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THE EFFECTS OF THE NEW ICT SCHOOL LEAVING EXAMINATION ON THE ATTAINMENT OF ICT COMPETENCIES

Introduction

Today's societies have arguably become information societies that require those entering the job market, most of who have a School Leaving Exam (Examination, for short) have information and communication technology (ICT) related skills and knowledge (literacy). The use of personal computers and basic tools of ICT is of increasing importance as well. Education in this field has always had a big role in propagating ICT literacy, even though a wide variety of types of classes have been referred to as ICT studies at schools. While other subjects had a common set of requirements and uniform Examinations regulated what students should learn, ICT was characterized as a subject lacking a uniformly required system of skills and knowledge. This situation was rectified with the reform that changed the entire system of Examination and within it, the ICT Examination as well. This ongoing reform transpired parallel to the period where the transformation of ICT highlighted the fact that there was a need for a significant change of paradigm in teaching this subject. Educators have accepted that they needed teach more pragmatic skills that could be used in everyday life and they needed to develop competencies that students passing the Examination could use on the job market as well as in their tertiary studies.

This paper discusses the Examination of the 'common' ICT subject. The ICT oriented vocational schools have their own vocational ICT Examination, but that serves a different purpose and does not deal with the basic ICT competencies.

We managed to greatly influence the ICT education by introducing a set of Examination requirements that were user-centric and aimed to measure the development of competencies. More and more students chose the ICT Examination as an optional subject as now it is equal to the ECDL exam (European Computer Driving License). The popularity and success rate of the Examination clearly shows that the new School-leaving Examination has very much influenced the attainability and quality of ICT education and that was the goal of the policy makers in recent years.

The Causes of the Reform

By the mid 90's it has become evident that our over 20 years old traditional Examination system has grown outdated and was in need of some upgrades. Preceded and paralleled by a reform of the curricula and the textbooks, these changes brought

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on debates over the 'subject matter' or 'competency' approach. These debates have been very useful for our work on the new Requirements and Types of Examination. Apart from these steps in educational research and development the national evaluation practice has changed significantly as well. The experiences gained through participating in the IEA and other international studies helped along the Examination reform as well. The public's general interest has turned towards school events at the same time as well and also focused on important criteria for the quality of the Examination such as objectivity, reliability, as well as comparability and equivalency of the Examinations taking place at various locations. A new viewpoint has also emerged, the need for an Examination equivalent to the entrance exam to tertiary education for those who wished to continue their studies in higher education.

Developing the Examination

The reform of the Examination took place in a setting where joining the EU was already in sight and we've become familiar with the respective EU documentations and outlines. Therefore we were able to implement the priorities of the EU such as efficiency and quality among many others. With regards to the Examination, we have considered the factors contributing to efficiency and what quality means to us. Appropriate level of knowledge, level of socialization, one's chances on the job market, one's ability to get higher wages, the social capital raised by education are all important factors of efficiency. The latter factor is a combination of trust, the ability for cooperation, civic activities, and schools are responsible for the development of all. As for the dimension of quality, it is very important that the dimensions correspond to national and international standards, measure up to the institutional and local standards as well as satisfying those who participate in this venture. All these factors have played a role in forming of the Requirements and Types of the ICT Examination. Those young people who have command over ICT competencies that meet the a general demand will have better chances on the job market, will be able to make better wages than those who do not. A national standard or a nationally equivalent Examination requirement was very timely in the case of a subject's Examination that had very colorful and uneven in quality therefore not reliable and not comparable in terms of its results. We had the opportunity to develop an extensive and professional Examination that also provided the chance to receive feedback from the public. In phase one of development we had the opportunity to explore the 'status' of the subject, the Examination as well as gain insights into the international field of education. Our working group has produced well-executed research papers that were the more than adequate base to form the requirements and exam types. Therefore, they added to the status and prestige of the subject. In other European educational systems development of the ICT competencies takes place in various forms. In some cases ICT is a standalone subject with proper class hours, in others it is used in various subjects as a tool. Many countries use both approaches; while in some ICT has yet to appear at schools as a subject. The national infrastructure requires for the subject to be a standalone one in Hungary. As the result of the policy makers' emphasis on the Sulinet (Schoolnet) project's development and the evalua-

tions, the majority of students have access to ICT tools at school while a lesser number has access to them at home for everyday use. At the same time we have seen an increase in the number of teachers (especially among the younger ones) who use ICT during teaching their subjects with expertise and in a wide variety of ways as educational media or a tool for information.

In addition to developing the educational documents we have created a large number of new types of tasks that fit the requirements. These have undergone a set of evaluations themselves. We had the opportunity to field test these at schools and based on the feedback we implemented the necessary changes. All finalized documents were presented to the professional organizations, ICT teachers and experts from other areas (human studies, sciences). We also had the chance to have a trial-Examination for those students who volunteered the year before it was implemented.

The working group itself consisted of high school teachers, tertiary level educators, and associates from the field of teacher training, educational researchers, associates from continuing educational institutes.

The preparation of the teachers (for the new Examination) was made easier by various factors. Before the Examination was implemented teachers participated in centrally financed, accredited trainings in numerous regions in the country. They were also able to get up to date information from the website of the Ministry of Education. A very detailed documentation was also prepared to the website with sample tests as well as explanations of the relevant legislative provisions.

The requirements and the types of the ICT Examination

It would be impossible to present the requirements in the fullest within the pages of this paper, but we will try to list the basic ICT competencies and the categories that contain the content oriented competencies and elements of ICT literacy.

„Basic/general competencies

We expect the students to prove their command of the following basic competencies:

Up-to-date user skills (students are taught to be able to explore the possibilities of computers and ICT literacy);

Thinking in algorithms (promoting mathematics type development of thinking that is equally important at school and in everyday life);

Self-sufficing work (computers react to the student's activities immediately, they enable self-paced learning and special care for advanced pupils);

Cooperative skills, working in groups (larger tasks require a group effort, a distribution of tasks, communicating with others);

Creative work (whether we create a program, a text document or database on the computer, the result is always a product of a creative process with all that entails);

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Realizing the interactions of ICT and society (the rapid development of ICT has had grand effects on society, only those who understand the changes and their cause can realize their potential) (Excerpts from the detailed requirements for the ICT Examination.)

The content oriented competencies were grouped as follows:
Information society**,**
The basics of ICT – hardware**,**
The basics of ICT – software**,**
Text editing**,**
Handling spreadsheets**,**
Handling databases**,**
Information network services**,**
Presentations and graphics**,**
Library use**,**
Algorithms and modeling (advanced level)**,**
The basics of programming (advanced level)**.**

These topics include skills and knowledge that the job market as well as the civic sphere will require from the individual. To properly summarize the goal of the ICT Examination, we could say that *it focuses on the practical, everyday use of skills and knowledge.*

The types and structure of the Examination

Figure 1 shows that the Examination of the nationally uniform requirements are made up of an oral and a practical part and it is of two levels of difficulty (– medium and advanced). Students chose to take the level they desire. Sufficient scores at the advanced level Examination guarantee additional points at the entrance exams of tertiary educational institutes. The purpose of the medium level is not a selective one; rather it is to show the successful completion of studies and the attainment of ICT competencies. The time frame below shows that the emphasis is on tasks with practical applications and that is a major step forward compared to previous Examinations.

Figure 1: structure of the ICT Examination:

	Practical Examination	**Oral Examination**
	120 points	30 points
	Set of tasks to work with on the computer	Detailing and discussing a topic
Medium level	**180 mins, 5 tasks**	**15 mins**
Advanced level	**240 mins, 4 tasks**	**20 mins**

Figure 2 shows the breakdown of topics and their weight during the practical Examination. The figure shows the main difference between the two levels. Three topics from the medium level are combined in a more complex one at the advanced level (create a document). The Advanced level requires a deeper understanding of database management related tasks and programming skills are emphasized more while they are not included at the medium level.

Figure 2: Topics of the practical Examination

Témakörök	Medium level		Advanced level	
	Time	*Score*	*Time*	*Score*
Text editing	60 mins	40 points		
Presentations, graphics	20 mins	15 points	60 mins	30 points
Website creation	20 mins	15 points		
Spreadsheets	50 mins	30 points	30 mins	15 points
Database management	30 mins	20 points	60 mins	30 points
Algorithms, data modeling, programming	–		90 mins	45 points

Figure 3 shows the relations of the topics in the oral Examination. The list of topics contains at least 20 items. A practical demonstration can be asked for during the presentation of all topics, the time to carry out each task (except for those that need the demonstration of skills of internet use) is two minutes.

Figure 3: the distribution of the topics in the oral Examination

Information society	8–20%
The basics of ICT – hardware	24–32%
The basics of ICT – software	20–28%
Communication over the internet *(with practical demonstration)*	20–28%
Library use	8–12%

Scoring of the oral presentation is based on the following criteria:
Logical structure   8 points
(Timing the presentation, highlighting important elements, well thought out structure.)
Phrasing, proper use of terminology   8 points
Content   8 points
(Topic relevant content, no content errors or invalid explanations.)
Communication skills   6 points
(Can the student be led to follow your lead if they get blocked? Do they understand the topics the Examination Committee asks about? Can the student discuss the topics with the Committee members in a proper manner?)

The scores the student receives translate to five marks, they also contribute to tertiary entrance exam scores. Students receiving the best mark (5) can also file for an ECDL exam paper. This way they can get an otherwise costly service just with the high school diploma, a document that is the valid ICT diploma on the job market.

A few results from the new Examination

The new ICT Examination is not mandatory. Mandatory high school subjects are Hungarian language and literature, mathematics, history, a modern foreign language and an additional subject the students themselves chose. The number of subjects they can chose are relatively high, vocational students can chose multiple additional subjects based on the type of school they attend. Despite expectations a high number of students chose to take the medium level ICT Examination, almost 20% of the students taking the Examination. Almost 7% chose the advanced level Examination. These are very favorable numbers that show the students' general interest in the Examination and that they trust in their ability to successfully attain the ICT competencies during their studies. If this trend of choosing ICT as an Examination subject keeps up that will no doubt raise the prestige of the subject. A significant number of ICT teachers have projected a considerable worsening of performance in an opinion research. The National Center for Evaluation and Examination (OKÉV) has noted a slight drop in performance (Graph 1 and 2, 3.75 and 3.44), but these figures also show a positive effect. The graphs show that the ICT Examinations of previous years have allowed for more bias when it came to grading. The tendency to give a higher score/grade caused a deformed distribution curve (Graph 1) while the distribution curve of the 2005 uniform central Examination (Graph 2) is more balanced and closer to an even distribution therefore showing that the nationally uniform Examination has made assessment of student performance more objective and effectively comparable.

Distribution of grades 2001-2003.
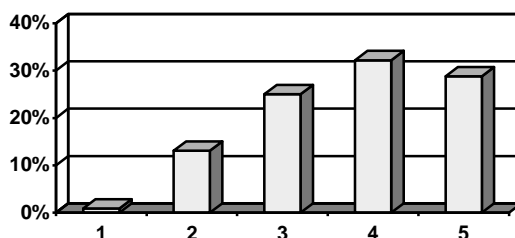
*Graph 1.: Distribution of grades in 2001-2003 in ICT (**average: 3,75**)*

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Distribution of grades 2005. Mid-level
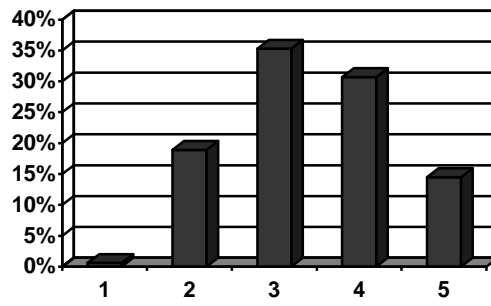
*Graph 2.: Distribution of grades in 2005 at the mid-level ICT exam (**average: 3,4**)*