

Fredrikke

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International view on:

- **Teacher Education**
- **Educational Technology**
- **Motivation//Divergent Thinking//Readiness**
- **Special Educational needs**

13 articles with contributors from Slovakia, Poland and Norway

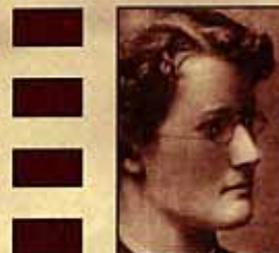
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HØGSKOLEN I NESNA

Om Fredrikke Tønder Olsen (1856-1931)

Fredrikke Tønder Olsen ble født på handelsstedet Kopardal, beliggende i nåværende Dønna kommune. Det berettes at Fredrikke tidlig viste sin begavelse gjennom stor interesse for tegning, malerkunst og litteratur. Hva angår det siste leste hun allerede som ung jente "Amtmannens døtre".

Kildene forteller at Fredrikke levde et fascinerende og spennende liv til tross for sine handikap som svaksynt og tunghørt. Hun måtte avbryte sin karriere som gravørlærling fordi synet sviktet. Fredrikke hadde som motto: "Er du halt, er du lam, har du vilje kjem du fram." Fredrikke Tønder Olsen skaffet seg agentur som forsikringsagent, og var faktisk den første nordiske, kvinnelige forsikringsagent. Fredrikke ble kjent som en dyktig agent som gjorde et utmerket arbeid, men etter 7 år måtte hun slutte siden synet sviktet helt.

Fredrikke oppdaget fort behovet for visergutter, og startet Norges første viserguttbyrå. Hun var kjent som en dyktig og framtidsrettet bedriftsleder, der hun viste stor omsorg for sine ansatte. Blant annet innførte hun som den første bedrift i Norge vinterferie for sine ansatte.

Samtidig var hun ei aktiv kvinnesakskvinne. Hun stilte gratis leseværelse for kvinner, inspirerte dem til utdanning og hjalp dem med litteratur. Blant hennes andre meritter i kvinnesaken kan nevnes at hun opprettet et legat på kr. 30 000,- for kvinner; var æresmedlem i kvinnesaksforeningen i mange år; var med på å starte kvinnesaksbladet "Norges kvinder" som hun senere regelmessig støttet økonomisk.

Etter sin død ble hun hedret av Norges fremste kvinnesakskvinner. Blant annet er det reist en bauta over henne på Vår Frelzers Gravlund i Oslo. Fredrikke Tønder Olsen regnes som ei særpreget og aktiv kvinne, viljesterk, målbevisst, opptatt av rettferdighet og likhet mellom kjønnene.

Svein Laumann

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Harald Nilsen, Nesna Univ/College

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- WHE in the Subjects of Pedagogy and Psychology
 - WHE in the science of Literature Universal
 - WHE in the science of Nordic Language and Literature
 - SE (i.e. Doctor's Degree) in the field of Applied Linguistics
 - Publications/Conference speeches/Guest lectures/Project, etc.
- Go to: <http://tinyurl.com/22o6cd> (all), <http://tinyurl.com/4dyd6f> (Polish language)
<http://tinyurl.com/6hvq5h> (English language)

- Employment

Nesna University/College, i.e. teacher training education, in-service teacher training, advanced lectures, conference speeches (national/international), guest lectures, publishing (national/international)



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Editors' preface

Having the will to look beyond one's own educational system, one should do well to put one's curiosity to this international characterized *Fredrikke*-publication. Three nationalities are represented – Poland, Slovakia and Norway – and seven universities, i.e. Comenius University and Constantine the Philosopher University (CPU) (Slovakia), University of Szczecin, Nicolai Copernicus University, Silesia University, Higher School of Business in Dabrowa Górnicza (Poland) and Nesna University/College (Norway).

Totally 13 articles are organized in three parts in accordance with the main topic:

Part I Transformation of education programmes for Teacher training in Basic School in Slovakia, four articles. Part II Use of technical remedy (ICT) for educational purposes, four contributions from Poland and one from Norway and Part III Four articles from Poland and Slovakia classified education in general.

PART I Programs for Teacher training

Authors from Slovakia underline the commonness between school and society, claiming how cultural changes and new way of life has great impact upon the school system. Accordingly we may agree with the Slovakian author Wiegerowa saying that “The transformation of school system is becoming inseparable part of our life”.

Pressure of changes in school in general attract the role of the teachers, from teacher of subjects to development of teacher's personality, teachers of subjects to teachers who have the will to non-directive, democratic ways of Education, willingness to heuristic problem solving and willingness to flexible educational and training practice.

One should note well the Slovakian Sirotova and Smetanova who highlight the role of the teacher as follows: “One of the teacher's task is to create specific conditions that enable students to acquire *long-lasting values* (in italic by editors) rather than a large amount of information that may quickly be forgotten (...)”. One should give great attention to the conception of “long-lasting values”! Obvious – there is not a matter of values only, accordingly the articles touches what kind of values as well.

PART II ICT in use in Educational contexts

Four authors from Poland and one from Norway give focus on pupils in pre-school and primary school using ICT. A common perspective is *quality* in advance of quantity, i.e. the conception of learning and the focus on the process from indefinite sources of information to relevant knowledge.

E. Perzycka (Poland) discusses the Computer in use in multimedia education, the computer as a didactic “tool”. She balances the perspective, underlines the positive effect, however making a critical point of view on computer in use.

D. Siemieniecki (Poland) introduces a practical based, so-called “example program” for a computer aided lesson for early schooler creative development. Though she presents separate school subjects, she thinks across subject with the creativity as glue.

D. Moranska (Poland) focuses how ICT can form childrens motivation and disposition for self-development to improve knowledge-based competence. Her perspective reminds us about the Norwegian motto “responsibility for own learning”, a perspective that gives young users feeling of active participation in their educational process.

R. Raska (Poland) introduces a natural pedagogical experiment which was to show an innovative, didactic situation and change in arithmetic knowledge and skills learnt by 1st grade elementary students using computer. In this context she puts into our mind the concept “constructivism” – “the most significant educational trend nowadays”, she says.

H. Nilsen (Norway) gives attention to the new form of exam in Norwegian compulsory school, using ICT to (eventually) receive better marks. In particular he focuses on the heavy process to navigate from a multimodal flood of information to useful, relevant knowledge (“navigating competence”).

Part III Educational issues in general

A. Watola (Poland) presents – as a background – the relevance of school *readiness*, and how one can diagnose this precondition for doing well in school. The main part of the article presents Watolas own study in the field of readiness. Readers are encouraged to reflect on the relative notion of readiness, asking for readiness in relation to what?

M. Kisiel (Poland) discusses in short form, however very interesting, the term *motivation* in the educational area, and she raises question among three grade students (9 year old) what is their preferences with respect to music activities and their motivations for studying music in school.

A. Stachura presents an experimental research (small scale form) focusing how divergent tasks of maths extends pupils’ divergent (flexible, added by editor) thinking ability. And, the author refers from his study, “even fluence and flexibility of thinking was improved during the experiment”.

How should the school take care of pupils with special educational needs, is the question articulated of three academics from Slovakia; G. Porubska, D. Mala and V. Gatial. This question is all over of relevance, and highlighted, we may remind, in the new Norwegian school document *Knowledge Promotion 2006*. The article lists the most common learning disorders, concentration disorders, speech disorders, low intelligence, and sketch out relief effort recommended by psychologists and educational counsellors.

At last from editors:

The articles do not go in depth of research, do not represent basic research. However, we suggest, the articles reveal interesting thinking, in basis (we may claim) cross-cultural thinking as we note three European countries are represented. So – dear readers – of interest in this volume of *Fredrikke* should be to get a brief, brief look into the sphere of individual thinking; 13 different authors, 13 different interests, 13 different brains with a common fram of reference – school, school equipments, learning, students welfare, students preparation to cope with school challenges and with the real life.

Katowice/ Lillehammer 20th May-2009

Anna Watola Harald Nilsen

Adriana Wiegerová
Slovakia

Transformation of education programmes in Slovakia – its impact on preparation of future teachers at primary school

Introduction

We live in the area which, in future, will definitely be evaluated as a time of new culture and lifestyle formation with education and information starting to gain one of important value preferences. Changes in education are characterized by many newly-constituted factors including economic, geographical, demographical and other specifics. The school has always been primarily responsible for the task to adequately develop education and training. School and school programmes have recently been the centre of attention for quick changes. The transformation of School System is becoming inseparable part of our lives and hopefully, next generations will evaluate this era in a positive way.

In the last fifteen years there have been discussions held in Slovakia and the Czech Republic on changes and potential school reforms. Slovakia and the Czech Republic had and will always have common traditions, common historical roots. However, following the separation of Czechoslovakia into two independent countries the transformation of education has been dealt in a different way. The tradition remains common but at present different direction of attitude to changes in the form of curriculum for all types of schools is obvious. Curricular reform is always a kind of catalyst for discussions on school system in its global form (for more details see Beneš, 2005). In the last five years, the curricular reform has been related particularly to nursery and primary schools in the Czech Republic. On the contrary in Slovakia, curricular changes have been evident especially at universities. Although other schools have also been subject to different partial innovations, they have not been fully impacted by a fundamental conceptual change. Nevertheless, it can be said that either in Slovakia or in the Czech Republic, schools are now at so called pilot stage of their changes.

About ten years ago a discussion started in Slovakia on a new National Education Programme for upcoming 15 to 20 years known under the name of MILLENNIUM. Its authors, V. Rosa, I. Turek and M. Zelina compiled an “open document” presenting basic and framework orientation of the education in Slovakia. The document contained the draft of fundamental changes in organization and content of education. It stems from creative and humanistic pedagogical concept.

The main objective is particularly to: change traditional encyclopaedic inanimate education in creative and humanistic education and knowledge and value education focusing on activity and freedom of the person, its ability to create its own progressive and creative way of being for the life in the millennium.

What kind of changes should the MILLENNIUM bring?

- *Change philosophy of education* – transfer from traditional concept of education to creative and humanistic concept, integrate pragmatic philosophy of education
- *Change content of education* – implement curricular transformation (reduce the amount of useless, functionless information and replace it with the content, pieces of knowledge necessary for life and key competences. Make new curriculum, books and new study materials

- *Change preparation of pedagogical workers* – transform from teachers of subjects to development of teacher's personality
- *Change methods and ways of education* – transform to non-directive ways of education, to democracy, to heuristics, alternative educational and training system
- *Change management* – decentralize it, give more confidence to schools

The Millennium draft included also securing quality preparation of teachers in pre-gradual and post-gradual systems with the focus on fulfilment of tasks within the new National Programme. The National Programme was strongly criticised by academics who pointed mainly to unclear philosophical resources as well as to problems in procedural level of cognition (for more details see Kolláriková 1999, Pupala 2004).

Democratization and humanization are not easy categories. Nor their terminology is unambiguous. Key values of democracy such as freedom, equality, right and order often contradict each other in solving particular problems. The same applies to clarification of the concept of humanization.

Intensified need for humanization of education brought new views of school. In Slovakia, however, the humanization of school has become a symbol of expressing the antipole to knowledge and rational school. Humanistic approaches should avoid liquidating student's performance in cognitive sphere and they should be used to create suitable classroom atmosphere for education which can assure the student will lose fear and find confidence in teacher, meaningfulness of school education, and discovers their own ways of cognition together with a teacher. This should be the substance of the school humanization.

These were the reasons why in Slovakia as an information society, the society where the science and progress are highly preferred, the appeal started to grow for transformation of schools from memorising large quantities of knowledge to development of thinking, competences, attitudes, values and personal qualities in particular. This tendency should have an impact on preparation of future teachers as well.

The way to the start of fulfilment of the National Education Programme in Slovakia took more than seven years. Compared to other countries „starting up” the process of the reform nearly at the same time this was the longest period. Except for very small changes, for example introducing alternative elements in teaching process or approving alternative schools (which have mostly been of church character in recent years), no significant changes occurred by 2008. It means that until September 2008, there was the Curriculum in force approved in 1995, that is thirteen years ago.

In 2008, a fundamental change in reform occurred.

First of all the new School Act was adopted. Universities have gone through changes. Pursuant to Decree of the Ministry of Education of the Slovak Republic No. 614/2002 Coll. on Credit System of Studies the structure of studies is modified in three levels, bachelor, master a doctoral. In 2002, preparation of new study programmes began at all faculties in Slovakia. The situation at faculties and the change in preparation of future teachers started five years earlier than the change or preparation of so called State Education Programme. On one hand, this element of the reform can be deemed positive because the students of Pedagogical Faculties will be prepared for new situation at schools. On the other hand,

however, they could not have been prepared for the real State Education Programme, because this document had not existed before 2008.

To prepare pedagogy students for new roles and demands brought with transformation of education programmes requires equipping these students with profession competences which will enable them to become quality and successful teachers in changing conditions of education in reform (SPILKOVÁ 2005). The accent is put on competences key for new conception of school teaching. The one largely discussed includes psychical and didactical competence the development of which means to teach students the way to create quality educational situations and conditions for successful learning of all learners. Communication competence is also considered to be important. It is not only searching for a new quality teacher-student relation but also the cultivation of communication with the world of adults. In this context it can be said that the teacher should be a kind of mediator of education, the result of which is a child with cultural literacy.

With respect to reforming efforts, the complex context of the system of education is important together with sequence of previous stages to following ones. Thus it is obvious that the type of the school system and indication of transformational changes has a direct influence on the conception of a primary school and also the preparation of a teacher for primary and elementary education.

Teaching profession for primary education in Slovakia has been included in the field of study of Pre-school and Elementary Pedagogy. This field of study is integrated in the group of fields of study of Education and in the subgroup of Teaching, Pedagogy and Pedagogical Sciences. The design of study field structure is based on classification in the international catalogue ICSED 97 with particular attention paid to tradition in education of teachers in our social and cultural conditions. There is a common basic framework or common line in this field of study for each university in Slovakia. Naturally, peculiarities of each study programme are given by abilities and conceptual orientation of particular departments at individual faculties.

Study programmes consist of individual areas corresponding to framework determination of the content core of the study. They contain general and specialised subjects including key subjects closely linked to performing teaching profession. Each study programme consists of three parts in relation to obligatory character of subject. These include obligatory, compulsorily optional and optional (voluntary) parts. Compulsorily optional part has a minimum number of compulsory subjects prescribed from the range of choice. Each subject has a given number of credits which are obtained by students following a successful completion of prescribed study programmes.

Candidate for completion of master study programme of „Teaching for primary education“ shall:

- obtain a minimum of 120 credits out of which 72 credits shall be from prescribed obligatory subjects and a minimum of 48 credits from compulsorily optional and optional subjects
- defend their diploma work thematically oriented to selected theoretical or application area of the study programme
- successfully pass state oral exam in methodology of education and training at nursery school and school club
- show competence in solving didactical assignments on selected content of primary

- education
- successfully pass colloquial state exam in Theory and Practice of Elementary Education.

Bachelor Study Programme “Teaching at Nursery Schools and Education at School Clubs” is the first stage also for primary education. It includes the same base for the second stage in the following two programmes:

- a) Pre-school pedagogy
- b) Teaching for primary education.

Graduate – bachelor is able to project and implement educational activity at pre-school institutions and spare time facilities for younger school-age children. They have knowledge of cultural and social context of education, they know basic psychological conditions of education, and they are able to apply pedagogical and didactic programmes at particular educational institutions. In its compulsory optional part the study programme enables the graduate to advance continuously to the master level of study for teacher at primary education level or specialized worker for the area of pre-primary, i.e. pre-school education.

Theoretical knowledge of the graduate:

- knows and is well informed of wider philosophical, social and political context of educational process,
- knows biological and psychological interpretation of child development and education,
- has the command of general theories of education,
- knows and understands the theory of pre-school and after-school education,
- knows principles to create and project pedagogical environment for pre-school and younger school-age children,
- is able to interpret scientific pedagogical texts as well as texts of frontier educational disciplines.

Practical knowledge of the graduate:

- is able to implement created educational projects at pre-school facility and school club for children,
- is well informed of programmes and general methodology of education of children related to children and pupils of the particular age,
- is able to process methodologically particular pedagogical projects and programmes for individual content parts and education,
- is able to diagnostic reasons of educational problems of children and intervene pedagogically for improvement and communicate their findings with particular pedagogical and psychological service.

The first experience shows that in preparation of graduates of bachelor study it is necessary to focus more on systematic practical part in addition to theoretical orientation of teaching.

While in the past pedagogical practice was an independent part separated from theoretical disciplines, at present it is linked to theoretical subjects. Pedagogical practice is understood as other form of teaching implemented in training school with tasks clearly specified by the teacher of the particular subject. This form of practice enables to follow two aims:

1. the teacher of theoretical subject is responsible for the concept, course and evaluation of the practice;
2. the second intension is related to clear connection of the theory and practice.

This way it is possible to create the space for students to understand pedagogical context. Objectives of pedagogical practice result from the profile of the graduate of the study programme and they may be presented as follows:

- support the process of obtaining cultural literacy in students, in order they are able to apply obtained competences in the process of education and training of pre-school and younger school-age children.
- obtain compact view of educational activity at nursery school and children's school club.

Master Study Programme “Teaching for Primary Education“ creates precondition for obtaining the qualification for teaching at 1st stage of primary school. The content of the study programme for elementary education teaching is a follow-up to bachelor study of teaching at nursery schools and education at children's school clubs. It provides more complex and deeper theoretical knowledge on basic factors and processes in education. It also provides thorough orientation in the content of basic education and its effective transformation for purposes of didactics. This level of the study programme also forms a sufficient professional basis to support the profile tied to research and development and more complex project activity at the third (doctoral) level of study in the field of pre-school and elementary pedagogy.

Graduates of the study programme are able to perform the profession of:

- a teacher at 1st stage of primary school
- university teacher participating in preparation of teachers within the field of pre-school and elementary pedagogy.

The graduate of the study programme is able to project and implement educational activity at 1st stage of primary schools or at educational facilities at the level of elementary education. They have knowledge of cultural and social context of education, they know basic psychological conditions of education, and they are able to apply pedagogical and didactic programmes at 1st stage of primary schools. In its compulsorily optional part, the study programme enables to deal with specific requirements of the region, school and pupils. It also enables the graduate to advance continuously to doctoral study of elementary pedagogy.

At present, the presented form of the study programme of Teaching for Primary Education is approved at the Pedagogical Faculty of the Comenius University and in September, first 50 students were enrolled on the bachelor level of the new credit study. At the moment it is difficult to consider what the new concept of the professional preparation of teachers at 1st stage of primary schools will bring. We will be able to assess it only when the first graduates of this study are in practice.

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Zákon č. 131 o vysokých školách a o zmene a doplnení niektorých zákonov.

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Innovation of approaches and teaching methods in the teacher training programme

Introduction

The position and role of the teacher in the educational process has changed as a consequence of information explosion and dynamic progress of the society, science and technology. The teacher's role is not only to introduce completed facts and mediate new knowledge. One of the teacher's tasks is to create specific conditions that enable students to acquire long-lasting values rather than a large amount of information that may quickly be forgotten and moreover, quickly changed. Cognitive abilities and creativity of pupils and students, their competence to learn effectively, their motivational and emotional attributes as well as their flexible social adaptation are considered to be most significant values. Therefore, many experts, politicians, and parents agree that a high quality training programme on pedagogy and psychology is needed beside the subject field the student is studying and will be teaching. University students – future teachers should also be educated that way and apart from the above mentioned values, they should be trained in developing communicative skills and encouraged to understand the importance of lifelong education in order to extend their knowledge of the subject they teach and of new technologies and new educational strategies. They are asked to be aware of any changes connected with requirements and expectations of teachers. That is why the teacher training programme employs various educational forms and teaching methods that allow the university student to be an active participant in the educational and training process. The option of the methods depends on the following indicators:

- the form of teaching (a lecture, seminar, workshop, tutorial);
- the study group (the year of study, number of students, motivational differences etc.);
- the syllabus and aims of the subject taught, the number of lessons available;
- the rooms available, teaching aids, technical facilities;
- the teacher's own pedagogical knowledge, skills and abilities.

Every teaching form is a combination of various teaching methods. The combination is influenced by many elements of which some are always dominant. The most typical teaching forms within university environment are lectures and seminars.

University lecture

As R. Štepanovič (1975, p.141) states, the university lecture represents a typical form within university education. Its role is to present a certain amount of information out of a large quantity of knowledge of a specific issue, and to clarify methodological principles of science as well as to develop students' logical thinking. The student receives not only facts and information but also sees different methods used by university teachers to explain and illustrate such as analysis, synthesis, induction, deduction, etc. During the lecture, the use of relevant stimuli, their structure and mutual relations is important to develop students' abilities to observe and think logically. In another words, the lecture introduces the student to the content of the topic dealt with and to the ways and possibilities to adopt and understand it.

J. Vašutová (1999, p.190) mentions that the basic feature of the lecture is to explain theoretically and systematically the problem or its part that a certain subject is aimed at. She

highlights that the lecture is not a replacement of study literature as the teacher does not provide students with all the information and facts that s/he expects the students to present during their examinations. The lecture is to motivate and encourage them to further study.

To elicit students' activity, the lecture may be organized in a way that forces them to think about the issue during but also after its end; the teacher is advised to raise a question with more than just one possible answer or solution. Students then search for information using various sources, they take part in discussions on seminars or in informal talks among themselves. This type of lecture promotes every aspect of creative and autonomous students' thinking and fulfils completely its educational role. The lecture belongs to the oldest and most widely used methods. It allows:

- to gather comprehensive and completed commentary on new facts in logical sequences;
- to clarify abstract terms, their links and relations;
- the teacher to affect his/her students by his/her own way of thinking, precise and clear verbal expressions, professional and emotional enthusiasm for the topic presented;
- the teacher to influence a large number of students at the same time.

Although the university lecture is often accompanied by visual support to provide students with various graphs, schedules, formulas etc, its crucial role remains to be the teacher's own presentation, his/her "live" words, taking into account his/her rhetorical skills and the quality of his/her speech. Nowadays, however, a teacher's monologue is disappearing and a dialogue with students is becoming more and more frequent. J. Vašutová (1999, p. 192) suggests that university teachers should use modern and effective techniques and methods for presenting the issue and attracting students' interest in it. She sees the dialogue as part of an interactive lecture based on questions and answers, discussions, mutual cooperation in problem solving activities and she emphasises the importance of quality teacher's presentation and dialogue management.

During a lecture, the teacher analyses mainly the most important parts of the issue and for extra requests, s/he recommends appropriate literature or other sources to study from. At the end of the lecture, teachers are advised to devote some time to at least one type of feedback so that they are able to self-evaluate the lecture. A good lecture is characterised by some principles the teacher follows:

1. The teacher begins his/her lecture on time, a break is scheduled usually after 45 minutes.
2. The teacher states the topic and the structure and timing of his/her lecture.
3. The teacher speaks a standard language, in an audible way, articulates and modulates the tempo of his/her speech in accordance with the topic.
4. The teacher speaks from notes, highlights the most important information and quotes correctly.
5. The teacher provides the audience with information that is scientifically correct and updated.
6. The teacher structures and organizes his/her lecture in a logical and understandable way; s/he may add some refreshing and motivational passages.
7. The teacher demonstrates and uses practical or historical examples.
8. The teacher clearly formulates and summarizes the main points and leaves space for the audience to ask questions.

Lectures may be modified and enriched by combining some elements. M. Zelina (1990) presents the following:

- a) a lecture and discussion, in which the discussion is held either at the beginning or at the end of the lecture. In the end, a summary is required;

- b) a lecture and supplementary reports, in which supplementary reports are created by students and take from 7 to 10 minutes;
- c) a lecture and discussion based on thesis – the audience is asked to the so called pre-study of the issue;
- d) a stage-discussion and a lecture – the lecture is held by more experts invited to “the stage”. A summary in the end is essential as well as a comparison of solutions in the theory and practice;
- e) a lecture combined with discussions in groups and micro-groups. In the beginning, the teacher’s lecture raises a problem; then it is pre-discussed in groups, afterwards one of the students presents the results;
- f) a poster lecture – the teacher creates a poster concerning the problem, the aim of the work, results, summaries and recommendations, bibliography etc. This form is time and space consuming, and an active participation of students is required, therefore it is not suitable for every lecture.

The quality and effectiveness of the lecture depends not only on the teacher but also on the audience’s reactions. Students are asked to follow and understand the ideas presented and review them with their own knowledge and experience, formulate questions, or to express their opinions.

The university lecture is and is likely to remain the basic form of university studies. Despite inventions like the letterprint, tape-recorder, radio, television, PC and the internet we still may assume that its role will retain until the live word serves its function.

University seminars

The name comes from the Latin term “seminarium” which means “garden nursery”. “Seminar” in the ancient Greek and Roman schools represented discussions, students’ presentations, teachers’ notes and works of a similar type. Seminars were later on developed mainly in universities.

J. Vašutová (1999) describes the role of the seminar stating that it is the place for students to deepen and extend their theoretical knowledge gained during lectures and their individual studies. They are given a chance to present the results of their work, to practise and develop their communicative skills, creative and critical thinking, to cooperate and work in teams and to strengthen their interest in the issue. These aims affect a structure of seminars; students are organised into smaller groups (approximately of 20-25) of the same study field. Seminars offer wider pedagogical possibilities than lectures although they depend on them to a certain extend. If the content of lectures is not rich enough, teachers cannot expect extremely good results on seminars.

Seminars are typical for the use of methods such as discussions, interviews or chats, dialogues. Discussions are often connected with the student’s presentation or report. Heuristic, experimental and situational methods, case studies, etc. are, however, less often present on seminars. Heuristic methods are characterized as those which get students closer to the solution of problems stated (Štepanovič, R., 1985). Students build and form their skills and habits to solve such problems so that in the future they can easily orientate in them being aware of their own potential. I. Turek (1999, p. 47) describes such methods as series of recommendations, rules and instructions that form a system which enables students to identify the problem correctly and finally reach a desired result. The most frequently used method is probably the one of brainstorming, whose author is A. F. Osborne. There are three main principles that need to be followed: the first one explains how important it is to select the production of ideas from their evaluation; the second one tells us that the more ideas we

produce, the higher probability it is to find a unique one among them. The third principle advises us to get people to work in teams rather than individually as they encourage one another and produce more ideas. Taking into consideration brainstorming as a teaching method, the objective does not need to be to find an optimal solution but to educate and let students be involved in the content and develop their creative abilities.

There are different variations of brainstorming, e.g. brainwriting, the 635 method, table-tennis brainstorming, Hobo method, Gordon's method etc. Naturally, many more methods of creative problem solving exist, and we have not named all of them. We have concentrated of those well-known ones that are possible to use within the university education.

Both, the situational method and case studies are based on communicative approach, they strongly activate students, develop creative and evaluative thinking, teach how to discuss, debate or speculate, how to express one's opinion. In both of them, students are faced with a "problem" and have to find a solution (answers may vary), moreover the case study involves also role play activities and touch mostly the active and affective aspects of one's personality.

It is very hard to separate or chose one method that would represent the best or most effective one. The use of teaching methods varies depending on many factors, e.g. the structure of the subject taught, the age of students, technical and room facilities, the frequency and number of lessons available, the teacher's pedagogical experience and his/her methodological abilities and skills etc.

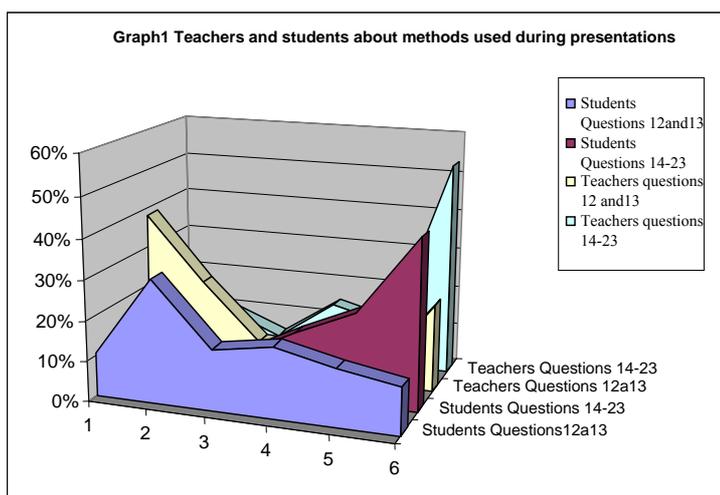
Results of the questionnaires concerning the use of teaching methods during seminars and lectures

We gathered data of 638 respondents on the use of teaching methods by university teachers. The teachers and students were given two questionnaires; the first one concerned the use of teaching methods during lectures within one semester and the second one during seminars within one semester. Both of the questionnaires consisted of the so called closed items and all the respondents were to choose one of the given options.

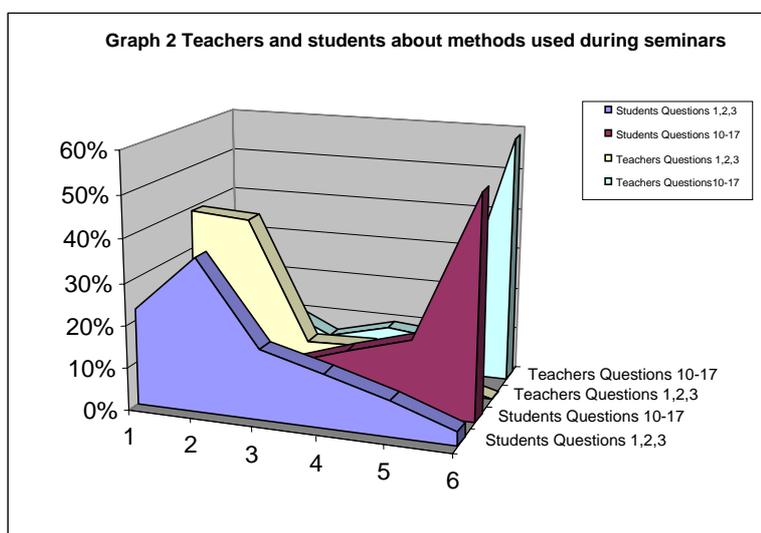
We had prepared 64 questionnaires to be completed by university teachers. They map the situation during lectures and 124 ones during seminars. The questionnaires consisted of 26 items which dealt for example with the common principles of the lecture, the use of traditional and non-traditional teaching methods and teaching aids, sources of information. The results show that university teachers use more frequently the traditional teaching method of a systematic and structured presentation and teaching aids rather than non-traditional ways of teaching.

We were also interested in specific methods that are used during university seminars. According to the results, the teachers use traditional methods and discussions as well as presenting students' seminar works more frequently than non-traditional ones (heuristic and situational ones, case studies, brainstorming, brainwriting, etc.)

The same analysis was done on the students' answers. 450 questionnaires were completed, out of which 225 map the situation about the use of non-traditional teaching methods during lectures and 225 during seminars. The students responded that traditional methods were used more frequently than non-traditional ones. The data comparisons are presented in Graph 1:



The last analysis describes the results of the use of non-traditional teaching methods by university teachers during seminars. Graph 2 shows that again, traditional methods are more popular with teachers:



The results of the survey reveal that teaching in a traditional way still persists within the university educational process. Both of the groups, the university students and teachers claim that organising the teaching process traditionally is more common and widely used in our universities.

It is a necessity that university education responds and reacts to on-going changes in the society that evoke the changes of the position and role of the teacher in the educational process. Those changes do not hit only changes in the school curriculum, establishing new study subject fields, changes in the educational structure, students' assessment, relations between students and teachers, but they also invite changes within the use of teaching methods. The information explosion requires a new way of university training. The output of university students defines various competencies of young graduates, involving critical and comparative thinking, problem solving, creativity, team work, and communicativeness. Non-traditional teaching methods help university teachers to develop the above mentioned aspects of students' personalities together with theoretical knowledge of their subject fields. Those methods also establish and create conditions that allow university teachers and their students to form a partnership with a mutual respect. They motivate and activate the student's interest in the subject and take into account the individuality of each student. The student of poor

rhetorical skills may attract his/her colleagues by original and unique ideas within brainstorming, for example.

Another positive feature of non-traditional methods is teacher–student interaction. The student is not just a passive receiver of facts any more, and the teacher not just a mediator of new information. Those methods form a desirable environment for the student to work autonomously and develop his/her skills and abilities during the educational process. On the other hand, they also force the teacher to extend his/her professional knowledge as well as his/her pedagogical skills.

When applying various non-traditional methods, students deal with different tasks in small groups. This is the way they are trained to accept and adopt and evaluate opinions and ideas of their colleagues, that is essential for working in teams. The students' creativity is being developed, as many authors claim in their works ((Zelina, M., Turek, I., Vašutová, J., Petlák, E. et al).

The theoretical knowledge acquisition is important for students nevertheless it is subjected to their abilities to use it further, not only within their formal education but also during their practical activities. Therefore, non-traditional methods allow students to practise and solve real-life model situations and gain know-how experience, not just by discussing them but in a very practical way. After such training the students are able to apply the experience in their further lives.

On the other hand, we cannot neglect traditional teaching forms and methods. As it has been proved, they are effective and successful especially with students in their first years of university study. Non-traditional teaching methods require much effort to the teacher's and at the same time student's personalities. They demand basic knowledge of the issue dealt with, creative thinking, flexible communication. That is why the use of both traditional and non-traditional teaching methods and forms aiming at optimal development of the future teacher's personality may be an ideal solution.

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Teacher education for primary grades

Introduction

Teacher education for primary grades pay heed to attention because the pupils acquire basic knowledge. From this time of school attendance students gain their further success and failures. That's the reason why the questions about teacher training education are permanently in the centre of our attention. These questions became current in this time and it is connected with the general reformation of our school system. It was being prepared for a long time and was put into action in September 2008. The reform's essence and its aims are focused on the improvement in education process by developing creative thinking skills, supporting self-activity and the fact that the students should be in the center of pedagogical-didactic work of the teacher. International PISA research emphasized that we should devote to the aspect of school education more intensively than in the past several years. It pointed to the lack of ability to use the huge amount of knowledge our pupils have but don't know how to use it in everyday life.

Teacher education for primary grades

At the beginning of this part we would like to emphasize that teacher training education for primary level belongs to one of the most demanding kinds of study programs when compared with secondary or tertiary levels. Demandingness of the study lies in the duty to study whole subject series except pedagogical and psychological disciplines. It is Slovak Language, Maths, Biology, Music Education, Art Education, Physical Education and others completing the student's profile. We would like to remark that obtaining scientific knowledge is not the most essential part of teacher training education but methodical knowledge and skills how to teach are also included. Students are indulged in these activities throughout their study by various kinds of pedagogical practice.

Selection of students for teacher training is a significant moment. Nowadays the interest in studying this kind of study programs has risen than before. This is a very good opportunity for faculties to choose students suitable for becoming good teachers. What is important during the selection and teacher recruitment? We state the two most important indicators, particularly: attitude to teacher profession and personal conditions. At this point it's important that the personal qualities identify with qualities typical for teacher profession, for example self-confidence, creativity, emotional stability, flexibility, empathy and further. The same stands for abilities meaning: cognitive – preconditions for studying and further self-culture, psychomotoric – activities connected with teacher profession, affective – preconditions for emotions control and using these abilities in the teaching process. Previous areas are crucial during selection process of students for the study.

Teacher training for the first grade of basic schools is divided into two levels – first level takes three years and the graduate obtains the academical degree Bc. After the further two years graduate obtains the academical degree Mgr. and he is qualified for teaching at this grade of school. We have already mentioned that the content of study is very demanding because the student is studying various subjects which form the first grade syllabus. Of course, it's not just about the study of subjects but also its didactics, i.e. how to teach these

single subjects. It's obvious to study foreign languages (students can choose English Language, German Language, French Language, etc.) because the reform we mentioned previously implements the compulsory study of two foreign languages- at the first grade 1 foreign language since the third class and an additional one from the fifth class. To make it clear, in our school system we have one teacher to teach all the subjects of the first-grade syllabus. Teachers teaching at the second grade are prepared for combination of two subjects.

Basically we can state that teacher education for primary schools in Slovak Republic has many common signs with the teacher education in other countries of Europe. Among the many comparative characteristics we list the following ones:

- Focus on the specific period when the child proceeds from the kindergarten and family surrounding to school facing systematic and everyday work. Teacher training is subordinated to the knowledge of age and individual particularities.
- Student- future teacher should precisely know pre-school period and development during this period. Bc. study has its scope on exactly on these subjects. The graduate can be employed in pre-school institutions.

Connected with the changing requirements on education, e.i. on schools, requirements on teachers and their training are also alternating. In the past teacher at a primary school could be a good teacher if he knew basis of science, pedagogy and psychology. This new transformation period calls for new teacher's demands. It's the matter of the following demands:

Competences of teachers are extending. Nowadays it's not enough just to "teach well". The teacher should also teach effectively. It means to accent effective methods and forms of educational work in a way students and their teacher reach their goals in the shortest time and with the less effort. It's not possible without knowing the newest teaching methods together with the ability to evaluate his own work. Consequently, one of the most meaningful features of the teacher's work is the ability of self-reflection.

Teacher's work at a primary school includes the socialization of children, too. Therefore, he has to be not just a teacher but a facilitator as well, who creates positive school climate. The student learns together with the teacher and classmates how to establish mutual contacts in the school surrounding.

Currently, the integration of children with various learning disorders has become a remarkable topic in our country. It's a topic that was as if ignored. Because of the increasing demands on the consequential effects of education the teacher has to be a perfect diagnostician. He has to intervene into the educational process and family education in an appropriate way.

The areas remarked above are crucial, though they don't do up the complexity of the training and work of teacher at primary schools. We should describe a whole list of tasks connected with the training and work of teachers. Various authors (Banach, C., Petlák E., Spilková, V.,) introduce a series of demands:

- learn how to organize the teaching process, teach the students how to learn and develop creative competences
- form the personality and regulate the education of students
- complex nurture of students and effort for his socialization
- lead the students to systematic and lifelong education
- to be particular about self-development in professional orientation, etc.

All faculties realize the importance of these priorities and so education is extraordinarily innovated. Innovation affects not just the content of education but also pedagogical practice of future teachers. Pedagogical practice is reminded because it was underrated during the transformation period of the 90's. It is being successively appreciated as an essential part of teacher training.

Except the aspects mentioned earlier which are focused more didactically rather than education, we remind, that questions about education in the teaching process are resulting in recent years. Educational function of school is more and more emphasized. Traditional human values are constantly transforming as a result of recent life. They are losing their value so they are replaced with other ones consisting mainly in consumer lifestyle and values. Also the rise of criminality, weak attitude of young people to work, loose moral behavior of people etc. are, unfortunately, accompanying phenomena nowadays. It would be improper to blame teachers and school for this behavior.

On the other hand, we have to point out that school could be blamed for this to a certain extent, too. Let's think of the ratio how much we teach and educate in schools. We can all agree on the fact that this relation could not be expressed in mathematical terms. The range of this report doesn't allow us to analyze and explain the main idea that: "nurture will be more important than education." Who understands the trends of development of society and trends, which multimedial techniques are offering and will offer, he also understands the main idea and its importance for youth and teacher training. O. Speck characterized the dramatic changes in human values by words: "what was in the past unthinkable and condemnable in the society, today it is becoming a norm."

It is not possible for school to correct all the mistakes in society. It is truth, that he can't get rid of this duty. In the future teacher training it's necessary to be prepared for education and have mastered educational methods based on the activity of students. We should focus on methods of evaluation with accent on feedback, use of communities, which are analyzing students' behavior and creating ideas for improvement. Emphasize the affective experience in students' community, connect the educational influence with real life surrounding the students. E. g. we are not teaching students to respect elder people just by telling them about their life, but also using activities to help elder people – cooperation with retirements homes. We can name more of this kind of real life situations. More important is transformation of attitudes to education using nondirective approaches. From mentioned above, it is obvious that there are some transformational changes in teacher training, preparing them for new opportunities and necessities of education.

We would like to add that comparing recent nurture and education with last years it is obvious, they are more difficult today. The difficulty is that school and teacher are in certain degree autonomous subjects. E. g. school has 30 % possibility to choose its own curriculum. Firstly, it is a certain way to express faith in teachers. On the other hand, teachers' work is more difficult. We were talking about creativity in connection with students but now we would like to talk about creativity connected with the teachers and schools. We are not afraid to state, that just those schools will stand in competition, which will be creative. These schools have to work with innovative methods and forms and universally prepare students for next studies. These are new tasks for colleges of education, which are training future teachers and they are starting to offer various kinds of alternative study programs.

Teacher at primary school and his work in school

After finishing the pregradual training and becoming an employee, a new stage starts in the student's life- named as professional start. During this important period the role of student

is changing into the role of teacher and so his relation to parents, he's taking responsibility and becoming independent.

Graduate of university is armed with theoretical knowledge, skills and abilities, which he obtained during his studies. But the problem is his professional readiness- mostly not sufficient- for some of the obstacles of practice and also his readiness of his personality for dealing with some events.

J. Alan (In: Průcha, J., 2002, s.208) in the stage of professional start he defines following kinds of conflicts, with which the graduate collides:

- Conflict between knowledge and experience of teacher
- Conflict between personal aspirations and interests of institution
- Conflict between recent teacher's position and evaluation of his perspective.

B. Kasáčová (2004, s.49) is enriching the previous list of conflicts by another one. She defines conflict between desire and necessity to get a job in contemporary conditions.

This conflict is typical for recent years and it is connected with general decrease of work opportunities. This is caused by lower number of children in population classes visiting primary level.

The stage of teacher's entry in his profession is named as beginner teacher. From the practical point of view it's considered as very important and because of this it is given a lot of attention in pedagogical theory and research.

Working responsibility of starting employee is continuously raised, he is introduced to his professional position and he can rely on cooperation with other, more experienced workers. But the reality is more difficult. Beginner teacher takes all responsibilities of teacher from the first day at school, i.e. full responsibility for education. He is performing his tasks alone i.e. he doesn't have anybody who would help him or give him advice. Beginner teacher is advised by induction teacher, who is assigned to him by school management. He can consult his teaching problems with this teacher. This skilled teacher is taking care of beginner teacher from methodical side and he is responsible for adaptation of beginner teacher to school management.

J. Průcha (2002, s. 210-211) summed up and divided the causes of problems beginner teachers meet during the first months into three groups:

1. Causes resulting from teacher's personality. Some of the beginner teachers are recognizing that they are not mentally ready for this profession during their employment. The most difficult for them is to maintain discipline or their insufficient vocal abilities, preventing them to speak several hours a day. Feeling of loneliness is causing problems too and they are taking the responsibility for children with difficulties.

2. Causes connected with professional competences of teacher. Beginner teachers realize that pregradual training didn't prepare them for performing common task of teacher, e.g. filling the daily agenda, other administrative work, communication with partners of school, (school boards, inspection, advisory system of schools, parents)

3. Causes resulting from situations at schools. School reality brings new situations, which are causing a lot of difficulties to beginner teachers despite of concrete experience from pedagogical practice. They consider the teaching activities as the least difficult ones. This is probably the result of pregradual training focused on mastering the methodical processes.

Most of the beginner teachers are pointing out that after finishing the first year of pedagogical practice they were least prepared in the field of class management and maintaining class discipline and attention, work with weaker students, and solving problematic educational situations. These subjective opinions are supported by results of

researches about beginner teachers in western European countries, USA, Canada and Australia, which summed up the most frequent problems into the following order: maintaining discipline in classroom, motivating students, adjusting to individual characteristics of students, evaluating results of students, developing relations with parents, inconvenient materials and aids, organizing the work in classroom, solving individual problems of students, big burden of teaching process, relation with colleagues (Průcha, J., 2002, s. 214-215).

Strengthening the pregradual training by development of communicative, diagnostic, psychodidactic, management abilities and self-reflection should help to overcome problems and thus help beginner teachers. Mentioned abilities are corresponding with requirements of pedagogical practice and they could make the professional start of beginning teacher more easier.

One of the most important requirements of recent schools is the cooperation with families realized by head teachers represented by beginner teacher. School and family present two of the most substantial educational factors. Cooperation is realized by classroom meetings as a basic form of cooperation; head teacher's family visits, parents at schools, written contact of teachers with parents and open days at schools.

Significant group of activities is formed by connection with parents, the beginner teacher wasn't prepared for- he was let to discover it by himself. Problems and situations crossing the teacher's way in pedagogical practice are adequate reactions on unexpected development of teaching process, managing meetings with parents, individual meetings with parents, solving disciplinary problems. The development of communication and consulting skills would decrease the number of problems during cooperation between school and parents. Parents are usually older than beginner teachers and they are afraid that they will not be respected as professionals.

A lot of problematic groups of teacher's activities are to overcome by experience and maturing of teacher's personality. Enforcing the important skills during the studies in university should help preventing "the shock" of beginner teachers caused by professional start and school reality.

Summary

In our report we were shortly describing existing state and tendencies in teacher training for primary schools. Truth is, that this problem is more difficult and it isn't easy to describe it on a few pages. It is important to state that we are implementing vitally reforming effort in our educational system. Expected reforms could not be realized and it wouldn't be possible to reach desired goals, if teacher training was not reformed. In the report we mention some fields, which are requesting special attention during the teacher training. If we really want to emphasize the nature of changes in our school system, it is needed to be focused mainly on the use of those methods by beginner teachers that are not forming just knowledge, but leading also to creative use of knowledge in learning and life, consistently humanize the whole educational process, because they are connected to other approaches of students to learning and school. Big deal of attention is given to socialization, because nowadays deficits are shown in this field, too. Finally, we would like to emphasize the importance of lifelong education as the key area for students and teachers. We consider this the top priority and base for important changes in the learning of students and their teachers.

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Preschool education and the teacher training in Slovakia: facts and challenges

Abstract:

This article is concentrated to describe history of preschool education and preschool education in SR today. Education for special needs children and teacher training for kindergartens is discussed as well.

Key words:

kindergarten, preschool age child, special educational needs children, teacher training, school acts.

Introduction

There have been many changes in Slovakia within the last two decades. New socio-economical and political conditions are reflected in the field of education, both in education of children and in education of teachers. It is motivating and fruitful to compare educational systems on an international scale. An article was written to support an idea of European dimension in education and in teacher training and with the intention for sharing the experiences in the educational arena.

1. A brief view on the history of childhood, education and educational theory.

According to historical documents, child care in Europe was always closely linked to the socio-cultural development and economical level of a society. Each historical time reflects the general societal meaning, accepted philosophy, political climate, ideas and beliefs for future. The relationship between societal developments, existed educational theories and practices in childrearing is evident.

Coming back to the early history of civilization (prehistoric time) children were educated in primitive family groups - accompanying their parents, they were modeling life activities and communicative rules of their parents and other members of these early communities. As schools did not exist at the beginning of civilization, the very first primitive educators were parents and whole family groups. The common feature for all historical communities, as well as for human society today is, that the main aim of education and childcare is to transmit important knowledge, values, customs and rules from one generation to future generations (children are seen as important conveyors of culture, links to the future).

Throughout history, the portraits painted of childhood have been very rich. They reflect the accent and value that was given to children by various generations of adults. Throughout human history, childhood has always been a social construct of adults. Adults, through their activities with children, affect the quality of childhood. The value of children was changing – from its reproductive (procreative) value for society, through economic value to emotional value. Historical documents describe the influence of formal education in early societies (Sumeria, ancient India, China, Persia...) and the influence, place and responsibilities of parents (different tasks in education for mothers and fathers – Greece: Sparta, Athens,

Rome). Childrens' rights in history were very restricted, till year 374 there also existed possibility of infanticide (especially of children with handicaps).

Later on in the history of human society, the position of a child depended also on a social class to which he/she has belonged (free, unfree, nobility, serfs, middle, upper class). As it was generally viewed in middle ages - children were not in the centre of interest of European societies.

Thanks to thinkers in the field of religion, philosophy and education from 16th-18th century, attitudes towards children, childcare and education has gradually changed. It was *John Amos Comenius* (1592-1670, mainly his books *School of Infancy* and *Orbis Pictus*), *John Locke* (1632 - 1704, philosophy of *tabula rasa at birth*), *Jean Jacques Rousseau* (1712-1778, *Emile*), *Johann H. Pestalozzi* (1747-1827, *How Gertrude Teaches her children*) and *Friedrich Wilhelm Froebel* (1782-1852, the father of kindergarten, *Mother play and nursery songs and finger plays*) who created modern educational theories on early childhood education. These theories are the basis for understanding real needs of preschool age children and had important influence on more recent history of institutional preschool education and creation of preschool curricula (compare Berger, E. H., 2000, Helus, Z., 2004)

World-known thinkers mentioned above also influenced parent involvement in education, movement of women- mothers to support their and children rights in child caring. Their ideas were the first steps towards modern research in psychology and pedagogy of early childhood - exceptional children including (E. Key, M. Montessori, J. Watson, E. Erikson, J. Piaget, L.S. Vygotskyj,...) and in teacher training for kindergartens.

2. The beginning of institutional preschool education in Slovakia.

The description of general features of childhood in the history of Europe is not very different on territory of Slovakia. It was also influenced by historical socio - cultural events, geographical and political position, the development of school policy and valuing the child. The existence of the first formal institutions for young children was closely linked to socio-economical conditions in Slovakia (in first half of 19th century, growing factory production influenced employment of women, existence of a strong group of working mothers have raised demands on institutions taking care about children).

A great deal in developing institutional care and education of preschool children in territory of Slovakia belongs to *Mária Terézia BRUNSWICK*, who based first institutions (1.11.1829) in towns Banská Bystrica, later in Bratislava and Trnava. Her attitudes and educational ideas were influenced by the ideas of J. A. Comenius, J. H. Pestalozzi, J. J. Rousseau, R. Owen, F. Froebel and other known thinkers. In the territory of Slovakia in those times were also established various associations for child caring, women associations, leaflets on early childhood care were printed and disseminated, the first principles on how to take educational care about children were stated. Created curricula reflected political conditions of the society (multicultural community).

But really modern educational acts were created only after the second World War. According to the general understanding of psychology and pedagogy of a preschool age child, the functions of preschool institutions were the complex cultivation of a child according to his/her individual potential and age characteristics (educational function), diagnostic function, advice and intervention.

3. Preschool education in Slovakia – present time.

In 2008 an important legislative step was implemented in Slovakia, as Act 245/2008 about education (school act) was signed. The act is the result of analyses of educational effectiveness, of positives and shortcomings in Slovakia during last 20 years. It also reflects the comparison of Slovak education with educational systems in European countries. The act is a way to create modern school systems, that fit to strict requirements and standards of EU schooling.

The International Standard Classification of Education was applied for creating of levels and curriculum of education. According to this international document level 0 (ISCED 0) – preprimary education is realized in preschool education, in kindergartens (called in Slovakia “mother school“). According to the new act (Part 1 – paragraph 28) Kindergarten is an integral part of school system, what is a new element in schooling. The educational institution is designed for 3(2) – 6 years old children.

The leading educational idea is to support personal development of a child in its complexity and to create conditions for further education and life of a child. The crucial educational goals are:

- to fulfill the natural need a child for social contacts with peers,
- to facilitate fluent adaptation of a child in new educational environment (while entering kindergarten and elementary school),
- to support attitudes of a child towards learning process (by using the play),
- to increase and develop in a creative way the personality of a child in his/her psychomotorics, cognitive, social, emotional and moral spheres,
- to respect various socio-cultural and socio-economical conditions of families of children in kindergartens,
- to apply and protect childrens’ rights in close cooperation with parents of children and with other social institutions,
- to meet interests of parents in education and help them in parenthood (Hajdúková, V. and col., 2008, p. 12).

The fundamental educational document in kindergarten is so called State Educational program, which is concentrated on developing of:

- psychomotorical competences of children,
- personal (interpersonal) competences (bases of self-concept and self activity),
- social (interpersonal) competences,
- communicative competences,
- cognitive competences (basic skills for problems solving, critical and creative thinking),
- competences for learning,
- informatics competences (Hajdúková, V. and col., 2008, p. 14).

Kindergarten program Child and the World consists of 4 topics (Me - I am, People, Nature, Culture). State Educational Program is the base for creating of School Program, which is created by each school (respect to local geographic, historic, social conditions). Attendance to kindergarten is partially paid (exception is final year of attendance, before entering basic school, when children from low income family backgrounds are educated free of charge). Final year children are usually grouped in one class and they are awarded by certificate. Methodology of education is based on ontogenetic specifics and on individual abilities of children listed in kindergarten institutions. Kindergartens are free to organize open

air schools, field trips, sport trainings and other activities but child could be involved only after previous agreement of his/her parents.

4. Kindergartens and preschool special educational needs children (Sench).

System of education in kindergartens due to recent humanistic trends in education allows integration of SENCH. Accordingly to Educational act in SR there exist several ways for education of exceptional preschool age children. One possibility is to group exceptional children according the type of their disabilities into kindergartens for medically impaired children (there can be educated children with various disabilities – mental, hearing, visual, physical, impaired communication abilities, autism, children which are deaf- blind, which are sick or ailing children, children with developmental delays). All above mentioned kindergartens belongs into the system of special schools in SR. Kindergartens create also possibilities to educate also children from socially disadvantaged backgrounds, from family environment that insufficiently stimulate development of cognitive and emotional abilities.

The second possibility is to educate SENCH in special classes of regular kindergartens, but children are in groups according to their disabilities. Educational activities are planed in such a way, that part of them is devoted only for exceptional children, the other part of education is together with intact children.

The third way of education of SENCH is educational group together with other children in kindergarten. If it is necessary from educational point of view the child is educated according to individual educational program (created in cooperation of school, institution for educational prevention and advices, what closely linked to help of family).

Nowadays trends in education of preschool SENCH is to place them into conditions of regular schools. Accordingly to Educational act in SR this educational activity is based on special created conditions and rules (e.g. maximum 2 exceptional children per class, possibility of a position for teacher assistant, in special cases parents are involved).

Educational act (2008) solves also the position and education of gifted children. Specific conditions for them are created to develop their abilities in the sphere of intellectual gifts (academics), children gifted in arts and sports. Conditions for education have to reflect special abilities of gifted children. In is important to support children from the very begin after the diagnosing of the gift.

5. Kindergarten teachers training.

The other side of preschool education is represented by teacher training. Having in mind all competences which should be developed in children, study programs for their teachers have to be created very properly. Teacher training in SR has a long history (the fundamentals for modern educational system – teacher training including- were based in 18th century by monarchs Maria Terezia and Josef the 2nd).

For recent history the most important is the period after the World War the Second and struggle of teachers (supported by educational theorists) for university level of teacher education. In 1946 an Educational Act was adapted, according to which all teachers had to graduate at university level (Faculties for teachers training, 4-years programs for elementary classes teachers, 5-years programs for second stage of basic school teachers and secondary schools teachers). Duration of study programs has altered and was depending on demographic situation and demands on teachers (their number reflected birth rate, „baby - boom“ after the war).

Exception in requirement of university level of study were preschool institutions teachers. For their training were sufficient so called secondary educational schools with 4-

years programs finalized by school leaving examination. This type of secondary school is still existing. The whole time there exist ongoing professional debates on duration of teacher training, on proportion of theoretical study and teacher practice in their programs and so on.

Looking on research findings (especially in psychology and pedagogy) there is a clear evidence about positive impact of early educational support of a child and about professional educational institutions closely linked to family education (negatives are only in cases of early separation of a child from mother in nurseries for 1-3 year old babies, which are considered to be harmful for the healthy development of a personality of a child).

During the last decades there was very often an articulated demand for deepening professional preparation of kindergarten teachers at least at a university bachelor study level. The most relevant reasons were:

- young age of novice - teachers entering the profession of kindergarten teacher (18-19 years, who are very often personally unmatured and unexperienced),
- Socio – political changes in Europe (20/21century), comparison of educational reality and school systems, compatibility of university study - students/teachers mobility, credential system, international acceptance of diploma and university certificates, work mobility in EU,
- relevant research findings in child development and theory of teaching profession.

In 2002 University Act (n.131) was sign in SR, according to which the best qualification for kindergarten teachers can be obtained at bachelor study level of study branch Preschool and Elementary Education. Content of study for three years is specified in study subject:

1st year of study: bases of educational science, bases of psychological science, theoretical background for content of education in kindergarten, other: work with PC, foreign language, practice,

2nd year: continuance in educational studies and psychological studies (more specified on preschool age), methodology of basic fields of education in kindergarten (early language skills, art education, physical education, mathematics, moral development, specific problems in education (SENCH), out of school education teaching and tutoring practice (KG, 1st class of elementary school, open-air schools...),

3rd year: linking theory to practice, research and practice, (research in education), deepening knowledge and skills in study subjects, working on bachelor written thesis, complex teaching/tutoring practice.

Categories of subjects in study content are compulsory (without choice), compulsory elective (semi-free to choice, stated criteria for choice), elective (offered, but not compulsory, free to students' choice). Study is finalized by bachelor state examination, with parts as follows:

1. Defending written thesis (25-40 p., foreign language abstract, bibliography – literature resources, appendix),

- thesis tutor, reviewer-opponent,
- presentation, explanation and reflections on reviews, discussion.

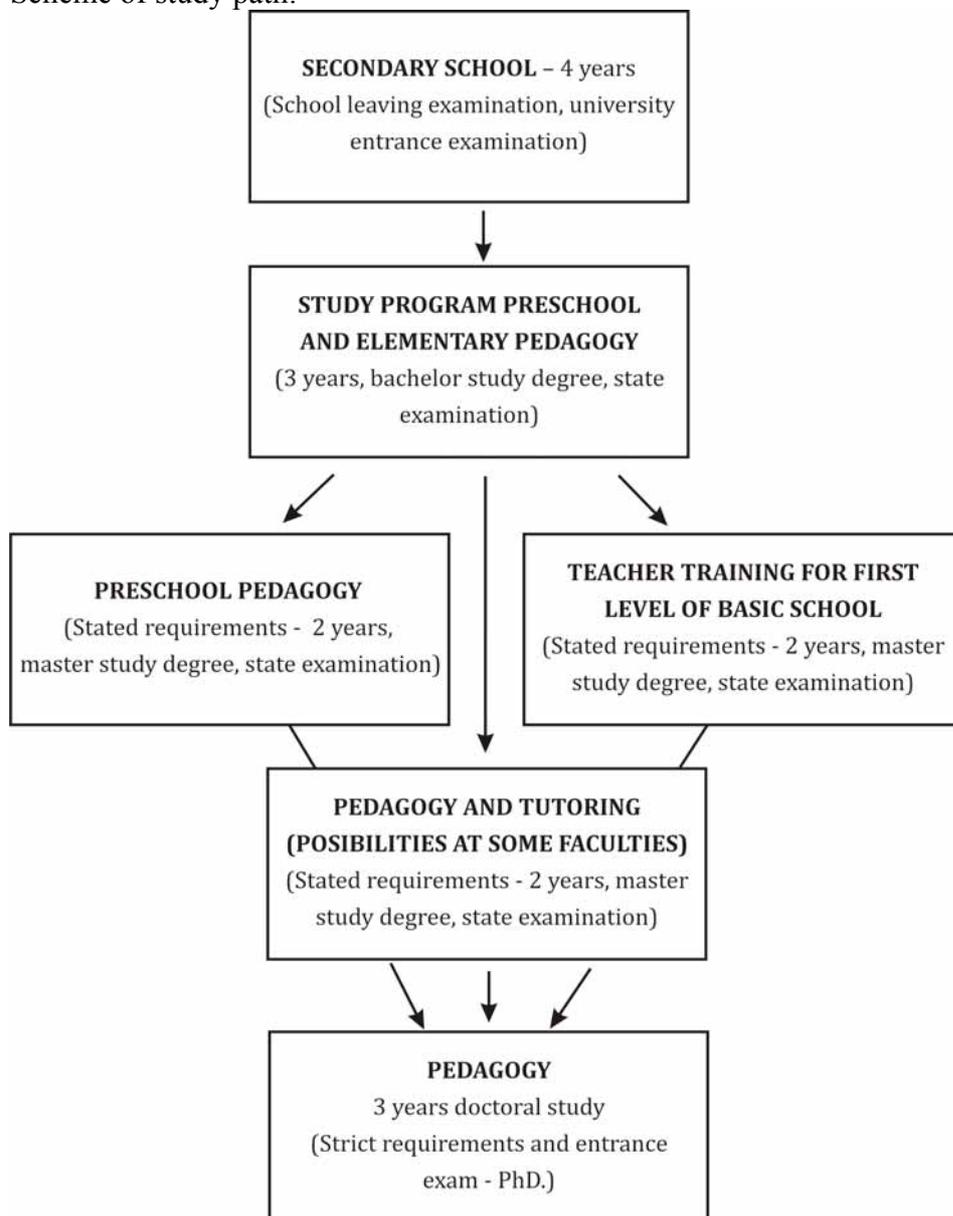
2. Oral examination content:

- theoretical bases of education of an early school age child,
- theoretical bases of psychology of an early school age child,
- preschool curricula and methodology of education (portfolio on educational practice is an integral part).

Examinators are university teachers with relevant scientific degrees (4-5 members). Each part of examination is evaluated (A, B, C, D, E, FX) - PASS /FAILED.

Department of Pedagogy - Faculty of Education CPU in Nitra offers possibility for combining the study programs (3 study levels) as it is seen on the scheme.

Scheme of study path:



Conclusion

The authors of the article are for many years involved in teacher training. A lot of personal experiences allow them to articulate the most important challenges for future education. One of them is the child itself, development of his personality and sensitivity of adults to all children needs and rights. Second challenge lays in adults - in their education and attitudes to children, as they are the future of human society. So, the right education starts

from the right education of adults, of parents, teachers or everybody, who is in some way involved in education.

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The computer in pre-school education

Abstract

Due to the decreasing prices of computers making them more available, they may be used as an important element in the teaching process. The multitude of educational programs aimed at small children stimulates the reflection on „if” and „in what extent” the computers *may* or *already are* used in preschool education. This work is an attempt at describing the place of the computer in pre-school education.

Keywords: computer, multimedia education, kindergarden

Introduction

The computer is an indispensable device accompanying humans in everyday life. The possible applications are currently so vast that one would have difficulty imagining an adult person who has not come in contact with the computer at some point in one's life. It is used for work, study, entertainment and is present not only at schools, working facilities or private homes but also in public places – internet cafes, at railway stations, in museums etc. The ubiquity of the computer lends support to the statement that being able to use a computer is one of the basic abilities of the contemporary human just like the ability to read and write; it is a crucial ability regardless of one's education, profession or age.

One can therefore say that the ability to use the computer can be an element in the educational processes starting at a very early age, also at the pre-schooler stage. At this point the child is initially merely an observer how the parents or elder siblings use the computer. If it is present at home, the child perceives it as an equally natural element as a television set, washing machine or a refrigerator. The child can also notice that both the parents and the brother or sister enjoy spending a lot of time in front of the computer and it is for them a source of joy and a pleasant way to spend time. That draws the child's attention and causes even very small children to take interest in the computer and play with it willingly. In this context it appears to be fully justified to start discussing the use of the computer in preschooler education. On one hand the ability to use the computer may become a subject taught in preschooler education, on the other hand it may become a contribution to everyday learning and playing as one of the tools enhancing the classes.

Learning processes and the computer

Using the computer and its software requires such abilities as: acquiring the necessary information (e.g. on the Internet), analysing and interpreting the information, processing data. As noted by J. Gruba: „currently one can discern two directions in computerisation of education. One aims at forming the information technology culture spanning the whole society. In this case the computer is the subject of teaching. The other aims at the possibility of using the computer as means of increasing the efficiency of the teaching-learning process” (J. Gruba, 2002, p. 41). Due to the topic of this work, the scientific interest in this study focuses on the second direction meaning the use of the computer as support in the teaching and learning process.

Learning as a term is understood in many different ways, nonetheless its essence lies in treating it as a process or as an action. By learning we mean performing activities in order to internalise something. Such learning may be achieved through observation or experience. Certainly the activity may be considered as learning if certain material or knowledge will be internalised and this requires changes in the neural system which then effectively lead to more or less permanent changes in behavior (Z. Włodarski, 1976, p.15).

Learning at the pre-schooler stage may be intentional or unintentional. The intentional one results when a child attempts to learn how to recite a poem or sing a song and the teacher uses the support of different didactic means in order to increase the efficiency of the learning process. Such learning requires the ability to focus attention, concentrate on the subject being explored or the content being taught. Random attention is not yet fully developed in small children, hence the problems with prolonged concentration and rapid discouragement while learning (Z. Włodarski, 1976, p.19). Unintentional learning takes place in almost every situation when the child notices something or performs an activity. It often happens that the child remembers many things unintentionally and unconsciously and recalls them later. We can say for certain: the more intense the experience associated with remembering, the deeper the memory. In unintentional learning the most important role is taken by random attention, manifesting itself by perceiving something independently of one's free will but only because it drew our attention (Z. Włodarski, 1976, p.20).

S. Wygotski assumes that the properly organised teaching process „(...) carries the intellectual development along, giving rise to many developmental processes, which would be impossible without teaching”(Capińska E., 1996, p. 40). One of the aims of teaching is to give a child the ability to think logically as a basis for correct communication and any organised activity. That can be achieved by proper organisation of fun activities, using such means, methods and organizational forms in the classes that develop the proper intellectual attitude in pre-schoolers, expressed by creative, logical and critical thinking. By using computers in the didactic process S. M. Kwiatkowski intends to introduce computer technology to selected elements of the teaching process as well as the learning process. In his view, if the didactic process is defined as a sequence of systematic activities performed by the teacher and children and enabling them to master the knowledge, form certain abilities, reflexes and attitudes, the computer may be an important factor affecting the efficiency of the process. The computer is a tool „offering and organizing education”(S. M. Kwiatkowski, 1994, p. 103 – 104). One of its basic functions is supporting activities of the learner and in consequence stimulating their thinking.

Introducing the computer into the teaching process resulted in significant changes in respect to steering the course of learning activities. Traditionally, this process was based on the teacher's activities supported by textbooks. Currently, introducing the computer resulted in the need for dividing the functions into those associated with computer programs and the teacher. In the traditional teaching process the teacher was not only a mentor, the organizer of the educational process but also the only person verifying the pupil's knowledge and evaluating it. A completely different situation is encountered in computer-aided teaching process. Here the role of the teacher is supporting the learner's activities, aimed at gaining independence. Such attitude towards the role of the teacher and the role of the computer enforces the need to redefine the education object. If we assume that the computer is an extension of human mind and the aim of education is educating minds, then incorporating computers into the teaching process must result in changing the education object, which in turn enforces the need to redefine the educational content. From the point of view of new requirements posed to educational facilities one can name the following ways of using the computer in teaching: 1) the computer as a teacher; 2) the computer as a tool; 3) the computer as a student.

The computer used as a tool encompasses a broad spectrum of functions, which enable the learner to perform tasks faster and more effectively. The learner knows what is to be done and the computer facilitates performing those tasks.

In a situation where the computer acts as a teacher, its use comprises of transferring electronically programmed knowledge and abilities. The advantage of the computer is engaging learners in an interactive process, recording their progress and controlling them.

In a case where the computer acts as a student, the user manages it completely. The learner is the one who possesses certain knowledge and uses it to „teach” the computer how to perform certain activities – programming it for certain tasks. Using the computer, the learner may solve problems.

The computer in multimedia education

Pedagogy is constantly seeking new methods and tools for rapid assimilation of knowledge, its systematization and control of the results of the teaching-learning process. The role currently attributed to the media in education is a natural consequence of noticeable, everyday changes in the social and cultural sphere. This led to the introduction of the term „media pedagogy” and „media education”(W Strykowski, 2002, p. 13 -24) - as a strategy for implementing the teaching-learning process - based on comprehensive use of functionally selected simple (conventional) as well as complex (modern and technical) didactic means (media) (W. Strykowski, 1997, No 3).

J. Gruba suggests the term multimedia education should apply to one which uses diverse didactic media, both simple and complex technical media. Such teaching comprises of „comprehensive use of simple and complex didactic media, their functional selection accounting for the capabilities of the learners, the chances for using them in the education process, didactic tasks as well as features and capabilities of the media” (J. Gruba, 2002, p. 47). An advantage in such education is that it uses multiple codes, which means affecting many senses and multi-faceted activation of children. The transmission of information is enhanced by image, sound and possibility of performing manual activity. This allows children to receive actions coded in the language – due to the use of action means (natural objects, models), in the language of the visual area (video, audio and audiovisual materials) as well as in the symbolic language (verbal and visual messages). The diversity of stimuli reaching the child initiates all kinds of activities: recognition, manual, intellectual and emotional.

In the media education context and in the light of the aforementioned problems and tasks one should also account for the term of media education, most of all with regard to the teachers. Media education views the media as a whole. It also encompasses preparing the learner in the field of information and communication. According to W. Skrzydlewski, the media are means of communication, they can participate in structuring, coding, transmitting, receiving and processing content as well as contribute to reconstructing the knowledge about the world by the learners (W. Skrzydlewski, 1990, p. 24). The aim of such education is mastering the latest education technology as well as forming the skill of selective and critical reception of the media (M. Furmanek, 2005, p. 18). In the context of such goal, the need for shaping the ability to participate in social communication through the media is being emphasized, which means creating, reading and understanding the message, creating a consistent image of the media as source of information as well as providing knowledge and skills allowing for using the media as a factor promoting development throughout one's lifetime.

According to S. Dylak, accomplishing the aforementioned tasks is based on the assumption that „media education is teaching through the media, about the media and for the media” (S. Dylak, 1997, p. 36). The main goals of such education are as follows: Education

about the media, where the media are treated as a tool and the content being taught is the ability to use the media and multimedia, to have a dialogue via the Internet. The media are not only the content but also the tool supporting the education process. S. Dylak suggests that such education should be run in two directions: one would be the knowledge about the media and the mechanisms of their influence and the other one would be the ability to use equipment. Education through the media – its aim is shaping the inner motivation for learning. The media enable learners to use knowledge in practical action to acquire data and master the procedures of processing them. This is accompanied by the joy of being creative. Additionally the learner can see the effects of own actions immediately. Education through the media is introducing the future teachers and learners to the media culture, most of all however preparing them for critical reception of the media regarding the analysis and understanding of the messages they receive (S. Dylak, 1997, p. 36).

J. Morbitzer (J. Morbitzer, 2003, p. 31–36.) suggests adding one more kind of education and namely educating towards the media. He emphasizes the activity of the learner and teaching through experiencing as an important aspect, which is widely perceived as one of the most valuable teaching methods.

The role of media education is perfecting the teachers' skills in the area of using diverse technological appliances and didactic materials, but not only that. It also assumes that the teacher – based on the knowledge and skills regarding the use of digital technology - should be able to create own didactic program.

The computer as a didactic tool

One of the elements in the educational process, vital for its effectiveness, is using proper didactic tools. The computer is a kind of a didactic tool, which can be classified in the rank of technical media.

The computer however is only a tool enabling the use of computer programs. J. Gajda emphasizes that the degree of accomplishment in classes with the computer depends on the competence of the teacher – whether or not a given individual is able to choose the right program from a broad range of those available and whether or not the program is going to be suitable for the intellectual level of the learners, and also their abilities to use the computer effectively at each of the stages in the educational process (J. Gajda, 2004, p. 139). The pace of transferring new content using the computer should match the individual perceptual capabilities of the child, so that it does not discourage against this form of transferring messages and even to the contrary – it should make the child interested so that the curiosity for exploration is stimulated and the learner is motivated to explore a given area further.

Proper use of the computer as a didactic tool requires that the teacher has expertise about computer programs and rules for using the computer in education.

Computer programs for children in fact differ from those meant for adults. Especially in case of educational computer programs for the youngest children, apart from content-related and didactic correctness, there are additional requirements such as: simplicity – natural and friendly means of communication; comprehensible and immediate reaction to all actions of the user; focus on working with the mouse meaning pointing and selecting options instead of typing them on the keyboard, combining the feature of entertainment and a valuable didactic material; teaching how to think logically and creatively; using concepts already familiar to the user and minimum requirements regarding the memory of a child; teaching how to associate elements common to different programs; planning future advancements of the learner; shaping the esthetic sense; graduating the difficulty of tasks according to the apparent progress; rewarding the child for providing the correct solution by playing a short melody or interesting acoustic effect; introducing a diversity of activities in order to prevent

weariness and avoid discouraging against further actions; it must be possible to interrupt or stop actions at any time.

There is also another element making the program suitable for performing educational actions, namely: a user-friendly interface. The user interface is a set of graphical symbols (icons) placed on a computer screen (J. Gajda, S. Juszczak, B. Siemieniecki, K. Wenta, 2004, p. 225). For a child the symbols must be easily readable, leaving no room for doubt. Using the interface must be intuitive, with minimum number of letters or - for the youngest children - with a voice speaking loud and clear when the cursor is pointed at a command icon.

The basic rules for using the computer in classes with children could be stated as follows: 1) the computer should only be used when it is needed for performing certain didactic and educational functions; 2) content transferred or consolidated using the computer must be directly relevant to the subject of a given class; 3) the time spent with the computer should be planned in detail; one cannot cause weariness by overusing it; still, the time given should also be sufficient for completing the task by every child; 4) one should use programs with multilevel structure suitable for different intellectual capabilities of learners meaning individualising the teaching process; 5) it is worthwhile to try combining the computer with different didactic media, however one must not overload the class with their number; 6) computer hardware and programs for use must be checked and prepared before classes; 7) the teacher should be familiar with the components and functionality of a computer as well as the methodology for using it (J. Gruba, 2002, p. 41).

Summarising the discussion regarding the possibility of using the computer in a teacher's work, one must state that they are very broad. The computer may be an important tool in didactics, helping in the following areas: preparing classes by the teacher or preparing a methodical unit used initially without a computer; in performing the actions required by the curriculum (lessons, activities) with computer support; in diagnosing and controlling progress made by the student; when performing didactic classes, reeducation as well as correction-and-compensation classes; in consolidating the knowledge acquired and practicing abilities and skills; for enhancing additional work with children after classes (J. Łaszczak, 1998, p.56). A major advantage of the computer as a medium supporting the teaching processes is making the child curious by its multimediality. More than other didactic mediums, it facilitates understanding the subject, encourages positive activity and saves time.

Using the computer in kindergarden

The computer may be used for teaching various subjects at school but also in pre-school education. Some programs available in the market enable children to develop concrete abilities e.g. recognizing letters, reading and counting. Others are more general and open, supporting the ability to reason. This kind of programs is called a „mental gym” (G. Gregorczyk, W. Jochemczyk, 1998, p. 15).

It is very characteristic of programs aimed at the youngest children that they closely correspond to the way of teaching suitable for a given age, which means teaching by playing. Computer programs for pre-schoolers may be used in teaching how to read and write. The exercises aim at awakening interest for shaping such abilities, training perceptiveness, concentration and manuo-ocular coordination, broadening the range of vocabulary and it is also crucial that learning those difficult actions is made into a pleasurable activity.

Programs for little children usually refer to three types of educational activity in pre-schoolers: simple learning, problem solving, developing activity. Simple learning takes effect when basic, crucial information is provided, e.g. letters in the alphabet, uncomplicated sequences of numbers, names of the days of the week etc. Solving problems succeeds through exercises aiming at finding connections and relations between objects, e.g. determining

which objects are larger and which smaller. Such exercises develop memory and relaxation and also facilitate exploring the world. The computer may also be used in developing creative activity. One example for that are programs used for filling pictures with colours.

It is worthwhile to note that the computer used well promotes learning how to read. Research in this regard has been performed by J. Gruba. She conducted her study in two groups: one taking part in the experiment and the control one. For a certain period the children practised reading with a computer program. Teaching 6 year old children how to read with the aid of the computer proved to be more effective than using simple media. Also, the children from the experimental group scored much higher in the regard of visual analysis and synthesis (J. Gruba, 2002, p. 129). Reading techniques also differed in the two groups. As much as 41,18% of children in the experimental group were reading in a mixed manner or fluently, compared to only 11,76% in the control group. After acquiring such ability, children from the experimental group exhibited a higher level of understanding when reading texts. Additionally, their reading pace was faster (J. Gruba, 2002, p. 130).

The efficiency of teaching how to read using the computer results from the fact that software activates a child to a large extent. This is closely related to polysensoric operation of software, which stimulates many senses and many kinds of activity: the perceptive, intellectual, manual and emotional.

„The computer is a very patient teacher. When used for learning, it enables the child to repeat the same activities in an unlimited way, as many times as necessary to master them. This makes learning with the computer easier and less stressful, since the computer does not give grades, while also simultaneously being demanding, consistent and impossible to bribe” (S. Taboń, 2002, p. 33).

Therefore it is reasonable to use computers but only in accordance with the didactic purposes and with software matching the age of learners and therefore a child's capabilities.

Hazards arising from uncontrolled use of the computer by children

The advantages of skillful use of the computer are invaluable. However, its use is not always proper. It often happens that parents think of the computer as a substitute providing all intellectual entertainment as well as the pleasure arising from plain fun. Spending long hours in front of the computer brings about serious consequences, most of all social and emotional. If we treat the computer as a „companion” during the child's play, if we allow a child to overuse computer games, in that way we also restrict contact with that child.

Using the computer with children requires special attention, also due to the fact that they are more prone to different factors. They are at the beginning of their lives – and therefore they are unable to select contents in games or computer programs. Views and attitudes formed in this way later have influence over future successes and failures (J. Krupa, 1005, p. 29).

Another consequence observable in many children are illnesses. As noted by J. Izdebska: „spending many hours in seated position leads to spine curvature and posture flaws whereas being exposed to the computer screen leads to vision defects. Additionally, lack of movement lowers muscle strength and stamina” (J. Izdebska, 2005, p. 29). Another effect of spending a long time in front of the computer is irritability and insomnia.

Children who use the computer uncontrollably are also under risk of being exposed to an overwhelming, explosive amount of information of mixed moral and social stance as well as homogenisation of multimedia content. The consequences of the influence of such content are very serious. The information chaos encourages non-selective, non-critical reception devoid of any reflexion, characteristic specifically for little children. The lack of ability to

rationalise facts and limited capability of evaluating them results in a tendency to form a distorted view of the world. J. Izdebska emphasizes that using the computer is often linked with performing activities lacking any intellectual challenge, which in consequence may lead to laziness and intellectual passiveness. The worldview presented in computer games is far from reality. The child cannot separate those two worlds. As a consequence of this, the child may experience difficulty in correct recognition and understanding of the world. Similar observations were made by M. Braun – Gałkowa (M. Braun – Gałkowa, 1997, No. 8, insert p. 6), who states that spending many hours in front of the computer leads to neglecting other activities and decline of other interests as the child becomes accustomed to such manner of spending time and does not take interest in anything else.

Another hazard posed to children are scenes of aggression and violence as an element in computer games. According to J. Izdebska „constant, almost addictive observation of aggressive factors on a computer screen in connection with actually performing actions such as killing, using violence justified as „playing a game in the right cause” may lead to insensitivity” (J. Izdebska, 2005, p. 111). A very significant danger is getting addicted to the computer called computer addiction. Addiction as a term is understood as a result of a repeatable experience of high emotional impact and high frequency. The problem arises in the very moment of losing control over duration and manner of using the computer.

Another negative result is an increase in the level of aggression in children that overuse computer games. Research has shown that „computer children” are more aggressive, meaning more offensive regarding both physical, direct and verbal offensiveness, negativism, suspiciousness, oversensitivity and irritability. Such children tend to be more tense emotionally and less sensitive to the distinction between good and evil (M. Braun – Gałkowa, 1997, No. 92, p. 61). One may therefore state that children spending too much time on „aggressive” computer games are characterised by higher aggressiveness and their moral sensitivity is lower.

Therefore, we might say that improper use of the computer may lead to many negative consequences, out of which the most important are: 1) physical anomalies: posture flaws, spinal curvature, vision defects, damage of nerves responsible for hand and wrist movement; 2) psychological hazards – neurosis, phobias or other changes in the nervous system (e.g. screen-induced epilepsy), addictions, loss of the sense of reality – caused by the idea of a character „dying multiple times” and the possibility of „miraculous healing”; 3) moral hazards – easy and uncontrolled access to information, negative attitudes and improper conduct as well as schematic behaviour; 4) social hazards – isolation from the social group, anonymity, computer crime; 5) intellectual hazards – indiscriminate trust and faith in the capabilities of the computer (A. Hassa, 2002, p. 546).

The hazards described above are usually the result of the teachers not being prepared for conscious use of resources and capabilities of a computer. This is a matter of conscious attitude towards digital media. One's contact with the computer ought to be put within certain boundaries. A child may not be left alone at the machine for a few hours. A good solution is using the time together. Also, as far as computer games are concerned, parents should have proper orientation regarding the values represented by the creators of such products.

Summary

The computer is an efficient tool, which may enhance classes aimed at comprehensive development of the child and preparing the child for school. Working with the computer develops many skills: reading, counting, recognising shapes and colours, organising and classifying, perceiving differences and similarities, creating simple sets of elements. The

aforementioned advantages make computers suitable for use in the kindergarden as well as the first stage of school.

Regarding the local kindergardens in Szczecin, Poland - they have limited capacity of using the computer in maths, natural and esthetic education or reading and writing due to insufficient supply of hardware and software. The teachers have proper knowledge regarding the didactic process, they lack however the fluency needed for using the computer as a tool, as well as information technology expertise and methodical basis regarding computer-aided education. Nonetheless, it would be possible to use the computer since there is a lot of software in the market, highly differentiated to be suitable for different ages and curriculum content.

Pre-school education is aimed at preparing the child for school education. The child has to acquire the basics of reading, writing and counting. The level of physical, cognitive and social development reached by a child leaving preschool education depends on many factors: the family situation, preschool environment and peer groups and also individual predispositions. One can see large changes in the way a child behaves and perceives the surrounding reality: „the perception mechanisms are flexible enough to be subject to modifications in different situations and under the influence of these experiences, as a result of learning” (W. Radziwiłłowicz, 2004, p. 49). In no other period in life do the changes appear with such intensity. Since exploration of reality is performed using many senses, the computer is that one didactical means that through its multimediality can support the child's development. However, the current absence of hardware and software in preschool environment as well as the low level of expertise in teachers make us appeal to the parent's consciousness who have computers in their homes and their offspring observes and takes part in their possible use.

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The role of the media in creative development of early childhood

The media – a curse or a blessing?

The emergence of film resulted in a radical change of the cultural image. Technology is now referred to as a cultural fact (M. Filiciak, 2006, p.12). Nowadays film, television, video games and the Internet are part of culture – and by combining symbols, myths and traditions, they form a basis for the its development (W. Godzic, No. 42/2001). When discussing the role of the media in the creative development of early schoolers, one cannot ommit the fact, that the media shape worldview by assigning meaning to the world. The information reaching viewers combines into a kind of a cultural mosaic. Research performed in Poland (P.Kossowski, 1999), indicates that 96 of 100 children watch programming aimed at adults. Most frequently they watch tv series (as well as action films and criminal stories) and game shows. Preeschoolers like watching films with „a lot of fighting and shooting”. Statistics show that children in Poland watch a monthly dose of 500-900 advertisements (for comparison one should add that in the USA children watch 20,000 advertisements yearly). A manifestation of the influence of the media is the performing realm of children's activity, where they take the roles of characters from popular films, cartoons and reality shows, using their characteristic lines or quoting text from television advertisements.

Children do not analyse nor question the content of a television broadcast, which is mostly based on stereotypes and assigning labels, as confirmed by research on the image of the social world in cartoons meant to be watched by children (A. Krajewska, 2003, p.194-220). The research also confirmed the influence of electronic media upon drawing activities of children and youth (B. Didkowska, 2005, p.114-122). Literature focusing on media in education and media pedagogy (B. Siemieniecki, 2007) puts a lot of emphasis on the problem of dangers arising from a negative influence of the media on children's development. Janusz Gajda enumerates the dangers arising from mass media exposure, which include: presenting reality in a „false mirror”, creating a fake view of the world, overexposing violence and sexuality, establishing the consumeristic lifestyle (preferring materialist values, careers and advancement over ethical matters, success based on material status). The media desensitize morally and lower the level of artistic culture and esthetic taste by the prevalence of popular culture standards (J. Gajda,1997, p.98-99). The same author points at educational opportunities created by the audiovisual media, such as access to a broad selection of programming, possibility of educating towards universal values such as: truth, good, beauty, love, freedom, tolerance (J. Gajda, 2005, p.143-153). Technology enables viewers to record programming from television. Furthermore, computers enable viewers to transform the text in a creative way, thus creating a new one. One way of creating new texts are computer-aided lessons stimulating visual art activity in children. Such activities should be aimed at individual development of a child (D. Siemieniecka, 2006, p. 307-310). The result of didactic influence should be aimed at creating openness, creativity, as well as divergensive and heuristic thinking. The methods for teaching an early schooler are based on direct cognition and shaping an emotional relation to reality in accordance with developmental patterns and the needs of a child.

The developmental characteristics of an early schooler

The early school years are referred to in literature as „late childhood” and include children of 7 to 10-12 years of age. In Poland, in this period a child starts learning at school in the grades I-III. The development of an early schooler is characterized by: the development of the nervous system, dynamic development of motoric features. The cognitive development is characterized by the following features: development of sensations, perceptions, observational abilities. A child's attention is characterised by ability to focus, capacity, space and divisibility. A child can access random memory, can learn about the world in a real and direct way. In an early schooler, fantasy is no longer used as frequently to fill in the gaps in knowledge, it is mostly replaced with logic memory. Development affects such areas of memory as: permanence, capacity, accuracy. They begin to use hierarchical categorization of knowledge. Children of this age may demonstrate complexity of speech and writing. Their thinking is concrete (Piaget calls this the concrete operational stage). Children base their knowledge on their own experience and they also develop conceptual thinking (verbally-logical and cause-and-effect).

The possibilities and the role of computers in working with an early schooler based on a proprietary example lesson plan for a computer-aided lesson

Further below we present a proprietary lesson plan for children in the II grade of primary school. The classes are run in two blocks: the first one assumes conducting classes based on direct cognition, visualization, action (classes in a city park), whereas the second one is based on computer-aided classes and visualization of material while measuring achievement (a multimedia presentation titled *The Leaves*). This part also assumes aiding the process of independent problem solving, stimulating pupils for creative activities (an exercise allowing for assigning colors to leaves using the Paint software), simulating real phenomena and processes constituting the subject of learning (completing the missing leaf fragments), aiding the problem solving process.

The didactic literature notes the following functions assumed by didactic multimedia: cognitive, emotional-motivational, practical, consolidating, accelerating and control.

Example lesson plan for integrated classes in grade II

(Lesson plans were developed by B. Filarska, MA and D. Siemieniecka, PhD, the multimedia presentation called „The Leaves” was developed by Agnieszka Siemieniecka-Sąsiadek, MA.)

Classes are comprised of two parts: Part 1 – performed outside (in a city park), time: 90 minutes, Part 2 – performed in a computer room, time: 45 minutes.

Part 1

Subject area: „Golden Polish Autumn”

Topic of the day: „Autumn at the Park”

Time: 90 minutes

Content and curriculum requirements: Curriculum for stage I of early schooler education based upon the regulation by Polish Ministry of Education, MEN DKW-4014-149/99.

Natural environment and social education, grade II

Content: Phenomena and changes occurring in nature in the autumn, plants and animals preparing themselves for the autumn.

Curriculum requirements:

Essential - the pupil can (with the aid of the teacher) answer the questions pertaining to changes in nature during the autumn.

Basic – can answer the questions pertaining to changes in nature during the autumn,

Extended - observes changes in nature during the autumn,

Total – can determine changes in nature during the autumn.

Polish language education:

Content: memorizing poems (exercises in studying texts), - enriching, activating and specifying vocabulary, enhancing the ability to express thoughts as sentences.

Curriculum requirements:

Essential – the pupil recites memorized poems with the help of the teacher, uses new words in utterances when aided by the teacher, composes and develops sentences when aided by the teacher.

Basic – when reciting memorized poems the pupil makes few mistakes, demonstrates passive knowledge of new words, restricted number of words in a sentence (in utterances).

Extended – recites memorized poems with proper intonation, uses a broad range vocabulary, but may not always use it correctly in utterances, phraseology or correct grammatical forms, transforms single sentences into compound sentences.

Art education:

Content: presenting scenes and situations taking into account the mood inspired by experiences and works of art (visual art activity), determining the features of objects and phenomena occurring in the environment surrounding the pupils: shape, size, proportion, colour, texture (observing, experiencing)

Essential - can present phenomena in the surrounding reality, with help of the teacher can determine features of objects and phenomena in the environment, such as: shape, size, colour, texture.

Basic - can present phenomena in the surrounding reality, can independently determine features of objects and phenomena in the environment, such as: shape, size, colour, texture.

Extended - can present scenes and situations inspired by experiences, seasons, literary works, can independently distinguish and name features of objects and phenomena occurring in the environment, e.g. shape, colour, texture, proportions and size.

Total - can present scenes and situations taking into account the mood inspired by experiences, seasons, literary and musical works, can determine features of objects and phenomena in the environment, distinguish them and name features such as: shape, size, proportion, position as well as distance, colour, texture.

Operational tasks: the pupil is able to observe and describe certain trees and bushes, recognizes and names deciduous and coniferous trees growing in the park, explores by touching, distinguishes features of leaves, observes nature without disturbing it, during

activities with elements of playing and experiencing, remembers the names of autumn months, recognizes warm colours in the park, recognizes and names the texture of tree bark (smooth, porous, cracked, grooved), can use „autumn collection” to make a portrait of Lady Autumn, recites a memorized poem with proper intonation, calculates, adds and subtracts in the range up to 30, behaves safely in traffic and public transport.

Methods: based on words (directed conversation, solving and making riddles, reciting a poem), action-based (exercises and games), based on watching (observations).

Forms: individual, teamwork, collective.

Course of activities: bus trip to a city park, groups walk to assigned sites for games and excercises, welcoming – playing to the song „Bawiły się listki” („The Leaves Were playing”), conversation about autumn months, collective recitation of the poem „Pora wesola” („Merry Time”), observation of trees and naming them, collecting fallen leaves within the range of trees at the site chosen for the group. Each pupil collects a leaf fallen from one tree, names the tree, describes the appearance of the leaf and its colour. Children divide into groups based on the kind of leaf they picked up. They determine and compare the colour of the collected leaves. They assign names to their colours (warm colours), they search for and collect leaves fallen from other trees, compare them with figures contained in their exercise book for the subject called „Natural and Social Environment”. They complete exercises from the book. They use carbon paper to copy bark of a few trees, using a crayon or a pencil. They label their copies with the name of the tree. Consequently, they divide into teams again, each team collects various jewels of autumn. They invent two calculation problems using those jewels, either adding or subtracting. The team presents the problems to the other team. Then a motion game „Squirrels to the Hollow” follows. Each team uses leaves and collected autumn jewels to compose a portrait of Lady Autumn. Children listen to autumn riddles provided by the teacher (hedghehog, squirrel, woodpecker, ants, hazel) and compose their own. Everybody walks together to a pond with swans. Summarising the lesson. Consuming a meal. Return to school.

Part 2

Subject area: „Golden Polish Autumn”

Topic of the day: „We Recognize and Paint Leaves”

Time: 45 minutes

General tasks: evaluating knowledge from the previous lesson - summarising knowledge about phenomena and changes in nature taking place in the autumn, a recap of known species of trees, recognizing leaves, a recap of the rules for using the Paint software.

Content: presenting different visual art techniques: drawing, painting, sticking paper scraps and their characteristic features, introducing the technique of a computer drawing, a recap of tools available in Paint software: the brush, colour palette, eraser. A recap of the acquired information about colours characteristic for autumn as well as the mood and colours affecting the mood. Recognizing and naming leaves – an exercise of completing drawings of leaves and colouring them, determining from which tree the leaf comes from, evaluating features of leaves: shape, size, proportion, colour, texture (based on the experiences in the park), matching the shapes of leaves to the names of trees.

Operational tasks: pupil can use simple tools in the Paint software, e.g. the brush, colour palette, eraser, can distinguish and present features of objects and phenomena in the surrounding environment, such as: shape, size, colour, texture, proportions and size; the pupil can express mood and autumn colours on a drawing, can print own work, can recognize and name leaves and match them with names of trees.

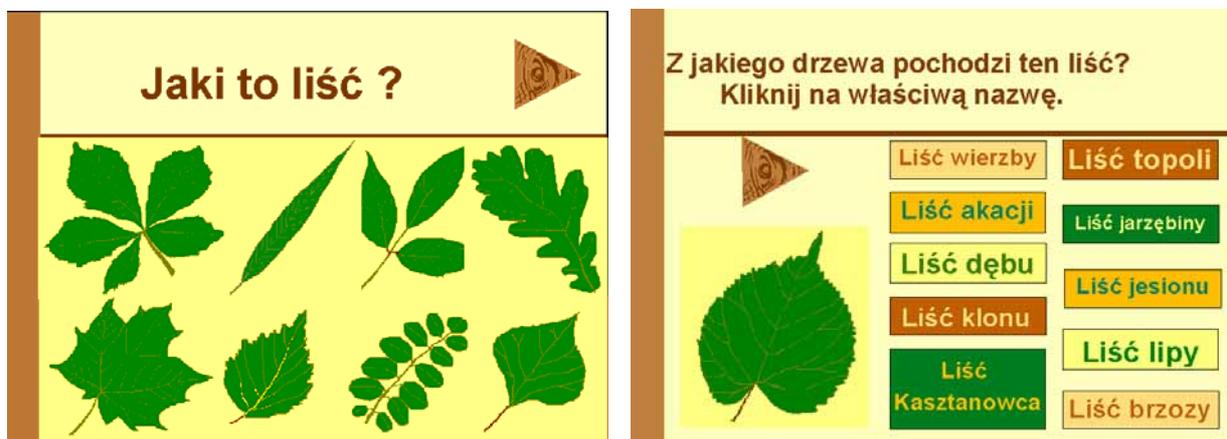
Methods: based on words (directed conversation), action-based (exercises with the computer, a multimedia presentation).

Forms: individual, collective.

Course of activities: entering the computer room, welcoming, a recap of the rules for working with a computer, conversation about the walk in the park, observations and names of trees. Consequently, children present the leaves collected at the park, determine and compare colours of leaves. They assign names to colours (warm colours), then a discussion of different forms of presenting leaves follows: painting, sticking paper scraps, plasticine clay modelling etc., presenting computer tools – the Paint software: the brush, colour palette, eraser; at the next stage children complete missing halves of leaves (Figure 1), children colour leaves with „autumn colours”; printing of works follows, which are to be displayed in a showcase titled „autumn in the park” – discussing the works, children check the ability to recognize leaves using a multimedia presentation titled „The Leaves”. Summarising the lesson.

Figure 1. Paint software – exercise consisting of matching halves of leaves. After matching, the children are supposed to colour them.

Figure 2. An example window from a multimedia presentation titled „The Leaves”. The task for the child is to guess the species name for the leaf depicted in the image.



Summary

Computer-aided teaching of early schoolers allows for activating mental operations, e.g. analogies (D. Siemieniecka, A. Siemińska- Łosko, 2007, p. 197-208; D. Siemieniecka – Gogolin, 2005; D. Siemieniecka, 2008), which takes place while using the multimedia presentation prepared by the teacher as well as colouring and completing missing fragments of leaves. Using computers for classes facilitates development of the observational sense,

inference skills and logical thinking (B. Siemieniecki, 1999). During the classes, children describe the objects and phenomena observed, as well as their properties. Using computers for activating creative thinking. While working with computers, children look for different solutions to problems at hand. Using a computer graphics software allows for activating imagination and creating new mental images. Children watching other completed works have a possibility to make comparisons of different solutions (e.g. the colours used) which promotes divergensive thinking.

It is important that the graphics and multimedia software used for computer-aided lessons be characterised by a simple and well designed interface.

In literature (<http://szkolnictwo.pl/index.php?id=PU5105>) it is pointed out that the optimum number of elements in a menu bar is 16. The menu bar should run along the right side of the screen and the main tool for using the software should be the mouse or direction buttons and the space key. Menu buttons should use depictions familiar to the child, and also teach combining common features of the software. A multimedia software aiding the teaching of early schoolers should also include audiovisual help and should employ the rule of gradually increasing the difficulty as well as show progress in a child's learning. Such software should include differentiated feedback information for the right and the wrong answer. Negative feedback should encourage further trial by the pupil.

Another feature of software meant for using with early schoolers should be its versatility regarding combining the elements of entertainment and content from different teaching subjects. Such software should have esthetic value and include the features of differentiating activities. It should also allow for interrupting a task in any moment as well as coming back to the list of tasks. Art education for children promotes individual creativity and enables multi-faceted development of personality. Computer-aided lessons promoting direct cognition allow early schoolers to consolidate knowledge acquired outside. Simultaneous use of Paint software and a multimedia presentation titled „The Leaves” is stimulating and improving children's perception. With classes conducted this way there can be no doubt that „children are eager to combine colours, they mix them on purpose, acquiring many hues of the same colour, (...) then we allow children to freely use the colour of their choice, to experiment (...) and then we witness the creation of works of extraordinary colour spectrum and colour esthetics” (<http://www.adalexpoczkowe.webpark.pl/kus2.doc>).

Preparing and conducting classes for early schoolers requires creativity and cooperation between teachers teaching integrated education (early elementary) and Information Technology (IT) teachers. The lesson plan presented here, with its media enclosure, is an example of team work and cooperation.

The use of graphics and multimedia software in educating early schoolers gives satisfactory results and promotes the creative development of the child as has been proven in pedagogical practice. While including the computer in the education process of an early schooler one should remember about the specific characteristics of this developmental age and the herefrom arising needs for entertainment and unrestricted creativity (D. Siemieniecka, 2008).

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ICT and forming a child's attitude towards the learning process in early school education

Introduction

Responsible management of self-development in the context of dynamic social, economic and cultural changes resulting from the formation of knowledge-based economy is connected with acquiring appropriate competences. The competences, coupled with knowledge, say much about a man and his abilities, have an impact on the functioning and position he occupies in the society. The realization of the extensive process of the permanent education involves forming key competences such as the learning ability and IT competences. In the pedagogical literature the educational process is defined as a set of all the influences which are conducive to the development of a man and which make him capable of active self-realization and of developing his personality through his own activity (Kwieciński Z., p. 13-14). It is evident from the above definition that self-education (self-mastery) plays a very significant role and is, together with teaching and learning, one of the three main pedagogical processes.

Thus, the aim of education is to form in pupils a permanent disposition to improve knowledge already acquired and acquire new knowledge and skills. Consequently, it is necessary to equip a man with adequate knowledge and abilities and to form his attitude in such a way so that he can treat the self-development activities naturally. The self-development process should result from his internal need. Then, the permanent education may become the life goal of a man who, having chosen his own way of life-long learning and self-development, brings sense into his life. The task of the whole educational system is to show the usefulness of modern information technologies for supporting self-development and to protect the young generation against the hazards caused by the development of ICT; the said tasks should be realized even at pre-school age. Thus, it is clear that the acquisition of IT skills is the starting point for all subjects of education.

The role of motivation in forming key competences.

School is a social institution responsible for preparing young people for the future by equipping them with required knowledge and skills and by shaping the so-called "open-minded attitude" the characteristic feature of which is the permanent search for new knowledge. It is reflected in the high level of cognitive activities. The contemporary school denotes, above all, the environment which is conducive to the development of a man and which provides the learners with the possibility of social integration, of being able to open up in order to get to know the world. The contemporary school is also referred to as the environment of individualization of education. [Pachociński R., p. 40] The realization of these tasks involves shaping pupils' attitude towards learning. The actions undertaken by a teacher in relation the formation of learning motivation are not expected at all stages of education but they seem to be of great significance especially in early school education. The attitude of a pupil to school, the attitude towards learning and knowledge and one's own learning style are formed at this early stage. Apart from supporting pupils in their activities and organizing the educational environment which is expected to be conducive to the active participation in school classes, teachers should stimulate the emotional processes and induce motivation. The tools of information technology are very useful for supporting the activity of

pupils and for encouraging them to learn. The use of computers in schools opens up the possibilities of operational education based on constructivist principles. The modern educational system is at present furnished with quite new possibilities, unknown to previous generations. These are the interactive didactic media, attractive and effective, which enable the application of various educational methods. As a result of it, teachers can better realize their educational goals by creating situations which are conducive to the activity of learners and decision-making; thus, they can enhance the pupils' belief in their own capabilities. (Huk T., p. 32-46)

The experimental research carried out among the primary school pupils (III class) has indicated that the application of computer software in the educational process has a positive impact on building the learning motivation and the level of knowledge. In pupils' opinion, computer-assisted classes arouse considerable interest. Children learn "by playing" and acquire necessary knowledge and skills at the same time. The pupils under study showed great interest in the educational computer programs and in classes held in a computer laboratory. Regular classes of this type did not cause any tiredness or lack of involvement in the computer-assisted learning process. Most pupils were independent and self-reliant in their work. They did not wait for the teacher's instructions but they took further actions on their own. The exercises, adequately selected in relation to the pace and level of difficulty, activated and encouraged pupils and enabled them to succeed which, in turn, had a positive influence on their learning motivation. The pupils willingly engaged in surmounting the difficulties which got in their way and reaching higher levels. They had a feeling that they were trying to reach their destination by acquiring and improving their skills. They continued trying in order to reach the intended purpose. The independence of pupils during their work, their concentration and engagement in the activities they were supposed to perform were under observation during the experiment.

The said experiment was a good opportunity for observing the pupils' reactions to the use of computer games in class. The pupils were deeply engaged in what was going on in class. The work performed by pupils and the skills which they were improving did not exert any negative influence on their general feeling; quite on the contrary, all the time they were very active, content and excited. They focused entirely on the realization of the tasks they were faced with. They completed the tasks and discussed the final results among themselves. They learned the persistence, independent decision-making, self-examination and self-evaluation. The pupils working with computer programs were sure that, in great measure, they themselves created the reality visible on the screen. That is why they felt they were responsible for what they learned and how they learned which, in turn, enhanced their conviction about their capabilities and the feeling of high effectiveness of learning. (Morańska D., 2008, s. 97-109).

While organizing the educational process it is necessary to remember that the environment in which a child functions day by day is the active media environment. The situations in which a given child gains new experiences help to shape the ability to induce the motivation for self-learning. (G. Kapica, 2005, p. 141-146). All teachers should take the above into consideration and they should organize the learning environment which is rich in didactic situations conducive to stimulating the motivation. The above mentioned situations should reflect the actions taken by pupils outside school. The school which respects the dialogue between teachers and pupils and partner-like cooperation allows the pupils to show their own activity, to have the feeling of being the co-subject of their school and, as a result of the existence of the above enumerated factors, to increase the level of engagement in the learning process. The IT technologies are very useful for teachers within this scope because the appropriate application of these technologies causes the pupils to feel that they are the "makers" and have control over something. The communication tools and access to

knowledge at any time make pupils aware that they can act independently in the process of satisfying educational needs. The sense of control and the educational dialogue enhance their self-esteem and influence the motivation which is necessary to perform cognitive tasks. (T. Gordon, 2007, p. 67).

ICT and integrated early school education

Early school education plays a very important role in the process of child's development because it provides him with elementary knowledge about himself and the outside world, shapes his character and equips him with the knowledge and skills which are indispensable in higher classes. It should also respect his individuality (Śliwerski B., 1992, p. 31). A child at early school age should familiarize himself with the educational methods enabling him in the future to develop his own capability of reasoning and imagining, his own judgment and the sense of responsibility. At present it is difficult to realize the above mentioned tasks without the use of information technology which is a component part of the environment in which a child lives. The computer and the Internet are commonly used nowadays and are of great importance to young children. The findings of the study carried out on 831 children aged 7-13 indicate that in this age group one child out of ten is an internaut (Genius, 2007).

In a document containing the legal basis relating to the realization of the teaching and learning process in the educational institutions (the so called Curriculum Assumptions of General Education) there is a section which says that "the proper use of computers in class may stimulate the activity and creativity of pupils. What really matters is the fact that pupils should notice that knowledge can be acquired in an attractive and modern way..." Forming skills in a child and providing him with the knowledge on how to use information technology in education is effected in two different ways. According to the first option, skills should be acquired separately in special thematic blocks. According to the other option, IT skills should be acquired together with other skills in the educational process. The latter is often called the context-oriented strategy (Siemieniecki B., 2002, p.53). Unfortunately, in primary schools the IT skills are much more often acquired separately in information technology classes. It results from the fact that it is easier for a teacher to prepare a lesson this way. The context-oriented strategy, in turn, consists in forming IT skills permanently and systematically. It forces a teacher to systematically improve his IT capabilities and apply them in the educational process. Thus, a teacher is expected to possess high competences and make intellectual efforts to realize the aforementioned tasks (Siemieniecki B., 2002, p. 53).

In the integrated education, knowledge and skills are developed and improved actively; hence, the context-oriented strategy can be applied successfully because a teacher develops simultaneously other key competences by solving all problems comprehensively. The context-oriented strategy is more motivational for young children as they can notice skills and their meaning (Siemieniecki B., 2002, p. 53).

A computer has become nowadays a basic educational medium. It proved to be a very useful tool in the didactic process because it can be applied in many different ways. The most important thing for a child who is just starting to work with a computer is to learn how to operate it. In integrated education, the main goals connected with equipping children with IT skills are as follows:

- to raise the interest in information technology and to instruct on how to operate a computer;
- to develop cognitive activity;
- to show the usefulness of computers in education, pastime activities and work (websites for children, educational games, educational software, thematic encyclopedias, simple application programs);

- to organize the integrated education jointly by supporting the process of acquiring the literacy and numeracy skills and by supporting the environmental and technical education (computer-supported education);
- to support the learning of foreign languages (programs for learning foreign languages);
- to support therapists in their work aiming at the correction of disorders connected with, among others, space orientation, visual-motor analysis, audio-motor analysis, emotional disorders and dysphasia;
- to enhance the belief and confidence in pupils' own abilities and value (programs for pedagogical diagnosis and therapy);
- to equip pupils with the knowledge of ethics and moral principles and of the potential hazards connected with the use of information technology.

The computer, used as an educational medium in integrated education, provides pupils with stimuli affecting their senses, facilitates the cognition of reality and helps to master various skills and capabilities. A child, by means of a computer, gets to know modern technical tools, learns the possibilities of using the computer in the world exploration and communication, adopts proper learning habits in the educational process which appears to be interesting to him. In early school education, a computer is usually used for playing as it brings some elements of freedom and creativity into the educational process. It makes the computer more attractive to children who, as a result of it, seem to be more engaged in what is happening in computer-supported classes. The use of computers in the integrated education arouses positive emotional tension which supports children in their efforts to reach the intended goal, motivates them and, consequently, makes the learning process more effective. The properly applied integration of the educational content makes it easy to present the reality in the context of mutual dependences.

Summary

A computer stimulates and encourages children to search and discover, activates teachers and serves useful purposes. A computer opens up the possibilities of making decisions which gives young users a feeling of active participation in the educational process and having control over what they learn. As a result of it, a computer generates the co-responsibility for the effects of the educational process, increases the awareness of self-development, stimulates the interest in the learning process and increases the learning motivation. Children can reach conclusions on their own which forms a habit of creative and conceptual thinking. Papert maintains that children at early school age “can perfectly master the use of computers and that learning how to apply computers can change the way they learn any other things..” (Papert, S., 1996, p. 170) Trying to seek an answer to the questions concerning the role of modern tools supporting the learning and teaching processes in the school reality, it must be noted that interactive media are nowadays in the center of attention since they are very useful in the whole education, including also the early school education.

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The computer in teaching mathematics to elementary students

The subject of the article is the natural pedagogical experiment which was to show an innovative didactic situation and changes in arithmetic knowledge and skills learnt by first grade elementary students. The aim of the article is to show values of computer assisted elementary teaching in the process of creating mathematical skills and active construction of the arithmetical knowledge of elementary students. Conclusions drawn from the analysis of the research material prove the reasonableness of adaptation of primary schools computer classrooms available in schools for computer assisted elementary teaching, corrective-compensative classes and provide them with the best educational programs.

Introduction

Constructivism is nowadays the most significant educational trend, which describes the process of school learning, its dynamics and the relationship between the activities of the teacher and the student. According to the constructivist approach, the student should be an active and creative action subject because it is he/she who construct their own knowledge. The teacher is the one who supports the student in his activities and development. The support is based on aware creation of optimum conditions encouraging the student self-action incorporated in the process of shaping attitudes, skills and constructing own knowledge.

The great role of the child's selfaction was stressed, among others, by J.S. Bruner (J.S. Bruner, 1996, pp. 19-20; J.S. Bruner, 1974, pp. 7-9; J.S. Bruner 1978), J. Piaget (B.J. Wadsworth, 1998, pp. 171-173), L.S. Vygotsky (B.J. Wadsworth, 1998, pp. 21-23). New (constructivist) schools refer to real activity and spontaneous work resulting from the student's personal need and interest. Active education underlines the fact that students should express their will to do what they are involved in. The need and the interest that results from it is a factor that produces the reaction of authentic activity (J. Piaget, 1970, pp. 151-152).

Technological development has more and more influence on the process of teaching and learning as well as on education and self-education. The results of empirical research, carried out in the recent years, provide a lot of arguments supporting the effectiveness of using the new didactic medium i.e. the computer with educational programs, in assisting teaching, learning and education in the kindergarten (J. Gruba, 2002; A. Watoła, 2006) and in first, second and third grade elementary education (Ż. Kaczmarek, 2003; R. Raszka, 2008).

The right course of education based on the idea of constructivism is bound to the necessity to use wide specific material. A computer program including specific material, can make the teacher's work easier, save not only time but also the energy and effort put into preparing specific material for every student in the class. Apart from that, the computer with substantively well composed educational programs and methodologically well used in the process of learning and teaching constitutes an attractive and student-friendly teaching aid

The research methodology

The cognitive aim of the empirical diagnostic and verifying study was to estimate the effectiveness of using computers, together with intentionally and carefully chosen computer programs, in developing mathematical skills and active arithmetic knowledge construction of first grade elementary students. The practical implementation aim was to formulate

conclusions and implications for elementary teachers and primary school headmasters, useful in adding computers into the teaching aids range helpful in developing mathematical skills.

The main research question was formulated as follows: In what way does using educational computer programs in first grade elementary education affect the level of students' arithmetic knowledge and skills? The main question was complemented by more detailed questions. One of them was as follows: In what way does computer-assisted mathematics teaching to first grade students of primary school help in developing the ability to use the knowledge in problem situations?

The global dependent variable was the level of students' knowledge and skills in the area of elementary mathematics teaching, whereas the global independent variable was the methodology of using carefully chosen educational computer programs assisting elementary mathematics teaching.

The dominant research method was the pedagogical experiment carried out with the technique of parallel groups. The experiment went according to John S. Mill's canon (A. Sułek, 1979). It took the form of the natural experiment, which means that the students did not know they were the subjects, and the research was carried out in conditions typical of first grade education. The complementing research methods were: diagnostic soundings carried out with primary school headmasters and elementary education teachers, skills tests for students of both groups, observing students while learning, the documents analysis and the dialogue method. All the research tools were verified in pilot research.

The experiment was conducted partially in the first (pre-tests) and the second term of school year 2003/2004 in two purposely chosen schools situated in the Silesian province. The schools were nominated due to diagnostic soundings and the approval of the head and teachers to carry out the research. The post-tests were carried out in June 2004, whereas in the second week of September 2004 distance research was done. Altogether 72 students of four first grade classes of primary school took part in the research, including 37 students of two classes making the experimental group and 35 students of the other two classes making the control group. The statistic analysis of pre-test results revealed that characteristic features of the students, both in the experimental and control group, were of not great difference, and that means the groups came from the same general population and they could participate in the research.

The pedagogical experiment was preceded by thorough analysis of curriculum material in the area of arithmetic, planned for the first grade of primary school in the second term, because the experiment was intended to be carried out exactly during that term. Afterwards, the computer programs' contents were analysed and regarded as positive by the teachers in the diagnostic soundings. The educational material mentioned above also influenced the choice of the computer programs. Besides the technical and didactic quality of the programs and the possibility to use them were judged on the basis of educational computer programs criteria (B. Ornowska, T. Słowińska, 1990, pp. 243-247; P. Topol, 1988). Then the lesson plans and the schedule of the experimental activities were prepared.

Data collection tools meant to measure the level of mathematical knowledge and skills of first grade students in the area of arithmetic were also prepared. The tools were based on standardized tests by A. Cheba and A. Andrzejewska (A. Cheba, A. Andrzejewska, 2003), verified in the pilot research, and then used in the pre-experimental, post-experimental and distance research.

Mathematical Skills Test contained 24 exercises in the area of arithmetic. It was divided into three parts (natural numbers from 0 to 10, from 11 to 20 and from 0 to 100 – denominations of ten and the complete number range), according to the stages of numbers learning (M. Radwiłowiczowa, Z. Morawska, 1986, p. 128) and curriculum material in arithmetic planned for the first grade of primary school in the second term. The level of

arithmetic skills achieved by students was estimated as follows: a very high level (A), a high level (B), a medium level (C), a low level (D) and a very low level (E). All students of a particular class were tested simultaneously, in conditions ensuring that every student solved the test individually. The test took 1 hour 30 min. with one ten-minute break excluded from the overall time of the test. *The Mathematical Skills Test* included the following arithmetic skills: the knowledge of natural numbers in ordinal aspect; the ability to count the missing numbers in addition and subtraction equations, the ability to apply number properties and symbols to make addition and subtraction equations i.e. the ability to make addition and subtraction equations using the numbers given and writing the equations with '+' and '-'; the ability to compare the results of addition and subtraction; the ability to compare natural numbers; the ability to add and subtract natural numbers within and outside denominations of ten; the ability to add and subtract heard natural numbers in memory; the ability to distinguish units and tens in one- and two-digit numbers.

The ability test on applying addition and subtraction in problem solving was made of five word problems. The levels of applying arithmetic skills in problem solving were estimated in the same way as in the natural numbers equations. The test took 45 minutes. Every student completed the exercises individually, whereas all the students of a particular class were tested simultaneously. The test aimed to estimate computer influence on the ability level of applying the arithmetic knowledge and skills in solving simple and complex word problems.

During the following classes, done according to the lesson plans, the students practised and consolidated the previously introduced arithmetic knowledge and skills meant for the first grade of primary school in the second term. However, the classes in the experimental group were done in the computer laboratory using three selected programs, i.e. *Click teaches to count in the green school* (WSiP program, 1999, recommended by the Ministry of Education), *Virtual School. Mathematics* (YDP program, Interactive Publications, recommended by the Ministry of Education) and *Mathematics. Addition and subtraction* (Aidem Media program). The control group practised and consolidated the same arithmetic material as the experimental group, but using selected textbook publications.

Data presentation and analysis

The achievements of students in the control and experimental groups were measured in the pre-experimental, post-experimental and distance research. The students in the experimental group made considerable progress during the experimental classes in computer-assisted mathematical skills teaching and constructing arithmetic knowledge. In the post-experimental test 73% of the students reached a very high level of mathematical knowledge and skills (A), 14% high level (B), 8% medium level (C) and only 5% low level (D). Among the students who achieved a very high level there were those who got the maximum number of points (50).

Almost all the students in the control group showed a considerable increase in arithmetic knowledge and skills, however their results in the post-experimental test are lower than those of the students in the experimental group. Only 26% of them reached a very high level (A), 43% a high level (B), 17% medium level (C), 11% low level (D) and 3% very low level (E).

In order to check the difference significance between the two groups a Chi-square test was applied (χ^2) (S. Juszczak 2002, p. 212). The students in both groups progressed in arithmetic skills in numbers 0 – 100, whereas the differences in the pre- and post-experimental research in the development were statistically significant both in the experimental and in the control group. However, the progress turned out to be greater in the experimental group than in the control group, and the difference between the groups was statistically significant. The tendency was also confirmed in the distance research. The

experiment confirmed the veracity of the major hypothesis that assumed that using educational computer programs in the first grade of elementary education would result in high level of arithmetic knowledge and skills achieved by the students. The major hypothesis was estimated with the 0.99 probability; for the significance level $\alpha = 0.01$.

The research also confirmed the assumption that computer assisted mathematics teaching in the area of arithmetic has a great impact on the development of the ability to use the learnt notions and arithmetic operations in solving simple and complex word problems. The levels of applying the arithmetic skills in problem solving are marked like in the *Mathematical Skills Test*, i.e. very high level (A), high level (B), medium (C), low (D) and very low level (E). The difference in the test results between the experimental and the control group in the two research stages, i.e. in the post-experimental test and distance research was statistically significant. The students learning in a traditional way achieved poorer results than the students learning with the help of computers. With the 0.99 probability (for the significance level $\alpha = 0.01$) a hypothesis which assumes that there are statistically significant differences between the groups in applying addition and subtraction in problem solving was suggested.

Conclusions

The proper development of mathematical thinking demands the right organisation of the student's activity using well-chosen teaching aids and materials, among which the computer with educational software appears more and more frequently. The results of the empirical research described above allows to suggest computer-assisted mathematical skills teaching as an integral part of education in the first, second and third grade of elementary education. Well-thought, planned and deliberate using of the new interactive teaching aid that the computer constitutes promotes considerable development of mathematical skills. Besides, it has a great impact not only on the cognitive zone, but also on the emotional and motivational one.

An educational computer program that is well constructed and intentionally used to assist the development of elementary students' mathematical skills has a positive impact on rising interest in mathematics. It creates new possibilities to increase the level of students' engagement in achieving learning and teaching goals. Computer assisted learning becomes more attractive, draws students' attention and changes the relationship between the teacher and students in a positive way. It creates many opportunities to construct knowledge and practise students' mathematical skills.

Success in using computers in mathematics teaching also depends on the level of integrating them with teaching contents and methods, as well as with other teaching aids and materials. It is necessary to use them according to a plan, deliberately and systematically in every aspect of education in order to achieve a positive result in mathematics teaching. That is why the role of the teacher is to combine the traditional way of instruction with computer assisted teaching. On the other hand, the role of textbook authors is to construct educational computer programs which would complement elementary education textbooks, and to include computers and educational software in textbooks by annotations referring to computer assisted learning and teaching.

Elementary teachers should be encouraged to fully exploit the educational value of the computer, and broadly speaking of information technology. It seems necessary to organise methodology workshops in which they would be familiarised with the available educational software, useful in assisting the introduced and/or practised mathematical knowledge and skills, and with computer assisted teaching methodology.

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ICT in school: useful for what? And how?¹

Digital technology is a resource with many uses, also in school. But how should this resource be used, and with which aim? This article focuses on the overwhelming flood of information generated by digital technology and how pupils can handle it intelligently. To be able to handle the multimodal flood of information is, in my opinion, a challenge for all education and the formation of human cognitive processes. The article is based on conversations with pupil and teachers as well as on classroom observations during the preliminary and final exams in Norwegian with ICT in 10th grade, spring 2008.

The critics of using ICT as a pedagogical resource

The implementation of ICT as a pedagogical resource has only a short history, both in the Norwegian school system and internationally. Parallel with the media interest marked generally by positive attitudes and the over-communication of the possibilities of information technology there are voices that cast a doubt on the usefulness of ICT in the classroom and demand more critical thinking in relation to pedagogical use of data technology. J. Janio (2008) at St. Ana College, California, is pleased to see that data technology in schools is now evaluated on the basis of *quality* rather than quantity (number of PCs in relation to number of pupils). Quality, according to Janio, relates to the way we use ICT, and he points out the freedom of the individual pupil to either use or reject this resource. He further claims that different individuals understand the technology itself differently.

Already 16 years ago, in her book *Seeking Meaning* (1993), C. Kuhlthaus demands more critical thinking in regard to the process of searching information.² She defines the interactive process between the user and the source of information as a matter of negotiation, and this parallels Janios' view that users have the freedom of choice. Critics commonly point at the enormous amount of information that the electronic media provide. R. Säljö (2001)³ talks about the "confusing stream of information," and critics generally focus on the process of generating applied knowledge out of the informational chaos through reflection. (Aasen 1998, Säljö 2001, Qvortrup 2002, all in Gaard 2006, see also Beck 2006 and Nilsen 2009a, b) in print). The most important aspect here is, in my view, Janio's notion of individual choice, *which makes the difference between using electronic resources and being used by them*, i.e. to provide direction and focus to the process of searching information (more about this below).

The culture of written exams in Norwegian (during the period 2000-2007)

Between 2000 and 2007, the two-day written exam of language of Norwegian as a native language consisted of a *preparation day* and a *writing day*, when pupils were able to compose their texts. During the preparation day pupils received a reader ("temahefte"), containing materials with a thematic focus. The questions during writing day would have a connection with the thematic focus in the reader.

¹ The article is based on speech held in Szczecin, The Professional-Didactic Seminar, 24. – 25. November-2008.

² Referred in Gaard 2006.

³ Referred in Gaard 2006

During the same period schools could choose a different exam form where access to digital knowledge and inspiration resources (on the school's computers and the Internet) was possible. In this type of exam the digital media replaced the earlier reader. Pupils were challenged with new structures of information and knowledge, and they were challenged to engage in new ways of working and thinking (Strømsø and Bråten 2006; Beck 2006; Gaard 2006; Siemieniecka-Gogolin & Nilsen (editors) 2007; Nilsen & Perzycka (editors) 2008); Eriksen 2008, see also "new environment of human life" (Pilch & Stochmialek 2008).

The net-based preliminary exam, April 2008

Day 1, preparation day: What did the pupils say?

The general topics were "The Future in Our Hands," "Crime," "Lifestyle," and "Music." For inspiration and knowledge the pupils received access to a variety of verbal texts, pictures, animations, and sound, this means *composite texts*. After the preparation day I spoke to six pupils about how they evaluated the usefulness of the digital knowledge and inspiration resource. Only one pupil said the resource database had helped her, one pupil thought that they "had to use" some of the material, two answered that the materials were of no help, and two said that they "remembered something," but that it was possible to write the answers based on what they already knew. The teacher confirmed what the pupils had said, namely that the net-based resources were not convincingly useful.

The statements of the six pupils can be seen in a different perspective: During the first part of the preparation day the teacher functioned as a guide in terms of work habits. "I talked about using the world of IT," she explains, which means extracting key words, sorting, focusing, evaluating, and finally compose the written exam text.⁴ This is a complicated circular process, a cognitive exercise that sometimes has a clear aim and sometimes is a more coincidental search. The teacher helped the pupils to navigate in the many forms of the web-based text, and she tried to provide aim and focus to the pupils' search processes. Also the next chapter is about the pupils' experiences with the digital knowledge and inspiration resource, based on the ordinary exam of 2008.

The ordinary net-based exam, May 2008

Day 1, preparation day⁵

The resource pages contained 17 relatively short, ordinary, linear texts, supplemented by an audio version, a voice reading the texts. In addition to this compulsory resource the pupils had access to the entire flood of information on the Internet.

All 17 knowledge and inspiration texts from both prose and literary genres were linked to an overarching topic, *influence*, dealing with advertisement, peer pressure, and relations to parents, children, and teachers (see footnote 4 for internet address). The teacher supervised, inspired, and invited the pupils to a brainstorming about the *why* and *how*, in other words, to engage in cognitive exercises. All the time there was a clear intention to provide focus for the reading of web-based texts. After the teacher had directed the first class, pupils then could work individually, that means to interact with the resource pages and other electronic information on their PCs.

I observed the following: (i) The atmosphere was relaxed and apparently free from exam stress, and (ii) that the practice of "each pupil with his or her own PC" was, in the beginning, a more social practice than individual search and reflection. "Social practice" here

⁴ <https://eksamen.udir.no/nor/forberedelse07/startbo.html>

⁵ <https://eksamen.udir.no/v2008/eksamen/nor0017/> Bruker: NOR0017. Passord: JkjhT487G

means talking in a low voice, exchange of short statements between groups of two and three or between one pupil and a small group, etc, which lead to minimal individual focus.⁶ Three or four boys attempted to get into a focused research mode. Many of the girls—and only the girls—took notes, like the teacher had advised them to do. In a discreet manner I studied some of the note sheets and it appeared to me that the notes—key words, quotations, and short statements—were unclear and incoherent, apparently demonstrating minimal focus and/or connection to personal interests. When I asked them two girls replied, “we think we can use that” and one said “well, I get some new ideas,” while both their tone and body language betrayed their lack of conviction about the usefulness of the procedure. Two boys sat focused in front of their PC and said, “we will certainly find something.”

A few times the teacher intervened and asked the pupils to be quiet and focus on their texts (the resource data base). As an observer I thought: “Focus on which text and on what in the individual text?” It appeared to be doubtful whether the pupils had an idea which text they should direct their attention to and how they should work with the texts. The overarching topic “influence” did not provide clear directions for reading strategies or an understanding of which texts pupils should choose and how the text should be used. Even with a certain navigation competency (read, evaluate, choose, and compose), pupils would have problems finding relevant material, because the overarching topic was too diffuse and lacked a sense of direction. *It is of no use if the teacher encourages the pupils to work goal-oriented, if there are no clear goals to steer the working process.*

After the exam: What do teachers, examiners, and pupils say?

The evaluation of the new exam form is available in a 90-page report (hereafter called R).⁷ A selection of pupils, teachers, and examiners received a questionnaire with both quantitative and qualitative questions. About one third of the questioned pupils replied that they did not use their own notes or printouts from the digital resources (n = 419). More than 60% answered that they did not use the aids they had brought to the exam (n = 89). The pupils’ answers indicate that the net-based resources were not relevant for solving the tasks⁸ and that pupils had too little experience with digital aids (R, p. 25). The evaluation of the examiners confirms the pupils’ statements. The written exams show little use of sources, and more than half of the examiners thought that the pupils had not used the study aids in a relevant way (n = 219).

My three teachers’ informants pointed out that pupils had too little practice evaluating what material they can use and for which aim. To evaluate the potential of a resource and to distinguish between relevant and irrelevant means to realize the resource, which is an exercise in critical thinking. In his article “Cognition: Why are so many of us just not thinking straight?” Luigi Di Serio (2008)⁹ lists five characteristics of “deep cognition:” Knowledge, Smarts, Intelligence, Wisdom, Intuition. It can be assumed that 15-16 year old pupils have deficits in all five points, however by practice they should cope with this deficits.

If the aim with the digital resource pages had been to improve the quality of the pupils’ writing skills, then this aim has not been reached. The statistics from the years 2002 – 2007 shows an average grade of 3,45 – 3,5, and 3,4 for 2008 (R, p. 34). The results and the form of the exam as well as the views of the pupils and examiners need to be commented.

⁶ Jf. kollektive og individuelle praksiser, i: Lund 2006, s. 274f.

⁷ http://www.utdanningsdirektoratet.no/templates/udir/TM_Artikkel.aspx?id=3905

⁸ The exam tasks were organized in part 1) and part 2). In part 1) – the obligatory task – the students should write a reader’s letter about group pressure or about advertising. In part 2) students got 5 choices; influence by a ideal/model, influence from teacher, influence from the environment in general, reciprocal influence parents – children.

⁹ <http://diserio.com/cognition.html>

Conclusion and comment

Let us for a moment imagine the adult world of architects, nautical engineers, economists, and humanists. These people usually work with a clear objective to reach a result such as the plan of a house, the building of a ship, a calculation, a magazine article. With their clear objectives and focus they are selective in regard to the many forms and options of Internet resources. Compare this situation to the fact that 60% of the pupils expressed their discontent about the lack of connection between what they did during the preparation day and the written task they received during the exam day. The exam form of the pupils thus did not resemble a focused and goal-oriented work process from the adult world. With their PCs pupils had the opportunity to search, choose, revise, and use material in a result-oriented way, but the problem was that their goal was diffuse.

The overarching topic "influence" had been too little precise for an Internet search. All 17 resource texts had something to do with influence and relations, but they were not precise enough to help them to navigate from a multimodal flood of information to useful and relevant knowledge, i.e. intentional (logical) thinking.

Informational competency is a key competency for mastering the process of transforming the flood of information to relevant knowledge (Eriksen 2008). To be critically discriminating is a cognitive art that can only be applied if there is a concrete and clear objective. As journalists investigate with a concrete aim in mind and humanists collect material for their paper, pupils should receive specific tasks on their exam preparation day and thus learn to work in school as they would work in the real world. One of my teacher informants stresses both the necessity of objectives and experience with navigating in the wide Internet: "My pupils who today are in seventh grade will, when they are in tenth grade, probably and hopefully have a much broader navigating competency than tenth graders have in 2008." I would add that intelligence is something one has, and knowledge can be gained through reading, but the most important quality, *navigating competency*, is gained through practice (experiences) combined with intelligent thinking.

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Bruker: NOR0017 Passord: JkjhT487G

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Utdanningsdirektoratet: www.utdanningsdirektoratet.no (this is the main link for a lot of other links that refer to educational sources). Many of these links are written in English form, too.

Diagnosis and evaluation of the school readiness of a child

Introduction

Pedagogues, psychologists, teachers and workers of psychological-pedagogical centres have for a long time now been very interested in the issue of diagnosing school readiness. For many years attempts have been made to construct diagnostic tools to measure children's school readiness. Teachers and workers of psychological-pedagogical centres use materials from previous years (B. Wilgocka-Okoń, 1997, 2003) and create their own diagnostic tools. Some of them are then standardised. Constructing research tools and defining the level of school readiness are undoubtedly actions taken for a child's good. Using effective tools diagnosing a current level of a child's development, it is possible to take appropriate pedagogical actions to prevent any school failures, and to give a child a chance to achieve school success. Difficulties in learning must be prevented before a child starts school. Appropriately used results from research done to define the level of a child's school readiness, helpful in selecting methods of pedagogical impact for an individual child will certainly influence a child's school career and make school a place where they can achieve success. In pre-school pedagogy diagnosing children's development is not new. Pedagogical documentation of each kindergarten contains numerous materials, which prove teachers using various methods and forms while diagnosing the development of children aged 3 to 6. Diagnosing is a teacher's activity resulting from the educational law (Regulation MENiS, 2002).

The development of research over school readiness

Treating school readiness as the „effect of a child's experience gathered over a few years of growing and learning” (W. Szewczuk, 1995) has for a long time been the area of scientific interest to both psychologists and pedagogues. The earliest research over school readiness was connected with defining the most suitable age, at which a child should start school. Later, school maturity was connected with physical and mental maturity, and then it was found that there are relations in the sphere of a child's social and moral development. In the 1920s and 1930s a great progress in research over school maturity was made by German theorists Ch. Buhler, H. Hetzer and L.Schenk – Danzinger. They were representatives of the so called Vienna school, the achievement of which was adapting the teaching system to the qualities and correctness of a child's development. However, the representatives of the so called Leipzig school had a different view. They thought that during the school maturity process one should concentrate on the issues connected with adapting a child to school requirements. The output of both these schools was defining the criteria of school readiness and creating the first tools to measure the readiness. The scale of Schenk – Danzinger included mainly the issues connected with learning to read and write and the following tasks:

- using signs and symbols,
- concentration,
- subordination,
- ability to use hints when solving problems,

- ability to work in a team.

The Leipzig school followers emphasised a child's mental maturity and the individual features that, according to them, influenced learning, such as:

- ability to grasp shapes and numbers,
- movement memory,
- motor skills,
- persistence,
- ability to concentrate.

A test by H. Winkler was used to define the above listed features. After the First World War it started to be used by Polish pedagogues and psychologists.

School maturity became the scope of scientific research particularly after the Second World War. S. Szuman (S. Szuman, 1962) in his definition of school maturity mentioned a few other features which, according to him, have significant influence on the level of school maturity:

- orderliness,
- self-control,
- ability to exist in a group.

Although there are plenty of interpretations and analyses concerning the issue of school maturity, still there are no specific methods used to define a child's school readiness. Testing the level of school maturity one pays attention only to individual aspects connected with the functions concerning early-stage learning.

With respect to learning to read and write, many researchers accept the following abilities as factors necessary for reaching school maturity:

- auditory and visual analysis and
- motor-visual co-ordination.

Moreover, the following abilities undergo detailed analysis:

- manual skills and
- ability to project.

In learning mathematics the essential factors of reaching school readiness are:

- ability to make comparisons (less, more, the same, etc.),
- acquaintance with notion of number.

Children are also expected to:

- be able to use a specific amount of words,
- understand the cause-and-effect relationship,
- ability to express oneself orally.

While defining a child's social and emotional development, most researchers pay attention to features like:

- self-dependence,
- ability to co-operate,
- ability to establish relationships with peers and adults,

- regularity and persistence in action,
- respecting the work of other people,
- responsibility,
- ability to control and express one's emotions. (B. Szmigielska, 1998)

The presented groups of abilities and knowledge that a child should possess on starting school underwent a number of changes and development over the years. Now it is very difficult to state which of the groups was the most appropriate one, as the described features, abilities and knowledge required of a child were proper for the school of those times. School requirements change constantly. Nowadays, with the reorganised school system in Poland, different educational-didactic programmes are allowed to be used, and the expectations of schools towards children are also different. It is now emphasised that school readiness is not only preparing a child, but also a school, which means adjusting its educational activity to a child's different ways of cognition and representation of reality. This means the mutual adjustment of school towards a child's abilities and expectations and a child towards school's expectations. According to B. Wilgocka – Okoń, preparing a school for the varied level of school readiness of children starting school education is necessary because of the developmental differences and environmental conditions (Regulation B.R., 2000)

The outline of the research

For several years now I have fulfilled my interest in research in educational institutions within the scope of pre-school education. When another stage of the reform in the educational system was implemented I started conducting research connected with the realisation of the duty of school preparation by 6-year-old children (Regulation MENiS, Art. 14). The main research issue has been as follows: In what way do the institutions of pre-school education create educational chances for children at the pre-school age?

The main research has been conducted in Polish educational institutions.

One of the stages was based on conducting a natural pedagogical experiment concerning the computer assisted process of shaping selected areas of school readiness of 6-year-old children.

One of the issues concerned testing school readiness and the tools used in this process (K.Kollarik, 1996) The research is conducted in educational institutions in Poland and abroad. The basic research has been started in educational institutions in the United States, Slovakia and the Czech Republic.

This survey was divided into several stages, with systematically growing number and types of the surveyed kindergartens. The first stage of initial diagnostic research in Poland was conducted in 42 kindergartens located mainly in the Silesia and Malopolska regions and in a pre-school institution in the USA - Kove Learning Academy, Chicago, Illinois. In Poland the research was conducted in municipal nursery schools, private nursery schools, pre-primary forms in primary schools and nursery schools run by monastic congregations. A new method of measuring school readiness called „Range of school readiness” (SGS) has come into existence within the project 'Measuring six-year-old children's school readiness' which is co-financed by European Social Fund and announced by the Office for Implementing European Funds in the Ministry of National Education (Konkurs nr 5/2. 1a/2004). The method presented in the article is the latest tool used to measure a child's school readiness. At present this tool is being implemented in Polish pre-school education institutions.

Observation Sheet - The Scale of School Readiness (SGS)

The Scale of School Readiness has been prepared based on a wider sense of school readiness, connected with different kinds of a child's development - cognitive, physical, social and emotional. It is a method which will certainly be a very important one in the process of shaping six-year-old children's school readiness. Its particular advantage making it easy to gather data and analyse results is a computer programme used to calculate results of SGS. Measuring six-year-old children's school readiness with the SGS method is based on defining behaviours and skills while observing a child. Defining individual ranges of behaviours and skills the teacher uses the following terms: yes, rather yes, rather no, no. The detailed description is to be found in the manuals, and it is crucial to be acquainted with it. The observation sheet includes 72 issues, which make up the individual parts:

Part A – A six-year-old child learns about their environment and themselves, learns to understand the world

1. Tries to explain the observed phenomena
2. Can tell left from right
3. Understands the notion of space, e.g. over, under, behind, near
4. Can show directions on a piece of paper, e.g. up, down, left, right
5. Knows seasons of the year and the phenomena connected with them
6. Can tell the day of the week and what the next day will be
7. Predicts other children's behaviour
8. Talks a lot about themselves, e.g. What they like doing
9. Can appropriately tell what they know and can do
10. Can compare two pictures varying in details
11. Listens attentively
12. Their attention is easily distracted
13. Defines notions by relating to more general categories
14. Can place a new object in an already existing row of objects
15. Has knowledge beyond their direct experience

Part B – A six-year-old child plays and learns with their peers, acquires social skills

1. Their attempts to establish a contact are understood by other children
2. Talks about things important to themselves
3. Invites other children to talk and play
4. Likes sports activities
5. Skilfully catches and throws a ball
6. Can ride on a bike / climb a ladder
7. Can walk on balance beam
8. Puts toys and learning aids in order
9. Remembers about the rules of safety in a group
10. Helps other children, tries to cheer up a friend
11. Sympathises with (recognises, names) other children's experiences
12. Stands up for other children
13. Avoids conflicts
14. Tries to solve problems peacefully
15. Tells on others, blames other children when in conflict
16. Recognises other children's rights, e.g. waits for their turn
17. Needs being reminded of what they agreed to
18. Frequently causes conflicts

19. Reacts with anger, is easily offended, turns away, walks away
20. Easily bursts into tears, flies into a rage
21. Is aggressive towards other children

Part C – A six-year-old child learns independence in difficult situations

1. Puts on clothes skilfully (ties shoelaces, fastens buttons, zippers)
2. Tries to cope with difficulties themselves
3. Is persistent in trying, is not discouraged by failures
4. Takes the initiative, tries different ways of acting
5. Asks an adult for help too easily
6. Copies other children's behaviour and work
7. Avoids situations and tasks requiring independence
8. Tries to be near the teacher or another adult all the time

Part D – A six-year-old child is active, performs tasks, works supervised by a teacher

1. Is interested in the result, tries to finish work
2. Likes to do their work correctly
3. Is happy with the achieved result
4. Frequently asks questions
5. Asks for additional explanation and information
6. Can remember and perform a task
7. Argues, does not carry out instructions

Part E – A six-year-old child prepares to learn to read, write, Mathematics

1. Can tell a picture story
2. Uses cause-and-effect relationships when telling a story
3. Divides sentences into words
4. Divides a word into syllables and joins syllables to make a word
5. Has the ability of phoneme analysis and synthesis
6. Tries to read independently
7. Their ability to read exceeds the expected level
8. Likes arts and crafts
9. Builds with little blocks
10. Models figures in plasticine (e.g. people, animals)
11. Makes puzzles
12. Holds a pencil properly (grip, muscle tension)
13. Imitates simple geometrical figures and shapes in drawing
14. Draws letter-shaped figures in borders
15. Knows and uses ordinal numbers
16. Adds and subtracts objects, counting aids
17. Adds and subtracts in mind
18. Often chooses number games to play with
19. Is willing to solve mathematical quizzes
20. Counts within 100 from memory
21. Their mathematical skills exceed the expected level

The computer programme – SGS

The publication „6-year-old children's Teachers' Consultant" (E. Koźniewska, 2006) includes a CD with a manual of the SGS method and an observation sheet including the five parts related to a child's development:

- part A : 15 items
- part B : 21 items
- part C : 8 items
- part D : 7 items
- part E : 21 items

The definitions specified in the list A to E are mainly related to the way a child behaves and to the level of chosen skills they perform. The teacher responsible for the observation of a child using the SGS method should observe and note down 72 statements characterising each individual child. The computer programme includes four possibilities of evaluation: yes, rather yes, rather no, no. The programme calculates the selected answers defining the level of a child's school readiness. The evaluation of a child's school readiness is only possible in the case when it is done after the completed observation of a child. The authors of the computer programme put in fields, where it is possible for a teacher to include a note about a child's musical, artistic, technical, physical and other skills. If, based on the observation and the diagnosis of a child's school readiness, the teacher observes other important facts, there is also a possibility to note them down. This field is called: other observations not included in SGS. The observation sheet also includes a field to put in information about a child's health state and class attendance when in a group of six-year-old children. The last field in the programme should be filled with information about activities taken up by a teacher in relation to a given child. This is a great advantage of the programme, as the observation is not confined to the listed areas, but teachers can put in extra information whenever needed. The computer programme SGS is used to register and analyse the data of each individual child and also of the whole group of children. One SGS programme can at the same time be used in an institution which runs up to five groups of six-year-old children. Using the SGS programme, a teacher can at any time print out clear observation sheets and write their notes on paper, but what is the most important, they can systematically fill in the observation sheets in the computer. The results obtained by children will be calculated by the programme. The SGS computer programme is easy to use, logical and clear. Even a person who does not frequently use a computer is able to learn to use the programme in a short time without any problems. It breaks all possible barriers which can be encountered while working with a computer. The programme has a very nice graphic design and clear layout. The authors present how to use the successive stages related to: creating a list of children in a given group, entering data into the observation sheets and summarising the results. While creating a list of children all the input data are automatically moved to observation sheets and results conclusions. Entering selected pieces of information about a child and their marks, and all the changes and modifications can only be made on the list and not the observation sheet, which makes the document safe and prevents mistakes. Additionally, there is a possibility of saving the data automatically after a set time. This can be done by changing the options in Excel. The SGS programme allows printing current data from the observation sheet, the initial observation and the results from the final observation. When the data from the final observation are input, the programme automatically calculates the level of a child's school readiness in six subscales: school skills, cognitive competences, motor efficiency, independence, peacefulness and social activeness.

Conclusion

Diagnosing the process of shaping a child's school readiness is difficult. It requires of a pre-school teacher an up-to-date psychological and pedagogical knowledge, connected with factors influencing each child's individual development.

In the pre-school environment there is great interest in the research tools, with the help of which it will be possible to define precisely a child's current stage of development, find the weaker areas in a child's development which need increased stimulation, so that the time of pre-school education creates a chance of success at school.

The method called „The Scale of School Readiness” is an offer directed to all teachers, whose range of activities includes shaping children's school readiness. The presented tool is a pedagogically valuable offer, which has for a long time been awaited by pre-school teachers.

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Student motivation to learning's of music in school

Introduction

Through his own actions and activities, a man changes the world that surrounds him. A well-directed activity is his biggest treasure and the strongest asset for his further development. Interests are the most mature form of human cognitive activity and have a significant impact on personal development. The effects of this development are an indispensable force for discovering and experiencing the world, they broaden the horizons, enhance human activity, and give a creative feature to human actions. That is why interests should be deepened and developed. Where there are no interests, there is boredom, sense of limitation and emptiness. On the other hand, a person that has a specified range of interests is somewhat resistant to the monotony of phenomena that surround him. He is an explorer and continually seeks, has passions, faces difficulties and failures, but also has numerous successes.

Children have an inborn need to discover, experience and create. Everyone is equipped with the potential to imitate and create, but the extent to which those skills will be used depends on one's will and a proper external stimulus. Children only become aware of certain interests and abilities that they have once they come into contact with some discipline. Therefore, constructive and stimulating educational influence from the environment is needed. Not only school can help develop individual interests and skills of its students. Parents, mass media, peers and various educational centres also play an important role here, helping to organise the young people's leisure time.

Motivation and learning

The term motivation covers all processes that tend to cause, stimulate and direct a person's actions. Furthermore, those processes signal the extent to which tasks are accomplished and needs satisfied (Kotowski T., 1993, 384). Intrinsic motivation stimulates to action which is a value in itself. Examples include interests or love for something. Extrinsic motivation, on the other hand, stimulates to do something that will be rewarded or that will help avoid punishment (Okoń W., 1996, 178).

Motivation and learning are inseparable. Each method that aims to facilitate learning needs to have a positive impact on motivation. Parents are responsible for their children's education, and teachers- for the education of their students. Everyone who feels responsible for the process of education must decide what factors to focus on. Those factors play an important role in the process of learning as they influence the results of learning (Kruszewski K., 2004, 249). In musical education motivating activities accompany both the process of theoretical knowledge transmission and the processes of gaining imitative and creative skills. They are also used while guiding, controlling and assessing a child's independent work. Motivating tasks and activities aim e.g. at encouraging students to work and stimulating their willingness to cooperation (Kisiel M., 2003, 64). In school-centred learning, cognitive motivation is of special significance since it influences the child's interests and thus helps to stimulate his mental development. Motivation can be shaped via special didactic and educational actions that stimulate the students to perform specific, well-directed tasks. Different types of motivation are connected with different needs, regardless of which of them are the strongest or which motivation plays the dominant role in the learning process. The students are stimulated to act by more than merely one factor. Similarly, more than just one

factor shapes and directs the student's actions. Finally, what needs to be stressed is the importance of rewards and punishments in the process of motivation.

Music at school

Education is understood as a system that aims to help and care for a child. It is a system of assistance and guidance, the ultimate goal of which is to make the child independent. Therefore, education is a significant area of human life (Przychodzińska M., 1989). The educational system reform (1989) that modelled the structure of the schooling system resulted in the fact that children and teenagers in the same phase of physical and emotional development became subject to given educational stages. At this point, musical education began to be considered as an integral part of the process of education. It was decided that the basis aim of the integrated art education was to make it possible for the child to discover and experience the world and, as a result, form a system of values.

Curriculums devised for primary schools state that the main goals of musical education involve: stimulating imagination, promoting various forms of musical activity among pupils, studying theory of music, making the pupils familiar with music and customs typical of their region, homeland and of other countries, promoting a good attitude to the national culture and identity, developing the pupils' ability to talk about art and emotions it evokes. Finally, as the curriculum reads, musical education shall encourage the pupils' creativeness and thinking in abstract terms and should foster the child's mental development and tolerance (Twardowska A., Pisarkiewicz I., 1999). Additionally, there are a number of tasks that musical education ought to do. Those include: practicing vocals and playing musical instruments, motivating pupils to study music, its language and history, not only in terms of their relation to other spheres of art, but also in interdisciplinary activities.

A child's musical activity

By its nature, a child aims at being active and at developing its skills and abilities. Those tendencies are especially dynamic during the nursery stage and in grades 0-3 (6-9 years of age), then there is a more stable period (grades 4-6, which is 10-12 years of age). Music creates many possibilities of developing productive skills; it enhances creativity, resourcefulness, and teaches how to deal with people (Wierszyłowski J., 1981, 115). A child's interest in music can often lead to profound aesthetic experiences. It is possible to develop the ability to understand and experience music by giving young listeners specific music tasks or by raising interest and helping build a positive attitude to various forms of activity. Classes that combine music perception with playing instruments, listening to pieces of music illustrated by movement, painting the music one is listening to, trying to build musical instruments or combining a few forms of activity – all these help to present works of art and make artistic music more tangible and attractive to children.

During the first grades of primary school education, children need to become more task-oriented. There is a shift of focus from playing to tasks and the pupils need to concentrate on marks and achievements. It is also a period during which the basic musical abilities develop rapidly (Lewandowska K., 1978). Due to the musical development, this period is divided into three phases. Phase one is related to taking up school duties. It occurs when a child is 6-7 years old and experiences changes in the way it perceives music. Music is no longer just a background to playing; it becomes a subject of interests and cognitive operations. During this phase, the child wants to learn to play musical instruments; Phase Two refers to the early stages of primary school education. The child is 7-9 years old, is extremely keen on music and absorbs musical trainings easily. The changes that occur in the child's mental processes –

there is a shift from the preoperative thinking to specific operations – those changes influence the process of creating music-related terms in the child's lexicon (Kisiel M., 2005).

Motivating a child to become interested in music

In the school year 2005/2006 initial research was conducted, which aimed at presenting the pedagogical and didactic aspect of motivating third grade students (9-year-olds) to study music in primary school. Due to the diagnostic character of the research in question, the techniques and methods used were limited to diagnostic survey. The research was conducted in selected educational institutions in the district of Silesia – three primary schools were chosen to participate in the survey. The subjects were representatives of children from the lower grades. The survey conducted among third grade students led to interesting findings that indicate the respondents' preferences with respect to music activities and their motivations (both positive and negative) for studying music at school.

Data analysis suggests that 38.3% of respondents like music lessons at school, 36.7% like those classes only sometimes, and 25.0% do not like them at all. Out of the children that definitely like music at school, girls are the majority; in the group that sometimes enjoys music classes, boys prevail; the last group, i.e. comprising those who do not like music classes at all, boys constitute the majority. Answers to the question of what third grade students like and do not like doing during music lessons indicate some sort of hierarchy of forms of activities preferred by the respondents. What children like the most: listening to music (29.4%), singing (20.6%), dancing (16.25%) and playing to the accompaniment of music (15.6%). What must be stated, however, is that those preferences differ with respect to sex: girls enjoy singing, listening to music and dancing, and boys are keen on listening to music, playing to the accompaniment of music, singing and dancing. Activities that are not popular among third grade students include: reading and writing music (22.4%), having to learn theoretical information about music and musicians (21.9%), improvising and creating music (16.2%) and playing musical instrument. With respect to sex, it can be stated that – in general – the opinions of boys and girls are similar, although boys do not enjoy singing and dancing.

It is worth pointing out that children identify the following factors that motivate them to study music: their own music interests (14.2%), awards – including books, diplomas and money (13.5%), joyful atmosphere during lessons (11.6%), and getting an excellent grade (an A) for active participation in the lessons (10.9). What is important to note is that these general motivating factors correlate with the children's positive assessment of music classes at school (*I definitely like music classes*). The hierarchy of motivating factors varies a little, depending on the sex. Boys indicate rewards, excellent grades (A's) and parents praising as factors that motivate them to study music. On the other hand, for girls joyful atmosphere during lessons, interesting compositions and a colourful and interesting course book are the factors that matter. Factors that in the opinion of the respondents have a demotivate influence include: getting a negative grade for the participation in the lesson (22.3%), boring compositions (vocal, instrumental, dancing) worked on during the lesson (16.9%), loud and unpleasant lessons being a result of poor class management or lack of discipline (16.9%), punishments used by the children's parents (13.1%) or boring lessons (10.0%). While 'negative grades' discouraged both boys and girls, 'boring compositions' tend to demotivate mainly boys, and 'loud and unpleasant lessons' – girls.

Further part of the research consisted in answering the following question: how do parents, classmates and teachers encourage students from grades 1-3 (7-9-year-olds) to study

music at school? The findings confirmed that in most cases younger students can count on their parents help. 37% of the respondents stated that parents help them do the most difficult tasks – including music tasks; 26.3% point at the fact that at least one of the parents is always at home when the child is studying. Furthermore, in 14.1% cases, the respondents stated that parents clearly do not encourage them to study music.

A separate question in the research was devoted to the need for motivation coming from parents. The findings have been presented in the form of a ranking that begins with words 'I wish my parents would...': *accompany me when I'm studying music (play instruments and sing with me), arrange additional music classes for me, frequently praise me, help me do difficult tasks*. Interestingly, some of the respondents said they do not need any encouragement to study music from their parents.

It appears that for younger students peers have considerably low influence on the development of their interests in music at school. When asked: do your peers encourage you to study music at school, 5.0% of the respondents said 'yes', 6.7% said 'sometimes', and 88.3% said 'no'. When asked for explanation, the respondents claimed that peers do not really encourage them to study music because they tend to laugh at their mistakes and imperfect attempts to sing, play instruments or dance. Some of the respondents even said that peers disturb them and thus discourage them from studying music.

Those who said that peers do give them some encouragement said that their encouragement produces the following results: performing interesting compositions together, talking about music or encouraging them to enrol in additional music classes at and outside the school. The teacher's attitude is an important factor in shaping children's interests in music. The motivation the teacher gives can help not only to make the child try to take up music but also raise the child's interest in music. Most important for the respondents are: the teacher's help (18.4%), verbal encouragements and friendly atmosphere (14.5%), preparing interesting lessons (13.2%), the teacher singing and playing musical instruments (11.2%), and giving grades (10.5%). The answers were quite similar for both boys and girls.

Additional conversations with the students and asking them what they would like the teacher to do so as to encourage them to study music brought more ideas for motivating factors. The girls: *we would like the teacher to sing with us, be nice, organise music classes more often*. The boys: *we would like the teacher to use more popular music, be nice and give prizes and various gifts*.

When asked to evaluate music classes in terms of what they like the most, the children had the following ideas: interesting songs and compositions to play (20.9%), the teacher's singing and playing instruments (19.3%), good and up-to-date equipment (13.7%), interesting lessons (13.7%). What they found boring and thus demotivating was: broken instruments (20.5%), broken equipment (14.4%), boring songs and compositions to play (13.0%), classmates who lacked music skills (10.2%). The students can use the skills and knowledge they acquired during integrated classes in various situations at school, at home and in their environment. Asked where they use those skills, the respondents usually gave the following answers: school celebrations (19.8%), singing and playing instruments with their parents (13.2%), summer camps, scout camps, excursions (11.6%) and additional classes and courses outside the school (13.2%).

The data and findings presented did not answer all questions put forward in this paper, related to motivating students to study music at school. The students only orally expressed their opinions about what encourages them to study music, and those answers were quite subjective. Further research will allow to compare those findings with data obtained by surveying parents and teachers. Moreover, observations checking how children react to watching specific events or participating in those shall be conducted.

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Extending divergent thinking ability during early math education

Summary

The article presents research on introducing in the classroom mathematical tasks with many correct solutions. Method of describing tasks is presented along with idea of creating divergent tasks for didactical use. The scope of the experiment was influence of divergent tasks into fluency and flexibility of thinking. Results indicated that including divergent tasks into process of early mathematical education extends pupils' divergent thinking ability and increases learning effectivity.

Keywords: divergent thinking, creative thinking, early education, mathematics education

Meaning of developing proper mathematical competences in early stages of education might be hardly underestimated. Another goal of early education is developing of creative thinking. Could these goals be achieved simultaneously? What teaching contents must be prepared and what methods should be used for applying this content in the lesson? This article presents method of analysis existing contents of math teaching and creating new content with specific proprieties. Then we present outcomes of experimental evaluation in the typical school teaching process.

On the basis of J.P. Guilford's theory of the structure of intellect (Guilford 1967, pp. 198-214) we focused on one aspect of creativity: divergent production (divergent thinking). In this theory, divergent thinking is the kind of thinking with more than one possible result. Practically, divergent thinking can be actualized when we put the pupil into special kind of task situation, where more than one correct solving is possible. Of course, not in every task many correct solvings are possible.

According to the mentioned theory, we took into scope of research two components of divergent thinking: fluency (ability to create large quantity of solvings) and flexibility (ability to create many kinds of qualitative different solvings). Third component in the theory - originality of thought - was not considered because there was very small possibility to actualize this ability in solving mathematical tasks of relatively small complexity.

Mathematics is often, especially in schools, regarded as field of activity, where each problem should have one proper solution. It is probably result of predominating arithmetic computations in teaching programmes during many years in the past of education. New teaching theories, respecting natural child's disposition to seeking alternatives and creativity, influenced into changes in teaching contents (Gagne, Briggs, & Wager 1992, pp. 87-89).

Analysis of the handbooks: seeking for creativity stimulators

If we want to teach the pupil proper thinking and acting in complex problem situation with many possible solutions, we must prepare a special set of tasks for training. Properties of these tasks should be strictly controlled for keeping compliance with standard (obligatory) teaching programme.

Each task consist of two main parts:

- goal (aim), describing how result of solving should be,
- conditions , describing data needed for finding solution.

Every task (in this case, math task) can be described by standardized procedure using a number of variables, regarding content, form of presentation, structure, complexity, language and relations in the task.

For measuring "creative potential" of the task we defined another variable, named "subjective solving goal" with two values: "convergent" and "divergent". We recognize the task as divergent, if it has more than one correct solution. This category contains some kinds of mathematical tasks:

- concretization of the task presented in arithmetic or algebraic model (finding real-life application for abstractive rule or procedure)
- solving task with many possible correct solutions
- finding alternative solving methods of given task
- creating new task with given properties.

Having list of variables and description criteria, we can analyse content of handbooks and exercise books and then calculate frequencies of every kind of task. After analysis of some books used in early math education (in Poland), we can say that most of tasks presented have convergent goal and conditions. Only 5,7% of ca. 14,000 analysed tasks (in six handbooks and exercise books for early mathematics education) were these stimulating divergent thinking (Stachura 1997, p. 84).

For the experiment, a set of new tasks was created. We choose one particular topic of math education contents: *dividing and multiplying on numbers below 100*. These operations are introduced in 3rd class of polish elementary school.

All analysed properties of newly created tasks are the same like in the standard handbook and exercise book, except properties related to creativity: divergence of the task conditions and divergence of the task goal. In other words, we prepared a replacement of standard books, where instead of "convergent" tasks, "divergent" tasks were in prevailed count.

Using new tasks instead of exercise book - experimental research

Pupils in experimental group obtained special brochures with divergent tasks for using instead of standard exercise books. Teachers were instructed to utilize these brochures in the same way as standard teaching materials. Pupils in control group utilized standard books, as usual. In the experiment 6 classes from three different elementary schools took part (119 pupils on the whole).

Type of presented tasks was *independent variable*, with two values (convergent or divergent task). Convergent task has only one correct solution possible (for example, simple arithmetic, like "How much is $32:8=?$ "). In the divergent task more than one correct solution is possible (for example: "How can we divide 32 into equal parts?")

Dependent variables, measured before and after experimental lessons, were flexibility and fluency of thinking. These variables were measured using specially prepared tests, containing simple math tasks with many possible correct solutions. Tests used in initial and final measurement were similar in form, but contained different set of tasks (to avoid the "training effect"). Third variable was receiving level of the teaching content (effectivity of the learning). This was measured using typical didactic test.

In the initial measurement any differences between groups were indicated regarding fluency and flexibility of thinking, as shown in tab. 1. and tab. 2, where mean test results in both (control and experimental) groups are compared.

Tab. 1. Results of the initial measurement: mean results of the fluency test.

Group	Count	Mean	Std. dev.
control	42	11.43	3.60
experimental	77	11.28	2.90

Source: author's own research

Tab. 2. Results of the initial measurement: mean results of the flexibility test.

Group	Count	Mean	Std. dev.
control	42	7.64	2.55
experimental	77	7.26	2.18

Source: author's own research

Regarding mathematical knowledge and operations, we checked (by the separate test) readiness for introducing new teaching subjects. Fulfilling of eight teaching programme requirements needed for introducing new topic was checked, according to dependencies in the structure of teaching contents in the early math education (Zimny Z.M, & Zimny T.M. 1993, pp. 42-44). Pupils were well prepared to beginning new block of contents. As results of the test showed, 78% of pupils fulfilled six or more of these requirements. Group with somewhat better result of introductory math test became the control group.

Results of the experiment

After finish of discussing mentioned topic (contents block) on the lessons, we made final measurement. There was similar test of fluency and flexibility and an additional test, checking receiving level of contents learned during experiment. It was test similar in the form to the didactic test used for initial measurement.

Results of the final measurement are shown in tab. 3. (fluency) and tab. 4. (flexibility). As we can see, mean outcome in experimental group is significantly higher than in the control group. Difference between means was measured and asserted using ANOVA procedure with Fisher's F-test on the significance level 0.05.

Tab. 3. Results of the final measurement: mean results of the fluency test.

Group	Count	Mean	Std. dev.
control	42	5.79	3.11
experimental	77	7.89	2.20

Source: author's own research

Tab. 4. Results of the final measurement: mean results of the flexibility test.

Group	Count	Mean	Std. dev.
control	42	3.67	2.34
experimental	77	4.66	1.88

Source: author's own research

Learning effects related to contents presented during experiment were similar in both groups. As mentioned earlier, pupils in the control group were better prepared to the learning new contents. So we can say that experimental group, which had lower results in the beginning, equalized level of learned contents with control group.

Discussion

There might be a number of factors making influence into results of presented research. Especially methods of work in the classroom used by the teachers were not strictly controlled (but we interviewed teachers during experiment and after, and they revealed no differences regarding teaching methods and procedures). An important notice was, that pupils were really interested in new tasks, willingly worked with new material, but told also that "these new tasks are more difficult than these in our handbook". Another notice was that time of solving divergent tasks is usually longer than their convergent substitutions. We perceive this phenomenon as didactical advantage, because pupils are not bored with big number of similar simple tasks.

Conclusions

Including divergent tasks (tasks with many possible correct solutions) is the factor of extending pupils' divergent thinking ability. Even fluency and flexibility of thinking was improved during experiment. These abilities, as important components of creative thinking ability, should be incessantly diagnosed by the teachers and developed in properly planned and performed teaching. Teacher must be properly prepared for special competences, in creating and transforming information e.g. "neocompetences" (Perzycka 2008) and equipped with diagnostic tools and teaching contents resources.

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Professional orientation particularities of pupils with special educational needs

Annotation

Authors of this paper deal with the school psychologist and educational counsellor current experience analysis when working with special educational needs of pupils at primary schools in the Slovak republic, thus focusing on the field of their professional orientation.

Key Words

Educational counsellor, school psychologist, professional orientation, exceptional pupils

Introduction

School education is an inseparable part of our lives. Its target is to attain a certain level of education of an individual. External let alone internal conditions of those learning are not equal however. Thus the task of modern school of today is to educate all pupils – including those who are for various reasons exceptional. Exceptional either physically, mentally or spiritually. We perceive the exceptionality as both below or above average capacity or a level of development of in respectful areas of human personality. Hence we can call „exceptional“ a pupil suffering of learning disorder as well as an extremely gifted pupil. Since both extremes of this spectrum are accompanied with particular problems it is necessary to pay attention to them.

Current tendency is to educate exceptional pupils by integrating rather than segregating them with the rest of the population. This of course represents high demands on the educational system. Based on our experience in practice we are aware of the fact that the biggest part of the pupils with special educational needs represent pupils with various learning disorders. Interaction with such pupils is also one of the most demanding factors in the work of a teacher. The intensity of the specific learning disorders varies greatly from pupil to pupil. Although there are special educational programs, one has to keep in mind the individual conditions of single pupil. This is very challenging for both the class teacher and other teachers as well. The academic performance of such pupils is thus dependent on many factors (the individual education plan and its adequate exploitation being only one of them). Other factors include the pupil's intellect, stimulation of pupil's home conditions (ambitions of his/her parents, parents' ability to help the pupil, objective assessment of pupil's capacities by parents), the motivation of the pupil himself/herself, particular kind of learning disorder and its intensity, early diagnosis etc. The successful performance of a pupil is then based on combination of these factors then determines the future direction of pupil's education. Educational advisor, school psychologists are competent to control this activity. Their mutual cooperation with teachers and parents of the pupil can lead to the right choice of the pupil's further education.

Practical experiences

The prognosis and possibilities of professional orientation of exceptional pupils generally depends of several factors. Intellectual level and stimulation from home represent two of them, which support the intensity of so called compensation mechanisms that are at the disposal of the concrete pupil. The higher the level of compensation mechanisms the bigger the chance of pupil's success in further academic performance and the bigger the choices of his/her placement of exceptional pupils in regard to individual learning disorders.

Pupils with specific learning disorders dyslexia, dysortographia,dysgraphia.

The prognosis of pupils with such learning disorders is good the success however is greatly dependent on an early diagnosis, adequate home stimulation (the parents are interested in the education of their offspring, they are interested in re-education of learning disorder, they are helpful when overcoming the school problems of the pupil), intensity of the learning disorder (pupils with higher intensity of learning disorder are predominantly resistant towards the re/education methods and it is necessary to look for some adequate placement of such pupils in the future), the ability to compensate the learning disorder (the higher the intellect the higher the ability of compensating the learning disorder). Based on our experiences in practice it seems that it is possible for a pupil with single or even multi learning disorder to finish a university study provided that he has got abilities and a stimulating environment.

Pupils with specific learning disorder dyscalculia.

It's apparent that pupils with dyscalculia are less successful in coping with the demands of primary school. The reason is probably that mathematics is a section subject on one hand, on the other the quantification of results in mathematics (or physics) is easy compared to other subjects which leads to bad evaluation, mathematical skills are perceived as important also for practical life and that is why the requirements of the teachers in mathematics are high. When choosing the right occupation for pupils with dyscalculia, the orientation should be made especially towards the schools with low ratio of mathematics in its curriculum. Like with other learning disorders, the rule about the amount of compensation mechanisms can be applied here as well (the higher the intelligence level and impulse-rich family environment, the better the prospects of exceptional pupil).

Pupils with concentration and activity disorders.

Our experience show that the prognosis of pupils with concentration and activity disorders is depends on multiple reasons. Hyperactive pupil's prognosis is based on the level of disorder, if it's possible to educate the student integrated in normal class or if it is necessary to educate the student in a special classroom. If the level of hyperactivity and de-concentration (also the level of becoming tired) of pupil doesn't exceed a certain limit, it depends on early diagnostics, family background and the ability of pedagogical personnel if this student would be successful. If the impulses from family environment are lower, the hyperactive pupil is mostly not raised enough and has behaviour disorders that lead to inadequate demonstrations. Pupils with low level of activity don't have problems with behaviour but achieve low accomplishments in learning (they are mostly "looked over" by the teachers in schools). The concentration disorder and hyperactive behaviour are mostly less visible with the development of nervous system and with gain of knowledge and experience. These options secure better chances of a pupil on any kind of school.

Pupils with specific speech disorder.

The possibilities of professional orientation of these pupils is dependent on more circumstances (level of disorder, pupil's background, early diagnosis, regular re-education,

acceptation of special-pedagogic needs, in some case the presence of alternative forms of education – special class, special school for pupils with communication disorders).

Pupils with below-standard intelligence level.

Pupils with subnormal intelligence have a handicapped position at schools. Very important in good achievements is the family environment. If pupils come from socially lower family or dysfunctional family, the prognosis for their further education is low. These are mostly the pupils that end up in lower grades and their only possibilities of education are apprentice centres. These pupils are mostly not diagnosed because of the lassitude of parents and than it comes to good will of teachers if they will or will not tolerate their attitude during education process. If a pupil comes from an environment with an average level of stimuli, the problem can be mostly diagnosed and attitude towards the pupil can be obtained (so called individual approach). In this case the pupil can finish the ninth grade of primary school and has better chances in high school selection (three-year specialization). It's very important to consider every individual case, its specifics, also by cooperation with educational counsellor, psychologist, teacher and parent of a pupil from the point of view of his/her abilities and the right choice of occupation.

Concrete forms of work that are used by a school psychologist and an educational counsellor to realize a direction of professional orientation of exceptional pupils in our practice:

1. Identification activity. In the frame of this type of activity, the school psychologist and educational counsellor in cooperation with teachers and parents identify problematic pupils. As for the area of professional orientation, they usually deal with pupils that have a problem to choose an appropriate professional area or concrete type of school. There is an usual advance in our practice that educational counsellor searches for the pupils having problem to choose their future professional orientation, or he realizes this activity thanks to a help of teachers or parents. Sometimes pupils themselves come and ask for advice. One of the most important facts in the whole procedure is the early information about offered services for pupils, teachers and parents. This is realized through the parental sessions at schools, board announcements or direct contact of educational counsellor with pupils in the classrooms

2. Consulting activity. In our practice we offer consultations for teachers, parents and pupils. As for the teachers, in most cases they ask for our advice how to advance in educating and evaluating of pupils with special educational needs. This activity is continuous, done according to the current demands. In cooperation with the teacher we try to find a solution of the issue how to educate concrete pupil with particular learning disorder, which tasks are suitable for such a pupil and which are not, which methods are ideal in the process of education and evaluation, how to create an ideal individual study plan. The educational counsellor is mostly asked by parents to help to choose an appropriate professional orientation for children (type of school, it's locality). One of the most used method is a dialogue. There are many other methods missing in the practice that help to fulfil all the expectations of parents. In our practice we use the cooperation between educational counsellor and school psychologist to provide full service for parents and pupils.

3. Diagnostic activity. This activity is provided by the method of observation, analysis of results of pupils, anamnestic dialogue. Standard methods are not suitable and so they are not used in cases of ascertaining of professional orientation of pupil. When needed, this is solved in cooperation with school psychologist who realizes diagnosis of a personal profile of the

pupil (mental performance, character qualities, temperament qualities, areas of interest) and finally, they recommend a suitable professional area.

4. Preventive activity. In the frame of preventive activity the educational counsellor realizes collective and individual contact with teachers, parents and pupils. It is realized by means of work meetings, parental sessions, and boards. In our practice, the educational counsellor deals with the problems of professional orientation of pupils with various learning disorders. In these cases, prevention is really crucial due to their future assignment after finishing elementary school. In this area, with the cooperation with pedagogical-psychological consultancy he organizes seminars for parents, pupils with learning disorders. Such meetings are an ideal place to get much information about possibilities or restrictions of their further education.

School specialists dealing with professional orientation of the pupils (even of exceptional ones) are educational counsellor and school psychologist. In most cases we get much useful information from the educational counsellors about their various problems in this area. They mostly complain of unclear competences and a lack of skills or diagnostic instruments. Department of Pedagogical and School Psychology at the Faculty of Education of Constantine the Philosopher University in Nitra supported by the Cultural and Educational Grant Agency of the Ministry of Education of the Slovak Republic tries to create and realize an educational programme for educational counsellors at secondary schools with the purpose of development of professional career competences.

Conclusion

Presence of the exceptional pupils in the environment of ordinary schools represents nowadays an undoubtedly significant fact. This fact however carries series of subsequent problems, whether on the side of pupils, teachers or parents. The fundamental focus of interest of teachers, educational counsellors or school psychologists should be adequate help for these pupils in their education and thus in professional carrier. In real life experience we meet most teachers and other specialists who take positive stand and on the other side with minority who take negative stand to this problem. As Pokorná (2001, pg. 20) states, also a pupil with markedly exceptional intelligence has limited possibilities when choosing the field of study, as far as such a pupil suffers some developmental defect of learning. There are many reasons for this: secondary school criteria, intentional resistance of secondary schools for these pupils, eventually weakened skills of pupils due to problems with learning at primary school. One way of how to eliminate these problems is gradual education of teachers and competent professionals (e.g. educational counsellors) in this field.

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