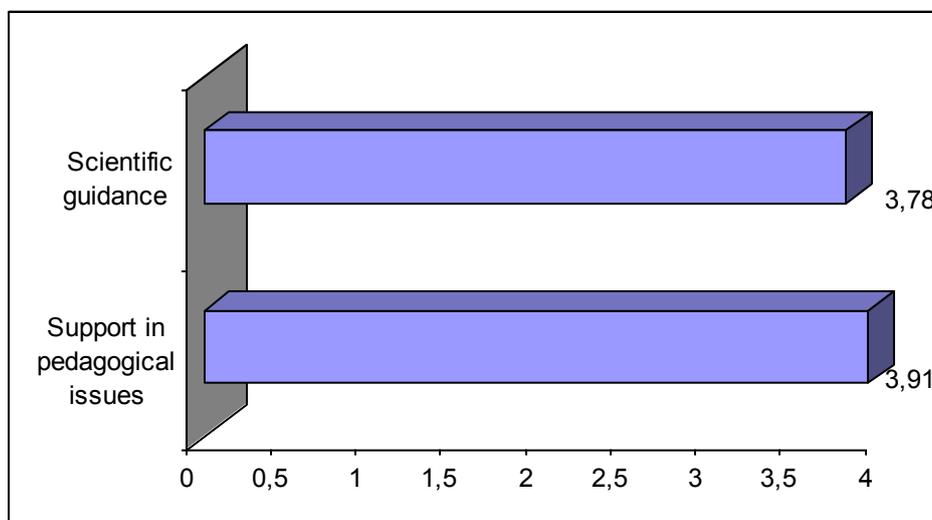
The number of teachers within the jurisdiction of each School Advisor is shown in Figure 1. As noted, not only are there unjustifiable differences between Advisors, but there is also a remarkable percentage (37.2%) of those who carry the burden of being responsible for more than 200 teachers, which hinders the individualized support promised by the institution.

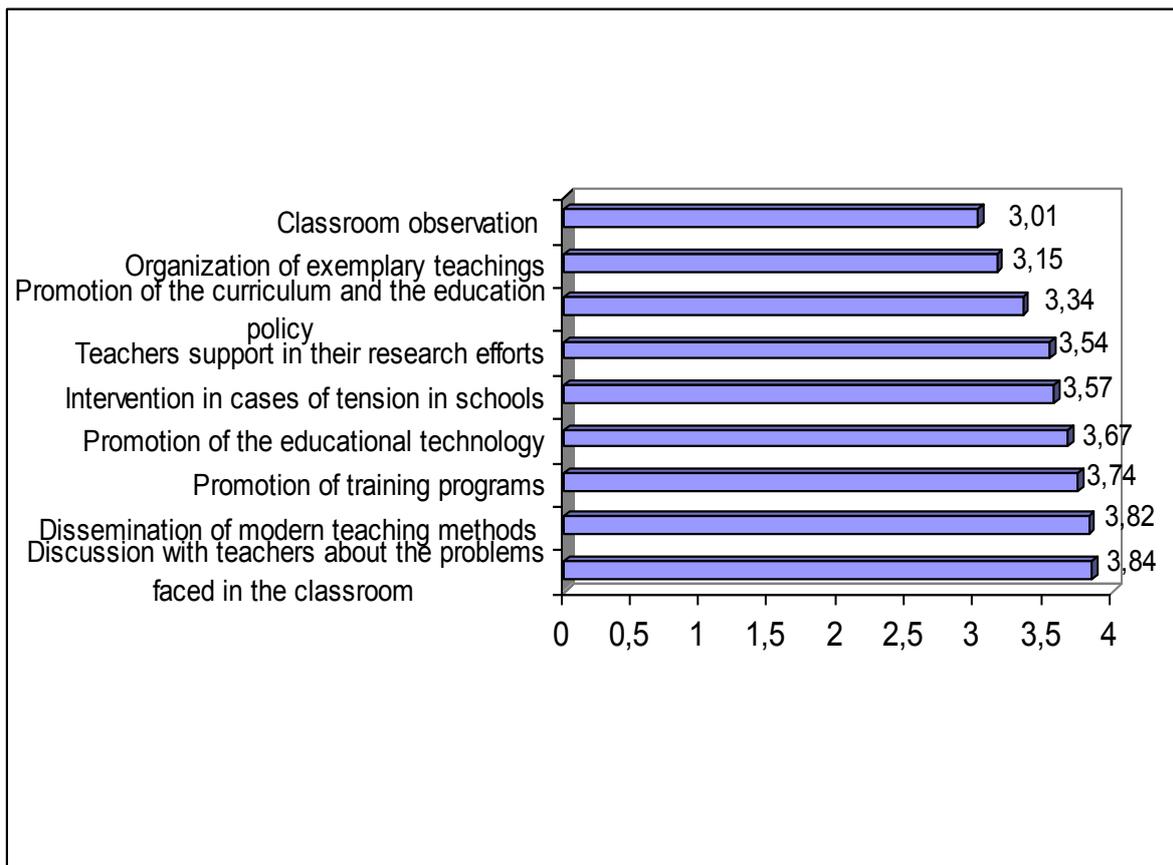
The data regarding the training of School Advisors concerning instructional supervision is disappointing: 29.9% do not have any specialization; not even the brief seminars, which were organized by the Ministry of Education following selection for the post, and which were evaluated as being inadequate.

Priorities for School Advisors as for Guidance and Support of Teachers

The task of the Advisors relating to teachers was /categorised into 11 components. The participants were asked to assess the importance of the listed components on the basis of their priorities on a five-point rating scale from 0 (unimportant) to 4 (very important). The results of this evaluation are presented in ascending order in Figures 2a and 2b.

Figures 2a and 2b. The importance attributed by the Advisors to the components of their role (averages)





A comparison of the estimates shows that School Advisors put **support of teachers in pedagogical issues** as being the priority with the most importance, (mean 3.91, standard deviation (SD) 0.309). **Scientific guidance**, i.e., providing advice on matters related to specific learning subjects, was significantly less important (mean 3.78, SD 0.552).

With regard to specific guidance practices, participants preferred to **discuss with teachers about the problems they face in the classroom** (mean 3.84, SD 0.406). This choice confirms the special importance attributed to teachers' support on pedagogical issues.

This was immediately followed by **dissemination of modern teaching methods**, (mean 3.82%, SD 0.441), which denotes the importance that School Advisors placed on the need for the renewal of teaching methodology and the elimination of static teaching models.

Another relatively high priority is to **promote training programs** (mean 3.74, SD 0.474). A significant point is the meaning that School Advisors give to their role and the manner they determine their priorities, which is characterised over the years by stability: even though the group composition has changed dramatically, in all previous cases a consensus can be ascertained, with some slight differences, among the School Advisors now in service and their predecessors (Papavassiliou 2008). This stability cannot be put down to the legislation that defines their statement of duties as it does not rank these components as more

important. It is more likely that the reasons for this can be found in the formation of a "guiding tradition" over time, where the educational context has favoured the reproduction and dissemination of certain supervisory practices.

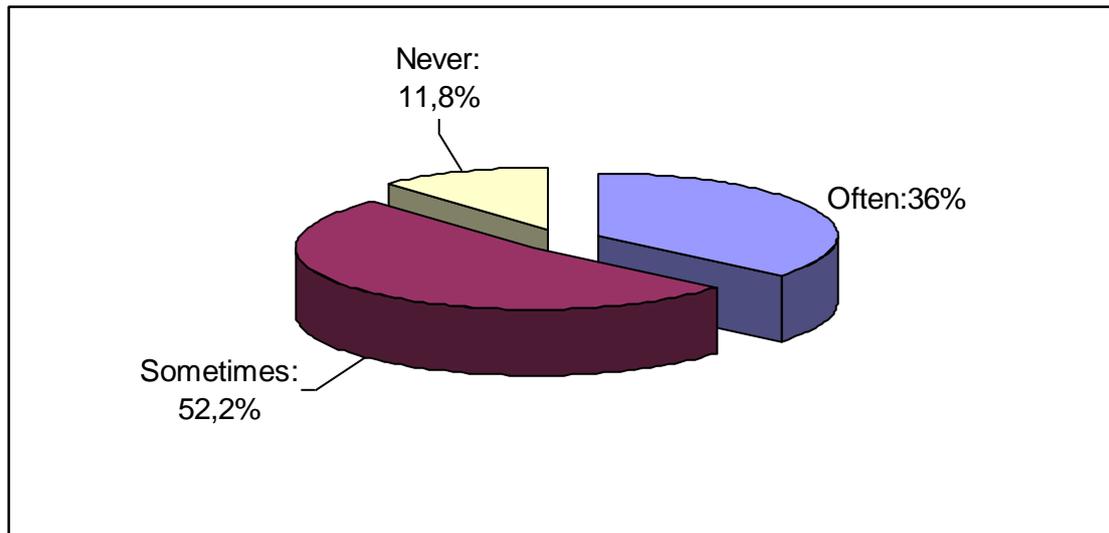
Promotion of educational technology ranks fourth (mean 3.67, SD 0.609), **intervention in cases of tension for the formation of a positive school climate** is fifth (mean 3.57, SD 0.652), followed by **teachers support in their research efforts** (mean 3.54, SD 0.698).

The last three components have been ranked significantly lower: 11.6% of the Advisors characterized **promotion of the curriculum and education policy** as being of moderate or of minor importance (mean 3.34, SD 0.701), possibly indicating their scepticism about the choices made by the central administrative offices and about the centralized structure of education, which leaves little or no scope for initiatives and innovations.

Organization of exemplary teachings has been placed second to last as a priority (mean 3.15, SD 0.916). Although it is common the practice of teachers observing and subsequently analysing the instructional teacher's lesson (Edwards and Collison, 1996: 27-28), the Advisors in the present study may have had inhibitions to exhibit their teaching practices, as this does involve their being informally assessed and/ or perhaps criticised by the teachers who are observing them. From this perspective, it is apparent that the above guidance practices are a much safer prospect. It is not only in this study that this component has received such a low priority rank. More specifically, in an earlier research, Advisors from the previous period placed it last and the researcher likewise interpreted this tendency as reluctance to teach before an audience of teachers (Papavassiliou 2008). Maynard (2000) has also identified similar feelings to mentors who in like circumstances had indicated a lack of confidence and the need to have the quality of their teaching confirmed.

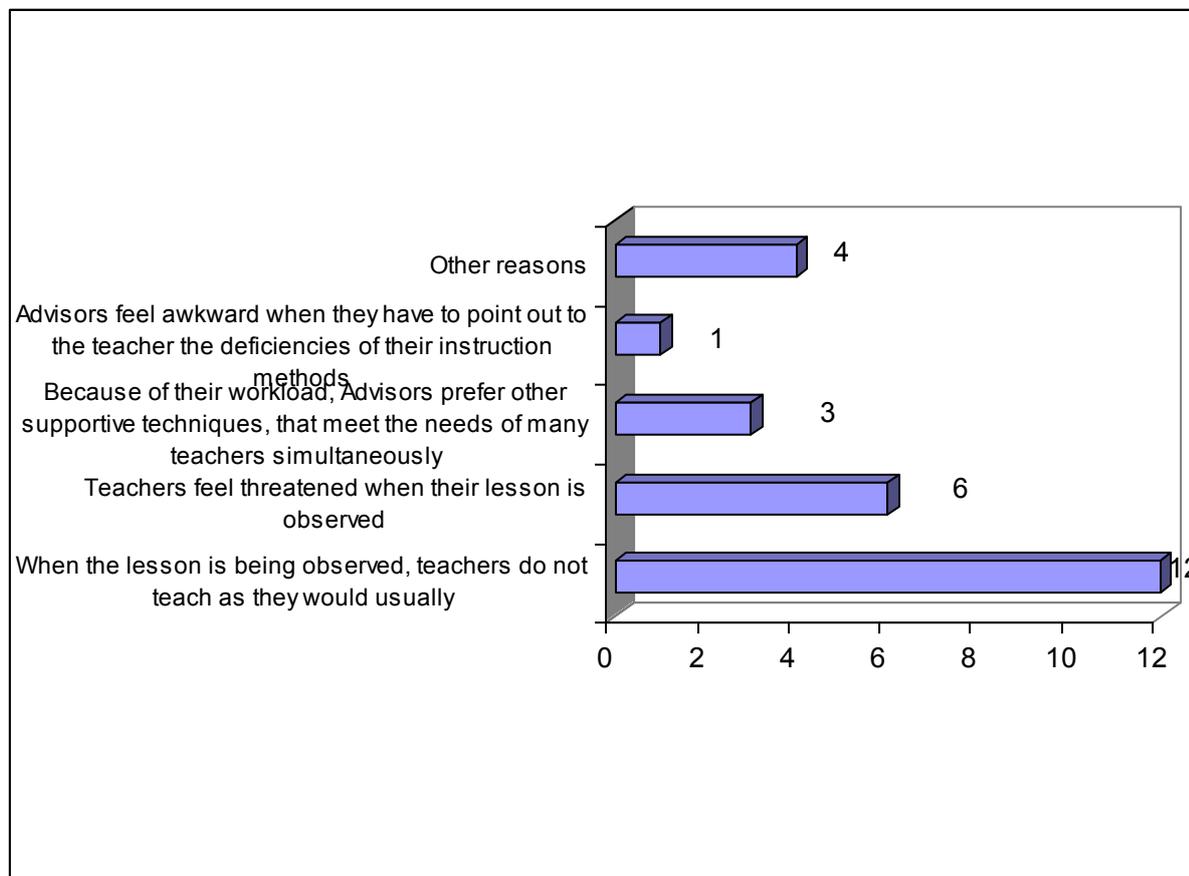
Finally, the practice that is the least preferred by Advisors (mean 3.01, SD 1.004), is the **classroom observation of teachers**. The fact that 27.9% of Advisors have given it a value ranging from 0 to 2 (insignificant to of moderate importance) is indicative. This is in contrast to the fact that the process is understood as essential to supervisory or mentoring relations, which is often exercised on a basis of systematic planning and with the use of observation tools and/or audiovisual recording media (see for example: Edwards and Collison 1996,27-28; Hobson 2002). In an attempt to approach the extent to which the latter perceptions affect the guidance practice, Advisors were asked how often they sought to monitor teachers in their classroom. It was revealing that a considerable (11.8%) of Advisors have never observed a teacher presenting a lesson in a classroom situation. 36% answered "often", while over half (52.2%) responded "sometimes" (Figure 3).

Figure 3. Responses to the question "How often do you seek to monitor lessons in the classroom?"



The responses here vary greatly according to the training that the Advisor has had. Of the respondents who have undergone training in supervisory practices, only 6.3% replied that they have never visited teachers in the classroom, in contrast to 24.4% who have not attended any such training programs - a proportion that is almost four times greater ($\chi^2 = 9.911$, $df = 2$, $p < 0.01$). This finding confirms the significant effect that training has on supervisory practices.

Figure 4. Responses to the question: "If you "never" seek to monitor lessons, what are the reasons that prevent you?"



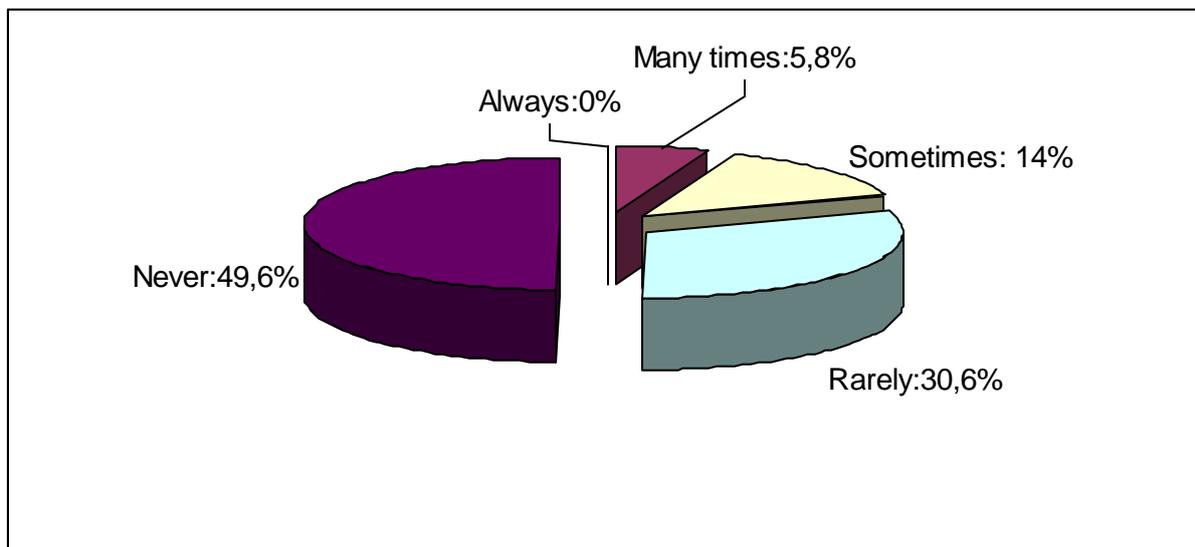
As can be seen in Figure 4, out of the 15 Advisors who reported that they never seek to observe lessons, 12 (80%) justified their action by answering that "when the lesson is being observed, teachers do not teach as they would usually". Six out of 15 (40%) gave as another reason the view that "teachers feel threatened when their lesson is observed", three (20%) "prefer, because of their workload, other supportive techniques that meet the needs of many teachers simultaneously", and one who is a consultant (6.7%) reported that he feels "awkward, when he has to point out to the teacher the deficiencies of their instruction methods ". It should be clarified that the reasons given above had been formulated a priori in the questionnaire; each respondent could choose more than one, and they were given the opportunity to add others that had not been foreseen. Interestingly, the other reasons that were noted are as follows:

- Discussions with students and the teacher is sufficient in order to clarify the teacher's work. (2 references)

- They themselves being teachers, who have taught in a classroom setting, thus they are able to perceive "the students' level and needs, as well as the pedagogical climate". (2 references)
- Observation is not useful. (1 reference)
- "An evaluation report is not permitted, therefore, teacher observation is ineffective". (1 reference)
- Teachers feel awkward being monitored. (1 reference)
- "Monitoring is considered as a kind of covert evaluation and thus, there is opposition by teachers largely instigated by the Teachers' Association". (1 reference)

Based on both our personal experience and the findings of the study presented above, it is apparent that a notable percentage of Advisors appear to have a distorted perception of teacher monitoring, which, in its worst form, is seen as an instrument of inspection or at best, it is regarded as a means for a teacher to prove their teaching skills. It must be stated here that despite the indisputably negative impact that the school Inspector had in previous years on school culture overall, the present day School Advisor has both the capacity and the responsibility, with the appropriate approaches, to alter this biased image into the positive, constructive role that it is.

Figure 5. Responses to the question: "If you often or sometimes seek to monitor lessons, do you face the reluctance of teachers to accept you?"



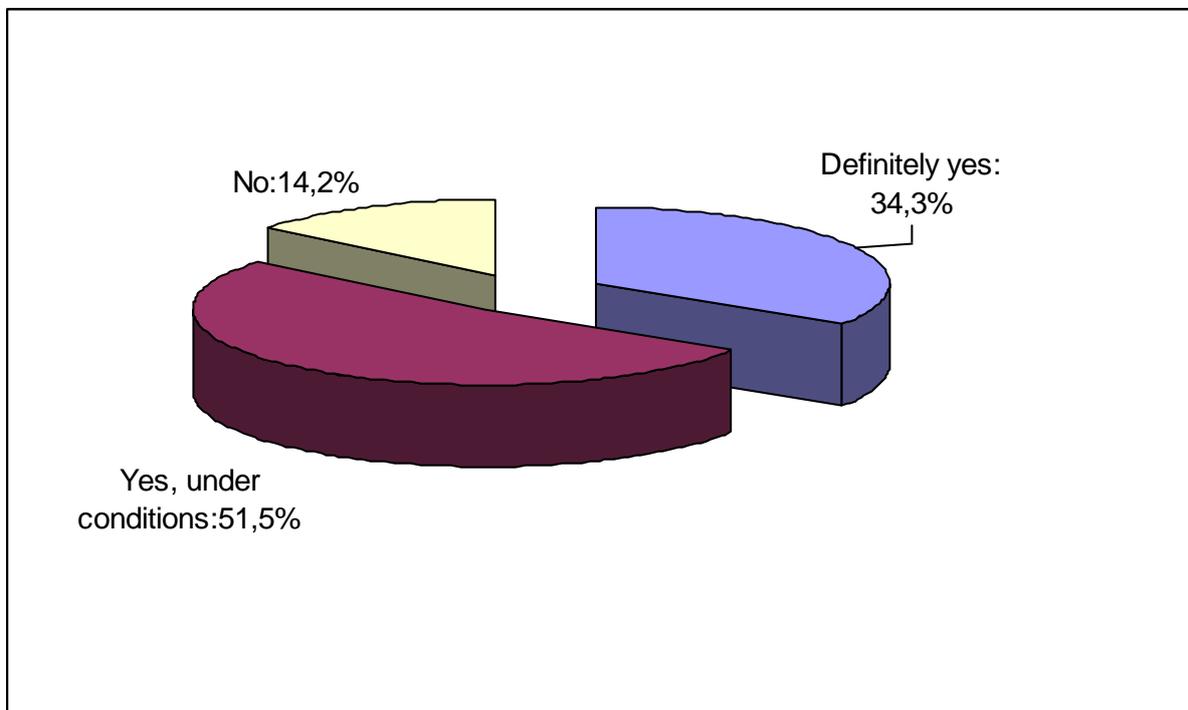
At least half of the 121 Advisors who often or sometimes sought to monitor teachers responded that there was a negative disposition of teachers to open up their classrooms to observation. Just under half (49.6%) reported that they never encountered a reluctance from

teachers. However, a significant (30.6%) of the remaining 50.4% overall, responded with "rarely"; it is interesting to note that only (5.8%) answered "many times".

Evaluation

The vast majority of participants (85.8% combined) agreed that Advisors should evaluate the teachers they guide, which indicates that they consider evaluation as a component of their duties, a view shared by previous Advisors (Bagakis 1999; Papavassiliou 2008; PESS 2000)⁴⁴.

Figure 6. Responses to the question "Do you believe School Advisors should evaluate the teacher they guide"?



Over half (51.5%) nevertheless, argued that in order for them to take on this responsibility, there needs to be certain conditions, which they stated. The conditions with the greatest number of references based on content analysis are as follows:

- The purpose of the evaluation should first and foremost be teacher feedback with the aim to improve teaching. (9 references)
- The assessment criteria should be specific and clear on both sides. (7 references)

⁴⁴ Letter addressed to Ministry of Education, Lifelong Learning and Religious Affairs, dated 7/5/2000

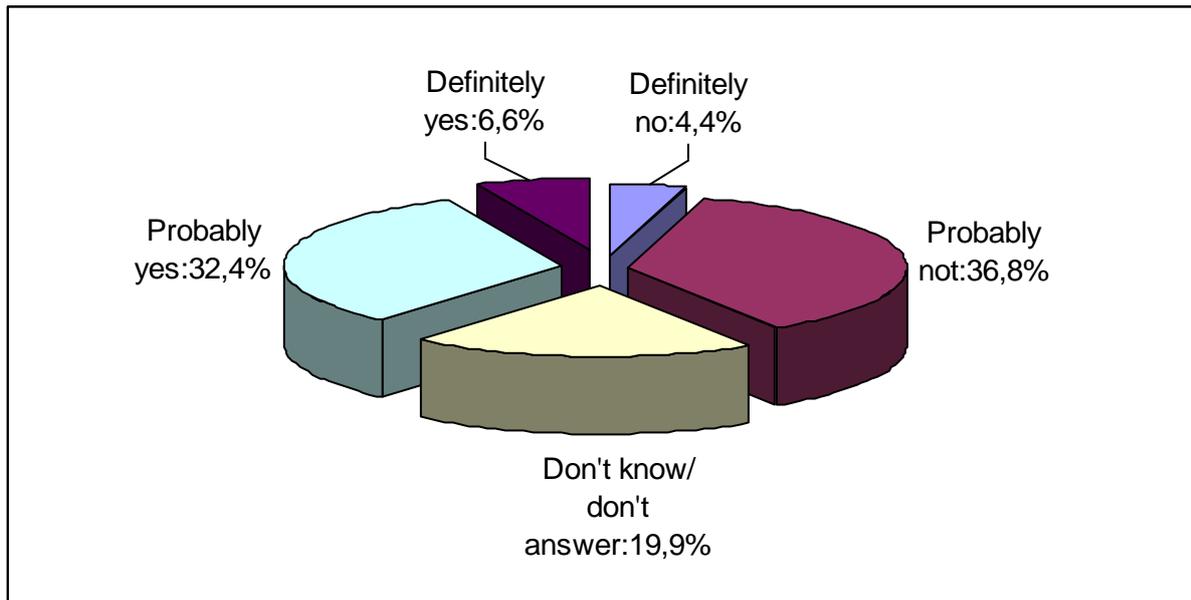
- Teachers should be given prior notice of their observation with specific details regarding both the procedure and purpose of the evaluation. (7 references)
- The School Advisor should undergo prior scientific training on evaluation processes. (5 references)
- Teachers should have access to systematic training before their evaluation. (5 references)
- Education officials should also be subject to evaluation. (5 references)
- Teachers who wish to be promoted to executive positions are those that should be evaluated. (5 references)

It is worth noting, however, that the Advisors' proposals do not include specific references as to "what precisely should be assessed", thus getting to the crux of the matter; this may very well be due to the more general nature of our question. Nevertheless, the actual content of the proposals clearly indicates that School Advisors wish the process of evaluation /to be applied under conditions other than those legislated in the past.

A possible explanation for the 14.2% of Advisors, who did not agree with the statement that Advisors should evaluate the teachers they guide, may be the fear of jeopardising their relationship with teachers, as is suggested by the analysis of the responses to the following question. One obvious example of this is one Advisor who noted that in this case the "sense of trust and intimacy between teachers and the School Advisor will be weakened".

In the next stage, participants were asked whether they believed that the legislative provision for integrating evaluation in their jurisdiction had made teachers more wary of them.

Figure 7. Responses to the question "Do you believe that the legislative provision for integrating evaluation in your jurisdiction has made teachers more wary of you?"



The "no" and "probably not" responses (41.2% combined) have a narrow lead over the "probably yes" and "yes" responses (39% combined). The "definitely no" and "definitely yes" responses are 4.4% and 6.6% respectively. In the relevant literature, as previously stated, it has been argued that the state's efforts to institutionalize teachers' evaluation under those particular conditions, not only undermined the supervisor-supervisee relationship, but also actually fed the teachers' negative attitude towards attempts to provide guidance (Andreou and Papakonstantinou, 1994). The views of the School Advisors in the present study neither confirm nor refute this position.

The correlation of responses to the two last questions showed that 52.6% of participants who responded that School Advisors should evaluate the teachers they guide, believe that the relative legislative provision "makes" or "probably makes" teachers more reserved towards Advisors. On the other hand, only 28.9% of respondents who are in favour of evaluation being conducted by Advisors hold the same opinion ($\chi^2 = 15.599$, $df = 4$, $p < 0.005$). It can therefore be assumed that an important factor affecting the attitudes of at least half of the School Advisors who do not wish to participate in the evaluation process is the likelihood of their relationship with teachers deteriorating.

Discussion

The data analysis of the present study showed that most Greek School Advisors consider it more important to guide teachers in pedagogical issues, rather than provide guidance on issues related to learning subjects. While discussing with teachers about the problems that arise in the classroom, disseminating modern teaching methods, and promoting training programs are the three most popular guidance practices, the least popular that were ranked the lowest are: promotion of the curriculum and of the educational policy in general, organization of exemplary teachings, and observation of teachers in their classroom.

The last two elements relating to School Advisors' practices are regarded as the most significant findings of the present study. Namely, School Advisors, as officials responsible for supporting teachers' professional development and improving teaching practice, despite identifying these as proponents of educational innovations, appear to be remarkably cautious in entering the classroom whether to conduct exemplary teachings or to monitor lessons. On this point, they still seem hold the attitudes they had as former teachers, which are further reinforced by the present teachers' reluctance to allow Advisors into their classrooms. Even though teacher monitoring is a basic component of such a collaborative relationship (Edwards and Collison 1996, 27-28; Hobson 2002), neither the School Advisors nor the teachers seek to apply it or even view it as a given starting point for constructive feedback. This finding appears to be consistent with educational research data, at least in Western societies, i.e., the classroom is generally regarded by teachers as an area that is inaccessible to others and they see teaching as an activity in an almost mystical light (Loughran 2006, 57; Ginsburg and Clift 1990).

Likewise, in the Greek educational system, the classroom is still partly closed to others. This is not only because of the traditional school culture, but also because of the burden of the authoritarian, all-powerful school Inspector as it existed in the past and the reactions of the teachers who responded negatively to the misleading legislation on evaluation. In addition, the large number of teachers that corresponds to each advisor cannot be overlooked as a cause for the modest number of teacher monitoring that are carried out. Any sort of personalised teacher support can almost be considered a luxury when taking the Advisor's workload into account. However, since feedback is the main focus of guidance practices and since that is based primarily on classroom observations (see indicatively Giokarinis, 2000; Edwards and Collison 1996, 27-28), it is not only unthinkable but also unacceptable for School Advisors to not enter the classroom

The majority of School Advisors are in favour of evaluating teachers, however, over half believe that in order to ensure the effectiveness and efficiency of the process, there need to exist other conditions to those that have to date been legislated. Despite the relatively large

percentage of Advisors who are in favour of evaluation, a substantial 39% “believes” or “possibly believes” that the legislative provision for integrating evaluation in their jurisdiction has made teachers more wary of them..

As the case stands, under the current circumstances with a complete absence of any form of evaluation whatsoever, teachers have very little or no external motivation to respond to the supervisor’s interventions aimed at the improvement of teaching and professional development. So long as there is no gross disciplinary misconduct teachers in Greece are free to choose a formalistic type of teaching and/or perform their duties poorly, without this having any professional impact on their job and in fact do not even hinder their chances of career advancement in the form of promotion. With the recent Law 3848/2010, introduced subsequent to our research, the now called Ministry of Education, Lifelong Learning and Religious Affairs has again expressed the intention to reactivate the teacher evaluation process, without, however, having as yet specified the terms under which this will take place. The present study has indicated that although School Advisors wish to undertake this responsibly, it can only be carried out if the provisions regulating the management of evaluation differ greatly from the old standards which had dismally failed to convince teachers of the state’s education system’s intent to check the subjectivity, and potential autocratic attitudes of the evaluators.

The most significant impediment, not only in this case but also to any reform, is an atmosphere of distrust between citizens and the state. Though this phenomenon may be observable, to a greater or lesser extent, in practically all countries (Davis 2001), its presence in Modern Greece has a particularly weighty significance (Dogan 2005, 23; Papoulias and Tsoukasm 1998, 110), especially when taking into consideration the fact that the Modern Greek state is a country with both a younger democracy than its other European counterparts and it has a comparatively low standard of living (Fuchs, Guidorossi and Svenson 2002, 346); governments and public administration have repeatedly been accused not merely of poor performance but of outright corruption. State representatives along with public administrators (in this case the Ministry of Education and School Advisors) in their efforts to increase public confidence and in order to tackle the growing individualism that leads to exploitation of the state’s funds and recourses for personal benefit, should make serious changes to the context in which people interpret decisions. This could be accomplished by adopting an attitude that demonstrates not only that they are able to make definite work commitments but also to be consistent in upholding them. Moreover, emphasis should be placed on developing a communication strategy based on mutual understanding, as well as acceptance and participation, so that citizens in general feel that they actively participate as partners in the reform measures instigated (Newman 2005, 173-174; Papoulias and Tsoukas 1998, 113-119). To conclude, there is definite potential for the

improvement of the relationship between School Advisors and teachers, as well as the entire educational community, especially within the new socioeconomic context being formed in the country based on trust, transparency and effectiveness.

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Online Knowledge Building Platform: In the Eyes of Knowledge Builders

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Abstract

This preliminary case study aimed to investigate students' perceptions of the application of Knowledge Forum in a Hong Kong subsidized primary school. Eighteen Hong Kong Primary 5-6 students used Knowledge Forum® (hereafter KF) as an online knowledge building platform in different knowledge building projects in different subjects and extra-curricular activities in the past two academic years (2007-2009). This study employed focus group interviews with students as a major research strategy in exploring students' views upon the use of Knowledge Forum®. Major findings of this study showed that the students had positive attitudes towards the use of Knowledge Forum®. On the basis of the students' perceptions in the study, four key features of KF are identified: (1) KF as build-ons for exchanging ideas and idea improvement; (2) KF as CSCL for deepening understanding; (3) KF as boundless learning; and (4) KF as international collaboration for cultural exchange and language learning. Conclusion and implications are also discussed in the last section in this paper.

Keywords: *knowledge building, Knowledge Forum®, computer supported collaborative learning, CSCL, computer assisted learning, Hong Kong*

Introduction

Knowledge Forum (KF) is a computer-supported collaborative learning (CSCL) platform in which knowledge advancement is facilitated with collaborative effort amongst mainly students. KF is a software environment specifically designed to support knowledge building (Scardamalia 2003). It was invented by The University of Toronto, Canada. Schools of over 20 countries are now using KF as a learning platform for their students to inquire knowledge collaboratively. KF provides students and teachers with a unique collaborative space in which to share ideas and data, organize course materials, analyze research results, discuss texts, and cite reference material. KF is appropriately used in a widely-ranged spectrum, from junior kindergarten to graduate level education, and for a broad range of community, health-care, and business organizations involved in creative knowledge work.

On the basis of knowledge building theory, KF depends on the deep underlying similarity of the socio-cultural and cognitive processes of knowledge acquisition and knowledge creation. KF allows users to create a knowledge building community. KF includes the features of note-taking, searching, and organization that allow any type of community to build knowledge.

Instead of a fragmented learning environment, a real knowledge building environment facilitates learning, in which learning is centered around ideas and deeper levels of understanding. KF is a collaborative database developed for this process of 'knowledge building.' Knowledge building process involves defining problems and hypothesizing, researching and collecting information, analyzing and collaborating. The structured environment of KF encourages exploration of ideas, sharing of new information, as well as creation of new knowledge. Different studies show that this type of sustained inquiry fosters student interaction and inquiry, and knowledge building creates a level of student interaction for developing basic skills and meta-cognition.

In the collaborative KF environment, all students are creators of knowledge in the learning community. They are expected to pose questions, define their own learning goals, acquire and build a knowledge base, and collaborate with one another. Built-in scaffolds help guide students to the thinking strategies in sharing and enhancing information. Students contribute public notes, 'build-on' to others' ideas, and 'reference' the work of peers. The ongoing practice of these advanced operations, combined with teacher support and coaching, helps students acquire the sorts of learning strategies that characterize expert learners.

Knowledge forum in the case school

The case school in this study was a primary school with about 700 students. In the past two years, KF was used in different subject classes in the case school, including Chinese language education, English language education, as well as extra-curricular activities that included international collaboration knowledge building projects with other countries, including Spain, the United Kingdom, Dubai, etc. In order to explore how the participating students perceive this innovation experience, a preliminary study was carried out in the case school in May 2009.

Research design and methods

The goal of the knowledge building project is to enrich students' learning experiences with the use of KF. The purpose of this study is thus to explore the students' perceptions of the application of KF. The research question of the study is *How did the students perceive the use of KF?*.

Qualitative approach is applied in collecting data for this study. Being exploratory in nature, qualitative approach is construed as a research strategy that emphasizes words rather than quantification in the data collection and analysis (Bryman 2004). The current approach acts as research-based enquiry to draw upon the views from the students on the innovation practice.

Focus group interviews were carried out to 12 out of 18 participating students in the project while each focus group interview contained 6 students. Owing to the exploratory nature of the study, qualitative approach was used to elicit the participating students' views and feelings towards the use of KF in their own learning experiences and let them express their views freely. All the data were collected after the use of KF. Students' focus group interviews were analyzed and emerging categories were identified with the use of colour coding for categorization. Finally, conclusions were drawn from these categories (Miles and Huberman 1994).

Findings and Discussion

The findings are categorized into the following themes: (1) KF as build-ons for exchanging ideas and idea improvement; (2) KF as CSCL for deepening understanding; (3) KF as boundless learning; and (4) KF as international collaboration for cultural exchange and language learning. They are discussed as follows.

KF as build-ons for exchanging ideas, idea improvement and knowledge creation

Very interestingly, the students recognized exchanging ideas and build-ons as one of the key features in the application of KF. Exchanging ideas, as regarded as the key feature of KF by the students, is also one of the reasons why they liked about KF. The students in the study agreed that exchanging ideas can help them learn more effectively. For example, this student explained why KF helps them learn more effectively, saying that:

“When others raise questions and we really can answer and we can provide new methods to solve them. On KF, sometimes when we find the problems, we can try to answer them.” (Student R, Focus Group Interview 2)

The students also saw that exchanging ideas through the use of KF (i.e. build-on) can help improve their ideas and create new ideas. Build-on is perceived as an important function of KF for exchanging ideas. For example, one student expressed, *“build-on is to let others know what I am thinking about others’ notes. It also shows what I think about others’ notes.”* (Student M, Focus Group Interview 2).

Idea improvement is an explicit principle in knowledge building, guiding the efforts of students and teachers rather than something that remains implicit in inquiry and learning activities (Scardamalia 2002). One student said that, *“KF is a platform for exchanging knowledge and ideas...for example, building on others’ notes and raise new ideas.”* (Student J, Focus Group Interview 1). Another student followed, *“On KF view, we can write about our own ideas and we can build-on each other and at last we can create new ideas.”* (Student B, Focus Group Interview 1).

Besides, some students perceived that KF helps them to develop their critical thinking through the process of exchanging ideas as well. In other words, the students could develop generic skills. For example, this student pointed out that, *“information from the internet may not be all correct and we need to be skeptical.”* (Student A, Focus Group Interview 1)

Much more interestingly, KF allows the students to build up their confidence in discussion with others. On this point, technology frees the inherently shy, less vocal individual to contribute with less fear of interruption or social stigma (Herrington and Oliver 1997) as some students may have verbally prolific or dynamic personality that may actually be inhibited in the learning environment (Austin 2002).

KF as CSCL for deepening understanding

KF, for the students, allow them to have more space to share and construct knowledge collectively. Many students expressed that KF allows the students to get more ideas and get a deeper understanding about the topic being studied. For example, one student said, "Through getting different ideas from others, we can get a deeper understanding of the topic being studied." (Student L, Focus Group Interview 1). Another student expressed, "*After from new information that was found by ourselves, we can put all the things together and think collectively and think more and get deeper understanding of the topic.*" (Student A, Focus Group Interview 1). Another student also had a similar view, stating that, "*We can better understand the topic through our discussion because we can get our classmates' opinions and have discussion and get deeper understanding of the topic.*" (Student J, Focus Group Interview 2). On this point, one student elaborated that, "*It's more interactive ... we have discussion together, learn together, for example, pose a question and ask for comments, ... edit the wrong words.*" (Student Y, Focus Group Interview 2).

When being asked about "*How do you use KF in your own learning?*", students stressed a lot on "build-ons" that help deepening understanding of certain topics. For example, one student elaborated that,

"First, we will write our ideas/opinions to attract others to read. And then build-on each other...after build-ons, there are new suggestions. Then we read about them and if we do not accept, we continue build-on."

(Student K, Focus Group Interview 1)

Another student also held a similar view, stating that, "*(It is) relevant to the topic in the textbook being taught...for example, festivals, on the KF, we are asked to discuss about new festivals.*" (Student J, Focus Group 1). One more student built on, saying that, "*Sometimes use simple words/sentences to write a note and then our English can be better. Searching information can be deepened. Sometimes the topic can be better understood.*" (Student H, Focus Group 1).

More importantly, deepening discussion is possible because of this key feature as one student said, "KF helps deepen discussion. If during the class, our discussion is just too shallow." (Student J, Focus Group Interview 1). Another student continued,

"KF is better ... as the teacher may not give us to discuss at the class, time is very short; with KF, we can get more ideas from others and make our own self-improvement." (Student K, Focus Group Interview 1)

Socially collaborative learning happened in the learning process with the use of KF, where the students learnt from each other through collaboration. On this point, one student said, “[t]hrough build-on, for example, others can point out my faults and then I can know my faults and make corrections. Then I can be better.” (Student J, Focus Group Interview Group 1) and “[n]ot deep in daily life things...such as food and nutrition. KF allows us to have deeper understanding and we can get more suggestions from others.” (Student O, Focus Group Interview 1).

Knowledge creation is also possible due to such kind of socially collaborative learning. One student said, “Apart from new information as found on our own, we can gain collaborative knowledge and create more ideas.” (Student A, Focus Group Interview 1). Another student talked about one topic that she used KF for creating some more ideas in a subject learning area, saying “New festival, sometimes we cannot think. As it requires much creativity. We can think more and get more ideas by build-on notes on the KF.” (Student O, Focus Group Interview 1).

As a whole, collaborative learning is a very important concept in the application of KF while the students had to discuss, exchange and build-on ideas and even create new ideas. In other words, KF is a kind of social learning platform that allows knowledge to be shared, enhanced, deepened and extended through collaboration (Scardamalia 2003). Knowledge building represents an attempt to ‘refashion’ education in a fundamental way to initiate students into a knowledge creating culture (Scardamalia and Bereiter 2006).

Kf as boundless learning

There is a key feature of KF that enables learning to occur anytime anywhere. The students in this study saw exchanging ideas with KF as a tool to foster the process of exchanging ideas outside the classroom anytime anywhere. “We gather all the information, discuss together. We cannot discuss at the class as it’s too loud for all to discuss in the classroom.” (Student S, Focus Group Interview 2). “KF allows our notes to be altogether. During the class, only 4 people can be into one group and during the class, it is noisy for the groups to do discussion.” (Student R, Focus Group Interview 2). Some other students also shared similar views. For example, one student said, “During the lesson, time is not enough for us. But on KF, we can see the information and continue our discussion on the KF and get better ideas.” (Student L, Focus Group Interview 1). Another student pointed out that, “more discussion can be allowed on KF. During the lesson, some of us are not brave enough to respond and it more direct to write our own ideas on KF.” (Student O, Focus Group Interview 1).

Apart from the above, such kind of boundless learning through KF is not only bounded to a local classroom but also it enables global education through international collaboration. Perhaps owing to the previous experiences in knowledge building projects that allowed international collaboration with Spanish and English students in the case school, the participating students perceived that knowledge building helped them to know more about the cultures of other students in other countries. For example, this student said, "If we have KF, we can have idea exchanges with other international students." (Student S, Focus Group Interview 2).

Interestingly, to the students, cultural exchanges seem to be highly linked with English language learning, in which English acts as a medium to understand, communicate and collaborate with others in the global world while English can be a communication agent to international knowledge building without any boundaries of the countries. The students found that the use of KF can help them in their language learning. One student said, "We can learn more English and search more information about the topic." KF is better than non-KF. We can learn more English. For example, in a topic, we can learn more about nutrition in the topic 'Food and Nutrition'." (Student K: Focus Group Interview 1)

Conclusion

In technical terms, KF is a shared, networked, multimedia database constructed and organized by the participants. Without doubt, KF provides an interactive socially collaborative learning platform for students to learn, collaborate and develop together for better learning. In knowledge creating organizations, people are honored for the contributions they make to the organization's or the community's knowledge (Scardamalia 2000).

Knowledge building pedagogy is based on the principle that authentic creative knowledge work can take place in school classrooms (Scardamalia and Bereiter 2006). KF, as 'technologically enabled knowledge building', is indeed a human dynamic of knowledge acquisition with the networking technologies that provide a great variety of learning opportunities for learners to learn in a timeless and boundless space.

However, there should be much more for future development in KF pedagogical design and practice. One student gave us as educators or teachers an insight towards school development direction. She said that: "*I suggest using KF... not only for 2-3 years, after being older, we already get used to using KF...*" (Student R, Focus Group Interview 2). The benefits of using KF in learning are certain but how can we sustain and further improve its use in the context?

More studies should be conducted to explore how students learn during the application of KF and what facilitating factors are favourable for student learning with the use of KF. Longitudinal study should be conducted to examine the extent to which student learning is affected by the use of KF and how KF change their way of learning. Factors affecting their perceptions of KF (such as teaching design, teachers' characteristics, etc.) can be further studied in the future. Difficulties can be further explored as well.

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PROFESSIONAL DEVELOPMENT OF TEACHER EDUCATORS

The Development of Students' Perception of Their Competence for Teaching Physical Education over the Course of a Year in Teacher Education.

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Abstract

The purpose of this study was how third and fourth year students in a teacher education programme perceived their competence in physical education, and how this perceived level of competence developed over two semesters of a 30ECTS course. The data was collected by means of questionnaires, the first of which was distributed to 37 students at the start of the course, and the second at the end to the 32 respondents who completed the course. The results, which were analysed using SPSS, show that the students' perceived competence in physical education had increased in all topics by the end of the course. At the outset, male students perceived their competence more positively than female students. However, after 40 weeks in the physical education programme, female students perceived their competence to be equal to or even greater than that of their male co-students. The results are discussed in terms of learning and development of pedagogical content knowledge.

Keywords: *PE students' perceptions, pedagogical content knowledge*

Introduction

According to a review of teachers' competencies (Nordenbo et al. 2008), teachers are the most important factor which influences pupils' achievement. It is therefore important to understand what knowledge student teachers need to develop in order to become competent and effective teachers. A considerable amount of work has been done in this field and has lead to many ways of conceptualising knowledge for teaching. However, although different

knowledge bases for teaching have been identified, most build to some extent on the knowledge bases identified by Shulman (1987).

Shulman (1987) identifies seven knowledge bases which form what he regards as the minimum knowledge required for teaching. The first knowledge base is content knowledge, also called subject matter knowledge by others (Capel et al. 2009). Content knowledge is the understanding of concepts and skills in the relevant subject. According to Shulman (1987), this consists of "...the knowledge, understanding, skills and dispositions that are to be learned by school children. This knowledge rests on two foundations: the accumulated literature and studies in the content areas, and the historical and philosophical scholarship on the nature of knowledge in those fields of study." (Shulman 1987, 8-9). The second knowledge base is general pedagogical knowledge with special reference to broad principles and strategies of classroom management and organisation that appear to go beyond content knowledge. The third knowledge base is curriculum knowledge which consists of knowledge of materials and programmes, such as e.g. national curriculums. The fourth base, pedagogical content knowledge, comprises knowledge of how a subject should be presented to pupils; this forms the basis for selection, organisation and presentation of lesson content. The fifth knowledge base is knowledge of learners and their characteristics and is of particular interest in physical education since it includes knowledge of children's physical, psychological, social and motor development, and hence of the fundamentals of human movement. The sixth knowledge base, knowledge of educational contexts, includes knowledge of the wider community and of the specific school. The seventh and final knowledge base is knowledge of both short and long term educational goals, purposes and values as well as philosophical and historical influences. Of all seven categories, pedagogical content knowledge deserves special attention since it represents the blending of content and pedagogy.

A knowledge base for teaching is not permanent or final (Shulman 1986). Siedentop (1991) has shown that the development of a teacher's knowledge bases in physical education progresses in stages. This development is either seen as stages of student teachers personal concerns in the teacher education programme (Fuller 1969), or as personal development as teachers (Capel 2001). Lack of knowledge or competence in certain activities or topics has consequences both for teachers and pupils. Insufficient content knowledge leads to a less confident teacher (Gower and Capel 2004). Pupils' learning also suffers when they are taught by a teacher who has limited content knowledge of the subject. A teacher who lacks competence in dance, for example, would probably experience considerable challenges even selecting suitable music with the right rhythm for a dance lesson. Physical education teachers must master the activities they teach to the extent that they can take their pupils beyond introductory levels (Siedentop 2002). In order to fulfil the

requirements of national curriculums, this means that teachers must have adequate content knowledge in a wide range of activities. The Norwegian curriculum is formulated for each grade in terms of competence aims, also known as learning outcomes, in a wide range of activities, e.g. dancing, outdoor education, orienteering, ball activities and skiing/skating (Norwegian Directorate for Education and Training 2006).

Research results show that student teachers of physical education have problems integrating content knowledge with pedagogical content knowledge (Siedentop and Eldar 1989). Graber found that while students recognised the need to combine content knowledge with pedagogical strategies, they did not know how to do this. Students starting on a physical education course bring with them a variety of personal experiences from sports, games, coaching and other activities. These personal experiences are diverse and to a large extent influence each student's content knowledge/subject matter of physical education and are therefore very important (Graber 1995). However, previous experience is also important for developing pedagogical content knowledge. Some findings claim that experience prior to the course is more important for developing pedagogical content knowledge than activities experienced as part of the programme (Lawson 1988; Annerstedt 1995). Another important factor which influences the acquisition of pedagogical content knowledge is motivation for learning (Biggs 1999). It has been claimed that if a student decides that a pass grade is a satisfactory outcome of a specific course, this would lead to a shallow understanding in terms of surface learning. On the other hand, students who become genuinely interested in a subject are motivated to learn as much as possible, regardless of any testing (Biggs 1987).

Capel and Katene (2000) investigated physical education students' perception of subject knowledge and how it developed during one year. They found that most students perceived their general subject knowledge in sports to be high, with the exception of dance and outdoor and adventures activities (OAA). It is worth mentioning that for many sports and activities, boys have a tendency to evaluate themselves more positively than girls (Klomsten 2004) and score higher on measures of general physical self-concept, physical ability and appearance (Marsh 1989).

Student teachers of physical education and their mentors seem to agree on what kind of knowledge a student needs to develop during one year (Capel et al. 2009). This includes content knowledge in general, but also knowledge in practical activities, and specifically in those activities where students lacked background knowledge and experience. Dance and gymnastics were identified as activities where students had least experience prior to the course and where they consequently reported that they needed to develop competence (Capel et al. 2009).

While most studies of students' perception of competence have involved students taking a full year of physical education, 60ECTS, the present study was directed at students taking 30 ESCT. The extent to which pedagogical content knowledge for teaching physical education would develop during this one year programme was of particular interest. Would 50% study time be sufficient for students to increase their perceived competence in the various physical education topics? Would there be gender differences in perceived competencies?

Methods

Data was collected from students who had chosen physical education as an elective course in their third or fourth year of a four year programme. They were asked to complete a questionnaire which took as its departure point 36 competence goals in physical education specified in the Norwegian curriculum (Norwegian Directorate for Education and Training, 2006). The questions were related to how students perceived their personal competence for teaching with respect to the specific aims, (e.g: To what extent do you feel competent to teach towards achieving the following competency aim: (The pupil should be able to) Dance different dances from different cultures). Student competence for each of the National curriculum goals was rated using the 5-level Likert scale with the following classifications: 1: I don't know what this is; 2. to a small degree; 3. to some degree; 4. to a great degree and 5. to a very great degree. Actual levels of competence were not measured in this questionnaire. The questionnaire was distributed to 37 students at the start of the course. The 32 respondents who completed the course answered a second questionnaire at the end of the 10 month course. Data was analysed using SPSS version 17.0. In the analysis, indexes were made to measure the internal consistency of questions within the same topic, e.g. questions about dance. Paired sample t-tests were conducted to determine if there were any significant differences between male and female students for each activity. T-tests were also conducted to determine if there were any significant differences between the responses at the beginning and at the end of the course.

The course

The course focuses on learning to teach physical education to primary and secondary school pupils (age range 6-15). When students have passed this course, they are qualified to teach physical education at this level in Norway. The course is the first physical education course in the teacher education programme, and involves basic knowledge and skills for physical

education. The 30 ECTS course is distributed over 40 weeks, 6 of which are spent in school. On average, students have 8 hours of teaching every week. In outdoor education, there are two compulsory excursions both of which involve overnight camping in tents. While students are actively involved in the learning process with respect to both practical activities and theoretical knowledge, the course is mainly practical, the focus being on teaching students how to organise activities, and how to adapt them for different skills and levels. Various teaching methods are used depending on the situation and the topic.

Results

37 students answered the first questionnaire, 17 male (Mean age = 25, 6) and 20 female (Mean age = 22, 7). Of the 32 students who completed the second questionnaire 15 were male (Mean age = 23, 9) and 17 female (Mean age= 23, 6). Mean and standard deviations for each competence aim, as well as results of the t tests, are given in Table 1. Internal reliability analyses were performed on factors in dance, basic movement, orienteering, ball activities and outdoor education using Cronbach's Alpha. All Alpha scores were over 0.7, suggesting internal reliability for factors concerning these topics.

Since physical education is an elective subject for students in third or fourth years of this teacher education programme, students were asked about prior knowledge of sports and about their activity level. All students reported having been involved in organised sports activities at some level. At the start of the course, 32,4% were active in organised sports. Of these, 41,7% trained regularly, 1-4 hours a week, while 33,3% trained 5-9 hours a week. Few had experience of teaching physical education; 75,7% had taught less than 10 hours in the subject⁴⁵, 43,2% had no experience as trainer, while 27,0 % had functioned as trainer in some kind of sport for a period longer than one year. There were no differences between the sexes in terms of training experience.

The results of perceived competence in the first questionnaire reveal gender differences. Mean scores are higher for male students in all competence aims except those which involve dance activities (see Table 1). Whereas perceived competence in activities involving skiing/skating and outdoor education indicate minimal gender differences, male students score very high for teaching ball activities. On issues related to theoretical concepts and knowledge about the relationship between health and physical education, female students score higher than male students.

⁴⁵ This is either as supply teachers or in school practice.

	Questionnaire 1			Questionnaire 2			t	P						
	Total (n=37)	Men (n=17)	Women (n=20)	Total (n=32)	Men (n=15)	Women (n=17)								
	mean	SD	mean	SD	mean	SD	mean	SD						
Age	24,14	4,99	25,65	6,90	22,79	1,40	23,75	1,48	23,93	1,67	23,59	1,33		
Basic movements	3,39	,50	3,28	,51	3,48	,49	4,12	,51	3,90	,40	4,31	,53	-5,43	,000
Orienteering	2,74	,66	2,94	,68	2,58	,61	4,08	,54	4,10	,57	4,06	,53	-8,90	,000
Dancing	2,52	,87	2,05	,74	2,92	,77	3,87	,80	3,68	,83	3,99	,77	-6,05	,000
Outdoor education	3,16	,62	3,15	,60	3,18	,64	3,73	,66	3,75	,64	3,71	,69	-3,46	,002
Ball activities	4,11	,81	4,47	,62	3,80	,83	4,66	,48	4,62	,51	4,68	,48	-3,22	,003
Skiing and skating	3,24	,76	3,24	,66	3,25	,85	3,97	,90	4,08	1,04	3,89	,81	-3,25	,003
Swimming	3,38	,86	3,47	,80	3,30	,92	4,16	,77	4,23	,60	4,11	,88	-4,02	,000
Relationship health-lifestyle	3,97	,56	3,94	,56	4,00	,56	4,47	,51	4,38	,51	4,53	,51	-3,52	,001
Theoretical concepts in PE	2,68	,78	2,59	,62	2,75	,91	3,66	,79	3,62	,65	3,68	,89	-5,20	,000

Table 1. Perceived competence for teaching competence aims in physical education.

The results from the second questionnaire show that all students have developed in terms of their perceived competence for teaching physical education. Interestingly however, female students have a mean score which is equal to or higher than that of male students in most competence aims, with the exception of ball activities and swimming. While male students had increased their perceived competence in ball activities from a mean score of 4.47 to 4.62, that of female students had increased from a mean score of 3.80 to 4.68. It is also interesting that standard deviations were also smaller for many questions in the second questionnaire.

At the beginning of the course, dance activities were those where students perceived themselves to be least competent, with a mean score of 2.58, which corresponds to “a small degree” or “some degree” of perceived competence. By the end of the course, the mean score had increased to 3.87, which almost corresponds to “great degree”. Gender comparisons show that male students perceived their competence in dance as poor.

Conclusion and discussion

This study shows that all students thought that their competence had increased after completing the 30 ECTS course in physical education spread over 40 weeks. While male students rated their competence higher than female students at the beginning of the course, on completing the course, female students rated their competence equal to or higher than that of male students in most topics and activities. These results may be explained by students having become aware of the fact that the focus of the course is on methods for teaching physical education, rather than on proficiency in sports activities.

At the beginning of the course, male students typically scored higher than female students on perceived competence in all competence aims with the exception of dance activities and those related to theoretical concepts and understanding. This is in line with the results of previous research (Klomsten, Skaalvik and Espnes 2004). Why female students score equal to or higher than male on perceived competence in most of the competence aims in the National curriculum remains to be discussed.

One reason why the boys score higher than girls on perceived competence in physical education at the beginning of the course could be explained by prior experience of the physical education subject in school as pupils, which corresponds to Graber's (1995) findings. Many Norwegians consider teaching physical education as equivalent to sports activity, and that competence displayed by student physical education teachers is a result of experiences in lessons in which they themselves were pupils. The content of these lessons and the teaching methods experienced there influence their own teaching later. In fact, it has

be claimed that prior experience in physical education as pupils is the most important factor which influences student teachers' comprehension of the subject (Curtner-Smith 2001; Graber 1995). Some scholars also argue that teacher education programmes have relatively little effect on how future teachers teach (Lawson 1988; Annerstedt 1995). However, the change in the current national curriculum from descriptions of activities to specific competence aims will probably increase the need for competent teachers. The present situation in Norway is that much physical education for the lowest grades in primary school is taught by teachers without any credits in physical education. Lagerstrøm (2007) found that 51,3 % of those teaching physical education in grades 1-4 had no credits in physical education.

It is also interesting to consider the content of physical education. Traditionally, physical education has been "male oriented", and the content has often been determined by activities which boys like or dislike (Verscheure and Amade-Escot 2007). Much of the content is performance based, since sports and physical education have for many teachers been simply two sides of the same coin. Hence, the content of lessons has often involved some degree of competition. This is also reflected in how the subject has been assessed in Norway, so that assessment has traditionally involved measuring strength, endurance and to some extent commitment. Female preferences have rarely been taken into consideration in evaluating pupils' competencies in the subject. In general, sports values seem to favour boys. Having skills and doing well in sports seem to be more important for boys than for girls (Eccles et al. 1993; Eccles and Harold 1991). Consequently, when female students score lower than male students on perceived competence for teaching practical activities related to competence aims in the National curriculum, it is likely that they rate their competence in performing physical activities rather than in teaching physical education. That the results show a higher score for female students with respect to theoretical concepts and non-practical aspects of the subject, may be accounted for by female students having lower self-esteem than male students in physical education generally, and for practical activities in particular. This conclusion is supported by previous research where males scored higher on general physical self-concept (Klomsten, Skaalvik and Espnes 2004). There is also a considerable amount of research which shows that boys and girls are treated differently in school and that teachers display gender biases in terms of how they perceive pupils and how they explain things to them (Verschaure and Amade-Escot 2007). Physical education teachers interact more with boys than with girls, and the language they use reveals stereotypical expectations (Griffin 1985; Wright 2000). Such factors as these may contribute to higher self-esteem for boys than girls in physical education.

The results of the present study show, however, that by the end of the course, the situation has changed. Female students' scores are equal to or higher than those of male students in perceived competence, also for competence aims related to practical activities. This may be due to female students realising that performing physical activities is not the only priority in the course and that how the subject is presented and taught is important. The higher female scores could also be the result of the development of pedagogical content knowledge. The course is not a performance based course, but rather one where the main focus is on teaching physical education and on increasing students' pedagogical content knowledge. The results indicate that students have become aware of this pedagogical focus during the 40 week course and that the teaching confidence of female students increases more than that of male students in that time.

Another important factor concerning perception of physical education, is that students' perception of organised sports is related to their leisure time activities. As the results show, all students had participated in organised sports activities prior to teacher education. This experience also influenced how they perceived the content of the physical education course, and meant that they already had considerable subject knowledge of various sports activities and games. Previous research (Capel and Katene 2000) draws the same conclusion. But while students had participated actively in a variety of sport activities, few had actually taught these activities. This may account for the considerable improvement in students' perceived competence for teaching, since other studies have shown that the students focus on developing knowledge in areas where they perceive themselves to be weak (Chapel et al., 2009).

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Evidence Based Teacher's Activity Teaching Students with Emotional and Behavioral Disorders: a Practical Approach "How We Educate?"

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Abstract

The paper presents an empirical study (years 2006–2007), which was carried out in order to describe the activities and the experiences of the teachers, teaching a student with emotional and behavioral disorder (EBD), to define the typology of teachers' activities and developed interactions with the student with EBD. It also describes evidence based teachers activities through participatory action research (years 2007–2008). Research took place in educational institutions and was carried out in order to obtain in-depth knowledge of the reality of the educational process of the student with EBD, of developed interactions with other participants of the educational process and to change it, encouraging positive behavior supports and changes both in the activity of the participants and the institution.

Keywords: *emotional and behavioral disorders (EBD), evidence based teachers activities, positive behavioral support.*

Evidence-based teacher's activity, grounded on the culture of scientific cognition, actualizes the practitioners' research, trying to change and improve the educational process, developing new knowledge during learning-in-action and forming evidence-based culture in educational institutions (Armstrong, Moore 2005; Biesta 2007; Coe 1999; Costello 2003; Koshy 2005; Petty 2008; Pollard 1997, 2006; Porter, Lacey 2005; Schwandt 2005; Wiltshier 2007). This includes teaching and learning in knowledge society, initiating teachers to refer to and carry out studies, cooperate in social networks and teams, solve problems encountered in educational process, analyzing, collecting data, evaluating their activities and reflection. Defining the problematics of the concept "evidence" in education studies, the scientists, representing the social constructivistic attitude (Coe 1999; Biesta 2007; Petty 2008), emphasize its close connection with value education and moral education, when decisions

are related not to what is possible (factual decision) but what is pedagogically wanted (the decision of value).

According to Porter, Lacey (2005) one of the main aspects of the activity of practitioners-researchers is that investigation is involved in everyday activity. The main practitioners' activity is to teach, to help children and youth having learning difficulties, to assess their needs and to perform many more practical works. In rare cases practitioners' are given complementary time or they are distracted from their main work when performing investigative activities, but usually they perform research during their practical activity. Although practitioners and researchers (scientists) are most often described as two separate groups of people with different prospects and different abilities and skills, the majority of the authors agree that the combination of these two groups is possible. Freeman (cit. Porter, Lacey 2005, p. 117) writes about a teacher-researcher explaining that it is "a story about two nouns connected with a dash" Analyzing and explaining the meaning of these nouns the author presents the most important agreement that a teacher-researcher works "in this dash". "Teacher", he explains, "is a person, and "research" is a process and relating them both together person's-process is created. Dash highlights the relations and differences between two worlds of education and research, it is acting and interest, when it is juggled with two needs complementing each other: need for education – it is the activity in a concrete context referring to what is known and what is to be achieved; research projection comprises an opposite direction when it is aimed to find out the bases and hidden preconditions of these activities. Biesta (2007), doubting about the expediency of the direct transition of research scientific technological model when analyzing and acting in the educational situations, emphasizes that in education measures and aims are related not to technological or external methods but to internal and interrelated values, the essence of education is rather a moral practice than a technological idea. According to the author the most important question for pedagogues is not about the effectiveness of their activity but about a possible pedagogical value of what they do, that is, about such desired pedagogy that would give possibilities to learn from own activity avoiding the contradiction between what they propose to do and what they really do.

Education of students with emotional and behavioral difficulties, in general education schools, based on the concept of evidence-based teacher's activity, giving a sense to the development of positive behavior supports, analyzed in this paper, is a typical pedagogical **problem**, which is specified by the essential question of the study: How does evidence-based teacher's activity change the educational process of students with emotional and behavioral difficulties?

Empirical study (2006–2007), which was carried out in order to describe the activity and the experiences of the teachers, teaching the student with emotional and behavioral disorders

(EBD), and to define the typology of teachers' activities and developed interactions with the student with EBD. Research sample: teachers (N = 76), working with students with EBD in a mainstream school. To select the respondents, a (non-probability) objective sample method was employed: subject teachers (N = 41), primary school teachers (N = 15), special educators/speech therapists (N = 9), social educators (N = 8), psychologists (N = 3) were interviewed. The research interview was based on cases of 36 students experiencing emotional and behaviour problems recommended by the chosen schools. Attempt was made the sample to represent teachers working with students of various age (12 cases in primary schools, 24 – in Year 5 to 8), and various types of schools (16 cases in primary schools, 12 – in high schools, and 8 in gymnasiums). Data collection method was a qualitative semi structured interview, applying in-depth interview elements. Preliminary research instrument was compiled on the basis of the concept of evidence-based teacher's activity; essential issues were distinguished: the situation of the student with EBD and teacher's activities while planning, acting, evaluating and reflecting. During the interview it was sought to see into and listen closely to the respondents' (teachers') experiences and activities developed with the student with EBD and his/her family. Data analysis methods: classical content analysis, cluster analysis, and cross tabulation.

Research data reveal that teachers, describing and evaluating activities while teaching students with emotional and behavioral difficulties, emphasize formality of planning educational activities and prevalence of activities orientated to gather knowledge. The interaction with the student with EBD highlighted the dominance of clinical disability situations and behaviorist approach-based teachers' orientation to the alteration of the students' behavior. While analyzing the interaction with the family of the student with EBD, the teachers declare parents' minimal involvement in the educational process and the shift of problems arising in everyday reality of the educational process to the family. The interaction with the family of the student with EBD is developed, providing with information or acknowledging parents' initiatives. While analyzing their educational activity, teachers emphasize the lack of technologies for understanding and solving of problems, poor cooperation with other participants of the educational process ("your class – your problem"), the shortage of reflective environments and the expressed need to have them. The teachers' speeches also record the elements of reflective activity – reflection on action, written evaluations and internal reflections rendered to the teachers' community. Teachers' activities, teaching students with EBD, and developed interactions with the student and his/her family are divers, ranging from empowerment-orientated, developing interaction and positive behavior to eclectic, orientated to rendering of knowledge, formal and developing social exclusion. The dominance of social exclusion category in four types of teachers' activity presupposes a conclusion that the student with emotional and behavioral difficulties

often appears in segregation situations, which are initiated by the teaching teachers or their colleagues, “normal” children and their parents. During the educational process the student with EBD encounters the activities of different teachers, in which little is harmonized. It is assumed that during one school day the student, in the subject system in particular, experiences a broad range of teachers’ activities and interactions, ranging from orientation to constructive interactions and positive behavior to development of social segregation, stigmatisation or even exclusion.

The method of activity research in participation has been used in order to get deeper knowledge about the education reality of a pupil having EBD, constructed relations with other participants of education process and to change it stimulating the activities of learning in action and maintaining of positive behaviour in the activity of the respondents and institution. The essential aim of activity research in participation was to encourage teachers to plan, act, assess and reflect their activities, to construct collaborating educational environments.

Research instrument was prepared on the grounds of the concept of teacher’s evidence-based activity, actualizing the teacher’s learning-in-action and positive behavior supports of the student with EBD. During the participatory action research, the participants of the research initiated changes in the actual educational process, seeking to improve it; therefore, participatory action researches each time took place individually. Research sample: pupils’ case (N = 1), mother (N = 1), teacher (N = 1), specialists (N = 2), administration representatives (N = 2). Data collection and analysis methods: audio records of discussions, open-ended questionnaires for the teachers and their analysis, the analysis of the observations of teacher’, pupil’ and their parent’ own activities, the analysis of reflections, diaries, the researcher’s notes in the margins.

Performing activity research in participation general principles of ethics have been followed⁴⁶: pupil’s parents’ written agreement was received as well as the agreements from all the participants and school administration. With regard to the requirements of ethics for activity research⁴⁷: the participants of the research were informed about the details of research performance and principles of ethics, the confidentiality of the data was ensured: coding of names, by the request of school – coding of school title (in fact, only one of three schools requested the coding of the title). When the participants of the research agreed, conversations and reflections were recorded with Dictaphone. When they refused, the researcher took notes. In order to avoid the inaccuracies of researcher’s subjective

⁴⁶ BERA (2004), SERA (2005).

⁴⁷ Coghlan, Brannick (2005), McNiff, Whitehead (2006), Nolen, Putten (2007), Mills (2007).

interpretation, the results of the research were presented to school communities, discussed with the participants and presented for the respondents' critical reflection and remarks.

Stage 1 – situation analysis cycle from the viewpoints of all participants of education process comprised several meetings.

Table 1. Situation analysis from the viewpoints of all participants of education process

Data (SEC, PPS assessment conclusion, pupils' and her family's biography aspects)	Jurga during the research was studying in 2 form. Teacher already in 1 form notices that the girl does not communicate with classmates, completely does not talk during classes. Colleagues (who were teaching girls from the same family) consoled the teacher indicating that their pupils also did not communicate and speak much in the first form, but later "recovered". 2008-09-29 school SEC prognosticates emotional and behavioural disorders and modifies general education programme of the Lithuanian language. 2008-10-29 PPS assessment conclusion: communication disorder (selective mutism). In the conclusion of psychological assessment it is stated that it was not succeeded to make verbal and nonverbal contact. In speech therapist's assessment conclusion it was stated that the girl reacted to the presented variant of the response nodding ("yes) and shaking ("no") the head. Mild special educational needs and education according to general programmes were stated. Assessment in child's development centre, consultations of children's psychotherapist were recommended.	
Participants' meanings and implications	Statements – empirical indicators	Interpretation and conceptualization
Accentuation of pupil's personal abilities	<i>I know that she knows how to read, she is excellent at writing and solving mathematics tasks. [prim.];⁴⁸</i>	Accentuation of learning abilities
	<i>She likes being on duty. [m.];</i>	Description of favourite activities
Communication at home	<i>At home she speaks, plays. [m.]; She tells her impressions as well as other girls. [m.];</i>	Activeness
	<i>She needed to write some essay, so we had troubles with that essay. [m.];</i>	Assistance rendered
	<i>They obey their father. Father almost does not speak to her, they communicate little. Our father does not show aggression and does not shout at children. [m.];</i>	Father's authority
	<i>At home she also sometimes does not speak,</i>	Limitation

⁴⁸ Explaining codes: [J.] – Jurga; [m.] – mother, [prim.] – primary class teacher, [sp.] – speech therapist, [spec.] – special pedagogue (the researcher during the activities of this case also performed the functions of special pedagogue).

	<i>becomes stubborn, does not look into eyes. [m.];</i>	
	<i>I never give her money, she does not go to the shop alone. [m.];</i>	Limitation of new environments and activities
Inadequacy of communication at school	<i>She does not say a word, I am asking, but she as if does not know how to speak. [prim.]; This time neither "yes" nor "no" – she does not say anything. [log.];</i>	Not speaking
	<i>During the break she is always standing next to the classroom door. [prim.];</i>	Need for familiar environments
	<i>In an alien place she sits alone, does not play with children, then gradually, at the end of the evening starts to play. [m.];</i>	Tension in new environments
	<i>She does not show any initiative independently, I would say, she is even afraid to show it. [spec.];</i>	Fear of new activity
Actions of activating communication	<i>I told the class girls to be friends, but the friendship ends somehow. [prim.];</i>	Encouraging classmates to communicate
	<i>I say, when you come to school, raise your hand and speak. [m.];</i>	Encouragement to get involved in education process activities
Problematic situations from the position of person's discrepancies, disorders	<i>In a preschool class we had problems, visited the psychologist. I talked to psychologists, she said that it is normal, it will get well with age. [m.];</i>	Reference to authorities
	<i>She is stubborn and you will not get a word from her. [m.];</i>	Withdrawal from outer world
	<i>She comes home angry, some fits of anger. Starts to cry when angry. [m.];</i>	Little emotional stability

In situation analysis from the viewpoints of all the participants of the education process during the first meeting a rather ambiguous situation of the description of Jurga's emotional and behavioural difficulties was revealed: mother accentuates full daughter's communication with family members, teacher – complete non-communication, not speaking during the education process. Jurga does not participate in the conversation, she is sitting and looking down. Already during the first meeting **activity planning** took place, as well as foreseeing problems and objectives, search for resources **consulting with the participants of situation** (stage 2) actualizing and **initiating changes in personal activity** (stage 3). The ambiguity of the description of pupil's emotional and behavioural difficulties was felt by all the participants of the meeting, therefore, during the discussion the following activities were foreseen:

- mother will observe Jurga's behaviour and emotions during education process (1 day);

- every day mother will ask Jurga about her successes at school, emotional moods;
- once a week the pupil will visit speech therapist and special pedagogue in order to better know her and stimulate communication.

On 23 November 2007 mother participated in the lessons, observed daughter's emotions. During the lesson the teacher presented tasks activating communication and collaboration. The teacher aimed to show the expression of Jurga's communication, collaboration and involvement into education process activities during the lessons.

During the second meeting mother having observed her daughter's activities during the education process and having seen Jurga's complete dissociation and withdrawal starts to describe the manifestations of inadequate communication in new situations and sometimes poor emotional stability. Mother becomes anxious about the girl's situation at school and agrees with the idea to actively involve and participate in planning, performing, assessing joint activities and share her observations with teachers. Mother emphasized that she really will be able to devote time for participation in the meeting and more active communication with the daughter.

The teacher and school specialists (speech therapist, special pedagogue) emphasize the importance of mother as Jurga's communication partner in the process of activity research in participation, accentuates the necessity of observation in order to reveal the pupil's individual needs and the harmony of all participants of education process in satisfying them. It was agreed upon the periodicity of activities and the time of meetings was arranged. The questions of ethics were discussed about Jurga's participation in the meetings (mother will talk to Jurga whether she wants to participate in the meetings, how she feels during them), about the group participants' ethical behaviour both in their meetings and in the dissemination of information. With the agreement from the meeting participants **joint education activities constructing the maintaining of positive behaviour** were started to plan (stage 4). Specialists regret because of inability to render psychological assistance for the pupil at school and initiate the search for external resources, i.e., apply to the town's Pedagogical Psychological Service (PPS) to request psychologist's consultations. It was agreed upon the continuation of activities and new activities were foreseen:

- every day mother will ask Jurga about her successes at school, emotional moods;
- once a week the girl will visit speech therapist and special pedagogue in order to better know her and stimulate communication;
- special pedagogue will apply to the town's Pedagogical Psychological Service for a psychologist's consultation for the pupil;
- communicating with Jurga to encourage her to look into eyes, to maintain eye contact;
- to ask to answer the questions "yes" or "no", record the answers;
- encourage Jurga to observe and record her communication.

Joint activities of the participants of education process covered 7 meetings of the team of maintaining positive behaviour (2007-12-03, 2008-01-07, 2008-02-21, 2008-02-28, 2008-03-06, 2008-05-15, 2008-05-19), in which Jurga, mother, primary class teacher, special pedagogue participated. On 16 April 2008 special pedagogue spoke to the psychologist from Pedagogical Psychological Service and discussed Jurga's emotions and behaviour during psychological consultations, psychologist's insights and prospects of possible activities. During every meeting the participants' activities were reviewed, reflections were shared, changes were assessed and further activities and their aims were foreseen together.

Activity research in participation performed together with Jurga, her mother, primary class teacher and speech therapist encouraged all the participants to gather for joint activity analyzing the situation, planning, acting, assessing one's own and others' activities and reflecting: during group discussions, filling in observation forms and discussing the data, mother and teacher writing diaries.

In this case the discourse of the conception of the situation of a pupil having emotional and behavioural disorders emerged. The activities of activity research in participation were oriented towards discursive cognition analyzing how the participants of the situation interpret, accept and understand the reality of the situation of a pupil having SEN. Individually formed discourses of every participant of education process manifested, the analysis and perception of which helped to construct individual, group, social and cultural reality.

Mother referring to the authorities (psychologist said, that it will get well with age) does not give much significance to the daughter's problems and hopes that they will be solved by themselves. On the one hand, mother accentuates Jurga's full communication in home environment: she plays with sisters, children in the yard, however, expresses as if completely opposite observations: she did not speak to anyone; she said that no one wants to make friends with her; sometimes you cannot get a word out of her. During activity research in participation filling in the diary of Jurga's activity and emotions and discussing with the other participants, mother starts to define her daughter's verbal communication more widely, discussing mostly used words, describing communication situations: *I asked how she felt. She asked me what it meant. I gave her examples, but she only laughed...*⁴⁹; and emphasized that communication with the daughter became more active: *at home in the evenings when there is no one around, now I have noticed after our conversations, she comes to me and then we talk for several hours.* In the last reflections discussing her personal input and the efficiency of activities, mother states: *I myself got the best use when I started observing Jurga, I saw my child in a different way. And this our discussion, our*

⁴⁹ From mother's diary

activity together was very useful. I learned to notice small details in her behaviour, emotions and talk about it.

Primary class teacher describing pupil's activity and expressing her perception of the situation states: *in the first form Jurga did not answer the questions, did not read aloud, did not communicate with classmates, but she did her tasks in writing very well. During breaks she walked alone, hunched. I thought that the girl was shy and that it would get well with time.* When the situation did not change: *I decided to consult the specialists working at school: special pedagogue, speech therapist and social pedagogue. We discussed and foreseen individual plan of child's education.* In the process of activity research in participation teacher observed Jurga, filled in observation reports, wrote diary and activated pupil's involvement to common activity of class pupils. Teacher initiated various activities: joint games of class pupils, encouraged the girls to be friends with each other, recorded and encouraged verbal and nonverbal pupil's activity: keeping eye contact in communication, nodding head, answering the questions with the words "yes" and "no". On 12 May 2008 teacher organized the game "What if I could not speak" for pupils so that classmates could understand the situation of a person who does not speak and share their impressions. According to the teacher after this game Jurga started to communicate more: *"during the lessons I meet Jurga's glance more often. Sometimes she smiles"⁵⁰*; the pupil herself come to her classmates and observes their activity.

Reviewing the dynamics of meetings of the team of maintaining positive behaviour it is necessary to point out that during the activity every member not only planned, performed, assessed and reflected their activities, but also searched for external resources: mother activated daughter Jurga's communication with her sisters, teacher encouraged the pupil's involvement into joint activity of class pupils not only during lessons but also during breaks, special pedagogue consulted with PPS psychologist.

Stage 5 – presentation the results of activity research in participation **for the participants**, coordination of interpretations and insights, critical reflection.

The first presentation of the results of activity research in participation took place preparing for international scientific practical conference "Exclusion and Social Participation: Educational Psychosocial Aspects. "Difficult" Child at School – Pebble in a Shoe or...?" organized by Social Education Research Centre of the Faculty of Social Welfare and Disability Studies, Šiauliai University. The second presentation of the results of activity research took place on 12 April 2008 in the meeting of Teachers' Council. Teachers

⁵⁰ From teacher's diary

described in brief the principles of activity research in participation, the performed activity and their results. The third presentation of the results of activity research took place on 12 November 2008. The data of activity research in participation and their interpretation were presented to the participants of the research in order to validate the data of the research, coordinate the positions of all participants and their subjective interpretations performed by the researcher. In the presented reflections teachers accentuate the need to initiate changes in their activity that occurred during the activity research in participation and the prospects of model application.

Conclusions and discussion

In the context of education of pupils having special educational needs cultural differences and the differences of the conception of adequate behaviour are very relevant. Both pupil and teacher may represent and often do represent different cultural consciousness, they may have formed appropriate behaviour describing their position, therefore, the right given to teachers to manage pupil's behaviour disregarding pupil's personal needs and attitudes often does not give expected results and even causes resistance. In this context the role of the family of a pupil having special educational needs becomes very important. In the author's research evident lack of parents' activeness, transferring pupil's problems to the family or employing parents as discipline warrants have been stated. Flicker, Hoffman (2006); Scheuermann, Hall (2008); Wearmouth, Glynn, Berryman (2005) accentuate employing parents as resources in solving difficulties faced by a pupil having SEN, stimulating partnership and performing joint activity; Gerulaitis (2007) – parents' involvement in the education of a disabled child in a special school and factors motivating the involvement; Ališauskienė, Miltenienė (2004) – collaboration between parents and school.

Massmedia orienting towards the tendencies of negative thinking in the society tend to develop a negative discourse towards pupils having EBD and especially emotional and behavioral disorders. Usually negative cases and events related to the education of pupils having SEN in mainstream school are announced, described and demonstrated stating the consequences of the expression of intolerable behaviour or emotions presenting information from one side. Meanwhile, positive practice and successful cases educating pupils having EBD in the educational community society are considered as normal. Problems are often concealed, because "if a teacher "manages to keep order" problems do not exist". It presupposes another ambiguous situation when a teacher does not speak about occurred difficulties, "closed in the room" trying to individually solve occurred problems or "somehow suffer that lesson". Involvement of the participants of the education process (pupil, his/her

family, specialists and teachers) as equal partners in decision taking, planning, performing, assessing and reflecting of their activities not only constructs behavior based on self-control and responsibility and maintaining of positive behaviour, but also stimulates the processes of learning in action when everyone is learning together with the others and from each other.

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POSTER PRESENTATION

Teamwork of Teachers as a Context and an Approach for Stimulating Life-Long Professional Development

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Abstract

Interdisciplinary nature of knowledge and greater need for individualisation of learning process of each learner create the need for systematic teamwork in schools. The paper will present some outcomes in the view of professional development of teachers involved in longitudinal two-year study of team work of 91 Primary and Lower secondary school teachers in Slovenia. The study was designed as a quasi-experiment with one experimental group, which was involved in the independently drawn up “The team work teacher training programme – developmental approach” designed by A. Polak. The study results shows that teachers involved in the programme of systematic team work recognised many areas of their personal and professional growth as well as the need for life-long learning on the area of improving their own team work skills and raising their motivation for new challenges within the team work teaching approach.

Keywords: *teachers, teamwork, life-long learning, professional development*

Introduction

Lifelong learning is a common formula, under which all types of learning and education are combined. Quality teaching, based on the principle of life-long learning, and which exceeds the traditional distinction between initial and continuing education, is bound to the principle of a learning society in which all can learn and integrate development of individual gifts. Documents of the European Union under the European Employment Strategy determine lifelong learning as a learning activity designed to run with the aim to improve knowledge and skills (Memorandum ..., 2000). Lifelong learning is no longer just one aspect of education and training, it becomes the guiding principle for the provision and participation across the continuum of learning content. All who live in Europe should have equal opportunities to

adapt to the requirements of social and economic life and to actively participate in shaping Europe's future, as ensured in the Memorandum on Lifelong Learning by the European Council in Lisbon in 2000. The definition of OECD (2004) defines that lifelong learning embraces individual and social development of all kinds and in all settings - formally, in schools, vocational education organizations, institutions of tertiary education and adult education, and informally at home, at work and in community. It need to be emphasizes also that life-long learning is sometimes natural, sometimes evolutionary and exceeds the traditional distinction between initial and continuing training (Devjak and Polak 2005). As stated in the Memorandum on Lifelong Learning (2000), the European Commission and its Member States within the European Employment Strategy identified lifelong learning as a learning activity designed to run with the aim to improve knowledge and skills. Lifelong learning is no longer just one aspect of education and training, it is to become the guiding principle for the provision and participation across the continuum of learning content.

Various authors (Bell and Gilbert 1996, Tom 1997, Day 1999, Loughran 2006, Beers 2007, Brady 2009) emphasise that the contemporary teachers are no longer the only source of information and that therefore they have to adapt their work to new needs of society. Teachers must now more than ever, be a mentors, student development facilitators, organizers, implementers of new educational and communication technologies, they must provide conditions for their own personal and professional development and be a part of the learning society and learning organizations (Beers 2007). All these different roles teachers can better provide if they are involved in teamwork, where they join team goals, team dynamic and develop their team skills early in their professional development (Polak 2005).

Teamwork of teachers as a context for professional development

Professional development is assured thru the process of learning. The most important is to change our view on professional development: instead of thinking of professional development as a top-down system of bringing best practice into the school from outside agencies, the teacher and their teaching context should be viewed as the site at which professional development is most effectively developed (Brady 2009, p. 337). Brady emphasized (2009, p. 338) that rather than an individual teacher engaged in the lonely task of directing their own professional development, communities of teachers can provide better space for the individual teacher to direct their own development while having around them opportunities to be supported and challenged by their peers and the research and expertise of other educators and professionals. According to Bell and Gilbert (1996, p. 99) professional support can be perceived by the teacher as sharing professional knowledge: sharing

teaching activities, solutions to problems and theoretical ideas. School-based teacher development needs to consider ways to provide support by middle management and in ways distinct from staff appraisal. The teamwork cannot be learned just on the basis of someone else's experience with team work, it need to be systematic and designed as a "step by step" approach and on the basis of learning through experience. Learning in the context of teamwork include learning about yourself, learning about others, learning from the others and learning about the group. Work in groups, interdisciplinary team planning and team teaching among teachers encourage exchange of experiences, views and options, as well as develop collective responsibility for teaching. A successful programme of teacher professional development ought to be based on a critical and intellectual discussion which can be developed only in a group of teachers (Yaxley 1991, Bell and Gilbert 1996). The outputs of different training programmes, as well as teamwork training programme, according to Mumford (1999) can be divided to knowledge, skills and insight. The knowledge learned in the context of teamwork include acquiring information from others in the group, tapping into the expertise of others, awareness of skills and techniques used by others in the group, awareness of interaction between self and others and between others. Regarding skills personal use of skills of communication, influencing and listening and team use of team skills is the most important output. Regarding the insights (attitudes) Mumford the importance of the awareness of why individual interact together in the way they do and the awareness of why the group of team achieves or not achieve its objectives (Mumford 1999, p.178). Teamwork of teachers as an context insure well structured and well psychological defined processes for learning and regarding the dynamic nature of team interaction (relationships, communication, problem solving...) the life-long learning in teamwork is the obvious way of coping with changes and team goals.

The programme for stimulating teamwork of teachers

"The team work teacher training programme – developmental approach" designed by A. Polak (Polak 2001) is 32-hours long programme, based on assuring that the assignments and the teamwork activities within the programme stimulate systematic analysis through reflection and on the high level of activity in the verbal or written way of expression. Written reflections and verbal activities stimulate individual's need to express oneself fears toward new team work experiences, their positive or negative expectancies, feeling, doubts, dilemmas etc. All activities were designed to foster the individual teacher's awareness of the importance to act in a sincere, open, democratic and trusting way. The activities of the programme centred toward personal in professional growth. In the programme different

methods and approaches were included and they were taking part in several activities, par example: lecturing, reporting, demonstration, working with text (study of professional literature), the method of writing (written reflections or diaries), discussion, the method of solving problems, workshops, role-play and (self) observation.

The content and the process the programme were based on several cognitive, intra-personal, inter-personal and meta-cognitive aims. Some of the most important were:

- introducing some theoretical background and meaning of the teamwork in the field of education,
- introducing the main psychological characteristics and specialities of teamwork in education,
- raising self awareness and self perception for team communication,
- stimulating verbalisation of personal fears, negative and positive expectations regarding teamwork,
- analysing past positive and negative experiences with teamwork,
- learning through experiences and raising awareness of different psycho-social processes regarding teamwork in education,
- motivating individual participants and teams of teachers for all three teamwork teaching activities (team planning, team teaching, team evaluation),
- analysing formal and informal roles in the team through discussion and different questionnaires,
- giving and getting feedback regarding the teamwork processes,
- introducing and exchanging experiences with teamwork,
- analysing experiences and problems as well as communication conflicts which are accompanying teamwork of teachers and introducing the most appropriate strategies to resolve them,
- analysing advantages and difficulties of team work in education practice.

It is very important that the implementation of the programme needs to be based on “step by step” approach and there is enough time to go through all these activities, because the time pressure could in teachers cause the anxiety, which can be the de-motivational factor to implement some changes in the teaching process.

The process included in the programme involves different intra-personal and inter-personal psychological processes (reflection, communication, social-perception, trust establishment...) which happen within different activities. At the end of each activity the goals should be presented to the participants by the guide of the programme. It is recommended that the goals are not known to the participant in advance, because this can disturb the spontaneity

of the thinking process of the participants. At the end of each activity the review of the reached goals should take place. On the basis of the individual contentment the motivation for new team assignments arise; on the other hand the unrealised goals focus participants on the systematic evaluation why they haven't been fulfilled.

The Study

The main purpose of the study was to find out some qualitative evidence about how the team work of teachers can be seen as a context and an appropriate approach for stimulating life-long professional development. The study was designed as a quasi-experiment with one experimental group, which was involved in the "The teamwork teacher training programme – developmental approach" independently drawn up for this study and introduced before. 91 Primary and Lower secondary Slovenian school teachers from 12 different schools participated in the study. The programme was carried on in 20 weeks period. In this period their motives for involving in the programme of stimulating teamwork were explore as well their recognition of professional development. Participants' written reflections and open-questionnaire were analysed and on that basis percentages of participants who named the same sentence were calculated.

At the beginning of the programme the motives of teachers for involvement in the programme were explored (Table 1) for the purpose of teachers' recognition of field where their need for improvement is detected.

Table 1. Teachers motives for involving in the programme for stimulating teamwork (n=91)

Motives	f %
Getting some new knowledge about team work	41,8
Getting some advices how to do teamwork	39,6
Innovation and enrichment of own teamwork	20,9
Involving in school reform	19,8
Learning new teamwork skills	14,4
Getting new teamwork ideas and challenges	13,2
Exchanging experiences with teamwork	9,9
Getting feedback about own teamwork	8,8
Clear-up personal dilemmas about teamwork	6,6

Life-long education is needed	4,4
Interest for teamwork	4,4
Enhancing colleagues for teamwork	3,4

The analyses of the motives for involving in the programme for stimulating teamwork show that almost 42 % of participatory teachers recognised the need to get some new knowledge about teamwork. They admit that they don't have enough knowledge about team dynamic, psychological processes and team learning. Big amount of teachers (39,6 %) also expressed that within the programme they expect to get some advices how to do teamwork. About 20 % of participating teachers from the programme expect innovation and enrichment of their current teamwork and almost for the same amount of them the school reform was the motivating factor for applying to the programme. Next frequent motive for participation of teachers in the programme was a desire to learn new teamwork skills (14,4 %) and getting knew teamwork ideas and challenges. For less then 10 % percentage of participating teachers the important motive was to exchanging experiences, to getting feedback and to clear-up personal dilemmas regarding the teamwork. The need for life-long education was identified (4,4 %), as well the personal interest for teamwork and the desire to enhancing colleagues for teamwork in education. The results of motives' analyses show that teachers have clear motives for involving in the programme and that they recognise teamwork within the programme as the opportunity for the professional development.

After the 20 weeks of the programme and active teamwork activities in the classroom the participatory teachers have been asked to identify the evidences (if any?) of professional development under the influence of teamwork. Their recognitions of professional development during the teamwork are listed in Table 2.

*Table 2. The evidence of professional development under the influence of the team work
(N=91)*

Recognition of professional development	f %
New knowledge about teamwork	32,6
Deeper, broader reflection on teamwork	14,0
More effective team-planning	10,5
Different perception of conflicts	10,5
Better argumentations of own views, ideas and suggestions	7,5
Approval of own teamwork	7,0
More systematic evaluation of work	5,8

Better motivation and communication within the team	4,7
New skills of teamwork	2,3

The most amount of participating teachers expressed that they get new knowledge about teamwork; this is the recognition of a third of the sample. The second most frequent was the recognition that during the active teamwork stimulated within the programme teachers get deeper and broader reflection on teamwork processes and dynamic. More than 10 % of participating teachers report that under the influence of the programme they improve their team planning and get different perception of conflicts. Some teachers reported that they improve argumentation of own views, ideas and suggestions, recognise approval of their work, learn how to evaluate their work in a more systematic way, how improve their motivation and communication within the team and develop new skills of teamwork. In their written reflections they noted that the process of teamwork within the programme stimulate their professional development in many ways, mostly in the direction of getting broader and deeper understanding of team dynamic and need for life-long learning through teamwork experience.

Conclusions

Through the experiences of teachers participated in the study the teamwork is seen as an appropriate context and useful approach for stimulating professional development and specially for reaching the awareness of need for life-long learning. During the programme *“The team work teacher training programme – developmental approach”* teachers recognised strong influence of their teamwork on their own professional development: they have got better understanding of different aspect of teamwork, they have improved their reflection on teamwork and their team-planning. Their perception of conflicts have been changed: the conflicts among team members have been seen as the obvious steps in the life of teams, which have laded to better argumentations of individual’s views, ideas and suggestions. The evaluations of team work have become more systematic, they recognise also better motivation and communication within the team. Teachers have developed their teamwork skills and approve their good pedagogical practice in front of the colleagues. The teamwork can be very stimulating context for learning, for professional development and mostly for crucial recognition about the importance of life-long learning “philosophy” and should be integrated in pre-service and as well in in-service teacher education.

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