

Electronic Diary for Lifelong Learning Program

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Abstract: *The paper deals with conceptual modelling of lifelong learning. Basic principles, activities and tools for contemporary Internet training are discussed, Main components of a conventional academic model and their influence on learning skills, personal and professional growth of students are analysed. New approach for education support is proposed. It is applied in a system which stores information for all accessible educational programs relevant to user's requirements and could be integrated in e-Government service. Electronic diary is designed to collect personal data and information about level of knowledge, self education and practical skills of graduated students and professionals. It could be useful for universities to manage education activities and propose new learning programs.*

Key words: *Internet Training, Conceptual Modelling, Lifelong Learning, Electronic Diary.*

1. INTRODUCTION

Provision of e-learning via the Internet offers students convenient access to lectures, manuals for practical training and exam tests. They could deal also with different materials from scientific journals, books and conference proceedings to complete their knowledge. Today many universities in European Union apply a system of credits and develop comparable curricula and syllabi in accordance with requirements of e-learning and lifelong learning. Except compulsory courses students are allowed to take elective courses at different faculties or universities. For this purpose course descriptions should be proposed bearing in mind the main principle of education – to achieve relevant connection between courses from different topics, defining the core concepts that students need to master in order to achieve the goal of next elective course.

Recently many universities do substantial changes of their applied academic model providing quality education in the most possible convenient manner [1, 2]. Some of them, founded as a college, enhance their activities to address the needs of the working adult and propose bachelor's degree programs. As a result transition between main steps of educational chain "high school – bachelor degree – master degree" could be performed in a way that supports easy implementation of e-learning modules and lifelong programs. To achieve good results it is very important to keep flexible connection between main components of this educational chain – school, college, university, creating new educational opportunities and propose relevant knowledge [3, 4, 5].

The paper deals with conceptual modelling of lifelong learning. Basic principles, activities and tools for contemporary Internet training are discussed. Main components of a conventional academic model and their influence on learning skills, personal and professional growth of students are analyzed. To achieve the purpose of flexible and efficient management of graduate education a new approach is applied. Bearing in mind that education should be founded on carefully selected programs and the most important goal is to provide graduates with up-to-date knowledge and practical skills in the workplace, a system for lifelong learning is designed. It is intended to support personal education chain "high school – bachelor degree – master degree". The system is designed as an electronic diary which stores necessary information to be used for all accessible educational programs relevant to users' requirements. In this way the system presents an operational framework for Internet training, giving common and clear advises how to continue education, offering courses and programs that encourage self directed and lifelong learning.

2. CONCEPTUAL MODELLING OF LIFELONG LEARNING

Last years experience in e-learning allows to analyse and to classify existing technologies and well accepted tools that could be used to present multipurpose academic model for education. Traditional education in computer classes or academic halls is at the root of all methods and mechanisms, applying less or more modules for Web-based education. Additional tools like on-line manuals, specialised courses for distributed education, based on text and graphics which are able to substitute the traditional course taken by lectures accomplish Internet-based training today. Web-based modules for education could be divided into two main groups. The first one is intended to replace traditional learning and the second one has just auxiliary functions. Recently telecommunications play important role as additional technology that help organisation of scientific meetings, workshops and project proposals. This technology could be applied to connect different students from different towns or countries with their professors. Three types of relations between these two groups are allowed. Usually connection is of type *1:N relation* (professor : students). Sometimes students prefer to communicate on-line each other, asking questions, sharing results of required course works. In this case they have relation of type *M:N* (students : students). Finally, students are able to communicate with their lecturer doing tests and discussing results, which is *1:1 relation*.

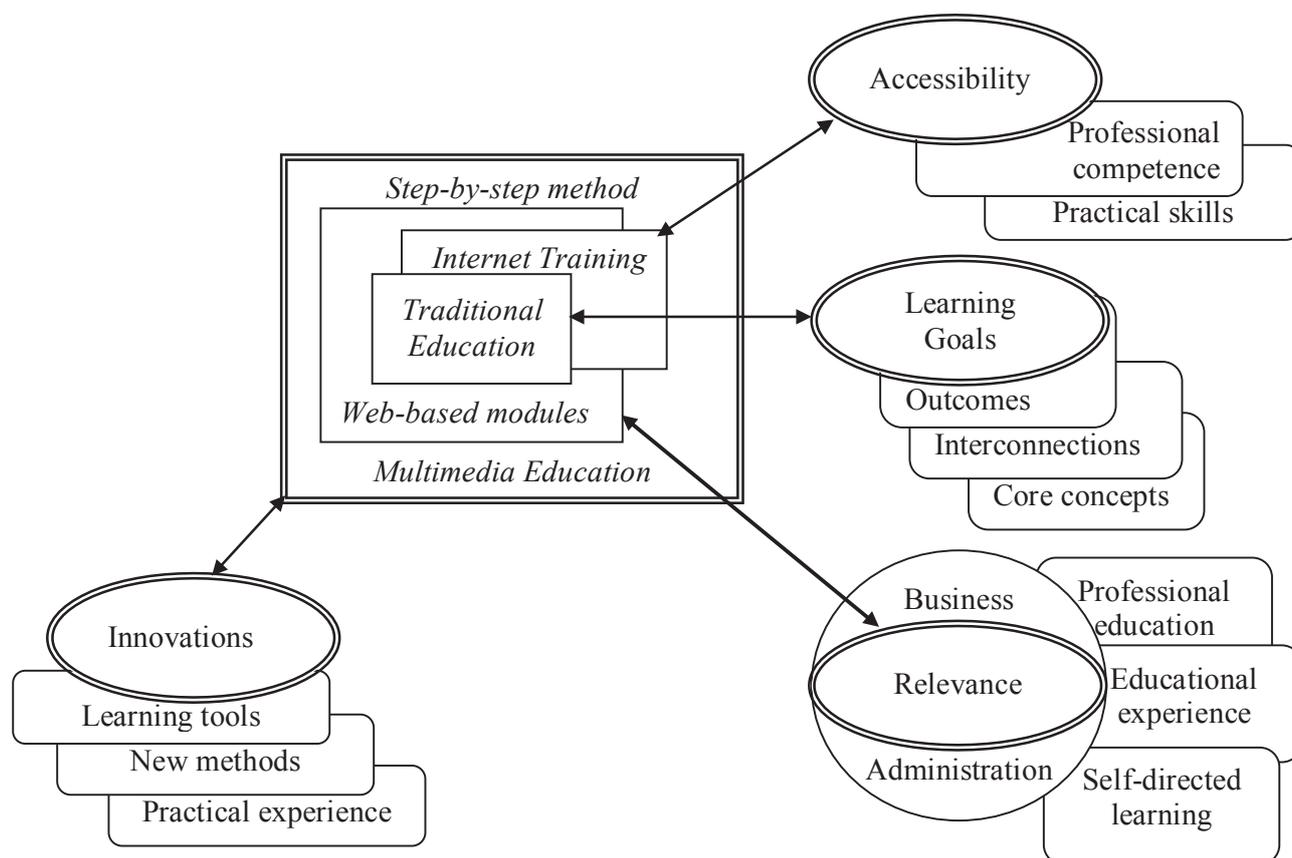


Fig.1. Conceptual model of lifelong learning

Internet training is the first step towards using computers and the global network by students to receive text with examples that provide theoretical introduction and define problems to be solved. It could be done in common case by e-mail or taking part in specialized forums. After that every student has enough time to understand and master core concepts. Since practical work occupies important place in education each course

must be provided with appropriate group and individual exercises. Students can deal with exercises during defined period of time and send results by e-mail. Web-based modules for education give additional opportunity to involve students in solving the basic theoretical and practical problems. At present stage many advanced learning tools use a step-by-step method to help students in understanding sequence of operations. This method has been implemented in a Web portal, especially created for the purposes of e-learning in cryptography [6]. The results, obtained using the proposed learning tool allow to draw conclusion that students who attend lectures regularly and use the Web portal to accomplish the set of knowledge in the subject can work successfully on their individual projects.

The first part of conceptual model, described above and presented in Fig.1 integrates recommendable methods, tools and technologies that could be used as a learning environment for different purposes – self-education, part-time education, course development, etc. The second part includes components and characteristics of academic model, designed to support specific requirements of lifelong learning at present time. Main components of the proposed academic model could be distributed into four dimensions, as follows:

(1) Learning goals

This dimension coordinates different courses, focusing on their core concepts and supports clearly articulated outcomes at each course. Here interconnections between comparable syllabi and fields of proposed curricula are defined, as well. As a result students and professionals who are interested in further education are able to outline their activities.

(2) Relevance to requirements of business and administration

Educational experience should be applied in a proper way to satisfy preliminary outlined structure of expectations. Administration and business are presented as two separate areas, which are able to influence on the rest categories of employed professionals who need dynamic education and additional practice. This dimension is responsible to encourage self-directed learning of educated people, offering specialized programs that are intended to involve participants with high level of knowledge and good practical skills.

(3) Accessibility

Educational opportunities should be provided to anyone and anywhere. The main goal of this dimension is to insist on requirement that universities must offer high quality and relevant lifelong education to people with desire to learn.

(4) Innovations

This dimension deals with necessity of creating new educational opportunities, related to the existing programs and approved curricula. It collects data for analysis of applied learning tools quality and expectations of students who are in good academic standing or professionals in rich practical experience.

Main dimensions of the proposed conceptual model are presented in Fig.1 bearing in mind their connection with educational tools, methods and technologies. At the root of the whole structure take place traditional education with its very important feature. It requires that education at present should be student-oriented, accessible, affordable and relevant. Hence all learning opportunities have to be applied after analysis of needs, knowledge and skills of candidates. For this purpose, a system for lifelong learning support is proposed.

3. ELECTRONIC DIARY FOR LEARNING SUPPORT

Electronic diary is designed to collect personal data and corresponding information that could be useful for colleges and universities to manage education activities. Finishing

high school every student acquires diploma. In order to include this information in the electronic catalogue of all persons, obtained diploma, the individual must fill in personal data and get access to electronic diary (e-diary) which becomes a document for lifelong learning. As shown in Fig.2 it consists of two parts. The first part includes personal data and names of colleges and universities where the individual has been graduated with speciality and recommendations. The second part of the e-diary collects data concerning set of knowledge and practical skills, obtained during education.

Every person is able to read his e-diary after successfully identification by PIN and password, but he has no permission to modify any data. Universities are responsible for access control and management of data for graduated students. All information is kept by Ministry of education, where cryptographic tools for data security are implemented. In this way business organisations can use specialised portal on Internet (e-Government) where information for educated citizens is stored in a manner providing convenient access and could be checked and proved. Every e-diary has its own unique number of 10 digits, which is used as a secret parameter when data should be encrypted. Results of exams and training courses are presented with two different lists which are accessible after successfully authorization. Information for level of knowledge and self-education, as soon as for practical skills is public.

Personal Data	First Name	Year	University	Recommendation
	Last Name	2007	Technical University-Sofia bachelor degree	Excellent in programming
	Date of birth City Country Address	2009	Technical University-Sofia master degree	Experience in project team
Number of e-diary	Results of exams	Level of knowledge: B Level of self-education: C		
	Training courses	Practical skills: B		

Fig.2. Structure of e-diary

Electronic diary is able to give good opportunities for organizations and administrative structures to explore candidates who apply for a job. It could be useful for universities to propose flexible lifelong learning programs to professionals. Bearing in mind the state of the structure and organisation of education at present two main approaches could be proposed. The first requires existence of national e-government portal with different services in education via the Internet, where e-diary to be implemented. The second approach accepts relatively independent e-diary that could be realised as a module of information system, intended just to help verification of diplomas.

In order to obtain and analyse results concerning functionality and for the purposes of education in “Electronic business technologies” (master degree) at Technical University of Sofia, the proposed structure of e-diary is realised as a Web portal. Two basic groups of users are defined – students and universities. Administrator is the person, who is responsible for registration of the user, their identification and access control. The application is realised on Apache Tomcat 6.0 and Internet Explorer 6.0. Different tests are

conducted to take conclusions about usability of browsers Firefox version 2 and 3. The results shown that all browsers, compatible with JavaScript and CSS-technology could be applied.

4. CONCLUSION AND FUTURE WORK

Many people take the view that the learning process should never stop, so lifelong learning programs will continue to play important role. Modern information and communication technologies integrated in e-Government services can respond more effectively to educational needs of users. Conceptual model of lifelong learning, proposed in this paper and electronic diary designed to apply the approach for education support could be implemented at the root of administrative services via the Internet, provided by national e-Government portal. For this purpose additional work should be done bearing in mind that lifelong learning program can be realized successfully only if it is based on a comprehensive strategic concept. Sustainability, security and data protection are of fundamental importance.

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