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IT competences in preschool teachers' training

In my study I shall provide a report on several years of IT training experience gathered within the institutional framework of teachers' training at Illyes Gyula Faculty at the University of Pecs. The study focuses on the question whether students who major in pedagogy in higher education hold sufficient IT skills, competences and performance that are required for the successful completion of their studies in higher education and whether after the completion of their training the fresh graduates are ready for future work in the context of IT activities? I shall essentially observe IT skills required by the curriculum and how they can be developed in preschool (kindergarten) teacher-training courses.

Key words: IT training, technological framework, algorithmic cognition, the attitude of applicability, informatics, role of competence.

Introduction

In my study I shall provide a report on several years of IT training experience gathered within the institutional framework of teachers' training at Illyes Gyula Faculty at the University of Pecs. The study focuses on the question whether students who major in pedagogy in higher education hold sufficient IT skills, competences and performance that are required for the successful completion of their BA studies and whether after the completion of their training the fresh graduates are ready for future work in the context of IT activities? I shall essentially observe IT skills required by the BA curriculum and how they can be developed in preschool (kindergarten) teacher-training courses.

We can say that IT training has been in a unique position not only within the framework of teacher-training but, also, generally — including all fields of education. The constantly changing technological framework and the rapid development have been challenging experts specializing in this field. From a somewhat lay perspective this means that a curriculum has got to be developed for the subject of «IT» — including the training of concrete protocols of application — so that it could later be taught along an accredited programme. At this moment we have been having some issues, on the one hand, due to the fact that the scope of the accreditation of a particular major/minor covers a number of years. Yet, on the other hand, we cannot plan trainings for concrete applications for more than one or two years with reference to applied informatics, either. Furthermore, several misunderstandings have been cropping up concerning IT trainings.

Learning IT

Professional competence has recently been very much dependent on technological changes. The continual retooling of competences implies lifelong learning — c.f. users' application frameworks like WEB 2.0/3.0 that everyone needs to get familiar with not only within the frames of special applications but, also, in daily use. Besides the former example there are numerous further reasons that necessitate IT training. European labour market requires that every person should be somewhat competent in IT ranging from basics to professional competence. IT training begins during preschool (kindergarten) education and is indispensable up to the highest levels of education. Yet we shall have to go and observe the segments of the field of IT in order to make sense of the concept, informatics.

Basically five required competences constitute the educational paradigm of informatics (IT). 1) Algorithmic cognition — starting with training in basic procedures. These are activities that are indispensable for building up conscious protocols. Random trials have to be excluded in order to shape a conscious user's attitude. 2) The attitude of applicability — students learn that the computer is a device that man can make extremely multiple use of. 3) Problem solving — when performing tasks we can competently select the proper IT device or application, and, we can also design a complex use of them. 4) Training for individual work with the help of IT. 5) IT protocol — this guides us how to «manage» the computer in this age of information and how to make proper use of the choices IT has been offering. «There is, no doubt, a strong need for a course in informatics (IT) since at this moment the pass mark level in IT implies some requirements that have not been fully included in the curriculum of any existing course. The educational paradigm of IT has an

inner logic and a conceptual framework of its own that has also become part of the general basic competences and which could only be taught in the form of a unique course» [1].

See below a list of general IT competences that are needed in higher education. The list has been set up by Laszlo Zsako at the IT Faculty at ELTE with reference to general education:

- IT related mathematics;
- basic IT concepts;
- setting up algorithms, data modelling, basics in programming;
- means of programming;
- performing tasks of application with IT devices designed for general use;
- handling operational systems of application;
- solving concrete problems via computers;
- using IT devices, the means of operating IT devices;
- informatics and society, informatics — in the past and in the future; ethical issues of informatics.

An almost limitless amount of learning could be related to the topics listed above — and this offers a choice for selection for each training programme.

Misconceptions Related to Training/Learning IT

Laszlo Zsako has also collected the misconceptions that we have to face in order to manage teaching IT properly. And now we shall observe in an all-inclusive analysis the misconceptions that feature in our current trainings. «The scope of the course in general informatics has generated heated debates among IT teachers, and an extremely heated one among IT experts and parents who are not competent in informatics. We depict mistaken and excessive views and consider them with criticism in order to highlight the importance and the proportion of segments included in the curriculum. We considered the following misconceptions last year» [2].

Says Laszlo Zsako in his study where he primarily focuses on public education. We can add that, besides secondary education, the misconceptions also feature in higher education and generate significant issues generally for the higher education, not just the segments engaging in IT — preschool/kindergarten teacher-training included.

The list below sums up the misconceptions that in some cases have already developed into frameworks:

- The course in informatics \equiv let's talk about informatics, generally.
- Training in informatics \equiv comprehensive training.
- Training in informatics \equiv this exclusively refers to users' training with reference to applications.
- Users' training with reference to applications \equiv learning the functions of an application.
- Training in informatics \equiv training exclusively in program design.
- Training exclusively in program design \equiv teaching a single program language.
- Training in informatics \equiv teaching segments of knowledge, each of which is of equal importance.
- Training in informatics \equiv some subjectively selected segments of informatics.
- Training in informatics \equiv exclusive training in the use of a particular IT device.
- Training in informatics \equiv a course that covers a sequence of otherwise unrelated sets of knowledge.
- The training always targets the most recent IT device.
- The IT course tutor is less competent than the student.
- Training in IT does not require a course [2].

The points listed above reveal an aspect basically reflecting that various viewpoints and attitudes have developed among both lay people and among experts and they meet with contradictions and generate debates. I have found these viewpoints and attitudes claim analyses.

11 essential misconceptions have shaped that we can, also, readily consider to have been significant in higher education. This time I shall underline the most problematic ones. We have already come across numerous definitions of informatics — the most conspicuous one reflects on the function when informatics is used to process data. If we consider processing data to be the central task of informatics we may as well wonder what the case is with the rest of other professional courses (whether they target electronics, natural sciences or any other field). Each course processes information within the framework of its own field. So does informatics itself. If, however, we overemphasize this we may as well mistakenly consider informatics to have a comprehensive professional profile without segments that, otherwise, would have constituted a part of general cultural competence. This perspective naturally became discredited during the 1990's — also indicated by the contemporary society of information. Another misconception claims that training in informat-

ics exclusively implies that we learn the use of devices and applications and, therefore, it does not have to develop skills and problem solving. We could ask with the same logic why we should learn history or mathematics when only a few people will go and become historians or mathematicians. «It is not technical competence that develops excellent user's competence but a general conceptual competence in basics and methods» [3].

This indicates that it is a misconception that if someone skilfully navigates within a program then s/he is competent in informatics. These first two points are sharply contradicted by the claim that within the course in informatics students do not need to learn the use of devices because they will learn that at home by themselves, anyway, just like they learn by themselves how to use the remote control of the tv set. It is also wrong when one thinks that the right way to teach informatics is to teach segments of IT competence one by one linearly and with laying the same amount of emphasis on each of them. It is nonetheless also unwise to limit training in informatics to a single segment of IT. Parents, students and teachers often face the problem that IT tutors may be less competent than students. This is generally the case when a student develops competence and performs well with particular applications and frameworks. This performance is, however, limited in its scope and will not be competent with the tutor's general IT competence and with his/her skills in generating overviews and abstraction. Each further similar misconception reveals some truth yet the excess in them generates negative output that can be traced in preschool/kindergarten teacher-training in the form of discontent held against courses in informatics.

IT Training for BA Majors in Preschool/Kindergarten Teacher-Training

In this section — following the lead of the prompts listed above — I shall observe IT training for BA majors in preschool/kindergarten education at Illyes Gyula Faculty at the University of Pécs. I have previously provided a detailed summary of the scope of competences, fields of knowledge covered by IT training and the misconceptions that have shaped with reference to them. It is interesting how this complex of issues features in BA studies. Prior to Bologna IT training for preschool/kindergarten major used to consist of a two-hour lecture and another double class of practical training in informatics. Thanks to the pragmatically focused curriculum IT training has recently become a double seminar consisting of practice — and students are also offered elective courses in IT to further develop IT skills and competence they may need during their further studies and when they start to work.

The IT curriculum consists of three basic parts: IT basics; application frameworks and applications that support preschool/kindergarten teaching. The latter segment is of uttermost significance on account of the fact that customized developing skills and developing games have been considered outstandingly important preschool/kindergarten activities. It is the very task of preschools/kindergartens to provide children with sufficient basic competence for the reception of the culture of information and communication. The Curriculum of the Faculty declares: «In this course students learn interactive programs that can be used in preschool/kindergarten sessions and the most effective methodologies of learning with computers. Students taking this course learn to be looking for proper computer programs fit for preschool/kindergarten education, for teaching and language teaching. Students in practical IT training courses learn the use of programs that they will be able to make effective use of in small children's development and, also, in language teaching» [4].

Assessment is provided via two mid-term papers: students are given tasks that they perform and solve via the use of computers. They also have to complete a project by the end of the term. These three components generate their grade for the course. To put it in a nutshell we can say that both us, IT tutors and students taking IT courses have been in an extremely difficult situation. During the training we prepare our students for individual work and for self-development and we target the development of problem-solving competences, thinking logically and in algorithms. This is a complex and difficult task that is tightly contingent with the surfacing and dominance of misconceptions concerning informatics. Considering these in order to counteract their negative impact I shall present choices for developing competences that may help tutors to provide an effective training sufficient for our contemporary society.

The Model of IT Competence

Competence is «a feature that is basically cognitive with a strong impact of elements of motivation, skills and emotional attitudes» [5]. We are discussing IT — otherwise called, «digital» — competence: it is constituted by readiness and skilfulness with which we can work with our IT communicative skills as long as circumstances make them available. Since we know that IT competence will not generate by itself we have to pay attention to its development. The university provides choices for the development of the following competences — among others. Andrea Karpati, fellow at ELTE TTK Communication and UNESCO Multi-

media Pedagogy Centre has listed these competences. She has also discussed them in several papers of hers. I shall rely on Karpati's research in the following analysis of IT competences concerning preschool/kindergarten teachers; while in discussing IT skills in application I will rely on my personal pedagogic experience.

The majority of students majoring in preschool/kindergarten education can select the proper software that is needed for performing a concrete task — ranging from administrative activities to designing interactive playful developing skills tasks and their applications. They can make use of resources but they are hesitant when facing novelties. They are frightened by new users' interfaces, and they need strong incentives to go and give them a try — also enhancing self-development. Individual learning can exploit the university's Coo-Space Framework, though it is seldom used and only with reserve. Via connecting to Coo-Space students may get acquainted with ways of «distant-learning». This is a digital platform of co-operation shared by students and tutors that promotes several ways for communication, for performing administrative tasks, for storing data, for organizing and for assessment. Students on the one hand develop user's competence and, on the other hand, s/he also develops an analytic and systematic way of thinking that also promotes her/his self-developing competence. Students later may also develop their distant work competences with the help of frameworks of e-learning. Creativity is indispensable for pedagogues who take care of and develop young children. When we try to design a preschool/kindergarten session making use of IT assets at hand students' session designs reflect that their readiness for the use of IT devices is limited to the setting up of a task sheet or to operating the overhead projector.

Designing and conducting IT-based preschool/kindergarten sessions — like second life scenarios or the use of virtual space, the introduction of avatars, simulating game applications that are accessible online — provide further choices that would expressly enhance creativity. Photoshop and cartoon design application may also enhance the effective work of preschool/kindergarten teachers.

Pedagogic work — besides basic office work — also consists of assessment that is backed up by table and data processing applications: setting up a database is a complex task from design to data maintenance — normalization, configuring, setting up reports, filling in forms, etc. included. These IT applications help in the assessment of the educative processes of young children, and, furthermore, they largely contribute to the shaping of a system-based attitude. The competence segment of «the use of IT for the purpose of collecting information and for learning» [6] is based on life-long learning (LLL). This is a key issue for an innovative pedagogic attitude and it is an indispensable constituent of permanent development. The internet provides infinite choices for the acquisition of information — its regular competent use enhances prospective preschool teachers' self-confidence. Last but not least familiarity with the social, ethical, legal and health-care regulations concerning IT culture and conforming to these rules is also an important segment of this set of competences. «This is the field where the culture of Hungarian IT education needs doing up the most» [7].

Preschool/kindergarten teachers have to be aware of the positive and negative impact of IT devices. The ergonomic rules of shaping a healthy working environment must be applied as early as the kindergarten so as to secure this attitude as a natural disposition in kids' everyday lives. The same applies with reference to legal frameworks that are tightly related to data safety.

Summary

In my argument concerning the role of competences I have made use of my own teaching experience and that of general competence conceptualizations. Preliminary to this I had provided an outline of the sets of IT paradigms that are required in the IT training for the preschool/kindergarten curriculum and then set up a list of wide-spread misconceptions contingent with IT training.

In order to develop IT training for preschool majors I suggest the design of a framework of IT devices the use of which promote coping with the difficulties generated by IT society. I have collected the competences that ought to be developed during BA studies for majors in preschool/kindergarten education. I hope that my commentary on them will further enhance our successful work effectively.

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Наджи Енико

Мектепке дейінгі оқытуда ІТ қолдану

Мақала мектеп жасына дейінгі балаларға жаңа технология көмегімен тілдерді оқыту мәселесіне арналған. Автор өз зерттеуінде университетінің педагогикалық тәжірибесін негізге алды (Illyes Gyula, Венгрия). Зерттеудің негізгі мәселесі — жоо бағдарламасының жаңа технология тұрғысынан оқытылуы және мектепке дейінгі мекеме педагогтарының қажеттілігінің арақатынасы.

Наджи Енико

ІТ-компетенции в дошкольном обучении

Статья посвящена проблеме преподавания иностранных языков с помощью информационно-коммуникационных технологий детям дошкольного возраста. Свои наблюдения автор основывает на педагогическом опыте факультета Illyes Gyula Печского университета (Венгрия). Важным проблемным моментом исследования стало изучение соотношения вузовской программы и реальных потребностей педагога дошкольного учреждения с точки зрения информационно-коммуникационных технологий.