THE DOCTORAL STUDENT'S SYNOPSIS TO THE PHD THESIS

ZRÍNYI MIKLÓS
NATIONAL DEFENSE UNIVERSITY
PhD Committee

Piroska Szegediné Lengyel

The Doctoral Student's synopsis to the PhD thesis

An upgrade to competence oriented e-learning model

and
the appraisals of the Reviewers

BUDAPEST
2011

**ZRINYI MIKLÓS NATIONAL DEFENSE UNIVERSITY
BOLYAI JÁNOS MILITARY TECHNOLOGY
PHD SCHOOL**

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An upgrade to competence oriented e-learning model

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1. PHRASING OF THE SCIENTIFIC ISSUES

In recent years, the so called „What, why, because, how, who, where?" question of didactics in the education, and therefore, the set up of different teaching-learning models has always been on the agenda, irrespectively of the education process takes place in traditional or distance-learning framework.

Over the last decade, the question – Whether and to what extent can the virtual, electronic-tool-based education, the „guided self-learning", available through distance learning books, CDs and websites, serve as an alternative to the traditional education method with physical presence of the students and the teachers? – became one of the most important issues in the high education.

The question seems not to be paid sufficient attention, so far. Certainly, it is not overemphasized to say that those nations will, on a long run, be more successful which will not only incorporate the distance learning in the central elements of their education policy, but will also prepare appropriate action plans for research and development, then will, in an immediate way, establish the conditions for the applicability in practice, as widely as possible, especially in the field of the higher education and the postgraduate training.

In reality, behind and in the background of the slogans of „Knowledge Based Society" (KBS), and "Lifelong Learning" (LLL) there are, on the one hand, the following aims:
- all layers of the society, to the widest extent possible, should have access to the relevant information/knowledge, and should, from time to time, update and develop it;
- the human resource demand in the fast growing, high value-added producing sectors should be met;
while, on the other hand, the basic conditions for virtual education "in bulk" have been evolving/evolved: the digitalized, electronic communication tools and channels allow to multiply the capacities of education/teaching and to increase their efficiency.

Due to the increased number of students at the universities and colleges and to the „lifelong learning" objectives, the distance education/e-learning is more and more appreciated, thus, it aims at expanding the virtual solutions in the high education, and creating complex (tutor, examiner) training centres, developing electronic teaching materials, which are to support the self-learning, the successful preparation for the examinations, the efficient acquisition of knowledge.

It is to prove, within the framework of the present thesis, that e-learning is an instrument for building successful individual carriers and for modernizing the society, it is a reliable, high quality, open-access method of education.

It is, also, to detect the competences, which will suit to enhance the effectiveness of the teaching and learning activities in the virtual space and to explore the methods, through which the progress performed – both on teachers' and on students' sides – in the e-teaching-learning process can be proven.

The specific actuality of this task should be underlined, as it is relevant for all fields of sciences, from the civil education to military education and training. In respect of the latter, it is sufficient to mention, first of all, one application possibility, only: it offers a solution for the units stationing in spatially distant garrisons and being on foreign missions to follow, in a continuous way, the changes and to keep pace with the extremely rapid development in the field of military equipment and technical sciences, while they – utilizing the opportunities provided by the distance learning – can join training courses, as well, even in the field of civil sciences.

2. SUMMARY OF THE OBJECTIVES OF THE RESEARCH WORK DONE

It was aimed at elaborating an e-teaching-learning model and a learning strategy which will work both in civil and in military education. The demonstration of workability and applicability will be made through the examples of teaching-learning materials and education methods developed for teaching financial-, taxation-, accounting-, and military technical subjects, highlighting, at the same time, the fact, that these will, effectively, serve to increase professional skills of the students and to provide high quality training for them, in the fields of the civil and the military education, as well.

It is to be proved that the e-teaching-learning process is to be carried out at such a platform of education, which will, parallel, be learning-, and student-, and teacher-centered, as well. The progress of virtual education will be enhanced, on the one hand, by the leadership of the teacher, what will be manifested through recommendations to the learning mode, methodology, pace, time, location, and, on the other hand, by the student's freedom in learning, thus in his/her free selection in the above mentioned recommendations.

Alongside the objectives, an aim occurred to develop e-books which are to effectively guide the e-teaching-learning process without any need for direct teacher-presence; e-books which represent a new stage at the scene of the education. It was assumed that due to the use of e-books and self-learning methods, the teaching of subjects of „civil sciences" can be enhanced in the field of military education areas, as well; consequently, obtaining the most advanced skills in the subjects of military engineering will, also, be available in a similar way, like subjects in the field of economic sciences, thus, specifically, accounting, finance, taxation.

The acquired knowledge in the subjects of the economic sciences will, effectively, complement the special military-technical knowledge of the students, which will represent a significant value both for the students (professionalism, confidence, carrier-development) and for the society, as well. On the one hand, Hungary, being a member of NATO, is in need of military professionals with complex, comprehensive, multi-disciplinary skills, and our country, on the other hand, can, with a high quality high education system, and qualified professionals, be equally ranked and competitive with the member-states, only.

3. METHODS OF THE RESEARCH WORK

Booth general and specific research methods are being applied in the present thesis.

Out of the general methods, the comparative method is being used to measure the effectiveness of the traditional and the electronic education. The relevant scientific literature is studied by using analytic method, then, following a systematization, the available knowledge will be synthesized.

Out of the specific research methods, hypotheses will be set up, first, which then should be confirmed.

The inductive confirmation of the hypotheses will be made in the following ways:
- finding methods (observation, investigation, experiment),
- processing methods (quantitative analysis, qualitative analysis).

The methods used for the deductive confirmation of the hypotheses are the following:
- analysis of the of pedagogical-history results,
- integration of the results of the auxiliary sciences.

The data for the revealing methods are collected from specifically selected control groups, by questionnaire, by survey method and through oral interviews and mathematical/statistical method are applied for the evaluation.

The results of my scientific research work were continuously published. My previous research results, namely the distance-education materials of the basic accounting-, tax-, and social security knowledge, in the field of economic sciences and the electronic detection systems in the field of military and technical knowledge have, continuously, been updated and integrated into my research program.

4. STRUCTURE OF THE THESIS

In the introductory part, the scientific issue is presented; including the objectives and methods of the research performed and the structure of the thesis is outlined.

In the first chapter, the goals and the tasks – based on the results of my research works regarding the traditional and e-learning models – are set forth, then the structure and the operation of the competency-based model and strategy are presented, which had been developed by myself for the e-teaching-learning process.

In the second chapter the content and methodology of the e-books – prepared in the field of economic sciences for the purposes of testing the effectiveness of the developed e-teaching-learning model and the learning strategy – are presented. The Reader will find specific references to the relevant parts of the e-books in order to having a more transparent view on the methodology problems and solutions, and the significant difficulties to face, in many cases, during the practical implementation, which requires a continuous improvement.

In the third chapter an analysis is made on the applicability of the competency-based teaching-learning models and educational strategies for teaching subjects of engineering, more specifically the possibilities for "distance teaching" of military engineering subjects. The process of preparing a specific electronic teaching material (an e-book on "Electronic detection systems") is presented, including a detailed review and eventual solutions for the treatment of the sensitive knowledge, information content.

In the fourth chapter the practical use of the competency-based e-teaching-learning model and learning strategy – in particular, the testing of the e-books, developed by myself, with subjects from the field of the economic sciences – are presented. With regard to the hypotheses, an evaluation is carried out on the learning process supporting role of the e-books, used as educational materials, in the traditional training and in the distance education; and furthermore on the content and methodology structure of the e-books in light of the students' needs and expectations. The hypotheses are supported and proved by a mathematical-statistical evaluation of the test results.

The concluding part of the thesis is to summarize the research work done, to conclude the hypotheses, to list the final conclusions and the new scientific results, to summarize the results of research, to present their utilization opportunities and future potential of application based on developed internet-technologies.

5. SUMMARY OF CONCLUSIONS

Due to quick changes in the economic and social environment, the rapid development of sciences, the importance of KBS and LLL is increasing and it is, in simple terms, required "to contaminate" as many people as possible with the aim of continuous learning.

Adult learning, though there are many similarities, is significantly different from learning in childhood, so, it is important to know: what do the adult people think about the lifelong learning, what are their preferences regarding the learning methods, the learning techniques, the learning strategies and what kind of learning materials, supportive learning devices do they prefer. The research, carried out, shows that students find their existential possibilities, the opportunities in their own carriers be increased due to increased knowledge, they consider that the knowledge became a determining and driving factor in the world development and this approach refers to their positive way of thinking.

The findings of the research work proved my assumptions:

- "To bring the learning closer to home", since people need to have access to the latest knowledge and information as rapidly and easily as possible; and the e-learning is the easiest and fastest way for these purposes.

- The motivating force of the e-learning lies in the variety of teaching tools, the experience-centered learning materials and the diversity of the communication channels delivering the knowledge to the learners.

Nevertheless, the high level of techniques, technologies alone are not sufficient for the success, and they can only become a valuable teaching tool when students and teachers together, by using them, will create something useful; when the weight in the learning process will be placed – provided that the availability of the modern techniques and technologies is becoming more and more straightforward – on the learning content and the participating students.

It will mean a major challenge for teachers of the future, as they will play an appreciated role in the teaching-learning processes of new kind; the excellence of their expertise, pedagogical and didactic approach will be required more than ever. Due to the appreciation of the teachers' role, the learner-centered education will, at the same time, become teacher-centered one, as well. The most important task for the teachers of the future will be, in addition to "delivering the knowledge", to managing the learning process: they will have to teach students to learn as independently as possible.

The research work, carried out, confirms that the e-learning provides a high potential for the education of the future, however the efforts will only become successful, when one has the courage to develop and apply the innovative, modern methods, which will facilitate students' access to the complex learning materials that support them in understanding and acquisition of the knowledge.

When elaborating the learning material, the "shaping of personality", the development of skills should be preferred to the "quantity of knowledge" as the former will provide a convertible knowledge.

This is underlined in the thesis, a development of the learning materials in line with the e-teaching-learning model and learning strategy, which focuses on the knowledge management and the learning management, when trying to help students to work out their learning techniques, learning strategies on their own, in order to make them able to acquire real knowledge by means of a self-learning process.

The education-theoretical concept of the above mentioned e-books, which is based on "the enjoying pedagogy", requires a teaching-learning environment, where the students, relying on their own learning experiences, gain the most possible basic knowledge, problem-solving thinking, while they find joy in the knowledge acquisition, their self-development.

An important "message" of the research work made is that the majority of students consider that the communication in a group has greater importance and they prefer it to that held between two people, only, so it is necessary to pay attention to possibilities of the cooperative work when developing learning materials.

In the thesis, furthermore, an emphasis is put on the issues of the e-examination, by drawing a sharp border between the formative and the overall evaluation: by means of a formative evaluation, thus a self-monitoring, the lexical knowledge can rationally be measured, which is a kind of basic knowledge suitable for solving exercises; however the final, overall evaluation is to be based on and expanded to the measurement of professional skills and capacities, which contributes also to shifting the education toward the practices and the realities.

It is important to emphasize that applying innovative methods should not be limited to a specific subject area of sciences, at all; however specificities should carefully be considered when compiling learning materials. This fact is highlighted in the chapter dealing with the issues of using distance teaching-learning in the field of military technical knowledge: appropriate safety requirements are to be applied when introducing sensitive military knowledge in the sphere of distance education.

As a summary, I conclude that the results of my research work confirm that the e-learning will be a dominant platform for education of the future and, for the purposes of its efficient operation, it will be necessary to produce modern multimedia-rich teaching-learning materials, which cover the entire teaching-learning process; and to develop effective learning strategies for an efficient knowledge acquiring.

6. NEW SCIENTIFIC RESULTS

1. I have examined the operation of the traditional electronic education models, their applicability conditions in civilian and military training and I worked out a competency-based e-teaching-learning model. The model will enable the rapid and efficient acquisition of knowledge in the civil and military high education, especially for the units in the geographically distant garrisons and on foreign missions.

2. Analysing and using the theory and practice of the traditional learning strategies, I worked out a learning strategy which can be used effectively for e-learning. An essential added value of the strategy is that it allows to continuously following the rapid development regarding subjects in the fields of both economic and military engineering sciences.

3. I elaborated and started – for the purposes of testing the practical applicability of the e-teaching-learning model and the learning strategy – an own, closed-circle, virtual knowledge portal. Under this framework, I have successfully tested the e-teaching-learning model and the learning

strategy (by using the own e-books developed for subjects of economic and military-technical sciences).
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7. THE POSSIBILITY OF USE OF THE NEW SCIENTIFIC RESULTS

1. Yet, some developed countries, only, have managed to build up institutional mechanisms to support works – by providing financial means, legal (copyright) regulations and ethical guidance – for developing electronic teaching-learning materials which can be reached quickly in the primary, secondary and higher education. Some universities make freely available the teaching-learning materials compiled by their teachers, while in other cases; the teachers/scientists are individually developing their own knowledge portals. Nevertheless, most of these efforts are self-financed and carried out in an altruistic manner, although the high prestige of a teacher's web-page can greatly increase his/her own – and in parallel his/her institution's – reputation, as well. The teacher's private initiatives and the increasing number of the e-learning portals connected to websites of some institutions represent a new direction in the education, drawing the attention to the massive opportunities for distance learning. Imagine the ideal situation that every student, "by a single click" can reach the highest level of knowledge in his/her own area of interest and he/she is free to choose among the state-of-the-art learning program packages according to his/her individual learning style.

It would be rational to encourage the exploration of further potentials in the field of electronic teaching-learning and finding solutions to connected issues (financial, ethical, copyright) at an educational policy level, as well.

2. As supposed, no internet-based, networkable, multimedia teaching-learning material has been developed in the subjects of accounting, financial, taxation for the purposes of the Hungarian military higher education. The results of my research work, the developed teaching-learning materials are expected to contribute to expand the professional knowledge of future military officers and to develop their communication and IT skills. The e-books on the military technical information offer a solution to the units in spatially distant garrisons or on foreign missions to continuously adapt to the changes and to keep pace with the extremely rapid development in the field of military equipment and in military technical knowledge.

3. The distance learning solutions, the e-books can be used effectively in the framework of the traditional education, as well; moreover, the teacher may suggest a learning strategy, where the traditional education is, to a certain extent, combined with distance learning solutions. The teaching-learning materials based on modern methodological solutions make considerably easier for students to learn at home, effectively promote to understand and acquire the knowledge presented by the traditional paper-based books.

4. The structure and content of the developed teaching-learning materials is practice-oriented, and based on the current legal requirements, so they can be expected to be effectively used not only for

military and civilian higher education, but also in higher vocational training and specialized secondary educational institutions, as well.

5. A further ideal field for utilization of the e-books is the post-graduate education. The frequent changes, e. g. in the laws on accounting and taxation create a specific need for a "responsive" type of e-teaching-learning materials, which are immediately adapted to the changes and contain a rich set of exercises, being based on the actual legal prescriptions and contribute, in this way, to updating and further deepening the knowledge of financial experts and managers.

8. RECOMMENDATIONS FOR FURTHER RESEARCH WORKS

1. Elaboration of the conditions of the final/overall examination for the subjects in the field of military engineering sciences.

2. Methodology research on the practice-oriented, case-study-based distance learning solutions for the subjects in the field of military engineering sciences.

3. Research for exploring possibilities for distance education of sensitive military engineering subjects.

9. PUBLICATIONS

Articles in home periodicals

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2. Piroska Szegediné Lengyel: Financial-accounting clearing of EU-subsidies, Informatics Periodical, 9th year, No. 2, 2007, Budapest, pp.51-55, ISSN 1419-2527 Abstracts p. 73

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4. György Seres – Ildikó Miskolczi – Krisztina Tibenszkyné Fórika – Piroska Szegediné Lengyel – Péter Gerő: Hypermedia in the education, cloud-learning, how turned electronics from subject of education to stage of it? Hadmérnök (Military Engineering, on-line academic periodical), 5th year, No. 2, June 2010, ISSN 1788 1919 http://hadmernok.hu/2010_2_seres_etal.pdf

5. Piroska Szegediné Lengyel: Computer based criminality or youngsters in the cyberspace, Hadmérnök (Military Engineering, on-line academic periodical), 5th year, No. 2, June 2010, ISSN 1788 1919 http://www.hadmernok.hu/2010_2_szegedine1.pdf

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9. Piroska Szegediné Lengyel: Enjoying pedagogy in the virtual space, Selye János University, „Social effects and changes" 2nd International Academic Conference Monograph-volume CD ROM, 2010, Komárno (Slovak Republic)

10. György Seres – Ildikó Miskolczi – Krisztina Tibenszkyné Fórika – Piroska Szegediné Lengyel – Péter Gerő: Do get the knowledge! - That is adaptation of the cloud-learning in

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20. Piroska Szegediné Lengyel: Enjoying pedagogy in the virtual space, Conference on Multimedia in the Education, June 2010, Nyíregyháza

21. Piroska Szegediné Lengyel: Enjoying pedagogy in the virtual space, University of János Selye „Social effects and changes" 2nd International Academic Conference, 2010, Komárno (Slovak Republic)

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24. Piroska Szegediné Lengyel – Miklós Veres: Taxation CD-ROM, GDF, Budapest, 2006

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http://www.lengyelpiroska.hu/szamvitele/konyv/index.html

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29. Piroska Szegediné Lengyel: Taxation e-book, 2010
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30. Piroska Szegediné Lengyel: Learning-management e-book, 2010
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31. Piroska Szegediné Lengyel: Electronic defence, e-book, 2010
http://www.lengyelpiroska.hu/jelz/index.html

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32. Piroska Szegediné Lengyel: General Accounting, ZSKF, 2007, Budapest, 186 p.

33. Piroska Szegediné Lengyel: General Accounting Practices, ZSKF, 2007, Budapest, 301 p.

10. CURRICULUM VITAE

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University, degree	

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Diploma in Economics, Chemistry and Pedagogy (1982)

Highschool for Financial and Accounting Sciences, Budapest
Diploma in Accounting (2000)

Zrínyi Miklós National Defense University, Faculty of Defence Electronics, Informatics and Communication, Bolyai János Military Technology PhD-School
PhD student (2009-2011)

Workplaces

ZSKF (Zsigmond Király High School), Budapest
Lecturer (2006 –)
Subjects: General Accounting, Introduction to the Accountancy, Controlling Accounting, Taxation, Taxation of Companies

Economic Highschool of Budapest
Lecturer (2008 – 2009)
Subject: Technical Analysis of Products and Processes

GDF (Dennis Gabor College), Budapest
Associate Professor (2003 – 2009)
Subject: General Accounting (Executive Tutor, responsible for quality control of learning materials and methods; developer of e-learning materials in ILIAS LCMS structure)

SZÁMALK Rt. College of Budapest Corvinus University
Lecturer (2003 – 2008)
Subjects: Controlling, Accounting

Varga István Secondary School for Trade
Teacher (1988 - 2003)
Subjects: Chemistry, Technical Analysis of Products and Processes (1988-2000); General Accounting, Basics in Finances (2000-2003)
Parallel duties: Deputy School Director (1992-1996); Advisor to the National Vocational Training Institution (2000-2003)

Szász Ferenc Secondary School for Technology and Trade
Teacher (1983 -1987)
Subjects: Chemistry, Technical Analysis of Products and Processes

KERMI - National Institute for Quality Control of Consumer Goods, Budapest, Department for Agriculture, Food and Catering
Economist (1982)

Certificate of merits	Minister of Education's Vocational Award (1990) Varga István Vocational Award (2002) Gábor Dénes Vocational Award (2005)
Trainings	Amendments to the Law on Accountings, Penta Unió (2001) Accounting Directives of the European Union, Penta Unió (2002) Introduction to the Securities Markets, KEBA (2003) Digitalized Accounting Programmes, LOK (2005) Taxation, Sämling (2005)
Mother tongue	**Hungarian**
Foreign Languages	**Italian** (2006) general, intermediate, combined (C) Examination centre: BME (Budapest Technical University) Examination System: BME (Budapest Technical University) **English** (2011) general, elementary, B1 written and oral Examination centre: ELTE (Eötvös Lóránd University of Budapest) Examination System : ORIGO
Computer knowledge	Complex, Word, Excel, Power Point

Field of Researching	**Effective education and learning methods in virtual space**
	How to increase the students' motivation for learning, to develop their commitments, their positive attitudes, their personalities by compiling and using state-of-the-art interactive teaching materials, acknowledging their results performed, rewarding them, i.e. how to find an enjoying way to the effective and fruitful learning process.
	Educating in the virtual environment may only be fruitful, if we create high quality learning materials, following the differences in the individual cognitive styles and learning habits of the students, when relying on such learning methods, which will keep the students' interest alive, will motivate them for learning; if we, in other words, as an educator, are aware of "what are the students interesting in", "how do they study", "what are their learning styles", "how can the students' interest be raised".
	These basic requirements are relevant not only for civil education, but for the military one, as well.
Driving licence	B

Budapest, November 1, 2011

Piroska Szegediné Lengyel