E-LEARNING AND POSSIBILITIES OF THE IMPROVEMENT OF COMPUTER LITERACY

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Abstract: Nowadays is computer literacy one of the required condition for employer who wants to success in the labor market. Unfortunately so called necessary minimum of knowledge is not exactly defined. So I present European (ECDL testing) and American (iSkills ICT literacy assessment) concept like the example of dashed definition of computer literacy. Because e-learning is one of the most modern educational process so it is very suitable to use it like the right medium for improvement of computer literacy especially for people who cannot endure classical present teaching. Further I present blended learning which is a learning solution created through a mixture of face-to-face and online learning as the alternative to e-learning. In the end I introduce evaluation and comparison of both educational processes.

Keywords: blended learning, computer literacy, e-learning, European Computer Driving Licence (ECDL), iSkills ICT literacy assessment..

1 Introduction

A necessary condition for successful entry into the current labor market is that the candidate is enough computer literate. But the question is when we can say that a person is computer literate and when not. For everyone that line is somewhere else and unfortunately there is no uniform definition. Simultaneously as technology educator, I am constantly amazed at the rapidly evolving knowledge base that our students arrive with. Therefore is interesting to show European and American conception which could show further developments in this area.

2 Computer literacy

"Computer literacy is a term that has been widely discussed, but whose meaning has rarely been agreed upon [1]." Those words remain as true today as they were when they were first written over a decade ago. The exact origin of the term computer literacy in unclear. Kurshan (1986, cited in Ref. [2]) has reported that computer literacy courses were introduced at many colleges as early as 1965. The term computer literacy was also promoted in the early 1970s by Arthur Luehrmann in an effort to promote understanding of the uses of computers as opposed to the workings of computers. Luehrmann has also coined one of the more concise and pragmatic definitions of computer literacy [Luehrmann (1982), quoted in Ref. 1]: "If you can tell the computer how to do things you want it to, you are computer literate." This definition has the advantage that it admits of a continuum of computer skill levels and it also allows for a concept of computer literacy that is both technology and environment or context dependent. Computer literacy can thus be seen to comprise multiple elements ranging from a spectrum of skills in the use of the computer to broader definitions that attempt to describe the impact of computers on society and the changes in society wrought by the advent of the so-called "information age".

When we would asked how it will look like the definition of computer literacy in the future, we could get inspiration from looking at different European and American conception.

2.1 American conception

Before the actual demonstration of the concept, I would like to point out that presented data come from research report: Setting Standards on the Core and Advanced iSkills™ Assessments by Richard J. Tannenbaum and Irvin R. Katz. This report documents a standard-setting study held July 20–23, 2007, at Educational Testing Service (ETS) in Princeton, New Jersey.

Two foundational levels – one each for the Core iSkills assessment and Advanced iSkills assessment – had been specified previously by the National ICT Literacy Policy Council, a group that was formed by the National Forum on Information Literacy (http://www.infolit.org) and that serves as the certification board for ICT literacy standards. The core foundational level describes the minimum ICT literacy skills a student should have upon entering the first year of postsecondary education. The intermediate foundational level describes the minimum ICT literacy skills a student should have upon entering upper-division post-secondary coursework or entering the workforce. The label *intermediate* was used for the Advanced iSkills assessment because the council believed that the label was a more appropriate description of a foundational level of skill. The two foundational level descriptions were reviewed by a larger community of educators and workforce representatives and suggested revisions were accepted by the council. The council approved foundational level descriptions were key components of the standard-setting process and are shown below.

Core Foundational ICT Literacy Skills
(relevant to Core iSkills assessment)

Demonstrate abilities to define tasks and needs, and to access and manage information in an effective, efficient, and ethical manner through the appropriate selection and application of information and communication technology to succeed in lower division (postsecondary) studies and/or the workplace.

Define: Articulate a need for information as one or more relevant, focused, and manageable questions. Know where to locate and gain understanding of acceptable, common definitions of terms associated with the needed information.

Access: Search, find, and retrieve information from a variety of print and electronic resources (e.g., databases, Internet).

Evaluate: Judge the currency, appropriateness, and adequacy of information and information sources for a specific purpose.

Manage: Conduct a rudimentary and preliminary organization of accessed information for retrieval and future.

Integrate: Extract and combine information from a variety of sources and draw fundamental conclusions.

Create: Summarize and adapt information to describe an event, express an opinion, or support a basic argument, viewpoint, or position.

Communicate: Adapt and present information for a peer audience.

Intermediate Foundational ICT Literacy Skills
(Relevant to Advanced iSkills assessment)

Demonstrate abilities that build on the core foundational skills of ICT literacy (define access, manage, and use information). The learner selects and applies appropriate ICT tools to synthesize, integrate, and assimilate information, to evaluate evidence and infer conclusions, to create and reflect on information processes and products, and to communicate results in a persuasive, ethical, and legal manner. These abilities are demonstrated at a skill level necessary to succeed in 3rd year postsecondary studies and/or the workplace.

Define: Articulate a need for information that defines a hypothesis or problem in operational terms.

Access: Develop and apply a systematic strategy for ethically and legally finding, retrieving, and sorting information from a

variety of relevant sources, representing a wide spectrum of perspectives, acknowledging sources appropriately.

Evaluate: Judge veracity, bias, primacy, persuasiveness, and completeness of information and information sources for a specific purpose.

Manage: Develop and apply a comprehensive system to classify and prioritize information in order to identify and clarify interrelationships.

Integrate: Synthesize information from a variety of sources and perspectives, compare and contrast arguments, identify trends and patterns, and infer conclusions.

Create: Generate information new to the learner through critical review and revision of assimilated information. Develop supported arguments and warranted conclusions to address the task at hand.

Communicate: Communicate information persuasively to meet needs of various audiences through the use of an appropriate medium.

2.2 European conception

While in Europe is testing of computer literacy achieved primarily by ECDL Foundation. ECDL Foundation is the certifying authority of the leading international computer skills certification programme – ECDL / ICDL. The quality and reputation of certification programmes are built on over a decade of experience in successfully delivering Information Communication Technology (ICT) certification programmes to over 9 million people, in 41 languages around the world

ECDL Foundation is a not-for-profit organization that benefits from the unique support of experts from national computer societies and international organizations across the globe. ECDL Foundation has offices in Dublin, Brussels, and Singapore, and appoints national partners (also known as 'operators') around the world to implement its certification programmes at national level. This global delivery network operates under strictly defined quality assurance standards thus achieving consistency of programme implementation around the world [3].

ECDL (ICDL outside Europe), is the international standard in end-user computer skills. The ECDL / ICDL Syllabus consists of 7 modules which define the skills and competencies necessary to be a proficient user of a computer and common computer applications. In order to achieve the ECDL / ICDL certification, individuals must pass a test for each of the 7 modules. ECDL / ICDL Module 1 is a theoretical test of computing knowledge at a general level, while modules 2-7 are predominantly practical skills tests. Individuals who have achieved the ECDL / ICDL certification can successfully demonstrate their competence in the use of a computer and common computer applications.

The ECDL / ICDL Syllabus consists:

Module 1: Concepts of Information and Communication Technology (ICT)

This module enables candidates to gain an understanding of the different parts of a personal computer, as well as some of the key concepts of Information and Communication Technology (ICT), such as those relating to security, and health and safety.

Module 2: Using the Computer and Managing Files

This module requires candidates to demonstrate knowledge and competence in using the common functions of a personal computer and its operating system. It teaches how to adjust the main settings, use the built-in help features and deal with an application that is not responding.

Candidates will learn to operate effectively within the desktop environment and work with desktop icons and windows. This module addresses how to manage and organize files and directories/folders, and how to duplicate, move and delete files and directories/folders, and compress and extract files.

Candidates will learn what a computer virus is and be able to use virus-scanning software. They will demonstrate the ability to use simple editing tools and print management facilities available within the operating system.

Module 3: Word Processing

This module enables candidates to demonstrate the ability to use a word processing application to accomplish everyday tasks associated with creating, formatting and finishing small-sized word processing documents such as letters and other everyday documents.

Candidates will be able to duplicate and move text within and between documents. They gain competence in using some of the features associated with word processing applications such as creating standard tables, using pictures and images within a document, and using mail merge tools.

Module 4: Spreadsheets

This module enables candidates to understand the concept of spreadsheets and to demonstrate the ability to use a spreadsheet application. Candidates will understand and be able to accomplish tasks associated with developing, formatting, modifying and using a spreadsheet of limited scope ready for distribution.

They will also be able to generate and apply standard mathematical and logical formulas using standard formulas and functions, and demonstrate competence in creating and formatting graphs or charts.

Module 5: Using Databases

This module enables candidates to understand some of the main concepts of databases and demonstrate the ability to use a database application. This includes creating and modifying tables, queries, forms and reports, and preparing outputs ready for distribution, as well as learning to relate tables and to retrieve and manipulate information from a database by using query and sort tools.

Module 6: Presentation

This module enables candidates to demonstrate competence in using presentation tools on a computer. Candidates will be able to accomplish tasks such as creating, formatting, modifying and preparing presentations using different slide layouts for display and printed distribution.

They will also learn to duplicate and move text, pictures, images and charts within the presentation and between presentations, as well as be able to accomplish common operations with images, charts and drawn objects and to use various slide show effects.

Module 7: Web Browsing and Communication

This module is divided into two sections. The first section on Web Browsing requires candidates to understand some of the concepts and terms associated with using the Internet, and to appreciate some of the security considerations. In the second section, Communication, candidates will learn to understand some of the concepts of electronic mail (email), and gain the ability to use email software to send and receive messages, and to attach files to mail messages.

2.3 Future trends

If we compare both conceptions, we discover that American conception is primarily focused on work with the Internet and information search. Whereas European conception emphasizes work with office programs. However we may observe common features such as the growing importance of the Internet and electronic communication. This trend is confirmed by a new ECDL Standard 5.0 [4].

3 Possibilities for teaching computer literacy

I can obtain concrete experience from teaching of the courses: The basics of the PC and Introduction to the processing of textual information. Both courses are taught at the Department of computer science and educational technology, Faculty of Education, University of West Bohemia in Pilsen, Czech republic. Teaching of these courses is conducted through e-learning and blended learning. Before I describe practical experience I would like to acquaint readers with the term of e-learning and blended learning.

The American Society for Training and Development (ASTD) defines e-learning as a broad set of applications and processes which include web-based learning, computer-based learning, virtual classrooms, and digital. Much of this is delivered via the Internet, intranets, audio- and videotape, satellite broadcast, interactive TV, and CD-ROM. The definition of e-learning varies depending on the organization and how it is used but basically it is involves electronic means of communication, education, and training [5].

E-learning can potentially provide many important payoffs. To learners, online instruction offers the flexibility and convenience to complete learning units when and where a learner desires [6]. Additionally, online education has been used to reduce costs and to provide an efficient, standardized way to deliver content [7, 8].

In addition to potential cost savings, e-learning has pedagogical potential beyond traditional methods related to the principles of learning discussed. For instance, multimedia capabilities can be used with learning exercises that allow learners to apply concepts realistically [9]. Or, animation can help demonstrate concepts and events difficult to portray in traditional classes, which, in turn, can facilitate a more accurate communication of important ideas [10]. E-learning can deliver "new" information not contained in traditional sources, effectively reinforcing other course information through offering examples, explanations, assessments, and exercises. In this way, online instruction can potentially enhance learning compared to what can be accomplished using a classroom only approach [11].

However, there are also potential disadvantages or limitations of online learning. For example, one study concluded that asynchronous e-learning was not effective as a standalone method to deliver technical training for information technology professionals Learners in the study commented that e-learning eliminates classroom interaction time, where a significant amount of "real learning" takes place as users assimilate information, utilize software, apply knowledge to problem solving, and interact with the instructor and other learners [12].

Other potential problems of e-learning that have been identified in previous research include a sense of learner isolation [13]; learner frustration, anxiety, and confusion [14]; higher student attrition rates [15, 16]; the need for greater discipline, writing skills, and self-motivation; and the need for online users to make a time commitment to learning [17].

Based on these considerations, some research has stressed the importance of using a "blended learning" approach [18, 19]. Blended learning is a hybrid instructional approach that combines elements of e-learning with the traditional classroom environment [20]. It involves starting with learning objectives and then selecting the best combination of delivery methods to meet those objectives [21]. In some situations, blended learning may involve students completing online units prior to meeting to ensure they share a common foundation of knowledge. This allows class sessions to go into greater depth with application exercises and problem solving. Alternatively, e-learning elements can be used after class meetings to maintain an ongoing dialogue among a community of participants about course-related topics through chats or discussion board postings.

4 Practical experience

How I described above I can build on concrete experiences which I have received from teaching of the courses: The basics of the PC and Introduction to the processing of textual information. Both courses are mainly focused to increase computer literacy among first year students of Bachelor´s degree, Faculty of Education, University of West Bohemia. Specifically, these courses are aimed to teach how to work with MS Word, MS Excel and MS PowerPoint, I would like to point out that teaching is organized according ECDL Syllabus 4.0. Mentioned courses attracted around 250 students so far. Students succeeded in the course if they successfully wrote four practical tests. Students execute tests on school computers and their task was to practical show gained knowledge for example editing of long document in MS Word.

A lot of students met with a form of teaching through e-learning for the first time which can lead to some problems. Among the greatest problem belongs that the students put greater demand on the ability of self-study. For this reason in academic year 2009/2010 we realized teaching of the courses through blended learning. Thanks to this change, we could compare the results of teaching through e-learning and blended learning.

Teaching in the winter semester of the academic year 2008/2009 was using only e-learning. Students could utilize personal consultation with a teacher or a consultation by e-mail during the semester. But it is evident from the graph 1 that for many students were finishing of the courses exacting. Data in the graph 1 are related to main field of study of students and according to the results achieved thus we can infer the level of computer literacy of individual students.
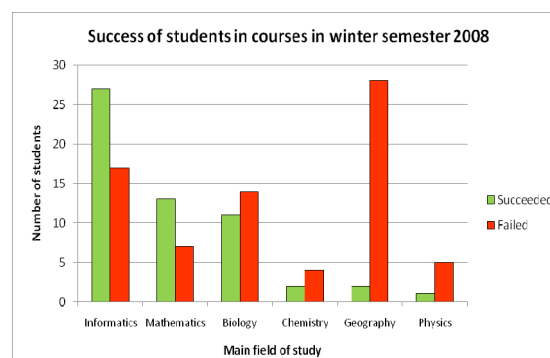
Graph 1 Success of students in courses in winter semester 2008

Because in the winter semester 2009 enrolled less students in courses, we realized lessons through blended learning whereas the required conditions remained retained. With this approach, we eliminate the part of the problem of loneliness of students during the study because they had the opportunity to consult study problems personally at seminars where they were introduced with an additional explanation. Looking at graph 2 shows that this change approved itself because the number of successful students was significantly larger than the number of unsuccessful students.
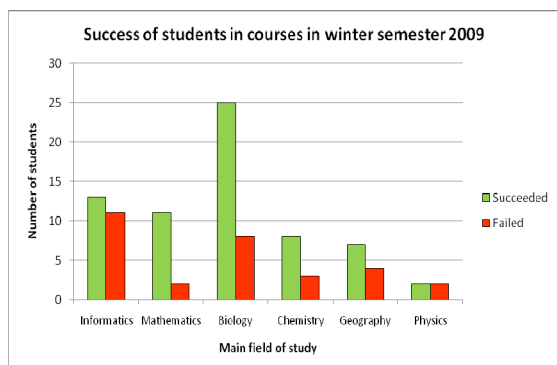
Graph 2 Success of students in courses in winter semester 2009

5 Conclusion

From accrued experience appears to be very useful introduction of blended learning in teaching. This opinion, confirms especially results of students achieved during the studies and reactions of students in the assessment of teaching quality.

Although e-learning (and various blended approaches that integrate online components into traditional classes) continues to grow rapidly, it still remains at an early stage of development. Consequently, developers and deliverers of online learning need more understanding of how students perceive and react to elements of e-learning (since student perception and attitude is critical to motivation and learning) along with how to apply these approaches most effectively to enhance learning [19].

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