

7th DisCo Conference Reader: New Media and Education

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Introduction

This was the seventh time that the Centre for Higher Education Studies organized an international conference on distance learning. The conference was held under the name DisCo for the second time and we were focusing on new media in education.

We were very pleased to welcome participants from five continents and twelve countries (Czech Republic, Slovakia, Poland, Germany, Great Britain, Spain, Sweden, USA, Australia, South Africa, Uzbekistan, and Iran). Thus we could witness sharing experience between people from different cultures and different education systems. We believe that we did not only gain new experience and knowledge but that we also made new friends.

The conference begun by a day devoted to workshops that were led by renowned instructors. Enthusiastic and experienced **Sigi Jakob-Kühn** from Germany guided us through ePortfolio system Mahara. In his workshop, **David Mudrák**, founder and manager of the Czech community portal MOODLE.CZ, focused on the newest advanced activities of LMS Moodle in 2.x versions. **Tomáš Bouda** revealed the secrets of teaching in virtual worlds and **Jakub Štogr** demonstrated how to use digital portfolios for self-assessment. We would like to thank the instructors once again as workshops and gaining practical knowledge are as important as the theoretical texts that can be found in the conference proceedings.

We would also like to thank for the financial support without which this conference could not take place. Our thanks go to the official representation of Pearson platform Fronter in the Czech Republic, and official representation of Cambridge University Press in the Czech Republic.

Jan Beseda and Zbyněk Machát

STUDENT LEARNING ASSESSMENT IN OPEN AND DISTANCE LEARNING: QUALITY ASSURANCE CONCERNS

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Abstract:

The open and distance learning (ODL) paradigm has no doubt provided tertiary education opportunity for a greater number of qualified students who would have been denied access due to limitation of time and space in conventional universities. The open and distance learning institutions pride in large number of students. It is worthy of note that innovative instructional media such as e-learning, video conferencing, virtual learning etc are being developed continuously in order to address the instructional needs of these large populations. Considering that these innovative instructional procedures are able to meet the instructional needs of large populations; can the same be said of the assessment of student learning? While one lecturer can attend to the instructional needs of about five thousand students, it is practically impossible for a single lecturer to objectively score this same number. This paper shows the various challenges that exist in student learning assessments across a large population and proffers strategic procedures that can be adopted to address these challenges for the purpose of assuring quality of the programmes and products of distance learning.

Keywords:

Assessment, learning, quality.

1. INTRODUCTION

Open and distance learning a means of learning delivery in higher education. Has become accepted as a viable alternative to conventional institutions, because it is not limited by time and space. The earliest distance learning institutions were designed for matured learners and for working adults who had desire to learn but due to other limitations could not enroll in the conventional institutions to learn. Over the years, this has changed as the improvement in communications technology and the high demand for higher education which the conventional institutions are unable to meet. Open and distance learning with the obvious advantage of not being

limited by time and space now enrolls large number of students. The advancement in computer and internet technology has brought about highly sophisticated and functional delivery modes, so that reaching this large population of learners is made possible. Assessment of learning in the changing world of higher education is of paramount importance. Assessment is an integral aspect student learning with a high premium of expectation by the society from the university graduates (Stefain, 1998). Fundamental to effective teaching, assessment is seen as an integral part of the teaching and learning contract, so scholarly approach is applied equally to facilitation of student learning as well as assessment of student learning (Stefain, 2004). Assessment is recognised as probably the most important factor influencing how students learn (Brown and Glesner, 1999). Garrison and Anderson (2003:95) state "Successful learners most often rely on assessment deadlines and activities to both pace and direct their learning efforts. Effective teachers use assessment activities strategically to motivate learners to engage successfully in productive learning activities." Trehan and Reynolds (2002) observe that while examples or critical pedagogies, including those situated online are accumulating, they seldom exhibit changes in assessment practices.

2. COMPUTER-AIDED ASSESSMENT

Computer-aided assessment (CAA) has been on the increase in distance learning, in part due to the changing higher education environment namely, increased student numbers, lower unit of resource, medullisation and increased flexibility being used in a wide range of context (Bull et al , 2002). The developments in internet technology make available a huge potential for promoting more mutative applications of CAA. Enabling the use of different assessment methods including : peer – assessment , self – assessment , group – based assessment and objective testing (Past and Franklin , 2002 , Herrington et al , 2002) CAA is adaptive as the outcome of an assessment can be used to determine further questions or information that the student need to address . Charmin (1999) identifies the advantages of CAA for formative assessment as repeatability or immediate response , immediate marks to staff , reliability , diversity , equitability , timeless , flexible to access ,

student interest and motivation of students taking responsibility for their own learning.

3. ASSESSMENT IN DISTANCE LEARNING

In the contact school system, assessment has taken place over the past century, there is however evidence to show that the modern approaches are still lacking or insufficient, therefore establishing a need to change the paradigm (Nekton & Sangria, 2007). A few decades past this crisis has also been appearing in the context of distance education due to the ever advancing progress of information technology and the growing need for knowledge economy and lifelong learning (Barbara & Bradis, 2004; Marcelo & Peres, 2004). The intensive production of ICT in higher education and the emergence of online distance education and-learning had forced a rethink teaching and learning model (Sangria & Gonzalez-Sannamed, 2004) This has also brought about the need for new assessment experiences which are suitable for e-learning . These experiences should be noted in openness and flexibility (Morgan & O'Reilly 1999).

Shuijnens et al (2006) approach to competence based performance assessment in ODL has taken into account the way the online model should incorporate in its institutional design; that online learning in more efficient and effective when curricular structure in fundamentally based on the execution of activities; the activities need to be authentic. Herrington, Oliver and Reeves (2003) stated that authentic experiences are very important for the individual to build mental structures that work in significant situations. Those activities that are related to activities with greater range; the designed activities have to be real challenge for the student development of thinking the structure process has to be designed in a way that it offers possibilities that the student takes over the development of the activity execution, the activities have to imply some type of social negotiation and intervention is necessary to create learning institutions facilitating a group analysis regarding the acquisition of knowledge and of the process that support this acquisition.

Cliff, Houston and Pugach, (1990) reported that one of the most important objectives of whatever instructional model is the

development of skills that show the self- reflection of the student. It is necessary to gather assessment information of every activity as introduce activities designed based on the assessment logic. Assessment has to allow dynamization and guarantee the students individual and collective learning processes. The Office and Technology Assessment (OTA) is a set of methods that require the students to generate answer or response that demonstrate their level of control over knowledge, ability or skill (Elliot, 1995). Reflections offered by experts in the field of DL shows that online test are limited to self-assessment or objective tests, even if they are few expectations using projects and the portfolio approach (Zuniga, 2001; Silva, 2007).

4. QUALITY ASSURANCE CONCERNS

The assessment procedures in DL programmes, just like in conventional institutions are formative and summative. Most DL programmes have designated examination centres for the summative assessments, where the level of quality is dependent on the psychometrics of the test, the test administration and scoring. The issues arising from this is not different with that of the conventional institutions which can be handled by institutional monitoring units. With the advent of e-learning in DL, formative evaluation trend has become online based. The prevention of plagiarism has become the subject of much attention, but insufficient attention has been given to other problems of dishonesty in online assessment (Rowe, 2004). Everybody lies at one time or another (Ford, 1996), and cheating is common in education (Gathrop and Foss, 2000, Dick et al, 2003). Gzet(1999) reported that cheating increased significantly in the second half of the twentieth century and that cheating increases with the age of the student at least through the age 25, which could have serious implications for distance learning with its older students. Cheating also has been observed to increase as the bandwidth (information per second) of the communication channel between assessor and assessed decreases, that is people who feel more "distant" cheat more (George and Carlson, 1999, Burgeon, et al 2003).

It is often easier to cheat online, since what and who the assessee brings to the assessment cannot be seen and this even increases temptation to cheat. Often people make reference to pressure from other jobs and the lack of strict discipline on when a test is to be taken, and different learners taking the same test at different times, whereby communication may put to question the integrity of the test as many programmes used for testing are new and not fully debugged (Bell & Whaley, 1991) Rowe (2004) identified three serious problems involving online assessment these include getting assessment answers in advance, unfair retaking of assessments and unauthorized help during the assessment. Olt (2002) stated that in e-assessment it is hard to ensure all students the take the test simultaneously, or else students who take the test earlier supply the answers to others who take it later. To address this, different items may need to be used for different test takers or large number of items be used. It is however difficult to fairly score different items and unfair when number of items becomes too large. Answers to the test items can be known before hand by students breaking into security blocks. This can be done by cracker software, social engineering methods like pretending to be system managers and seeking information that can allow them gain access to the test answers (Mitnick, 2002). Students may take an assessment simultaneously as the instructor's password is adequately protected; there is a possibility to use "spyware" to electronically gain access to other students responses and what the instructor is typing in his computer (Mintz, 2002). Student could also use software called "sniffers" to gain access to fellow students or instructors answers or password (Mc Clure et al, 2001).

Unfair retaking of assessments is another serious problem with online assessment, as students could stop the server after grading is done but before it is recorded, given the extra time to consult collaborators or unauthorised reference materials. Some even adjust the system clock, that make it look like taken at an earlier date and overwrite the lower grade. Instructor's password theft can help students delete low grades and thereafter retake the test and this can continue until they are satisfied with their score. Unauthorized help during assessment is considered as probably the most serious problem with online assessment as there exist is a challenge of

confirming that the student is in fact who they claim they are, unauthorized collaboration, hiring consultants or other student to assist with the test are serious concerns which cannot be ignored. "High-tech" solutions of infra-red or electronic monitoring is an effort but may be inadequate as communication is possible through optical and aural forms (Rowe, 2004).

5. ADDRESSING THESE CONCERNS

On the problem of getting assessment answers in advance, the first remedy should be that formative assessment as the name implies should be used as a means of facilitating learning. Scores allotted to it, should only serve the purpose of qualifying the student for the summative assessment. This should be introduced as a matter of policy and should be made known to the students. There is also the challenge of a one stop assessment of summative assessment. This can be addressed by allowing for flexibility for students to take the assessments when they are ready for it with at least two opportunities in one study session.

Considering the problem of unfair retaking of assessments, this exist because the formative assessment is not seen as it should be, to facilitate learning. Students should be encouraged to take the test a number of times and see it as a learning process and scores obtained should not add up to the final assessment but to serve as qualification for the summative assessment.

Regarding the problem of unauthorized help during assessment, assessments which is meant for the purpose of grading should be conducted with the presence of proctors. The challenges of unauthorised collaboration cannot be adequately addressed by technological control as these can always be beaten over time.

6. CONCLUSION

There is no doubt that DE is the most appealing solution to the large number of students who desire education but who cannot find a place in conventional institutions due to the challenge of space and time. While the e-learning technology has the capacity of effectively handling teaching and learning issues. It is far from effectively

handling assessment issues, it should however be used for formative assessment in other to facilitate learning and when grading is involved, the traditional summative evaluation procedures should be employed. It must be noted that the purpose of schooling is learning not assessment, but when certification is needed then learners should be ready for some constraints to make the process worthwhile.

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E-LEARNING AND BLENDED LEARNING COURSES IN A JOINT PROJECT OF FACULTY OF ARTS, CHARLES UNIVERSITY IN PRAGUE (FF UK) AND ACADEMY OF ARTS, ARCHITECTURE AND DESIGN (VŠUP)

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Abstract:

In this paper, we would like to introduce the concept and structure of e-learning and blended learning language courses, as part of the joint project at the Faculty of Arts UK and VŠUP, which are worked out within the OPPA European funds. The introduction of e-learning and blended learning courses into the language education at both universities is expected to solve specific problems these faculties have faced (e.g. part-time students). The courses are created by the employees of the Language Centre at the Faculty of Arts UK, who are at the same time tutors of the courses for the students of VŠUP, plus the employees of VŠUP themselves. The courses are prepared in LMS MOODLE, which is serviced by the PCHHELP company. There are seven courses – four in English and three in German. Apart from these specialized courses, grammar books in both languages and methodological handbooks – with a full range of interactive exercises – for both the current and future teachers of these courses were produced. The courses bring new and innovative ways of learning to ensure students' self-study skills in foreign language learning. This presentation will focus on the introduction of the courses, the feedback from the winter and summer semesters (from both the course creators – teachers and the students who took part in the courses) and also on our future vision of how to continue in the field of newly introduced and implemented e-learning and blended language learning education.

Keywords:

E-learning, blended learning, LMS MOODLE, foreign language learning, university courses

1. INTRODUCTION

In March 2011 the Language Centre of the Faculty of Arts, Charles University (JC FF UK) in Prague with Academy of Arts, Architecture and Design (VŠUP) introduced a joint project OPPA – “Language Teaching Innovation within Certified Bachelor Programmes in Arts

and Human Studies” (“Inovace jazykové výuky v rámci akreditovaných bakalářských programů uměleckých a humanitních oborů”). The project, in which e-learning and blended learning courses for the students of both faculties were created and introduced, will run until September 2012.

2. COOPERATION AND AUTHORS

The two faculties had already been cooperating in the field of language teaching before the introduction of the project. JC FF UK provides language courses for the students of VŠUP. Therefore, teachers from both JC FF UK and VŠUP take part in the project. The technical service is provided by the PCHELP company.

3. COURSES

The project has been really interesting not only because e-learning and blended learning are quite new fields for the faculties, but also because the situation in language teaching at both faculties is quite different, even though some conditions are very similar. On the one hand, there are students for whom it is difficult to regularly attend the present courses for a number of reasons. The students of VŠUP have a lot of study activities which are time consuming and therefore have a lot of absences. The courses for the students of Faculty of Arts are not compulsory and a lot of students do not manage to enrol in a course of their level. There are also a number of part-time students for whom it is also difficult to meet the requirements of the regular courses. On the other hand, all students of both faculties are required to pass a language exam which also focuses on specialized and specific language skills, soft skills. Therefore, the e-learning and blended learning courses were introduced as one possible solution to this situation.

There are the following courses for the students of both faculties at the website address <http://jc-elearning.ff.cuni.cz> – four for English (two e-learning and two blended learning) and three for German (one e-learning and two blended learning). The level of the courses is according to the Common European Framework of Reference (CEFR).

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- English e-learning course, level B1 (according to the CEFR) – specified for VŠUP.
 - English e-learning course, level B1-B2 (according to the CEFR) – specified for FF UK.
 - English blended learning course, level B1-B2 (according to the CEFR) – specified for FF UK.
 - English blended learning course, level B2-C1 (according to the CEFR) – specified for both FF UK and VŠUP.
 - German e-learning course, level B1-B2 (according to the CEFR) – specified for FF UK.
 - German blended learning course, level B1-B2 (according to the CEFR) – specified for FF UK.
 - German blended learning course, level B2-C2 (according to the CEFR) – specified for both FF UK and VŠUP.

Blended learning courses cover four lessons a week. Two lessons are for homework assignments and two lessons are taught by the tutor of the course, so the students work both at home on their own and together with the other students and the tutor. E-learning courses also cover four lessons a week but only through homework assignments, so the students work on their own only. All the above listed courses have been introduced in this academic year 2011-2012 at both faculties as a part of language education. As previously mentioned, e-learning and blended learning in language education is a new field for both schools and therefore it is an innovative change regarding not only the contents but also the range of the offered courses.

The main aims of the e-learning and blended learning courses were: to help the students whose level of language knowledge does not meet the requirements of the schools to improve their knowledge so that they can start preparing for the exam; to provide the advanced students with opportunity to work on specific skills (e.g. presentation skills); and to provide courses which do not require regular attendance for either part-time students or the students with a lot of other studying activities. These are the same for both faculties.

However, most of the conditions and aims of the language learning at these two faculties can differ significantly (for example, purely artistic subjects at VŠUP). Yet, the authors managed to reach an agreement on the common strategy and structure of the courses. Regarding the structure, the courses are divided into modules which either follow the number of weeks in the semester or are topic based. Even though the courses are specified for either the students of VŠUP or FF UK, the topics of the individual courses were chosen so that they can fulfill the needs of all or most of the students.

4. ADDITIONAL MATERIALS

Another important part of the project is the creation of a whole range of additional and supporting materials.

4.1. Grammar Books

Grammar books were created for both English and German. The German grammar book is in German, whereas the English grammar book is in Czech (the reason for the use of Czech language for grammar explanation is the fact that a number of the students start with their language learning at a lower level (B1 and lower) and therefore it is better and easier for them to get the explanation in Czech. However, the English version will also be introduced.

4.2. Teachers' Books

The authors of the courses, who at the same time are their tutors and tutored the courses in the first two semesters of their implementation into the language courses offer, prepared teachers' books. These briefly describe the courses – the contents, aims, methodology, so that future tutors of the courses know how to work with a particular course.

4.3. Hot Potatoes Exercises

The main assignments and tasks within the courses are created in LMS Moodle. However, for the students who need more practice there is a whole range of additional Hot Potatoes exercises that were created and introduced. These focus especially on grammar and vocabulary practice.

4.4. Metacourses

These courses integrate materials that are common for all the individual courses. There is one *English Metacourse* in which the students can find the grammar book, links to on-line dictionaries, other links to useful websites and Hot Potatoes exercises practicing grammar and vocabulary. For German, there are several metacourses: *Lernwortschatz Deutsch* in which there are numerous Hot Potatoes exercises practicing vocabulary; *Grammatik – Interaktive Übungen* in which there are the grammar book and Hot Potatoes exercises practicing grammar; and *Hören und Sehen* in which there are Hot Potatoes exercises practicing listening comprehension.

The advantage of these courses is that any course can be made as a “child course” which then automatically enables all the students signed in this “child course” to access and use materials provided by the metacourse.

5. TESTING

The main aim of testing is to give feedback to the students, especially in the e-learning courses. The tutors use different types and means of testing offered by LMS Moodle. A set of 300 testing questions was made for English courses. The tests are based on CEFR.

6. EVALUATION

The courses are evaluated using two inputs – feedback from the students and from the tutors. For the students there are evaluation questionnaires in every course, which of course are anonymous. There are multiple-choice questions as well as open questions so that the students have space for their comments. The tutors hold talks with their students to find out what their opinions on the courses are.

7. CONCLUSION

The e-learning and blended learning courses are quite a new field for the two faculties (FF UK and VŠUP). However, the introduction in the academic year 2011 – 2012 was successful and prepared a very good base for further development of these already existing courses as well as creation of new ones. The whole project has brought a new, innovative and potentially important way of language education for both faculties.

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<http://jc-elearning.ff.cuni.cz>.

The above listed web sites were in operation in May 2012.

VISUAL WEB PRESENTATION FOR TEACHING OF UNIVERSITY MATHEMATICS SUITABLE FOR DISTANCE STUDY

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Abstract:

Department of Mathematics of the Faculty of Applied Informatics of the Tomas Bata University in Zlín has been dealing with the modern trends at teaching of mathematical subjects. In the submitted paper we are going to bring out a visual web presentation integrating text, figure and 3D animation which should innovate the Mathematics II subject. The visual web presentation will be placed for the disposal of general public on the Faculty of Applied Informatics of Tomas Bata University in Zlín server after its completing. The students of our university, especially the students in combined form of study, highly appreciate teaching with visual web presentation. Therefore we are convinced that also students of other universities, including those in distance study, can make use of this web presentation for reasons of its universality, usefulness and eye-appeal.

Keywords:

Visual web presentation, teaching and study aid, multivariable calculus, figures and 3D animations, Czech technical standard.

1. INTRODUCTION

Currently students from many different types of secondary schools with very different levels of knowledge and skills input are coming to study at universities. Therefore the aim of all of us who teach mathematical courses is to stimulate students' appetite for creative thinking. This visual web presentation was created to help achieve this goal.

In the article we are presenting first few lines from a total of approximately 150 lines of our visual web presentation.

We already use some lines, especially those containing animations, in the PC dataprojector screening in appropriate parts of the lectures and seminars in the second term in subject of Mathematics II.

This subject is supported by two textbooks (Fialka, 2008a), (Fialka, 2008b) and M. Fialka lectures it at the Faculty of Applied Informatics and at the Faculty of Technology of the Tomas Bata University in Zlín. Realistic assumptions are to use mentioned presentation at the other two faculties, where our department provides teaching of multivariable calculus containing roughly the same substance, more precisely, at the Faculty of Management and Economics and also at the Faculty of Logistics and Crisis Managements in Uherské Hradiště.

Both above mentioned textbooks and also the visual web presentation include the following components and concepts of multivariable calculus:

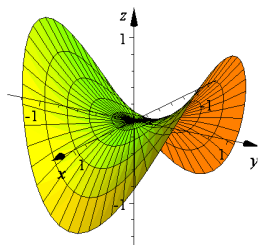
- Vector in physics and geometry. Direction, collinearity, norm of vector, summation of vectors. The model of real n -dimensional arithmetic vector space \mathbf{R}^n of all n -component arithmetic vectors with the standard scalar product and the standard vector basis. The real n -dimensional arithmetic point-vector (by another name *affine*) space \mathbf{A}_n and the real Euclidean point-vector space \mathbf{E}_n with defined scalar product. Convex angle of geometric vectors, unit vector. The positively oriented Cartesian coordinate system in \mathbf{E}_3 , right-hand rule used in physics. A vector or also a mixed triple product of vectors and their computation by means of the Laplace expansion of the determinant of the corresponding matrix. Hamming's metric space, infinitely dimensional spaces $C[a,b]$, $C_2[a,b]$ of real functions continued on interval $[a,b]$. The distance ρ of some points in the arithmetic model of the real n -dimensional metric space \mathbf{E}_n which is used in mathematic analysis.
- Neighbourhood of point and limit of convergent sequence of points in the n -dimensional Euclidean space \mathbf{E}_n . Accumulation point and some other important points and sets in \mathbf{E}_n and their sketch, concept of domain in \mathbf{E}_n .

Definition and graph of real function of several variables. Contour graph of function defined in \mathbf{E}_2 . Sketch of important geometric configurations from engineering practice, especially of quadric surfaces of revolution (incl. their PC-animation).

-
- Mapping of the (n,m) type, a point or also a vector function (vector field) of n real variables. Continuity and limit of a mapping (or a function) of n real variables and with values in Euclidean space \mathbf{E}_m , or also in its m -dimensional associated vector space $\mathbf{V}(\mathbf{E}_m)$.
 - Partial derivatives of a function of several variables. Total differential of a function, differentiability of a function. Geometrical meaning of total differential of a function of two variables. Tangent plane and normal line of a surface. Partial derivatives of composite function – chain rule, higher order partial derivatives, commutativity of derivatives.
 - Basic concepts of field theory: directional derivative of a function in given direction, gradient of a scalar field, Hamiltonian (del otherwise nabla) operator, Laplacian (del square) operator, curling and divergence of a vector field. Simply connected domain. Testing of conditions which guarantee if a vector field is a conservative (otherwise potential) one.
 - Implicitly defined functions and also surfaces. Computation of corresponding normal line and tangent plane. Higher order differentials. Taylor's theorem and its meaning.
 - Local extremes of a function. Global extremes of a function. Extremes of a function with respect to a set. Concept of vector function of scalar variable. Limit, continuity and derivative of a vector function incl. higher order derivatives.
 - Integral of a vector function. The Riemann double integral as the limit of some integral sums. Jordan-Peano measure in \mathbf{E}_2 . Set of measure zero.
 - Mean value theorem for integral calculus. Fubini's theorem for the double integral. Triple (or volume) integral. Fubini's theorem for the triple integral.
 - Transformation of multiple integrals. Selected geometric and physical applications of double integral. Evaluation of the area of a surface given by graph of a continuously differentiable explicit function by means of double integral. Physical applications of double integral to some surface configurations having mass-so called shells.

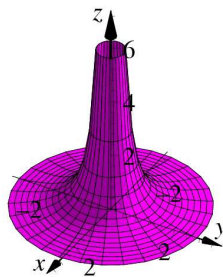
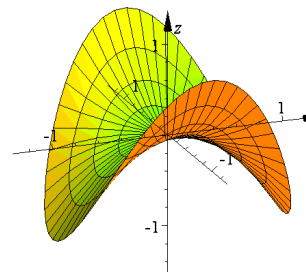
- Geometric and physical applications of triple integral.
- Simple smooth or piecewise smooth curves in \mathbf{E}_2 and \mathbf{E}_3 , their orientation. Line integral in scalar and vector field.
- Green's theorem on line and double integral. Jordan's theorem in \mathbf{E}_2 . Independence of vector function line integral on an integration path. Conservative vector field.
- Simple smooth or piecewise smooth surfaces in \mathbf{E}_2 and \mathbf{E}_3 , their orientation and orientation of its boundary (edge). Jordan's theorem in \mathbf{E}_3 . Surface integral in scalar and vector field. Gauss's divergence theorem and Stokes' integral theorem. Chosen applications of surface integral in field theory.

2. VISUAL WEB PRESENTATION FOR MULTIVARIABLE CALCULUS



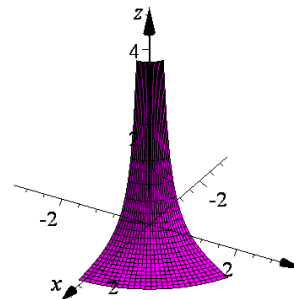
4.3

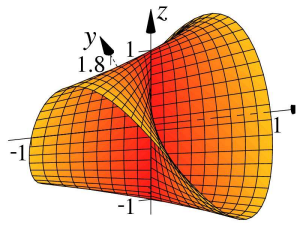
Graph of hyperbolic paraboloid (saddle surface) $z = y^2 - x^2$ in cylindrical coordinates



4.6

Graph of function $z = \frac{1}{x^2 + y^2}$

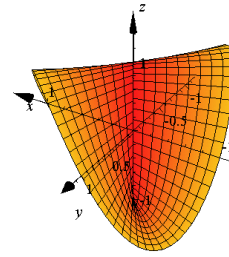




4.13

Pluecker's conoid $z = \frac{2xy}{x^2 + y^2}$ as

a straight line surface and bounded function which has no limit in the origin, although Both double limits exist and they are zero, is not continuous at the origin, even if continuous in each of its neighbourhood, and which is not uniformly continuous anywhere



We decided to combine advantages of figure and text document into a teaching and study aid – visual web presentation in HTML. The visual web presentation projected site contains the following items from left to right:

- **icon** of specific figure as the hypertext reference to its full-page projection
- **number** of the figure and its work term (it is possible to leave them both out)
- **title of the figure**, as the characteristics of its content, and in Czech for our students, of course
- **animation icon** of the figure (in the event of appropriate space situation) onto full-page projection.

Particular attention was paid to visual web presentation titles. We tried to maximize its brevity, but also clarity while maintaining its terminological accuracy. Therefore, its statement is relatively independent of the above mentioned textbooks to which figures were originally created.

The textbooks mentioned in references, as well as the titles in visual web presentation, contain mathematic signs and symbols which conform to the valid Czech Technical Norm. (ČSN ISO 31-11, 1999). We realize that general public does not know about the existence of that norm. We are very surprised that even the authors of secondary school textbooks in mathematics and physics do not use this standard or do not know the norm at all.

3. VISUAL WEB PRESENTATION AS A TEACHING AND STUDY AID

Teachers should allow sufficient time to prepare for the show. They must also carefully consider the timing and appropriateness of the length of the projection, which must be replaced by another form of early education. Described visual web presentation composed of figures and clear title with mathematical symbols and animations is an attractive means of didactics.

The questionnaire survey of about one hundred students, which was made a year ago shows that such teaching of Mathematics II supported by the visual web presentation is evaluated by the average numerical value of 1.35. This rating is the closest B = Very Good in standard ECTS grade which students are evaluated in the testing themselves.

4. CONCLUSION

The visual web presentation will improve the effectiveness in teaching of multivariable calculus, whereas it would be intended for a target group representing more than 2000 students of the Tomas Bata University in Zlín at its four mentioned faculties. The presentation will be freely accessible on the Internet for several months, specifically on the websites of the Faculty of Applied Informatics. The curriculum of our presentation covers multivariable calculus, taught in most universities with engineering disciplines. Therefore there may be interest to also use the visual web presentation freely.

We are convinced that also the students in distance study can make use of our presentation for reasons of its relative independence from the applied literature, mathematical clarity and free availability.

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JEDEN Z PŘEDPOKLADŮ ÚSPĚCHU BUDOUCÍHO DISTANČNÍHO VZDĚLÁVÁNÍ

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Abstract:

The future success of distance learning in the Czech Republic should be also based on the quality informatics preparation of the Czech youth. It seems to be that the age interval from 12 to 15 is a crucial period for the acquisition of basic knowledge and skills in the field of informatics. This age interval corresponds with the upper level of basic schools in the Czech Republic. Firstly, the definition of the informatics profile is stated and its description is formulated. Secondly, the authors proceed to a specific situation in a selected basic school. The main results of a questionnaire survey are presented. Finally, the conclusions focused on the successful distance learning usage in the Czech Republic are specified.

Klíčová slova:

Distanční vzdělávání, základní škola, informační a komunikační technologie, zpětná vazba.

1. ÚVOD

Informační a komunikační technologie (ICT) se v podmínkách ČR i mnoha dalších států staly klíčovou komponentou jejich dalšího sociálně-ekonomického rozvoje. Na úspěšném vzdělávání v této oblasti poznání významně závisí budoucí prosperita státu.

Na základě stávajících poznatků autorů a konzultace problematiky z pohledu vývojové psychologie je nejvhodnější doba k zahájení vzdělávání v oblasti ICT kolem 12 roku života. To znamená, že je žádoucí plně využít druhý stupeň základní školy, resp. první roky víceletých gymnázií.

Současná situace v ČR vzhledem k výuce ICT u výše uvedené cílové skupiny se zdá být z pohledu autorů článku charakteristická následujícími atributy:

- K výuce ICT na základní škole (ZŠ) existuje v současné době více vzájemně nekompatibilních přístupů.

-
- Každá ZŠ má svůj Školní vzdělávací program (ŠVP), který vychází z Rámcového vzdělávacího programu (RVP_ZV, 2007).
 - Vedení každé ZŠ a disponibilní lidský faktor (kvalita pedagogického sboru) plně rozhodují o kvalitě příslušného ŠVP i schopnosti školy jej úspěšně realizovat a dosahovat na poli vzdělávání v oblasti ICT očekávané výstupy.
 - Autoři se domnívají, že význam ZŠ pro úspěšné vzdělávání v ČR, a to nejen na poli ICT, je často ze strany vyšších stupňů škol i odborné veřejnosti podceňován.
 - Na základě komunikace se studenty vyšších stupňů škol, která byla zaměřena na problematiku vzdělávání v oblasti ICT, se autoři článku rovněž domnívají, že české ZŠ zřejmě nemají v současné době pro výuku ICT dostatek kompetentních pedagogů.
 - Dosažené výstupní znalosti a kompetence žáků různých českých ZŠ jsou v oblasti ICT často velmi rozdílné.

2. VYMEZENÍ POJMU INFORMATICKÝ PROFIL

Definujme množinu O_{ICT} tematických oblastí ICT takto

$$O_{ICT} = \{O_1, O_2, \dots, O_n\},$$

kde O_i , $i = 1, 2, \dots, n$ je konkrétní tematickou oblastí ICT jako např. databáze, počítačové sítě, textové procesory, tabulkové procesory, počítačová grafika, programování, apod.

Nechť r_i , $i = 1, 2, \dots, n$ je celočíselná hodnota z intervalu $\langle 0, 100 \rangle$, která vyjadřuje úroveň kompetencí v příslušné tematické oblasti O_i . Tuto hodnotu lze chápat jako procentuální zhodnocení zvládnutí dané tematické oblasti vzhledem ke stanoveným vzdělávacím cílům. Informatický profil je pak datová struktura tvaru

$$ITP = [O_1, r_1], [O_2, r_2], \dots, [O_n, r_n],$$

přičemž každou tematickou oblast O_i lze rozepsat na jednotlivá témata a k nim příslušné vybrané odborné termíny, které mají být pochopeny včetně jejich vazeb na své okolí, a vybrané dovednosti, které mají studující ovládat.

2.1. Informatický profil a distanční vzdělávání

Současné distanční vzdělávání (DiV) je úzce spojeno s ICT. Tento trend bude nepochybně v budoucím období posilován. Budování žádoucího informatického profilu, který bude nezbytný pro život v informační společnosti, by mělo být zahájeno v optimálním věku. Informatický profil by měl být dále postupně rozvíjen tak, aby absolventi škol byli připraveni na své celoživotní vzdělávání, jehož dominantní formou bude zřejmě DiV. Ze zahraniční literatury jsou pro stanovení optimálního věku žáků pro zahájení výuky ICT významné např. následující zdroje: (Bradbery, 2011), (Lerner, 1997), (Smith et al, 1997).

3. VYBRANÁ ZÁKLADNÍ ŠKOLA V PROCESU BUDOVÁNÍ INFORMATICKÉHO PROFILU

3.1. Školní vzdělávací program 31. ZŠ v Plzni

Národní program rozvoje vzdělávání v České republice v roce 2001 formuloval vládní strategii v oblasti vzdělávání (MŠMT_ČR, 2001). Vzdělávání v oblasti ICT bylo stanoveno jednou z prioritních oblastí vzdělávání. Rámcové vzdělávací programy pro základní vzdělávání (RVP ZV) stanovily na státní úrovni vzdělávací oblast Informační a komunikační technologie. Pro oblast je strukturováno učivo do jednotlivých tematických okruhů (RVP_ZV, 2007). Na základě RVP ZV vypracovala každá ZŠ svůj ŠVP, podle něhož se vzdělávání uskutečňuje. Profesi učitele v českém vzdělávacím kontextu se zabývá např. Vašutová (2004).

Vybraná 31. základní škola v Plzni je úplnou ZŠ s kapacitou 750 žáků. Pro výuku Informatiky jsou ve škole k dispozici tři počítačové učebny. Ve dvou z nich je rovněž interaktivní dotyková tabule. Kompletní ICT služby pro školu zajišťuje statutární město Plzeň, které je zřizovatelem školy.

Školní vzdělávací program 31. základní školy v Plzni (Fišer et al, 2011) zařazuje předmět Informatika (vzdělávací oblast Informační a komunikační technologie) do 5. a 6. ročníku. Časová dotace je jedna hodina týdně. Předmět je povinný pro všechny žáky. Předmět Informatika umožňuje žákům dosáhnout základní úrovně informační

gramotnosti (RVP_ZV, 2007), na které lze při dalším vzdělávání úspěšně navazovat.

Od 7. ročníku se žáci vzdělávají v povinně volitelném předmětu Informatika v časové dotaci 3 hodiny týdně. Tento předmět si žáci volí z široké nabídky volitelných předmětů. V ročníku je vždy jen jedna skupina o maximálním počtu 15 žáků. Volitelný předmět umožňuje žákům dosáhnout vyšší úrovně informační gramotnosti s návazností na předchozí získané vědomosti.

3.2. Výstupní kompetence žáka 31. ZŠ Plzeň v oblasti Informační a komunikační technologie

Školní vzdělávací program „Škola pro 21. století“ (Fišer et al, 2011) vymezuje pro žáky v předmětu Informatika následující výstupní kompetence:

Kompetence k učení

- dovede systematicky získávat a zpracovávat informace,
- aplikuje výpočetní techniku se vzdělávacím a výukovým software.

Kompetence k řešení problémů

- umí řešit problémové situace a zpracovávat je s využitím výpočetní techniky,
- má možnost obhajovat a prezentovat své názory moderními metodami.

Kompetence komunikativní

- využije výpočetní techniku ke vzájemné komunikaci mezi sebou, mezi vrstevníky,
- je upozorňován i na nebezpečí anonymní elektronické komunikace.

Kompetence sociální a personální

- je schopen pracovat jednotlivě i ve skupině,
- podílí se na pravidlech práce s výpočetní technikou.

Kompetence občanské

-
- respektuje pravidla práce s výpočetní technikou a zařízením zapojeným do elektrické sítě,
 - vhodně a smysluplně využívá výpočetní techniku, dbá na hygienu práce s výpočetní technikou.

Kompetence pracovní

- umí vhodně a smysluplně využívat výpočetní techniku, aplikovat software a hardware v praxi,
- umí s použitím moderních technologií (multimédia) prezentovat a uchovávat své práce.

3.3. Výsledky dotazníkového šetření

Provedené dotazníkové šetření se zabývá dosaženým infromatickým profilem žáka a bylo realizováno na podzim roku 2011. Výzkumný vzorek byl tvořen vybranými absolventy volitelného předmětu Informatika, kteří ukončili základní vzdělání ve školním roce 2006/2007. Mohli tedy s odstupem hodnotit výuku Informatiky na základní škole a svůj dosažený infromatický profil, který souvisí s výše uvedenými výstupními kompetencemi. Respondenti absolvovali volitelný předmět Informatika od 7. do 9. ročníku s časovou dotací 2 hodiny týdně. Obsahové vymezení předmětu bylo srovnatelné se současným obsahovým vymezením předmětu Informatika. Výuku vedl stejný pedagog.

Otázky v dotazníku byly zaměřeny na čtyři základní okruhy. První okruh otázek se zabýval osobním vztahem žáka k předmětu, druhý okruh hodnocením vzdělávacího obsahu, použitých metod výuky a technickým vybavením školy výpočetní technikou. Třetí okruh zkoumal souvislost mezi absolvovaným vzděláním (respondenti ve školním roce 2010/2011 ukončili středoškolské vzdělání) a výukou informatiky a poslední okruh položených otázek se zabýval aspektem lidského faktoru (osobností učitele) v souvislosti s výukou.

Dotazníkového šetření se zúčastnilo 15 respondentů, kteří byli elektronicky osloveni. Respondenti vyplnili dotazník v textovém editoru a vrátili elektronicky zpět zadavateli. Výsledky vyhodnocení odpovědí na dvě z položených otázek jsou uvedeny v následujících dvou tabulkách.

	Výuka beze změny	Výuka podrobněji	Výuka méně podrobně	Výuku zcela zrušit
Bezpečnost a ergonomie při práci s PC a multimédií	7		8	
Historie výpočetní techniky	9	2	4	
Hardware a software	6	8	1	
Operační systémy	7	5	3	
Textový editor	15			
Typografie psaní textu	11	2	2	
Vektorová grafika, animace	4	11		
Rastrová grafika, digitální fotografie	4	11		
Technologie tisku DTP, princip záznamových zařízení	8	4	5	
Tabulkový kalkulátor	14	1		
Internet	7	8		
Multimédia	10	5		
Počítačové sítě	7	6	1	
Autorský zákon	7	2	6	
Počítačové viry	4	6	5	
Výukové programy	5	5	5	
Základy programovacích jazyků	3	5	2	5

Tabulka 1: Názor respondentů na obsah předmětu Informatika

	Ponechat využití metody beze změny	Metodu začít využívat (využívat častěji)	Metodu využívat méně často	Metodu nevyužívat vůbec
Slovní výklad	11	4		
Dialogická metoda učitele s žáky	12	3		
Názorná demonstrace postupů	7	8		
Praktická práce s výpočetní technikou	11	4		
Práce s textem na PC (elektronickým materiálem, internetem atd.)	14	1		
Projekty	5	5	5	
Skupinová práce	3	10	2	
Samostatné úkoly řešené doma a jejich vyhodnocení ve škole	7	3	5	
Soutěže	2	7	6	
Samostatná prezentace Tvé práce před třídou s využitím multimédií (PC, interaktivní tabule)	2	10	3	
Samostatná tvorba elektronických materiálů (foto, video)	3	7	5	

Tabulka 2: Názor respondentů na metody výuky v předmětu Informatika

4. ZÁVĚR

Moderní DiV se stále více integruje s ICT. Budoucnost DiV v ČR lze mimo jiné pozitivně ovlivnit vhodnou ICT přípravou zahájenou na druhém stupni ZŠ. Na základě výše popsaných skutečností lze formulovat následující doporučení:

- Zahájení výuky ICT je vhodné provést cca ve věku 12 let žáků. Mimo jiné na základě provedených konzultací s několika pedagogy ICT na základních školách se autoři článku domnívají, že v nižším věku nejsou ještě žáci schopni plynule absolvovat danou problematiku pro její obtížnost. Výpočetní techniku lze však v nižším věku žáků použít jako vhodný doplněk výuky ostatních předmětů (výukové programy, užívání multimédií).

Realizované dotazníkové šetření přineslo mimo jiné následující zjištění:

- Výuka programového vybavení, které žáci potřebují v každodenním využívání ICT (textový editor, tabulkový kalkulátor), je dostačující.
- Výuka počítačové grafiky je pro žáky velmi zajímavá. Přivítali by rozšíření její výuky. Opakem je výuka základů programovacích jazyků. Toto učivo je pro žáky obtížné a nezajímavé. Z těchto důvodů se u respondentů často vyskytoval názor, aby bylo zrušeno, resp. omezeno.
- Žákům vyhovují tradiční metody výuky (výklad, názorná demonstrace postupů, praktická práce s výpočetní technikou). Moderní metody výuky (projektová metoda, problémová metoda, skupinová práce, prezentace před spolužáky) jsou žáky hodnoceny v závislosti na jejich temperamentu. Extrovertní žáci více upřednostňují soutěže, samostatné prezentace před třídou a projekty. Naopak introvertní žáci tyto metody výuky zpravidla nechtějí využívat. Většině žáků vyhovují bez rozdílu klasické metody výuky (výklad, dialog s učitelem, názorná demonstrace postupů).

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DETERMINANTY OVLIVŇUJÍCÍ ROZVOJ VZDĚLÁVÁNÍ FORMOU E-LEARNINGU

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Abstract:

At present, the use of information and communication technologies in education at all types of schools is becoming commonplace. Information and communication technologies bring many positive effects which appropriately complement and support the process of education. Some modern forms of study, applied at Czech as well as foreign universities, are even based on the use of information and communication technologies. Above all, this regards education realized through e-learning with information, curriculum, control incentives and communication being transmitted by means of modern communication technologies and using the World Wide Web, called simply the Internet.

The paper deals with the identification and description of the most important determinants influencing the development of distance learning in the form of e-learning and within the framework of Czech higher education. In addition to frequently emphasized technological and regulatory determinants, the paper deals with the often neglected pedagogically oriented determinants and trends, based on application of constructivist learning theory. The latter are essential for further development of the above mentioned form of education.

Klíčová slova:

Distanční vzdělávání, e-learning, legislativní determinanty, technologické determinanty, pedagogicko-psychologické determinanty.

1. ÚVOD

Vzdělávání realizované formou e-learningu se během několika let, poprvé byl pojem oficiálně použit v roce 1999 (Dvořáková et al., 2008), stalo nezbytnou součástí distanční, kombinované ale i prezenční formy vzdělávání na vysokých školách. Je nutné si klást otázku, proč k tomuto jevu tak masově dochází.

Návaznost na „klasické“ i nové pedagogické teorie i s přesahem do didaktických zásad je pro celý proces vzdělávání realizovaného

formou e-learningu nezbytná, a proto jim je potřeba věnovat patřičnou pozornost. Domníváme se totiž, že na základě jejich studia a popisu uplatnění v praxi může zpětně dojít k obohacení pedagogické teorie, a to nejen v oblasti elektronického vzdělávání. Je tedy nutné jejich promítání do tohoto typu vzdělávání chápat jako ucelený proces (edukační), jehož každá část zajišťuje plnění sice specificky odlišných, ale často překrývajících se cílů.

2. IDENTIFIKACE SKUPIN DETERMINANT A TRENDŮ ROZVOJE

Jedním ze způsobů realizace distanční formy výuky je e-learning, e-twinning či blended learning, které jsou specifické především využitím elektronických distančních studijních textů, označovaných také jako elektronické studijní opory (Klement and Chráska, 2011). Pro efektivní využití tohoto způsobu výuky je nutné využívat nejen sofistikované LMS systémy, ale také vhodné výukové texty obsahující celou řadu prvků, které studium činí zajímavějším, efektivnějším a usnadňují samostatné studium bez podpory „živého“ lektora/vzdělavatele. Proto se do popředí zájmu pedagogů domácích i zahraničních dostávají otázky, které vymezují nejen obsah elektronických studijních opor, ale také jejich strukturu či použití moderních způsobů prezentace učiva, jako jsou multimédia či virtuální realita. Dále jsou stále aktuálnější otázky směřující k možnostem implementace e-learningu do edukačního procesu školských zařízení a to i v rámci legislativních či organizačních omezení, které tuto oblast determinují. Tyto determinující vlivy můžeme rozdělit do tří samostatných oblastí, které se ale částečně překrývají:

- legislativní determinanty,
- technologické determinanty,
- pedagogicko-psychologické determinanty.

V dalším textu příspěvku tedy pojednáme o jednotlivých determinantách či rozvojových trendech, které výše vymezené oblasti ovlivňují.

3. LEGISLATIVNÍ DETERMINANTY ROZVOJE

První jev ovlivňující život českých vysokých škol v posledních 6 letech vycházel z faktu, že se Česká republika, jako jeden ze signatářů Boloňské deklarace, zavázala k plnění závazků vyplývajících z Boloňského procesu. V rámci tohoto procesu tedy Česká republika přistoupila na základě Berlínského komuniké k restrukturalizaci studijních oborů.

Druhým jevem, který velmi zásadním způsobem ovlivnil rozvoj českých vysokých škol, a to především v období let 2008–2012, byla politika financování, hodnocení a stratifikace českých veřejných vysokých škol, vyjádřená v podobě „Bílé knihy terciárního vzdělávání“ (Matějů, 2009). Ne vždy průhledná politika MŠMT ČR zapříčinila reálný pokles objemu financí, které veřejné vysoké školy získávaly v podobě příspěvku na studenta.

Pokud tedy české vysoké školy chtěly zachovat nejen kvalitu, ale i rozsah poskytovaného vzdělávání, přistoupily k akreditacím a zaváděním kombinovaných forem studia (dle zákona o vysokých školách je definována prezenční a distanční formy výuky, zákon dále připouští jejich vzájemnou kombinaci). Protože distanční vzdělávání s využitím starších médií (korespondence, noviny, televize, rozhlas) (Flechsigg, 1995) již bylo překonáno a neposkytovalo studentům ani vyučujícím potřebný komfort ani efektivitu studia, začalo se využívat možností e-learningu. Intenzivní rozvoj distanční složky kombinované formy studia byl nutný především z toho důvodu, že jednou z podmínek akreditace kombinovaných studijních oborů bylo doporučení akreditační komise ČR minimálně 30 % celkového rozsahu výuky realizovat distanční formou (Vinš, 2000). Akreditační komise zpočátku připouštěla aplikaci některých historicky starších způsobů realizace distanční složky vzdělávání, kde hlavním médiem zprostředkovávajícím přenos učiva byly tištěné studijní opory, ale postupem času od tolerování těchto starších způsobů realizace distančních složek vzdělávání v rámci akreditovaných studijních programů a oborů upustila a vyžadovala vzdělávací obsah implementovaný a prezentovaný v rámci LMS systému. Vznikla tedy velmi důležitá determinanta vycházející z legislativního rámce, který

požaduje *plnou elektronizaci distanční složky kombinované formy vzdělávání*.

4. TECHNOLOGICKÉ DETERMINANTY ROZVOJE

Z tohoto pohledu je možné identifikovat několik determinant, které vycházejí především z technických možností dnešních informačních a komunikačních technologií. Tyto možnosti se natolik zlepšily, a to jak po stránce kvalitativní, tak i kvantitativní, že je v současné době možné implementovat technologie, které před několika lety byly buď finančně či personálně tak náročné, že bylo velmi nesnadné je využívat v běžné praxi. Tyto technicky orientované determinační vlivy v distančním vzdělávání realizovaném formou e-learningu je možné pozorovat ve dvou samostatných oblastech.

První oblastí je možnost *využití interaktivních výukových prvků ve formě simulací reálných dějů či postupů*. Tyto prvky multimediálního charakteru se stále více uplatňují na úkor statické obrazové informace (obrázky, grafy apod.), protože jsou jedním z velmi efektivních motivačních, názorných e-learningových nástrojů. Umožňují průběžné či závěrečné ověřování výsledků výuky pomocí simulátorů v mnoha oborech lidské činnosti a to mnohdy interaktivní formou.

Druhou oblastí determinující rozvoj distančního vzdělávání realizovaného formou e-learningu je *možnost využití virtuální reality jakožto „učebního“ prostředí*, které může i v domácím prostředí navozovat atmosféru a klima vzdělávací instituce. Virtuální realita, nebo také virtuální prostředí, je technologie umožňující uživateli interreagovat se simulovaným prostředím (Marešová, 2009).

Tyto technologické determinanty jsou výsledkem mohutné exploze informačních a komunikačních technologií a jsou logickým vyústěním postupného přibližování těchto technologií co nejširší skupině uživatelů.

5. PEDAGOGICKO-PSYCHOLOGICKÉ DETERMINANTY ROZVOJE

Další skupinou determinantů, které je možné v současné době vypočítat, je cílevědomá aplikace některých prvků konstruktivistických teorií, například v podobě rozšiřování strategií učení či v podobě efektivnějšího dosahování stanovených výukových cílů, a to nejen v kognitivní, ale i psychomotorické a afektivní oblasti (Klement and Dostál, 2010).

První determinanta je charakteristická snahou o *aplikaci širšího spektra strategií učení*. „Klasické“ pojetí distančního vzdělávání úzce souvisí s teorií programovaného učení. Programované učení je vyučovací metoda založená na řízení učební činnosti žáků, která vychází z behaviorismu a nebehaviorismu. Konstrukce strategií učení studenty je ale odrazem myšlenek konstruktivismu, přičemž smyslem této výuky není pouze předání jediné pravdy, jak tomu je u transmisivní pedagogiky (její metodou je memorování, přenos neproblematizovaných „fakt“- poznatků do vědomí žáka), ale mnohem podstatnějším úkolem, před kterým vzdělávání stojí, je vybavit adresáta tohoto vzdělávání schopností orientovat se v záplavě poznatků a naučit se je správně využívat.

Druhou determinantou v této skupině je požadavek *na efektivní dosahování výukových cílů*, který je založen na skutečnosti, že realizace „klasického“ distančního vzdělávání byla založena na přenosových médiích, která neumožňovala využívat některé efektivní prvky uplatnění názornosti, ale také jen velmi obtížně umožňovala dosahování afektivních a psychomotorických cílů vzdělávání. Tuto skutečnost potvrzují i uznávaní odborníci na distanční vzdělávání, kteří často konstatují, že pomocí tištěných distančních studijních materiálů je zpravidla možné dosahovat pouze kognitivních cílů vzdělávání (Zlámalová, 2007, s. 23). Jeví se tedy vhodné tyto materiály doplnit o moderní elektronické prvky prezentace učiva jako je hypertext, vizualizace, simulace či virtuální realita.

Tyto determinující vlivy předpokládají existenci technických prostředků, které umožní nejen aplikaci těchto prvků a jejich složek (prezentace učiva, řízení, komunikace, evaluace, manipulace

s učivem apod.) do vzdělávání, ale také nástroje pro posuzování kvality či efektivity takto pojatého vzdělávacího procesu.

6. ZÁVĚR

V jednotlivých fázích svého vývoje distanční vzdělávání odráželo některé základní teorie učení dané doby. Programované učení bylo odrazem behaviorismu, technologické teorie byly odrazem kognitivismu. Konstruktivistické teorie se v oblasti vzdělávání realizované formou e-learningu odrážejí především v soudobé „hypermedialitě“ a „interaktivitě“. Tyto teorie jsou srovnávány nejen s obecnými principy distančního vzdělávání, ale také s reálnými možnostmi využití informačních a komunikačních technologií.

Jednotlivé identifikované determinanty ovlivňující rozvoj vzdělávání formou e-learningu, vycházejí především z vnitřních i vnějších podmínek za kterých je vzdělávání na vysokých školách realizováno. Tyto podmínky nevycházejí vždy z potřeb účastníků tohoto typu vzdělávání a rozvoje příslušných pedagogických teorií, ale především z potřeb vzdělávacích institucí, které jsou mnohdy čistě pragmatické.

Je tedy nutné tuto oblast soustavně zkoumat a na základě výstupů těchto pozorování upravovat vnitřní a vnější podmínky tak, aby umožňovali smysluplnou a kvalitní realizaci vzdělávání na vysokých školách.

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PODĚKOVÁNÍ

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NEW MODELS OF LEARNING IN HIGHER EDUCATION INSTITUTIONS

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Abstract:

In most of the universities we can find a special department or unit to support the development of digital contents for learning. This trend has grown with the success of the ICT at the end of the nineties, the popularity of Internet as a communication tool and the fascinating online services for global publication and searching engines. Initially, the distance learning teaching was adopting this new model, but nowadays, it has a widespread use in most of Higher Education Institution to support and enhance the face-to-face methodologies with the support of ICT. This paper shows some issues regarding the inclusion of technology on Higher Education Institutions and the role of these e-learning units on future trends.

Keywords:

E-learning, online communities, Digital identity, LMS, PLN, OER.

1. INTRODUCTION

Most of universities in the last decade created special unit for training and supporting ICT-enabled classes in the aims of facilitating teachers the management of their courses (contents, communication and activities). In fact, e-learning strategies are largely involved in myths and promises of effectiveness and flexibility that sometimes are far from the real situation (Njenga and Fourie, 2010), but nowadays, the situation is changing.

Sometimes, we are not aware that a new paradigm shift of digital identity and modern communication models is growing in society (Gea, Montes, and Gonzalez-Laredo, 2011) and education institutions are not an exception. The impact of ICT in everyday life is transforming our information society to a networking society, where new media features are the digital nature, (immediate) interactivity and accessible everywhere (Van Dijk, 2006). Higher Education

Institutions are plenty of digital natives (students) where technology is used widely for everyday life (communication, social networks, leisure, information, production etc.). This dramatic change appeared recently and so fast that sometimes, institutions, teachers and decision makers are not adopting enough changes to adapt their structures to this new situation. This is a global phenomenon, affecting any kind of activity we may involve. The computer and Internet were the basis of a new emerging paradigm of an interconnected world with new powerful network services for collaboration, information sharing and searching. The challenge from personal computer (user as a consumer) to ubiquitous computing (Weiser, 1991) represents a change towards users as producers and online communities for knowledge building. Institutions, on the other hand, are committed to a slowly change from analog to a digital model (Negroponte, 1994), materials, and resources are migrating towards repositories based on Learning Management System (LMS) with some kind of support to tutoring, communication management and self-assessments. These steps are usually organised through e-learning units/centres, adopting ICT on the new model of future classrooms and training teachers to new ways of interacting with students. These changes are so faster that sometimes is it a stressing situation for institutions with difficulties to follow trends, but at least, some of the activities adopted in the last years are the following:

- Increase visibility of the institution on Internet (curricula, teachers, organisation, academic activities, etc.). Nowadays it is recognised by decision makers a strategic issue and a good practice the improvement of the (digital) reputation.
- Use of LMS to support teaching activities. These tools offer new possibilities to manage resources, activities, and student assessment. The methodological background is smooth changing towards these new forms of learning.
- Creation of open educational resources (OER) in the aims of promoting open knowledge (Jacobi, 2012) and open source (software)

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- Visibility is some social networks, where social media are used focusing communication and dissemination of activities.
 - New services (sometimes using web 2.0 services) for streaming, digital repositories, etc.

These changes imply a transition toward a digital identity (email, LMS, social networks...) and nowadays, we are living in a mixed model where old methods and new tools coexist. In this process, attitude towards change is a crucial straightforward step, where sometimes we found some sort of teacher reticences, whereas students are digital natives.

2. DIGITAL LEARNING

Online or ICT-enhanced learning are common words to reflect this challenge in the methodology for teaching. Some of tag cloud and keywords for modern education institutions is summarised in Figure 1.



Figure 1. Tag Cloud of ICT-enhanced learning

The adoption of these trends is a great challenge on institutions. In this framework, the role of the e-learning units is fundamental to ensure a smooth and productive transition towards a new digital learning. These issues were discussed on a working group (Petegem 2009) to have a SWOT analysis representing the impact of these changes with different (pedagogically, technological and

organisational) points of view. The most relevant issues are shown in Table 1.

	PEDAGOGY	TECHNOLOGY	ORGANISATION
STRENGTH	e-learning is part of the mainstream learning Students – more active as learner, use of ICT	Improve access to resources, Better communication, Accessibility Repositories sharing	There is a unit of e-learning in most of universities Support to the teacher
WEAKNESS	Technology driven rather than pedagogy? Staff resistance of change	Different learning solutions (LMS) Management changes & Plagiarism?	Institutional strategies (ICT support, teach Vs. research)
OPPORTUNITIES	Internationalisation Need of good practices, and collaborations	Scope for innovation (m-learning, social networks, gaming) Flexible programs	National/International cooperation e-University
THREADS	Need of cultural change (Digital identity) New skills for learning	ICT Obsolescence Fast changes Technology cost	Copyrights Funding needs

Table 1. SWOT analysis of eLearning Units

The conclusions are illustrative of the opportunities and difficulties to adopt these changes. Strengths are well known due to the enhancement of (expanded) learning using new tools, adopted in classroom and supported by institutions. On the other hand, we may find some lacks and difficulties in this process based on the constant change of technology (obsolescence), interoperability between platforms (and therefore between institutions), plagiarism problems and a better pedagogical support to enhance the creativity and

innovation. Also, institutions prefer the investment in researching instead of innovating in teaching.

Perhaps, the most evident conclusion is the opportunity to a real change in institutions towards a real e-University (not virtual) where internationalisation, flexible learning, digital identity and lifelong learning are true fact. But in the opposite way, we have to cross some barriers; one of the most important is the sustainability of these new resources (new tools, technician support, storage, updates, etc.), the content providers (copyrights) and the new skills needed to survive in this new ecosystem.

3. OPPORTUNITIES FOR OPEN CREATIVE LEARNING

We are living the beginnings of the new information with amazing possibilities and universal access to knowledge, learning and communication through a networked world. Trends are constantly changing (Johnson and Brown 2012) and researchers are opening new frontiers never known in the past. Analysing the context, several key factor are relevant in this process as shown below:

- **The nomadic society.** Mobility is a key issue in our society. People spend a lot of time working and travelling from one place to another. Technology allows us create new models of communication and collaboration, and that nomadic time is spent in technology-aware places.
- **Our digital identity.** Nowadays, we are continuously sign-in online accounts and services. These activities also represent some kind of virtual traces, tracking our activities and intentions on this parallel digital world. The persistence of our activities are encoded in TCP/IP packets, stored, used and recommended to others. This identity is regarded with new features such as reputation, trust, confidence or popularity.
- **The knowledge provider.** Wise and knowledge are also acquainted with Higher Education Institutions. But other alternatives based on informal learning are gaining more acceptances using Internet and online communities to maximize audience and self-assessment.

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- **New rules and codes.** The cyberspace has different models of regulation, and governments and companies control these norms. Open trends are another emerging field supported by digital media: open software, free contents, or sharing mechanism are new models of sharing, learning and promoting creativity.

A common issue in any of these scenarios is the lifelong learning attitude. We are in a continuous model of training to new skills, new models of accessing to information and selecting new ways of information acquisition and knowledge. Open Educational Resources (Jacobi, 2012) is an interesting initiative, where the community (also educational institutions) is creating a deep body of open educational content. Initiatives promoted by Higher education institutions (i.e. OCW, iTunesU) and other by the community (i.e. wikipedia, khanacademy, youtube edu) offers several alternatives for users. This challenge is nowadays a consolidated trend. For instance, the most relevant universities around the world offer high-quality free massive open online courses (Weld and Adar, 2010). These initiatives are costly in human and technical resources, so therefore, funding needs to maintain such offer with good average of quality is another problem that institutions has to overcome. In the future, the role of Universities to accredit competencies is not only based on traditional masters and degrees, so they have to adopt some kind of certification and recognition to informal learning or free open contents. We are leading a European project (OERTest, 2012) to test the feasibility of assessing learning exclusively achieved through the use of Open Educational Resources. This is an issue that Universities have to carefully study in order to have a position regarding informal and open social learning.

4. CONCLUSION

Although there is awareness across European higher education institutions that ICT plays a pivotal role in pedagogical innovation, truly effective use of ICT remains patchy. For a student-centred view, current methodologies of learning and knowledge acquisition should be rooted on current and future technologies. In this framework, e-learning is growing in traditional universities as a complementary model for learning strategies based on ICT. In this paper, a SWOT

analysis is presented showing the role of the e-learning units in the universities. After that, some of the strategic issues of ICT that must be allocated on these units are the following:

- Content creation / production. Internet is a huge content provider, and the Universities must be positioned as a confident content publisher due to their role for disseminating knowledge. OpenCourseWare Consortium was an interesting approach one decade ago, but a big effort must be done in this way for a Lifelong learning society.
- Virtual mobility. Mobility is a new paradigm for student and a complement to physical mobility (Montes & Gea, 2011) for based on the understanding of the intercultural exchange based on virtual communities to enhance and complement physical mobility, internationalisation of curricula and intercultural exchange
- Digital Competences for a digital society. In fact, it is important to increase the skills to manage our digital identity, not only for students but also for teachers and technicians

The paper summarised some of the most relevant trends based on the ICT adoption on everyday life for learning and the role adopted by higher education institutions. This is an open question and we have to analyse carefully the proposal adopted by universities (Coursera, edX) to have a better approach to future models of learning.

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VÝUKA MLADÉ GENERACE S VYUŽITÍM MODERNÍCH TECHNOLOGIÍ PRO BUDOUCÍ DISTANČNÍ VZDĚLÁVÁNÍ

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Abstract:

The Education using computer technology begins for the young generation in primary school. Here, students gain knowledge and skills to work with computer technology. It is important that in this period is the education of pupils in this area quality and effective. The Post will document the use of new teaching methods in elementary school, and their inclusion in the effectiveness of teaching. The post describes "The action research" carried out in the Science subject in the educational field of Information and communication technologies in elementary school. In the first part will be presented the aim and type of research together with the determination of research questions. The second part will deal with a specific project for the experimental group. Here we will summarize the activities of students, teaching methods used, equipment and presentation of the project including the web address where the project is saved. The text will follow, in particular how were carried all the qualitative data collection, processing, their encoding and their subsequent analysis. The main section of this part is the detailed analysis of selected activities of students during the research. The conclusion of the article will be devoted to answers the research questions. It outlined the usefulness of research for practical use of high-quality education at primary school using with ICT.

Klíčová slova:

ICT, projektová metoda výuky, kvalitativní výzkum, rastrová a vektorová grafika.

1. ÚVOD

Vzdělávání s využitím výpočetní techniky začíná pro mladou generaci již na základní škole. Zde žáci získávají první znalosti a dovednosti práce s výpočetní technikou. Je třeba, aby v tomto období bylo vzdělání žáků v této oblasti kvalitní a efektivní. Kvalitou a efektivitou výuky spolu k zatraktivněním výuky se zabývá snad každý pedagog. Jednou z možností, jak zapojit žáky plně do výuky, je využít projektové metody výuky (Kratochvílová, 2009). Při použití

uvedené metody výuky vyvstanou otázky, jaká je úroveň teoretických znalostí a praktických dovedností při výuce informatiky s využitím projektů v porovnání s klasickými metodami výuky. Odpovědi na stanovené otázky se zabýval výzkum, který byl realizován ve vzdělávací oblasti Informační a komunikační technologie na základní škole v učivu vektorová a rastrová grafika.

2. KVALITATIVNÍ VÝZKUM

Při akčním výzkumu byla použita kvalitativní výzkumná strategie, která je zaměřená na menší vzorky a výzkumník má k subjektu těsný vztah (Hendl, 2008). Postoj výzkumníka byl uvnitř situace. Případová studie se zaměřila na studium sociálních skupin. Skupinou byla skupina žáků.

2.1. Cíl výzkumu

Cílem výzkumu bylo získat odpovědi na základní výzkumné otázky:

- Jaké mají znalosti žáci, kteří se učí projektovou metodou v porovnání s žáky, kteří se učí tradičními výukovými metodami?
- Jaké mají dovednosti žáci, kteří se učí projektovou metodou v porovnání s žáky, kteří se učí tradičními výukovými metodami?
- Jaký je přístup žáků k výuce při uplatnění projektové metody v porovnání s žáky, kteří se učí tradičními výukovými metodami?
- Jaké jsou znaky chování žáků, role žáků a činnosti žáků ve skupině při uplatnění projektové metody v porovnání s žáky ve skupině, kde se učí tradičními výukovými metodami?
- Jaké je sociální klima ve skupině, která se učí projektovou metodou v porovnání se skupinou, kde se učí tradičními výukovými metodami?

2.2. Podmínky výzkumu

Výzkum byl realizován na základní škole v Plzni, která se zařazuje mezi městské školy s kapacitou 800 žáků.

Na výzkumu se podílely dvě skupiny žáků. První skupina je nazývána jako SK8-VT (SK8-RP). V této skupině byli žáci 8. ročníku

povinně volitelného předmětu Informatika. Výuka žáků učiva vektorová grafika u této skupiny probíhala tradiční metodou výuky a výuka učiva rastrová grafika probíhala projektovou metodou výuky. Druhá skupina je nazývána jako SK9-VP (SK9-RT). V této skupině byli žáci 9. ročníku povinně volitelného předmětu Informatika. Výuka učiva vektorová grafika u této skupiny probíhala projektovou metodou výuky a výuka učiva rastrová grafika probíhala tradiční metodou výuky. Skupiny měly přibližně stejný počet žáků. V 8. ročníku bylo 13 žáků v 9. ročníku bylo 14 žáků.

2.3. Omezení výzkumu

Studii a její závěry je nutno brát jako lokální, protože výzkum byl prováděn na žácích stejné základní školy, kteří absolvovali povinný předmět Informatika v 6. ročníku a v ostatních ročnících na tento předmět navazující volitelný předmět Informatika. Žáci tedy mají dostatek předchozích teoretických znalostí a praktických dovedností s informačními a komunikačními technologiemi. Toto je zároveň výhodou (skupiny jsou v tomto smyslu trvalé a homogenní) a nevýhodou (mohou se projevit i jiné vlivy, dané předchozími zkušenostmi, které by žáci na jiné základní škole nezískali).

3. VLASTNÍ REALIZACE VÝZKUMU

3.1. Experiment 1

Výuka experimentální skupiny (SK9-VP) probíhala projektovou metodou výuky. Skupina pracovala na projektu s názvem „Škola hledá prvňáčky, pomůžeme jí“. Projekt byl realizován v listopadu školního roku 2011/2012 s časovou dotací 12 vyučovacích hodin. Projekt se zařazuje do vzdělávací oblasti ICT, jeho mezipředmětové vztahy jsou Výtvarná výchova a Český jazyk a literatura. Cílem projektu bylo seznámit žáky se základními pojmy vektorové grafiky, pochopit princip vektorové grafiky a naučit žáky pracovat s programy pro vektorovou grafiku.

První motivace k projektu proběhla při zpracování plakátů pro zápisy prvňáčků v hodině výtvarné výchovy, poté učitel nenásilnou formou ve skupině pohovořil s žáky o dalších možnostech vytvoření více

plakátů. Žáci sami navrhli elektronickou podobu a chtěli na ní podílet. Tato motivace pod vedením učitele vyústí v realizaci projektu.

Žáci během projektu využili tyto pomůcky: počítač s připojením na internet; multimediální interaktivní tabuli; software pro vektorovou grafiku (Zoner Callisto, CorelDraw); tiskárna; pastelky, zvýrazňovače, nůžky, lepidlo; reklamní plakáty (tištěná i elektronická podoba); psací potřeby.

Prezentace projektu byla ústní s pomocí elektronické prezentace na multimediální interaktivní tabuli před žáky a pedagogem a tištěná (vyvěšení plakátů v okolí školy, ve školkách a ve škole při zápisech prvňáčků). Projekt byl také prezentován na webových stránkách školy. Na hodnocení projektu se podíleli pedagogové, žáci, veřejnost a rodiče.

Výuka kontrolní skupiny (SK9-RT) probíhala tradiční metodou výuky ve stejném časovém úseku jako projekt a se stejným cílem výuky. Všichni žáci vypracovali plakát v programu Corel DRAW. Plakát měl obsahovat tyto povinné komponenty: logo školy; fotografie školy; vzory barev v RGB; text; povinné objekty (obdélník, hvězda). Soubory s povinnými komponenty měli žáci k dispozici na webových stránkách Grafika. Stránky byly uloženy na síťovém disku.

3.2. Experiment 2

Výuka experimentální skupiny (SK8-RP) probíhala projektovou metodou výuky. Skupina pracovala na projektu s názvem „Můžeme být na každém místě na Zemi, podívejte“: Projekt byl realizován v prosinci školního roku 2011/2012 s časovou dotací 12 vyučovacích hodin. Projekt se zařazuje do vzdělávací oblasti ICT, jeho mezipředmětové vztahy jsou Zeměpis a Výtvarná výchova. Cílem projektu bylo seznámit žáky se základními pojmy rastrové grafiky, pochopit princip rastrové grafiky a naučit žáky pracovat s programy pro rastrovou grafiku.

První motivace k projektu proběhla při hodině zeměpisu, kdy žáci při práci s mapou (nástěnná mapa a digitální mapa) vyhledávali zajímavá místa v ČR a ve světě. Při rozhovoru pedagog naznačil, že s využitím nových technologií mohou být na jakémkoliv místě na Zemi (aniž by museli cestovat) a mohou svoji polohu zdokumentovat

i fotografií. Tato motivace pod vedením pedagoga vyústila v realizaci projektu.

Žáci během projektu využili tyto pomůcky: počítač s připojením na internet; multimediální interaktivní tabuli; digitální fotoaparát; skener, software pro rastrovou grafiku (Zoner Photo Studio, Corel PHOTO-PAINT, PAINT.NET); tiskárnu; fotografický papír; fotografie, fotomontáže fotografií (tištěná i elektronická podoba); psací potřeby, nástěnnou a digitální mapu.

Prezentace projektu byla ústní s pomocí elektronické prezentace na multimediální interaktivní tabuli před žáky a pedagogem a tištěná (vyvěšení fotomontáže ve škole se souhlasem žáků). Projekt byl také prezentován na webových stránkách školy. Na hodnocení projektu se podíleli pedagogové, žáci, veřejnost a rodiče.

Výuka kontrolní skupiny (SK9-RT) probíhala tradiční metodou výuky ve stejném časovém úseku jako projekt a se stejným cílem výuky. Všichni žáci kontrolní skupiny vypracovali závěrečnou koláž v programu Corel PHOTO-PAINT. Koláž měla obsahovat tyto povinné komponenty: fotografie osoby; fotografie školy; vlajka ČR; automobil; text. Uvedené podklady měli žáci k dispozici na síťovém disku školy.

3.3. Způsob sběru dat výzkumu

Při výzkumu byly u každé skupiny uplatněny následující metody sběru dat: metoda pozorování (introspektivní metoda a extrospektivní metoda pozorování); metoda moderovaného interview (nestrukturované skupinové interview vedené na začátku výzkumu, polostrukturované skupinové interview vedené na konci každé hodiny a polostrukturované individuální interview vedené na konci výzkumu). Dalším zdrojem kvalitativních dat byl textový a elektronický dokument. V průběhu výzkumu byla kvalitativní data vázána na diktafon, digitální fotografii, elektronicky a tiskově vypracované výstupní soubory, fotografie a záznamové archy (Švaříček, 2007).

3.4. Zpracování kvalitativních dat výzkumu

Získaná data z netextové povahy byla převedena do povahy textové. Při převodu dat do písemné podoby byl použit program Transcriber,

pomocí kterého byla provedena doslovná transkripce mluveného projevu (Bitrich, 2001). Po zafixování všech kvalitativních dat byla data kódována a převedena do datových segmentů. V dalším kroku následovala analýza a propojování výzkumných dat. Pro kódování, zpracování a analýzu elektronických dat byl použit volně šiřitelný program pro kvalitativní výzkum ATLAS.ti.

3.5. Kódování a analýza dat

V analýze práce skupiny bylo kódování rozděleno na dvě fáze. První fáze byla fází otevřeného kódování – označování jevů a druhá fáze byla fází otevřeného kódování – analytické kategorie (Miovský, 2006).

V první fázi otevřeného kódování byly pro přehlednost údaje z kódování zaznamenány do tabulky. Tabulka obsahuje tři sloupce – odkaz, pojem, charakteristika. První sloupec odkaz (kód) slouží k označení určitého pojmu – jevu. Kód byl určen podle stanovených výzkumných otázek následovně: znalosti žáků byly kódovány kódem 1x; dovednosti žáků byly kódovány kódem 2x; přístup žáků k projektové (tradiční) metodě byl kódován kódem 3x; znaky chování žáků, role žáků a činnosti žáků ve skupině byly kódovány kódem 4x; a sociální klima ve skupině bylo kódováno kódem 5x. Vzniklý jev (pojem) uvádí druhý sloupec tabulky. Přiřazuje určitou výpověď žáka, nebo situaci ve skupině. Třetí sloupec tabulky charakterizuje daný pojem a je rozpracován na jednotlivé dimenze (vlastnosti na určitém stupni). Zde jsou uvedeny poznámky, jak tomu bylo v daném případě.

V druhé fázi otevřeného kódování byly jednotlivé pojmy kategorizované, tedy určitým způsobem tříděné a seskupené (vytvořené trsy). Byla vytvořena tabulka (ukázka Tabulka 1), která obsahuje kategorie (třída pojmů vzniklá vzájemným propojením významové jednotky, které korespondují s výzkumným cílem) tj. (znalosti, dovednosti, přístup žáků, znaky chování žáků, role žáků a činnosti žáků, sociální klima ve skupině). Tabulka obsahuje dva sloupce – kategorie a dimenze. V prvním sloupci jsou zaznamenány jednotlivé kategorie (vytvořené z pojmů). V druhém sloupci jsou shrnuty závěrečné dimenze, které nastaly v průběhu výzkumu. Tyto dimenze jsou souhrnem podstatných závěrů analýzy.

Kategorie	Dimenze
Znalosti žáků (popisné a faktické údaje).	<p>Žák: získal průměrné znalosti rastrové grafiky, dokáže znalosti vyjmenovat a aplikovat.</p> <p>Žák: znalosti definuje v činnostech (ovládání programu).</p> <p>Žák: dokáže aplikovat předchozí znalosti učiva informatiky.</p> <p>Žák: získal nadprůměrné znalosti zásad fotografování.</p>

Tabulka 1: Ukázka části tabulky druhé fáze otevřeného kódování

3.6. Shrnutí analýzy z hlediska stanovených výzkumných otázek

Z uvedeného výzkumu a jeho analýzy je možné stanovit odpovědi na výzkumné otázky:

- Znalosti žáků, kteří se učili učivo vektorová grafika projektovou metodou výuky, byly nižší, v porovnání s žáky, kteří se učili tradiční metodou výuky. Znalosti žáků, kteří se učili učivo rastrová grafika projektovou metodou výuky, byly stejné v porovnání s žáky, kteří se učili tradiční metodou výuky s výjimkou znalosti obecných zásad fotografování. Tyto znalosti měli výrazně nižší žáci, kteří se učili projektovou metodou výuky. Zobecněním lze stanovit: žáci, kteří učí projektovou metodou výuky, mají nižší znalosti, v porovnání s žáky, kteří se učí tradiční metodou výuky.
- Dovednosti žáků, kteří se učili učivo vektorová grafika projektovou metodou výuky, byly vyšší, v porovnání s žáky, kteří se učili tradiční metodou výuky. Dovednosti žáků, kteří se učili učivo rastrová grafika projektovou metodou výuky, byly stejné, v porovnání s žáky, kteří se učili tradiční metodou výuky s výjimkou dovednosti práce týkající se koláží fotografií. Tyto dovednosti měli vyšší žáci, kteří se učili projektovou metodou výuky. Zobecněním lze stanovit: žáci, kteří učí projektovou

metodou výuky, mají vyšší dovednosti, v porovnání s žáky, kteří se učí tradiční metodou výuky

- Projektovou metodu výuky s využitím výpočetní techniky zvládly obě skupiny žáků, bez ohledu na věk žáků a počet odučených hodin informatiky.
- Přístup žáků k projektové metodě výuky byl kladný. Žákům se projektová metoda výuky líbila. Jako důvod uváděli, že je více baví pracovat na jednom projektu, být nucen si sehnat informace a projekt obhájit.
- Činnost žáků při uplatnění projektové metody výuky byla více rozmanitá. Žáci pro úspěšné vypracování projektu byli nuceni splnit více činností a aktivit v porovnání s žáky, kteří se učili tradiční metodou výuky. Role žáků v rámci skupiny byly u projektové metody výuky rozmanitější a podněcovali žáky k lepšímu plnění projektu. Znaky chování žáků úzce souvisely se sociálním klimatem skupiny, kterému je věnován následující odstavec. Všichni žáci (s výjimkou jedné dvojice) chtěli vypracovat výsledný projekt na svém počítači sami. Což lze považovat za specifikum předmětu Informatika.
- Sociální a pracovní klima ve skupině bylo závislé na konkrétní skupině žáků. Skupina žáků 9. ročníku se projevila jako soudržná a schopná spolupráce. Projektová metoda výuky je podněcovala k vzájemné pomoci, spolupráci a vzájemnému řešení projektu. Tradiční metoda výuky je nijak nepodněcovala ke spolupráci, kterou byli schopni uplatnit během projektu. Skupina žáků 8. ročníku se při projektové metodě výuky projevila jako nesoudržná. Skupina se rozdělila na silné individualisty a jedince, kteří připustili spolupráci. Vykrytalizovaly zde špatné vztahy žáků mezi sebou, ignorace spolužáků a urážky spolužáků. Tyto sociální aspekty nebyly při tradiční metodě výuky zaznamenány v tak výrazné rovině.

4. ZÁVĚR

Příspěvek si kladl za cíl dokumentovat využití nových metod výuky na základní škole a jejich efektivitu zařazení do výuky. Pro distanční vzdělávání, které se stává v dnešní době fenoménem, je nutné, aby se mladí lidé naučili kvalitně a odpovědně pracovat s výpočetní technikou a s informacemi. Tyto znalosti a dovednosti lze nalézt ve velké míře na základní škole. Právě kvalitní výuka umožní mladým lidem pokračovat v dalších stupních vzdělání s využitím moderních metod a technologií.

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IDENTIFICATION OF LEARNERS' ATTITUDES REGARDING THE IMPLEMENTATION OF READ/WRITE WEB, BLOG TOOLS: A CASE STUDY IN HIGHER EDUCATION

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Abstract:

The aim of this paper is to identify the current perceptions and attitudes of learners in higher education toward the use of blog tools. A qualitative questionnaire, interview and, observation were used to collect data before and after the study in order to measure any differences that may have occurred. Although the learners' attitudes were mixed, it was possible to compare and contrast them pre and post study. Before the study most of their responses focused on their positive expectations of the blog. It was something they wished to gain despite their lack of knowledge of blog services. The issues, the learners considered were those that could affect their attitudes, i.e. 'Skills' and the 'Beneficial'. The attitudes of the learners after the implementation of the blog were mostly positive but in two conceptually different ways. Firstly, there was a positive attitude toward the acceptance and utilization of blogs but with certain conditions. Secondly, there was a positive attitude supported by a justification. Generally, 'features of blogs' and 'communications' were the important factors that could affect learners' attitudes but the main issue considered by the learners was the interactivity between participants.

Keywords:

E-learning, Read/Write, Blog, Attitude, Interactivity.

1. INTRODUCTION

In recent times, internet services have become widely used in higher education to significantly improve and develop the learning environment (Grosseck 2009). More particularly, the potential of blogs include their ability to support individual learning experiences and interactions (Lin, Liu, et al. 2006). Further they could be used to encourage and develop critical thinking, improve communication between learners and instructors, develop cooperative learning and enhance the learning environment (Alhojailan 2012; Lin, Liu, et al.

2006; Tan 2009; Kim 2008; Ocker & Yaverbaum 1999). Some studies claim that blogs are valuable because of their “reflective nature” (Sim & Hew 2010, p.151). To date, there is much research in favour for the use of blog services to secure a diversity of aims (Kim 2008; Williams & Jacobs 2004). Nevertheless, studies that investigate the attitude of learners toward blogs are rare (Sim & Hew 2010). This paper focuses on identifying learners’ attitudes that could influence the adaptation of blog services in higher education through the application of an experimental study. The learners were invited to express their feelings, opinions and reflections regarding blog services before and after their course.

2. THE PURPOSE OF THE STUDY

The purpose of this paper is to study the attitude of learners in higher education regarding the implementation of blog tools. The main aim is to gain a deeper understanding of learners’ attitudes toward blog tool integration. The inquiry also aimed to highlight the main issues that concerned students when using blogs as part of their learning environment.

3. BLOGS IN HIGHER EDUCATION, READ/WRITE APPLICATION (WEB 2.0)

Educational institutions are very active in adapting read/write web applications-web 2.0-. Higher education has significantly benefitted from developments in this field (Alhojailan 2012; Wang et al. 2008), for example, e-learning systems, which have evolved by adapting web technology (Anderson 2007).

Read/write web application refers to the second generation of web-based services, such as, Facebook, Blogging, Flickr and Twitter etc. These applications provide and emphasize online facilities in two main ways: collaboration and sharing (Sim & Hew 2010). More particularly, Baltaci-Goktalay & Ozdilek (2010) adapted and categorized five main strategies that could affect the ways users interact by utilizing the read/write web –web 2.0- application.

These strategies are

- sharing content, where the learners share their thoughts, ideas

and experiences

- developing content via learners as a group
- “*for large sets of user contributed content*” (ibid, p.4738)
- providing content trends for contribution (Baltaci-Goktalay & Ozdilek 2010 in Howe 2006)
- the ability to create a virtual world-learning environment

The fifth strategy has recently been studied further and it has been found that learners can express their thoughts and experiences with their instructor by posting comments regarding course materials via web 2.0 (Maag 2005).

Improving and developing skills/knowledge via cooperative learning could be rendered possible by integrating technology, such as, web services into classrooms. This can be achieved by using blogs that enable learners to become interactive in order for them to share their experiences (Lei et al. 2012, Weller, et al. 2005). According to recent reports, the innovation of new web services, i.e. the read/write web has proven powerful for improving the learning environment, especially in higher education (Lei et al. 2012; Kim 2008; Anderson 2007; Wu 2006; Schiano et al. 2004).

Practically, blog interactivity provides a wide range of space where the learners can expand their knowledge outside the classroom (Betts & Glogoff 2004). Moreover, Williams & Jacobs (2004) claim that blogs enable learners to share experiences and thoughts to bring about intellectual change. Nevertheless, Lin et al (2006) argue that blogs are beneficial even for the learner who is less interactive. In some instances, for example, learners are able to benefit by reading the posts and comments of others. This phenomenon is termed the ‘interaction of reading.’

There is no major difference in views upon the value of the read/write web in education. Grosseck (2009) said, “There is a general consensus on the positive aspects of Web 2.0 in teaching.” (p.481)

Grosseck, however, felt that educators remain ignorant in terms of adapting blog services in the classroom. One main point educators

have to consider when they adapt blog services is the learner's attitude. This is because the learner's attitude needs to be viewed as a concept, which is a new circumstance in education.

Moreover, educators should re-examine their teaching technique when using the read/write web by taking in to account learners' behaviours, which are mediated by their 'attitudes' (Ibid 2009).

Learner perceptions with respect to their attitudes are a major factor that drives the integration of technology in education. The perception of learners, however 'probably' changes from time to time (Venkatesh & Brown 2001). This paper focuses upon learners' perceptions and attitudes as it explores their feelings toward utilizing blog services in order to classify the factors that would affect their responses (i.e. wither positive or negative).

4. STUDY PLAN

This paper describes the implementation of the use of blog services in higher education level. It discusses the details of the study. It intends to identify the learners' attitudes by gathering data before and after the study through pre/post questionnaires, interviews and observations. At the start of the course, the researcher created a blog to encourage and enable all learners to become interactive and share their ideas and thoughts. In addition, the learners were allowed to voluntary participate by posting and commenting on blogs that related to their module's syllabus with no further structure.

The duration of the course was seventeen weeks. Pre-questionnaires and pre-interviews were gathered during second week while the post-questionnaire were collected during the 17th week. The observations were made throughout the seventeen weeks of the course.

4.1. Methods and Instruments

Qualitative methods were used to collect data from the learners to pre- and, post- test their attitudes. The data was collected via a questionnaire i.e. general question, which inquired into blog acceptance, unstructured interviews and observations during the course.

Triangulation was used for collecting the data. The term 'triangulation' indicated that the researcher used more than one instrument for collecting the data (Meijer et al. 2002). It has been argued that triangulation is most likely to be the main technique used by researchers in education because it ensures that analysis is rigorous and the data is carefully scrutinized so as to validate the literature (Elliot & Adelman 1974; McNiff & Whitehead 2002; Elliot 1991). For these reasons, three instruments were used in this study i.e. a questionnaire, interview and observation.

In particular, interviews were used because it enabled the researcher to become deeply involved with the participants' feelings (O'Hanlon 2003). The questionnaire enabled the collation of specific data from the learners within the learning environment while the observations helped to compare what actually happened in the research setting to the perceptions of the learners. This methodology is particularly suitable for this study because without triangulation judging the actions of the learners (subjects) via one method could not provide all the data that is required. Triangulation allowed access to their knowledge to understand their genuine attitudes (Cohen et al. 2011).

4.2. Data analysis

The data was analyzed using thematic analysis by following the Miles and Huberman (1994) model, see (Figure 1). It provided a comprehensive analysis process, where the researcher was able to make numerous cross-references between the evolving themes and the data (Hayes 1997).

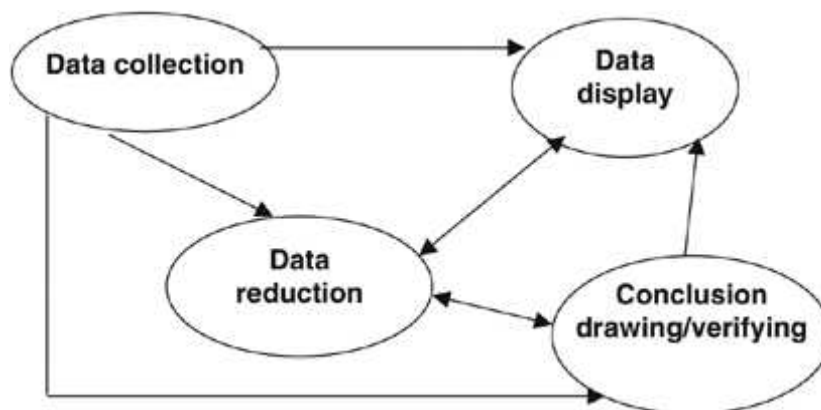


Figure 1: Miles & Huberman (1994) model for thematic analysis approached

After collection, the data was subjected to reduction. Data reduction refers to the process of selecting, focusing, simplifying, building and transforming the data (Miles & Huberman 1994). During this stage, new thoughts and ideas were developed in terms of what should be included in the context of data display. '*Data display*' is recognized by Miles & Huberman (1994) as, "*an organized, compressed assembly of information that permits conclusion drawing and action.*" (p. 11)

Importantly, these stages focus on visualizing the data. The data will be presented using diverse display techniques, such as, quotations, narrative text, figures, the tabulating of differences and similarities and clarifying the relationship and its associated complexity (Gibbs, 2002; Miles & Huberman, 1994; Yin, 2011). The advantage of utilizing such different data display techniques makes the description of comparisons and similarities clear (e.g. tabulating). In addition, it also increases the overall reliability of the research to make it valid for other researchers. In addition, displaying quotations aims to provide evidence, support and valid interpretation (Gibbs 2002; Miles & Huberman 1994; Patton 2002).

The final stages of the data analysis process were linked to arranging and organizing the study's concepts and thoughts. This was achieved by building coherent findings and drawing the results from the data. During this stage, the meaning of contradictory and identical data needed to be clarified (Creswell, 2007; Miles & Huberman, 1994).

4.3. Participants

The study was completed during the second semester of the academic year 2010-2011. All the participants (30 learners) were from Saudi Arabia, studying a subject entitled "*Computer Application in Education,*" at Teachers' College, King Saud University, Riyadh. The main aim of the module was to enable its learners to design and evaluate programmes in education using specific resources, such as, using web services. The duration of the course was seventeen weeks. The study was designed to collect data from all thirty of its

learners.

5. RESULTS AND CONCLUSIONS, RECOMMENDATIONS

5.1. Results

5.1.1. The result of the pre- questionnaire

The pre/post-questionnaires included a question concerning the ability of learners' acceptances of utilized blogs. The question was "*If you or your friend were offered an online-course via blog activities, would you take it or recommend it to your friend or not? Please explain why and why not?*", (Williams & Jacobs 2004; Al-Arfaj 2001).

Twenty-four learners responded to the pre-questionnaire. Most of them showed a positive attitude. Nevertheless, analysis of the pre-questionnaire showed that two main issues concerned the learners before they used the blog: (1) how beneficial is the blog, i.e. whether blog is useful or not and (2) the skills, i.e. what type of skills are needed to use it for educational purposes. Their concerns, however, come with different linked variables as in Figure 2.

Some learners indicated their lack of personal knowledge in terms of whether they possessed the necessary or appropriate tools to utilize blog services. This was linked mainly to their level of education, for example, how to choose a topic to communicate with others or what the best action to perform is and so on. The participants gave a variety of perceptions regarding the acceptance of the blog.

Pre-Attitude Easy to use Communication Time/place Skills Learning
environment Sharing information Self-efficacy Interactivity
Beneficial Policy Exchange the experience Content Up-dated

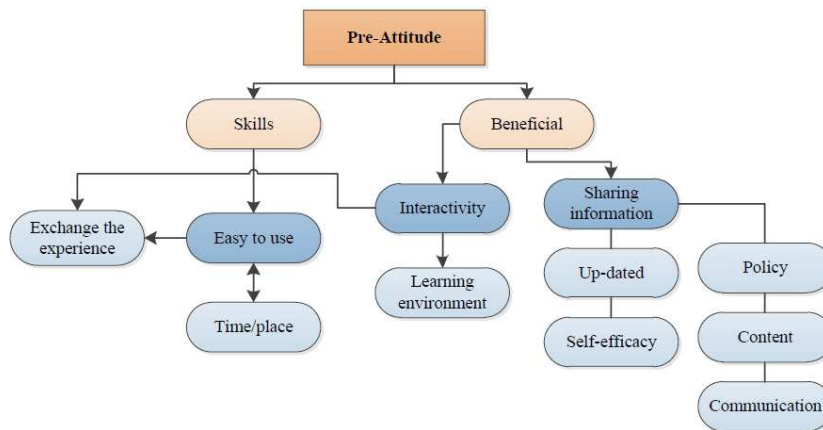


Figure 2: Pre- factors influencing the attitude of the implementation of blog concenter by learners

Most learners claimed that the skills they utilized to use the blog could be considered a factor that would affect their perception. For example, one learner said,

“I accept it but I need to know how to create a blog and to interact with others.”

This showed a positive attitude but accompanied by a lack of knowledge. With regard to the beneficial aspect, however, some learners showed their acceptance of using a blog in their learning environment. For example, one learner said,

“Yes, I will acceptif it is useful ..., we should use blog continuously during the course.”

The ease of use, interactivities and sharing information are secondary level factors that could influence learner usage.

Some learners, however, asserted that sharing information is important, especially with their instructors, for example, one learner answered the question by saying,

“Yes, [will accept to use blog again]; if it allows the learners to be socially interact by providing the right and cooperative environment where both educator and learner can share thoughts and experiences.”

Moreover, from previous statement, interactions that resulted in sharing information proved significant variables. Those could affect learners' attitudes.

5.1.2. The result of the pre-interviews

Fourteen learners were interviewed before the implementation of the blog. Most of the data gathered by interviewer proved compatible with the data collected via the pre-questionnaire. This enabled the researcher to conclude and summarize the results of the pre-interview under three main points, as follows:

Most of the learners were concerned about the correct way to utilize the blog. They expressed a positive attitude (as in pre-questionnaire) despite confessing their lack of knowledge of blog services. For example one participant said,

"It is my first time to use the blog. I don't think it is disadvantageous, I expect that it is good and useful as it entails discussion and dialogue."

Most of the learners indicated that blogs are a good idea within their learning environment and they were curious to know more about how to use them with diverse types of information and so on. This leads one to believe that, they gave their opinion based on what they were expecting from the blog not on any previous conceptions or biases. For instance for participant said,

"I believe that the most advantages is exchanging of the experience for one concerned subject as our module with knowing very little about blogs."

The analysis of the interviews elucidated a number of factors provided by the learners but none was justified in terms of agreement or disagreement. Their opinions, therefore, tended to be general in nature, reminiscent of a group meeting talking about the blog. This is illustrated by the conversation below.

***Lecturer:** What are the causes and means that you think have made the blog good in utilize?*

Learner: *as I mentioned before, there is no much room of freedom whenever the targets are precisely defined.*

Lecturer: *what do you mean by specific targets?*

Learner: *the rules of participation, yes, there might be an idea outside the circle you have drawn but it may open new horizons for you.*

Lecturer: *are you talking about our blog or blogs in general?*

Learner: *generally, the blogs have specific and regularized purposes in education, in my opinion."*

The result of the pre-interviews showed that the learners presented a positive attitude. Learners were excited about the implementation of the blog, wanting to become interactive and share their information/ideas but were only aware of a few significant points. The main point was that learners were anxious to interact with any type of read/write web application as it is an innovation that will mostly be beneficial in terms of *'their expectation.'*

5.1.3. The result of the Post-questionnaire

Learners were asked to answer the same questions they answered in the pre-questionnaire. All thirty learners responded. In addition, the result of their perceptions can be found in Figure 3.

Post-Attitude Motivation Tools value Enrich contentAssisting learning
Improving knowledge Providers content Learning environment Time
and placeEasy of useSharing information Exchanging
experienceInteractivity CommunicationFeatures

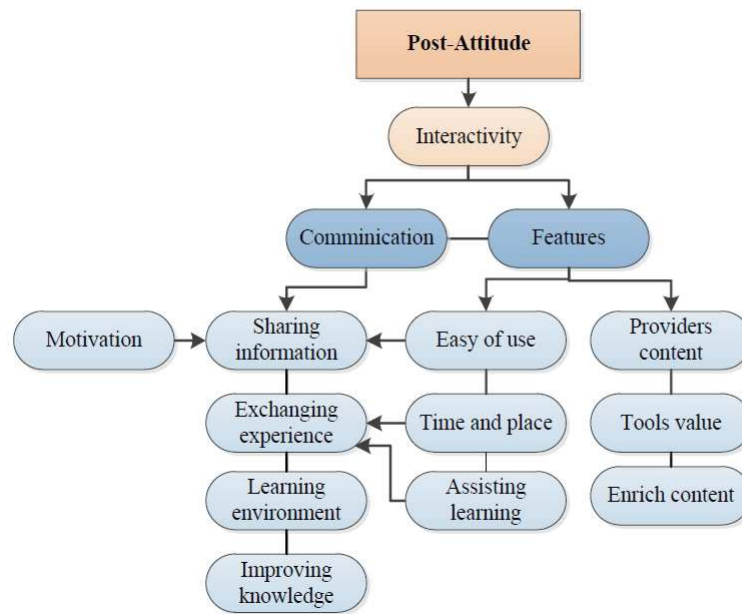


Figure 3: Post- factors influencing the attitude of the implementation of blog concenter by learners

Interactivity was the main factors that affected the learners attitude, in addition, communication and the features of the blog were the two main issues that affected learners' attitudes regarding its implementation during the course. Most of the learners, however, offered positive attitudes regarding their experiences with blog services. The learners considered that communication provides the ability to exchange experiences, ideas and sharing thoughts. Furthermore, they claimed that blog services present a good way of connecting and communicating between participants, especially between learners and instructors. For example, one learner said,

“Based on my experience in this course, I have found connected [communication] and exchanging ideas and thought is value.”

The features of the blog (i.e. ease of use, updated information, comments, content, tools value and engaged in any time and place) were considered by learners as an issue that makes them a major

factors.

In addition, one learner indicated the importance of communication in terms of providing an opportunity to use technology and to participate in a place where colleagues and the instructor are present. He said,

“Yes, I will accept it because; 1) it is a good methods to communicate between learners and teachers. 2) Via these tools, students will used to deal with technology. 3) Students will be participating with the subject.”

In addition, the learners considered communication as providing the ability to exchange experiences, ideas and share thoughts.

5.1.4. The result of observation

The result of the observations showed that the learners were excited and expressed a positive attitude during the course. A few issues did emerge during the implementation study that reduced some of learners' positive attitudes. These issues can be characterised under three main points.

Most of learners showed their resentment toward some posts, especially when they were transmitted from different websites. Learners preferred to read original text or 'contributed content.' Most of the posts during the first five weeks originated from other websites, which made most of the learners, see no point in creating our own blog. They claimed that we could use hyperlinks instead. Nevertheless, they were excited to read others' experiences and information rather than copying them.

Some learners displayed their dissatisfaction when confronted by verbose posts. Such posts were an issue. It caused some participants to become less interactive. In addition, it may have led some learners to modify slightly their attitude regarding the use of blogs in education and affect their perceptions in a negative way.

The structure in terms of the way to use the blog, i.e. 'the rules of blog' proved to be a concern. When the blog was started, no rules existed for posting and commenting. The only rule was that any posts should be related to the module's syllabus. Some learners, however, preferred to add some rules to manage the interactivities to avoid any

disturbing behaviour, e.g. long worded posts, reduced thankful comments, transmitted contents and the kind of content. Here the learners meant to determine the activities with the module's syllabus.

5.2. Lessons learned, conclusion

Before the implementation of the study, most responses tended to anticipate that the blog tools would be e-learning ones. This is indicated clearly throughout by their responses. Some of their responses show that they had no idea about blog utilization and so the reality of their responses tends to be concerned with giving information regarding their expectations. This means that there were excited and positivity disposed toward blog services.

After implementation, almost all the respondents tended to provide an optimistic review based on their experience of the course. Nevertheless, a few issues were noticed during analysis and they are considered 'unsolicited behaviour' when using the blog. They are summarised below.

- Most of learners agreed that interactivity was very positive. It encouraged their engagement and participation by contributing, especially when interactivity originated from the instructor.
- Communication and the features of the blog are the main factors [comes at the second level after interactivity] that drive the attitude of the learners toward interactivities.
- Most learners preferred original posts, i.e. they rejected any posts that had been copied from other websites.
- Unfavourable long posts; only three learners did not mind reading these especially, if it did not copy/past from other websites.
- Only three learners wished that blog activities were regulated by clear rules or [structures] e.g. the way to post, make the contents relate to the module's syllabus and include extra credit in the final mark for the modules.

Overall, it seems that the learners enjoyed participating in this experiment. The teacher [Myself] held the key responsibility for giving directions to the learners to enable them to develop a clear strategy of how best to use the blogs and provide the basic tools that they

require enabling them to take the first steps in engaging with these internet applications “*interactivity*”. It was realized that by using blogs certain skills and abilities not necessarily shown in classroom environments might be realized and promoted. Moreover, this research studied the cultural effect upon the learners’ feelings toward blogs and the impression gained was that cultural attitudes towards sharing and using e-learning i.e. blog web services can affect the impact that blogs can have in higher education.

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CRITERIA FOR DESIGNING EDUCATIONAL PORTALS BASED ON LEARNING CONCERN AND TYPE OF ENGAGEMENT

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Abstract:

The increasing viability of educational portals has helped the delivery of a set of services tailored to the needs of various types of learners. Although many portals have been designed for this purpose, but some are not capable of responding to different educational demands and expectations. This is particularly true when learners intend to become subject to education through their own style of engagement. To compensate for the corresponding deficiencies, in this paper, we propose some criteria essential to design of educational portals through considering learning concerns and the learner's types of engagement. These criteria are considered in a way to include functional aspects such as: representation, design, communication and collaboration, personalization and application as well as non-functional characteristics such as: efficiency, re-usability, integrity, reliability, etc. These items have been shown to be particularly significant with regard to design and evaluation of any sort of enterprise software in general.

It seems that, the interrelation between format of portality on the one side and learning concern and type of engagement on the other side is a significant point which is to be considered carefully in both designing and evaluating educational portals. Taking this point into account, the very criteria essential to such a design and evaluation should be developed based on this interrelation.

In this paper, having identified such an interrelation, we give characterization of the essential criteria using an ontology, and subsequently assess the capability of the proposed approach within some educational scenarios.

Keywords:

Educational portal, learning concern, types of engagement, portality format, design criteria, ontology.

1. INTRODUCTION

With the increasing growth in the number of learners and the amount of information on the internet, portals become significant as they bundle relevant information and tailor various services to the needs of different types of learners.

Although, there is a distinction between horizontal and vertical portals, from the perspectives of gateways, user status, service status (Kaur and Baba, 2006:1-6), etc. there is still some problems with regard to their major educational objective that is however to improve the level of educator's knowledge from one state to another.

There is no doubt that many networking, organizational and resource-based portals have been designed for this purpose, but some are not yet capable of responding to different educational and pedagogical demands and expectations, and instead emphasize on authentication, authorization and presentation aspects.

To overcome this problem, in this paper we propose some criteria to design and

evaluate an educational portal through considering learning concerns and learner's types of engagement. These criteria are considered in a way to include functional aspects such as: content representation, design, communication and collaboration, and personalization, as well as non-functional characteristics such as: efficiency, re-usability, integrity, reliability, etc.

It seems that, the relation between format of portality on the one side and learning concern and type of engagement on the other side is a significant point which is to be considered carefully in both designing and evaluating educational portals.

In this respect, an ontology is applied for characterizing essential criteria and, some educational scenarios are employed to assess the potential of the proposed approach.

The structure of the paper is as follows: Section 2 represents the related work, while the emphasis of Section 3 is on the proposed approach including "possible types of engagement", "determination of portality format based upon the type of concern & the type of engagement" and "role of ontology in characterizing the essential criteria". Scenarios are discussed in Section 4 and the paper is concluded in Section 5.

2. RELATED WORKS

A web portal is defined as a gateway to searchable and personalized information on the web, which also functions as a communication center for its target users. There are two main types of web portals; horizontal and vertical portals (Kaur and Baba, 2006:1-6).

Horizontal portals are also known as consumer portals that offer a broad range of services to users such as: Yahoo, MSN, AOL, Excite, etc. while, vertical portals can be further classified to enterprise information portals (such as: fool.com for investors), knowledge portals (such as: <http://abcteach.com> for ABC Teach Network,) and intranet portals (such as: <http://www.nsta.org> for US National Science Teachers Association).

It has to be noted that, educational portals can be enumerated as a subset of knowledge portals which provide various educational services for different types of learners.

Educational portals can be discerned in four categories of networking, organizational, resource-based and hybrid (Butcher, 2002).

a. Networking is a sort of web portal that provides various individuals (educators, learners, managers, and administrators) with a central point from which accessing various educational tools and facilities in online and offline form is possible. Some of these facilities are illustrated in portal's components such as: Reference, Resource, Links, Newsletter, Discussion groups, Subscription, etc.

b. Organizational is a kind of portal to be constructed by a specific organization whose core business is to deliver educational materials. Generally, these portals contain organization's background information, information on various projects, publications, etc.

c. Resource-based is a sort of portal, which provides access to various educational resources online. Generally, these types of portals contain adequate search facilities and can be linked to other relevant organizations or institutions as well as subscription services. In other words, it may include Generic Resources, Subject Specific Resources, and may Link to other Educational Portals

d. Hybrid is a kind of portal that can merge the functionalities of the above mentioned portals. KlasCement (Pynoo, Tondeur, Braak, Duyck, Sijnave. & Duyck, 2012: 1308–1317) is a Sample of hybrid portal which integrates characteristics of all three mentioned portals

A survey on educational portals in the four categories discussed above elaborates the point that they can totally be evaluated from three major perspectives of “content description”, “organization & representation” and “audience” as well. The main issues with regard to “content description” are “learning resources”, “services”, “currency in being up-to-date” and “credibility authenticity”, while for “organization & presentation” we have issues such as “speed” (with regard to portal uploading), “readability” (in terms of items such as “status of typography”, “status of type face”, “status of cleanness”, etc.), “menu type” (in terms of “navigation style”), “status of site map” (adequate, full-access, available, effective, ...), “type of hyper-link”, “status of design” (clean, uncluttered, ...), “status of support” (by email, by feedback, ...), “status of interactivity” (chat, discussion board, ...), and “status of search”. Also, the main issues with regard to “audience”, are “learner as audience”, “teacher as audience”, “administrator as audience”, and “educator as audience” (Butcher, 2002).

3. PROPOSED APPROACH

3.1. Concern, Type of Engagement, and Format of Portality

Engagement plays a significant role in the new paradigm of learning. It requires “feelings” and “sense-making” as well as “activity” (Quaye and Harper, 2009). Fredricks, Blumenfeld and Paris (2004: 62-63), drawing on bloom (1956), have identified three dimensions to learner engagement; behavioral engagement, emotional engagement and cognitive engagement (Trowler, 2010).

Although the online learning environment is believed to have improved educator learning, little empirical research exists to connect the gaps between learning technologies and traditional notions of learner engagement. This paper investigates the nature of learner engagement in the online learning environment to find out if the use of the internet technology has an effect on learner engagement (Chen, Guidry, and Lambert: 13-17).

Applying the concept of engagement to online learning, seems to enhance the quality of education under some considerations. Here, the challenge, as discussed in (Donaldson and Conrad, 2005), is the facilitation by educators and learners to move from the traditional passive lecture-based learning environment to the appropriate dynamically-evolved engaged online community where learners become knowledge generators.

Educational portals can be considered as realms for facilitating online learning. In this regard, the relation between format of portality on the one side and learning concern and type of engagement on the other side would be the core of our discussion.

Based upon the Khan’s online learning strategies (Khan, 2011) And Bloom’s digital taxonomy (Churches, 2009), various kinds of engagement may exist such as: game-based interactions, storytelling, simulation, discussion, collaboration and etc.

At the first place it is most important to see how a “concern” can be decisive in the formation of “type of engagement”. This is mostly because the conceptual constituents in a “concern” may not necessarily be (semantically) consistent with those in an

arbitrary “type of engagement”, and this calls for a systematic method to derive plausible “type of engagement” from a certain “concern”.

It is to be noted that each type of engagement has its own peculiarities from the view point of the characteristics which are to be observed when it comes to designing as well as evaluating a portal. Taking this point into account, it is obvious that, when a certain “type of engagement” is associated with a certain “concern”, one may expect that a different combination of the so-called characteristics is expected in designing/evaluating the portal. But the question is that: <<how such a relation can be revealed>>. It seems that the conceptual model to be established for “concerns” achieve a significant role in this regard. Let say, there is something in them with regard to “types of engagement” which lead to certain alternatives not necessarily workable for other types of engagement.

3.2. Mapping from the Type of Engagement onto Essential Characteristics for Portality

Ontologies, as powerful means for representing knowledge, have been shown to be helpful in design and evaluation of educational portals (Badie, Kharrat, Mahmoudi, Mirian, Babazadeh and Ghazi, 2009), (Mahmoudi, Taghiyareh and Araabi, 2011), which are defined as a gateway to searchable and personalized learning information on the web (Kaur and Baba, 2006:1-6). In this regard, there exist a wide range of functional & nonfunctional characteristics that should be considered in designing and evaluating a portal.

In this paper, we propose some criteria essential to design of educational portals through considering learning “concerns” and the learner’s “types of engagement”. These criteria are considered in a way to include functional aspects such as: representation, design, application, communication & collaboration, and personalization, as well as non-functional characteristics such as: efficiency, re-usability, integrity, reliability, etc. Figure1 illustrates the ontology of portal’s characteristics.

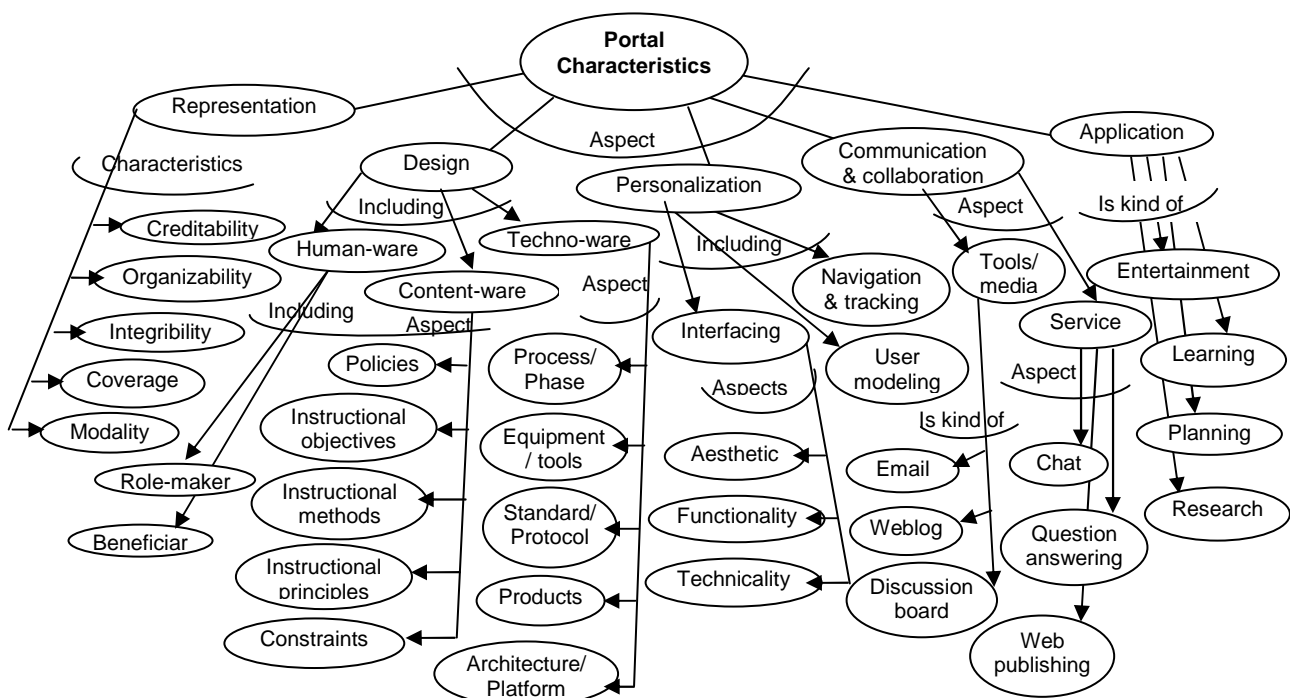


Figure 1: The Ontology of Portal Characteristics

To see how the above ontology can function with regard to the combination of “engagement”, the first thing is to figure out the “characteristics” in the ontology which are similar to these features. The values of these find characteristics will then be adjusted based on a domain knowledge. Out of the characteristics selected in such a way those which are aligned with the constituents of “concern” will be picked out as the final characteristics to be used for both design and evaluation purposes.

4. A SCENARIO

As an example, suppose that our “concern” is “enhancing the cognitive level of learning” from “understand” to “apply” and the “engagement type” is “game-based interaction”, which itself is derived from this concern.

Now referring to the ontology of portal characteristics, features of “engagement type” (which is “game-based interaction”) are first derived from its conceptual model. (Let say, for instance “phases”, “standards”, “engines”, “scenarios”, ...), and then we will look for the characteristics in the ontology with the same labels. At this stage, the values of these characteristics (phases, scenarios, ...) would be adjusted using a domain knowledge on “game-based interaction” as an “engagement-type”. This domain knowledge is in practice responsible for realizing how/ in what way a characteristic should be defined, in order to make a portal favorable for a certain “type of engagement”. Obviously, to constitute such a domain knowledge, knowledge of the existing cognition & learning theories & models as well as past experimental records of operationalizing educational portals can be beneficial. (Figure 2)

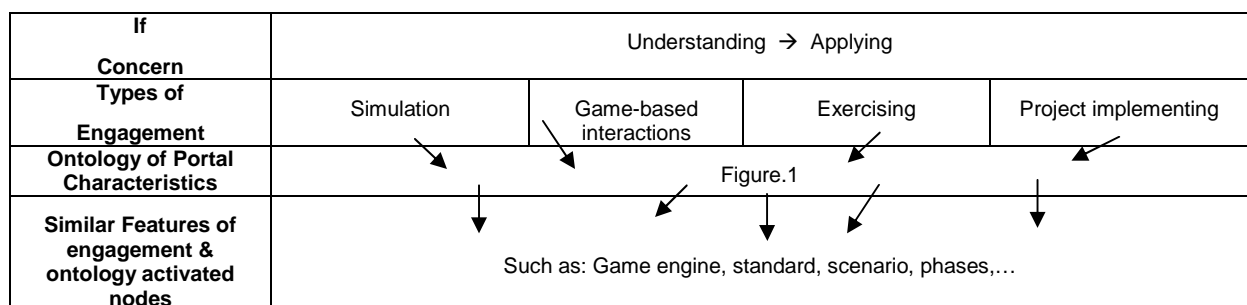


Figure 2: A Scenario

5. CONCLUSIONS

It was discussed in this paper how a learner’s “concern” and “type of engagement” can systematically lead to essential characteristics to be used for both design and evaluation of an educational portal. It was mentioned that the conceptual model of “concern” can be a ground for determining the features of “type of engagement”. Obviously, based upon this conceptual model, which strongly relies on the considered learning model, “type of engagement” and its features would be different. For the moment, relations between “concerns” and “types of engagement” have been defined intuitively. However deriving the features of “type of engagement” based on a conceptual model of “concern” can be regarded as a new research work in future. Also, for the moment, we have assumed that terminology of the features (in “types of engagement”) and the characteristics in the ontology are identical. It however may happen that they may not necessarily be the same, and some further work can then be significant to perform projection from these features onto the corresponding

characteristics using a background knowledge (like for instance a WordNet) on their similarities. Adjusting the values of characteristics in the ontology, using past experiences of operationalizing educational portals itself can also be regarded as a future research work.

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BIOGRAPHY

Maryam Tayefeh Mahmoudi is a Ph.D candidate at department of machine intelligence in the University of Tehran majoring in artificial intelligence with emphasis on intelligent organization of educational contents. Within the past years, she has been involved in a variety of research works at Knowledge Management & e-Organization Research Group of IT Research Faculty at Research Institute for ICT (ex ITRC), working on issues like automatic generation of ideas and contents, decision support systems for research & education purposes, as well as conceptualization of IT research projects. She is a co-author of the book entitled "Strangification: A New Paradigm in Knowledge

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Mahmood Kharrat received his MS degree in Biomedical Engineering from the University of Tehran, Iran. Out of the research activities conducted by M. Kharrat, "representation & utilization of the ontology of learning content" and "hybridizing user model and learning style", are particularly mentionable due to their wide applications in automating tutoring purposes. Within the past years, he has been actively involved in doing research in a variety of issues, such as IT Applications and Services in general and e-Learning, Intelligent Tutoring System, Organizational Learning and Knowledge Management in particular. He is a member of the scientific board of IT Research Faculty at Research Institute for ICT(ex ITRC). At present he is the head of Knowledge-centered services and in the meantime an adjunct lecturer of foundations of Information Technology in the University of Tehran.

Kambiz Badie received all his degrees from Tokyo Institute of Technology, Japan, majoring in pattern recognition. Within the past years, he has been actively involved in doing research in a variety of issues, such as machine learning, cognitive modeling, systemic knowledge processing and knowledge creation in general, and analogical knowledge processing, experience modeling and modeling interpretation process in particular, with emphasis on creating new ideas, techniques and contents. Out of the frameworks developed by Dr. Badie, "interpretative approach to analogical reasoning", "viewpoint oriented manipulation of concepts", and "compositional adaptation based on merging solution graphs", are particularly mentionable as novel approaches to creative idea generation, which in the meantime have a variety of applications in developing novel scientific frameworks as well as creating potential education and research support contents. Dr. Badie is one of the active researchers in the areas of interdisciplinary and transdisciplinary studies in Iran, and has a high motivation for applying intelligent/cognitive modeling methodology to the human issues. Currently, he has become interested in modeling the process of phenomenological experience as a step to promoting pedagogical quality in cyber-space. At present, he is a member of the scientific board of IT Research Faculty at Research Institute for ICT, an advisor to center's director in IT affairs, an affiliated professor at Faculty of Engineering Science in the University of Tehran, and in the meantime, the editor-in-chief of International Journal of Information & Communication Technology (IJICT) being published by Research Institute for ICT.

Tahereh Mirsaed Ghazi has a M.Sc. degree in Information Technology Management from the AmirKabir University of Technology. Within the past years, she has been involved in a variety of research works at Knowledge Management & e-Organizations Group in IT Research Faculty of Research Institute for ICT (ex ITRC) working on issues like intelligent systems in e-learning and knowledge management and assessment issues in learning organization. She has participated in supervision of several research and development projects associated with e-learning and e-content as well. At present, she is a researcher at Knowledge-centered services in IT Research Faculty of Research Institute for ICT.

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Mahtab Peyvast received her B.Sc. degree in computer engineering from Islamic Azad University. She joined Knowledge-centered services in IT Research Faculty of Research Institute for ICT since 2011. She had been involved in a number of R&D projects on different aspects of Portal such as: portal assessment and development. She is familiar with Linux, Java, VMware.

ZVYŠOVANIE POČÍTAČOVEJ GRAMOTNOSTI VYSOKOŠKOLSKÝCH PEDAGÓGOV S PODPOROU E-LEARNINGU A MANAŽÉRSKEHO SYSTÉMU LMS MOODLE

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Abstract:

The influence of new technologies, their application into each economic sphere, regularly stimulated an inevitable necessity of producing new working positions, which could not get along without a due degree of education and proper skills so far missing at the labour market. Hardly anybody was satisfied with the original and mostly single qualification acquired in a traditional way within the formal school system. The by now understood role of the student, limited in the long term by the young age, has shifted the age limit to the unlimited area. According to Drucker (2001), it is inevitable to newly define what it means to be an educated person. Traditionally, an educated person was considered the man, who had acquired the prescribed amount of formal knowledge. The man, who would be able to learn how to learn and who will keep learning all his/her life, will more and more be considered an educated person. The article focuses on the issue of increasing computer literacy of university teachers of scientific bearing, using e-learning support and LMS Moodle managerial system. We come out of the current analysis of innovating methods and forms of education, in connection with the implementation of information-communication technologies (ICT) into the sphere of education and with the employment of e-learning support using LMS Moodle tools. The initial part of the contribution focuses on the analysis of the current foreign and domestic educational activities. It devotes to historically existing theoretical resources, without which education could not have reached the current level. The second part of the article deals with the proposal of methodology of creating educational programmes with the support of e-learning in the environment of LMS Moodle and with the assessment of educational programmes by graduates as to the contents and realization of the programmes. Self-assessment of the acquired knowledge and skills by the graduates themselves in this part of the article gives evidence of the fact that for pedagogues life-long education is important and inevitable. In conclusion of the article, experience acquired by pilot verification of the educational programme in the practice, practical acquisitions and recommendations for teaching practice are presented. Education with an e-learning support, which belongs among progressive attitudes in education, is not any fad of the current era. In spite of the initial collapsing, e-learning support of education still survives, and mainly recently it has begun to widely develop again. It is also thanks to the development of more and more sophisticated mobile technologies in connection with the digitalization of library systems, which are the primary holders of knowledge.

Keywords:

Lifelong learning. E-learning. LMS Moodle. Educational modulus.

1. ÚVOD

Dynamika s akou sa informačné a komunikačné technológie (IKT) infiltrujú do každodenných procesov života spoločnosti, neustále zasahuje i výchovno-vzdelávaciu oblasť na vysokých školách. V tomto priestore sú rozsiahle možnosti využitia IKT a sieťových technológií prirodzene zamerané na zvyšovanie úrovne kvality vzdelávania. Proces metódy odovzdávania a prijímania vzdelávacích obsahov, sprístupňovanie spätnej väzby, poskytovanie relevantných informačných zdrojov, vzájomná komunikácia študentov a pedagógov a ďalšie previazanosti s technikou a technológiami, sa dotýkajú rovnakou mierou oboch skupín. Rozdiel spočíva iba v tom, že súčasný študent je s technológiami prirodzene spätý od narodenia a pre väčšinu pedagógov znamenali (znamenajú) moderné technológie nevyhnutnú potrebu ďalšieho vzdelávania. IKT sa stali, a čím ďalej tým viac sa stávajú, veľmi silným nástrojom v procese analýz a hľadania nových prístupov na efektívnejšie dosahovanie vzdelávacích cieľov. Preto sa medzi zásadné priority v oblasti vzdelávania zaradilo i ďalšie vzdelávanie učiteľov na všetkých stupňoch vzdelávacieho systému.

Pre skvalitnenie a zmodernizovanie vzdelávania sa na Slovensku uskutočnilo v posledných rokoch viacero zásadných krokov. V oblasti základného a stredného školstva to bola reforma základného a stredného školstva, okolo ktorej stále neutíchajúca polemika nasvedčuje, že svoj proces ešte neukončila i napriek zmenám, ktoré sa vykonali na rôznych úrovniach. Zaradením informačnej výchovy a problematiky digitálnych technológií, ako nových predmetov do výučby, sa obnažila i nepripravenosť samotných učiteľov.

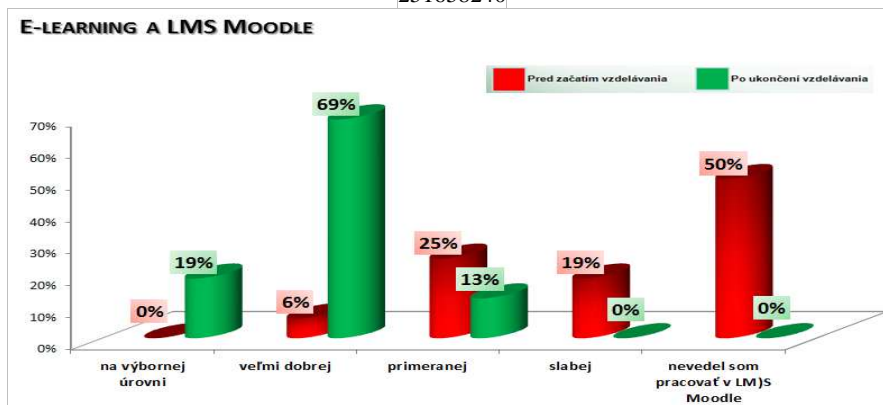
2. SEBAVZDELÁVANIE VYSOKOŠKOLSKÝCH UČITEĽOV S PODPOROU E-LEARNINGU A LMS MOODLE

V oblasti vysokého školstva sa najzávažnejšie výzvy týkali zvýšenia kvality vysokoškolského vzdelávania, zlepšenia riadenia vysokých škôl, potreby užšieho prepojenia vysokých škôl so súkromným sektorom a výskumom.

Oblasť počítačovej gramotnosti vysokoškolských učiteľov, ktorí sú zodpovední za prípravu budúcich učiteľov je rovnako veľmi

neuspokojivá. „...pre študentov vysokých škôl, je používanie multimediálnych pomôcok a elektronických kurzov viac-menej samozrejmosťou, keďže sa od nich automaticky očakáva využívanie ich intelektuálnych a kognitívnych schopností...“ uvádza Magdin (2010). Vytvorenie vzdelávacieho programu, bol z veľkej časti výsledkom dlhodobých pozorovaní úrovne digitálnej gramotnosti vysokoškolských učiteľov na UKF. Na tomto základe boli odborné lekcie tematicky zamerané na priestor internetu, multimediálne elementy, tvorbu jednoduchých webových stránok, počítačovú grafiku a najmä na získanie zručností pre využívanie prostredia a nástrojov LMS Moodle. Vzdelávací program bol akreditovaný pod názvom *Potvrďme to Enterom* a bol pilotne overený na skupine 37 vysokoškolských pedagógov. Doba trvania bola stanovená na 6 mesiacov. Prostredie vzdelávacieho programu zabezpečoval systém Moodle, ktorý je na UKF aktívny už takmer desať rokov a iba veľmi malé percento učiteľov UKF ho využíva, ako moderný a efektívny nástroj podpory vzdelávania. Napísať kvalitný výučbový materiál (pre e-learning) sa značne odlišuje od obyčajného písania textu pre klasické učebnice (Koprda, 2008), preto je potrebné dôsledne dbať na štruktúru lekcí, ktorých bolo v uvedenom programe 6 a pozostávali z úvodnej časti, s príslušnými cieľovými štandardmi. Tieto boli vyvedené zo štandardov *moderného učiteľa* (Kalaš, 2007) a z vybraných štandardov ECDL, najmä z častí Základy informačných systémov, Správa súborov, Elektronické prezentácie, Informácie a komunikácia. Výkladová časť bola tvorená slovníkom pojmov, elektronickými knihami, zhrnutím, odporúčanými zdrojmi. Praktickú časť tvorili pracovné listy so zadaniami, ukážky vypracovaných úloh a autotesty. Medzi najdôležitejšie časti patrila časť spätnej väzby, ktorá obsahovala anketu, zameranú na kritické zhodnotenie každej odbornej lekcie študujúcimi, anketu na sebakritické zhodnotenie nadobudnutých vedomostí a zručností a diskusné fórum.

Ako ukážku uvádzame Graf 1, ktorý vizualizuje výsledky sebahodnotenia úrovne kompetencií pred zahájením programu a dosiahnutej úrovne kompetencií po jeho ukončení absolventmi vzdelávania z odbornej lekcie *E-learning a LMS Moodle*.



Graf 1: Vyhodnotenie kompetencií pred a po ukončení vzdelávacieho programu

V protiklade s dosiahnutými kompetenciami predkladáme na ukážky výsledkov hodnotenia uvedenej odbornej lekcie tak, ako ju vo svojich odpovediach zhodnotili študujúci vysokoškolskí učители.

V ankete bolo položených 13 otázok. 2 otázky boli otvorené napr.: *Na skvalitnenie témy by som navrhoval/a*, 4 otázky mali priradené výroky k danej téme, napr.:

K zlepšeniu pochopenia praktických úloh v tejto téme by pomohlo:

<i>Podrobnejšie popísať požadovanú úlohu.</i>	46,15 %
<i>Pridať viac ukážok vo forme statických obrázkov.</i>	30,77 %
<i>Pridať viac ukážok vo forme animovaných ukážok.</i>	15,38 %
<i>Pridať viac multimediálnych elementov.</i>	7,69 %

Zadania súvisiace s tematickou oblasťou sú:

<i>Úplne vhodné</i>	38,46 %
<i>Primerané</i>	23,08 %
<i>Štandardné</i>	23,08 %
<i>Nie celkom vhodné</i>	7,69 %
<i>Úplne nevhodné</i>	7,69 %

Na hodnotenie 7 otázok sme použili päťstupňovú Likertovu škálu s výrokmi, kde sme k hodnotám od 1 do 5 priradili nasledujúce výroky:

1	2	3	4	5
Úplne súhlasím	Súhlasím do istej miery	Ani súhlasím, ani nesúhlasím	Nesúhlasím do istej miery	Vôbec nesúhlasím

Ako ukážku uvádzame výsledky nasledujúcich tvrdení:

Téma poskytuje dostatočné množstvo úloh na precvičenie a upevnenie učiva.

Úplne súhlasím	76,92 %
Súhlasím do istej miery	23,08 %
Ani súhlasím, ani nesúhlasím	0 %
Nesúhlasím do istej miery	0 %
Vôbec nesúhlasím	0 %

Na pochopenie učiva v lekcii E-learning a LMS Moodle nebolo potrebné usmernenie lektora.

Úplne súhlasím	0 %
Súhlasím do istej miery	46,15 %
Ani súhlasím, ani nesúhlasím	23,08 %
Nesúhlasím do istej miery	23,08 %
Vôbec nesúhlasím	7,69 %

3. VÝZNAM ODBORNÉHO VZDELÁVANIA A PRÍPRAVY UČITEĽOV A ODPORÚČANIA PRE PRAX

Reálna potreba a zmysel celoživotného vzdelávania má vychádzať z vnútornej motivácie každého pedagóga a uvedomenia si nevyhnutnosti nových prístupov k súčasnej generácii študentov, ktoré sú založené na fakte, že oni sú iní/odlišní, odborníkmi zaradení ako generácia YPSILON, nerozlučne zrastení s digitálnymi technológiami. Vonkajšia motivácia by mala zase vychádzať od vedenia vzdelávacej inštitúcie. Všetomžne podporovať svojich pedagógov a vytvárať podmienky pre uplatňovanie nových foriem a metód vzdelávania. Z dlhoročných skúseností si dovoľujeme zdefinovať zásadné odporúčania, ktoré by si vedenie vzdelávacej inštitúcie malo osvojiť a začleniť do svojho programu a to najmä:

- prehodnotiť motivačné podmienky pre tvorcov a tútorov e-learningových aktivít,
- vytvoriť materiálne i nemateriálne podmienky pre odborníkov, participujúcich na tvorbe e-learningových vzdelávacích programov,
- zabezpečovať priebežné vzdelávania a workshopy pre učiteľov z oblasti nových IKT a e-learningu,

-
- zriadiť špecializované pracovisko, ktoré by bolo vybavené technikou a technológiami, potrebnými k tvorbe kvalitných vzdelávacích obsahov pre dištančné formy vzdelávania s podporou e-learningu,
 - zriadiť špecializované pracovisko na univerzite, pre potreby evalvácie vytvorených vzdelávacích aktivít, ktorej zloženie by pozostávalo z odborníkov z príslušných fakúlt a katedier,
 - a ďalšie.

4. ZÁVER

Vzdelávanie s podporou e-learningu patrí medzi progresívne a efektívne prístupy vo vzdelávaní a nie je už dávno žiadnym módnym výstrelkom súčasnej doby. I napriek prvotnému *kolabovaniu* e-learningová podpora vzdelávania prežila a najmä v poslednom období sa opäť začína široko rozvíjať. Celoživotné vzdelávanie, poskytované najmä dištančnou príp. kombinovanou formou, je jedným z primárnych dôvodov vzostupnej krivky jej úspešnosti. Implementácia súčasných foriem a flexibilných metód vzdelávania sa odvíja od ich aplikátorov. Tými vždy boli, sú a vždy budú učitelia, na všetkých stupňoch výchovno-vzdelávacieho procesu. Nečakajme preto, že ďalšie zmeny do oblasti vzdelávania prinesie až generácia po nás. Budujme platformy na ktorých oni budú stavať ďalej. Buďme aktívni, flexibilní, myslíme novátorsky a nebráňme sa novým vplyvom. Riadme sa skúsenosťami, ktoré sme nadobudli a počúvajte požiadavky mladej generácie, vnášajte novátorstvá a prispievajte flexibilnými a inovatívnymi metódami do tej oblasti, v ktorej sami pracujeme.

Spätná väzba získaná od našich kolegov - absolventov vzdelávania, nám poskytla mnoho cenných poznatkov a inšpiráciu pre ďalšie inovácie či už vytvorených e-learningových programov alebo pre budúcu kompiláciu odborných tém do nových programov/kurzov s podporou e-learningu, v rámci celoživotného vzdelávania učiteľov.

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EKONOMICKÉ ANALÝZY A HODNOCENÍ VÝROBNÍCH PROCESŮ A PRODUKTŮ V RÁMCI PROJEKTU ŽIVOTNÍ CYKLUS VÝROBKU V PROSTŘEDÍ DIGITÁLNÍHO PODNIKU

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Abstract:

This paper deals with educational project that is focused on the issues of product life cycle in the digital factory environment. Orientation of the paper is on the usage of computer technology in education. This was done by creating an ebook which is focused on economic analysis and evaluation of production processes and products. The ebook was created in ProAuthor system developed at the Faculty of Mechanical Engineering at the University of West Bohemia. Elements of the training course are demonstrated in the paper.

Klíčová slova:

Životní cyklus produktu, produkt, kalkulace, ekonomická analýza.

1. ÚVOD

Cílem projektu je inovovat výuku studentů Bc. a Mgr. studijních programů Strojírenství a Strojní inženýrství na Západočeské univerzitě v Plzni Fakultě strojní ZČU/FST tak, aby teoretické a praktické znalosti studentů v problematice digitálního řízení životního cyklu výrobku (s využitím špičkového IT) byly v souladu zejména s budoucími potřebami podniků z hlediska konkurenceschopného strojírenství. To bude realizováno vytvořením 19 e-learningových multimediálních (MM) modulárních kurzů, kterými budou inovovány stávající studijní programy. Cílovou skupinou jsou především studenti FST s různým rozsahem získaných znalostí podle studovaných oborů (technologie, výroba).

Moduly kurzů budou využity v 38 předmětech 6 bakalářských a magisterských studijních programů z 3 fakult ZČU (<http://zivdig.zcu.cz>, 2012).

Jedním ze zpracovávaných vzdělávacích modulů je i modul „Ekonomické analýzy a hodnocení výrobních procesů a produktů“. Na tomto modulu je ukázána struktura studijních modulů a popsány prvky, které jsou součástí jednotlivých studijních článků.

Modul Ekonomické analýzy a hodnocení výrobních procesů a produktů je zpracováván pod garantstvím doc. Kleinové a pro ilustraci tvorby studijních materiálů byl zvolen proto, že autoři tohoto článku jsou součástí týmu, který se podílí na jeho tvorbě.

2. STRUKTURA MODULU

Celý kurz byl vytvořen v autorském systému ProAuthor, vyvinutým na Západočeské univerzitě v Plzni. Každý modul se skládá ze dvou úrovní, a to teoretické, která slouží k seznámení s danou problematikou, a praktické, kde jsou uvedeny případové studie. Na úvodní straně, jak teoretické, tak praktické části je definován cíl dané úrovně vzdělávání, potřebný čas na nastudování dané oblasti a klíčová slova.

Teoretická úroveň v modulu Ekonomické analýzy a hodnocení výrobních procesů a produktů obsahuje:

- Teoretické základy rozboru,
- Ukazatele,
- Obecné metody rozboru,
- Speciální metody,
- Náklady jako kritérium hospodárnosti,
- Výroba jako předmět rozboru,
- Hodnocení výrobních investic,
- Hodnocení produktu.

V závislosti na tomto obsahu je pak modul rozdělen do jednotlivých kapitol, které jsou představovány příslušnými studijními články, doplněny autotesty a studijní literaturou.

Praktická úroveň obsahuje následující případové studie spadajících do následujících oblastí:

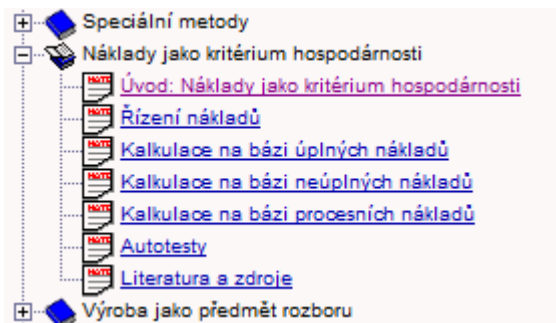
- Speciální metody (Řešení případových studií – aplikace nákladové a finanční analýzy),
- Kalkulace nákladů (Řešení případových studií – aplikace metod kalkulace),
- Výroba jako předmět rozboru (Kapacitní propočty, aplikace kritérií pro volbu optimální výrobní varianty),
- Hodnocení výrobních investic (Řešení případových studií – volba optimální investiční varianty),
- Hodnocení produktu (Řešení případových studií – Target costing).

3. POUŽITÉ PRVKY

Jak již bylo výše uvedeno jednotlivé kapitoly dle účelu, ke kterému slouží, mohou být tvořeny různými prvky. Za základní prvek studijních materiálů je považován studijní článek, tj. text objasňující danou problematiku, doplněný obrázky, schémata a grafy.

3.1. Ukázková kapitola – Náklady jako kritérium hospodárnosti

Dále je ukázána jedna z kapitol teoretické úrovně modulu „Ekonomické analýzy a hodnocení výrobních procesů a produktů“ – Náklady jako kritérium hospodárnosti. Struktura této kapitoly je uvedena na obrázku 1.



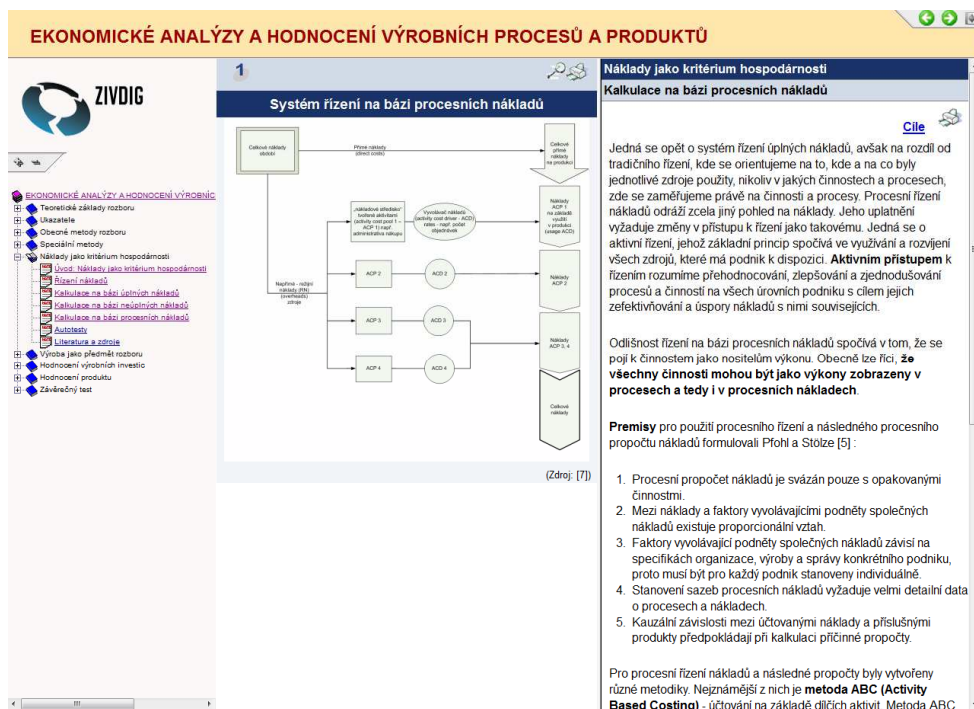
Obrázek 1: Náhled obrazovky ProAuthora – struktura kapitoly

Na začátku každé kapitoly je vždy nejprve uveden její stručný popis a cíle, viz obrázek 2.



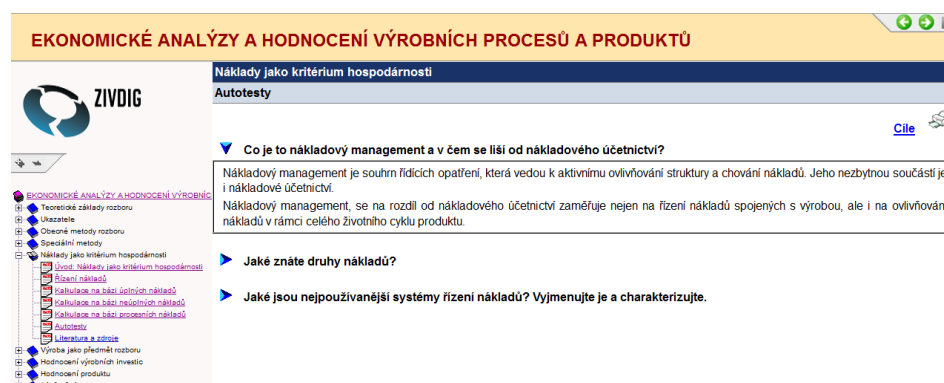
Obrázek 2: Náhled obrazovky ProAuthora – popis a cíle kapitoly

Poté jsou již uvedeny jednotlivé studijní články (např. Kalkulace na bázi procesních nákladů), viz obrázek 3.



Obrázek 3: Náhled obrazovky ProAuthora - příklad studijního článku

Na konci každé kapitoly jsou uvedeny autotesty na prověření získaných znalostí z kapitoly. Jsou založeny na otázkách se skrytými odpověďmi. Na obrázku 4 je zobrazena odpověď na první otázku, ostatní dvě odpovědi zůstávají skryté.



Obrázek 4: Náhled obrazovky ProAuthora – autotesty

3.2. Klíčová slova a cíle jednotlivých studijních článků

U každé kapitoly a studijního článku jsou uvedeny jeho cíle a klíčová slova. Příklad cílů je uveden na obrázku 5, příklad klíčových slov pak na obrázku 6.



Obrázek 5 Cíle studijního článku - kalkulační na bázi procesních nákladů

Klíčová slova	
Digitální podnik	Digitální podnik je zastřešující pojem pro rozsáhlou síť digitálních metod, modelů a nástrojů (včetně simulace a 3D-vizualizace), které jsou integrovány v rámci průběžného datového managementu. [http://www.digitov.zcu.cz/digitalni_tovarna.php]
Produkt	Produkt je výsledek souboru vzájemně souvisejících nebo vzájemně působících činností, který přeměňuje vstupy na výstupy.
Výkonnost	Výkonnost lze definovat jako schopnost podniku zhodnotit svojí činností vynaložené zdroje, vytvořit zisk a zvýšit hodnotu podniku, zajistit dlouhodobou existenci a rozvoj podniku v budoucnosti.

Obrázek 6 Klíčová slova - ukázka

3.3. Závěrečný test

Na závěr celého kurzu byl vytvořen závěrečný test. Ten se skládá z deseti otázek, kdy je na výběr ze tří možností u každé otázky, přičemž existuje vždy jedna správná odpověď. Po výběru odpovědi si uživatel sám vyhodnotí správnost svých odpovědí.

EKONOMICKÉ ANALÝZY A HODNOCENÍ VÝROBNÍCH PROCESŮ A PRODUKTŮ

ZIVDIG

AUTOTEST

Co jsou to režijní (nepřímé) náklady?

- Náklady nezávislé na změnách objemu produkce. Jejich neměnnost je však pouze relativní, mění se v čase, a to zpravidla skokem (např. při změnách kapacity či výrobního programu).
- Společné náklady, které mohou být nositeli nákladů přiřazeny jen nepřímo prostřednictvím vhodné techniky rozpočítání.
- Náklady, které mohou být přiřazeny jednotlivým nositelům nákladů (výkonům) přímo.

Vyhodnocení: ✘

Správná odpověď: Společné náklady, které mohou být nositeli nákladů přiřazeny jen nepřímo prostřednictvím vhodné techniky rozpočítání.

Vysvětlení:

Jakému popisu odpovídá systém řízení na bázi úplných nákladů?

- Vychází z předpokladu, že náklady jsou vždy spojeny s výkony. Vlastní řízení nákladů je založeno na analýze a propočtech nákladů ve vztahu k výkonům za určité časové období.
- Zahrnuje taková nastavení prvn...

Vyhodnocení: ✔

Správná odpověď: Vychází z předpokladu, že náklady jsou vždy spojeny s výkony. Vlastní řízení nákladů je založeno na analýze a propočtech nákladů ve vztahu k výkonům za určité časové období.

Obrázek 7: Ukázka závěrečného testu

4. ZÁVĚR

Tento článek je zaměřen na možnosti zpracování výukových materiálů pro vzdělávání. Tyto materiály byly zpracovány ve formě e-learningu. S výhodou je zde využít interaktivní způsob výuky. Kurz pak obsahuje celou řadu multimediálních prvků jako např.: obrázků, videí, animací a dalších. Na závěr kurzu je uveden závěrečný test, který okamžitě poskytuje zpětnou vazbu k pochopení studované problematiky.

Výhody:

- Systém umožňuje využití multimediálních prvků ve výuce.

-
- Při studiu kurzu je možné využít i externí aplikace (např. MS Excel). V rámci kurzu je možné spouštět vytvořené praktické aplikace ilustrující studovanou problematiku.
 - Kurz obsahuje na závěr každé kapitoly autotest, na konci kurzu je pak závěrečný test pro ověření získaných znalostí.
 - Studium může probíhat nezávisle na místě a času studia tzn., že každý si může studovat svým vlastním tempem a v prostředí, kde se cítí dobře.

Nevýhody:

- Při studiu je nutné použití PC.
- Pro spuštění kurzu může být nutná instalace některých SW aplikací (např. Adobe Flash player).

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<http://zivdig.zcu.cz>, (2012) *Životní cyklus výrobku v prostředí digitálního podniku*, Plzeň: Západočeská univerzita v Plzni, [cit. 2012-05-09].

PODĚKOVÁNÍ

Příspěvek byl vytvořen za podpory projektu CZ.1.07/2.2.00/15.0397 s názvem "Životní cyklus výrobku v prostředí digitálního podniku", který je spolufinancován evropským sociálním fondem a státním rozpočtem ČR. Tento projekt je řešen v rámci operačního programu Vzdělávání pro konkurenceschopnost.

DIDAKTICKÉ METODY PŘI VÝUCE CIZÍCH JAZKŮ V SECOND LIFE

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Abstract:

The article deals with didactic methods used for language teaching, focusing mainly on the MUVE Second Life and its connection to LMS Moodle. It assesses specific characteristics of a MUVE with regard to language teaching. Moreover, a list of different didactic method classifications is provided according to differences between synchronous and asynchronous teaching and language competences by which these methods are developed. The perspective of morphology, syntax and lexicology is applied in order to assess language competencies. It also includes experience and recommendations of other educational institutions that use Second Life. Here we discuss recommendations for the construction of didactic methods in MUVES and also practical advice valid mainly for Second Life. A summary of findings from practical language teaching at the Philosophical Faculty of Palacký University regarding application of selected didactic methods.

Keywords:

Didactic methods, language teaching, virtual worlds, Second Life, Moodle.

1. ÚVOD

Cílem příspěvku je podání přehledu didaktických metod pro výuku cizích jazyků v Second Life (SL) a sestavení doporučení týkající se aplikace vybraných didaktických metod ve výuce cizích jazyků.

Příspěvek byl vytvořen na základě studia nedávno publikované literatury a vlastních zkušeností s výukou v Second Life v rámci výuky předmětu Live in Second Life na Katedře aplikované ekonomie Filozofické fakulty Univerzity Palackého v Olomouci. Vychází především z českých didaktiků a zahraničních autorů zabývajících se e-learningem a výukou v Second Life. Nejprve jsou zhodnoceny specifika virtuálního prostředí, je podán přehled didaktických metod pro výuku cizích jazyků a obecná doporučení.

2. VIRTUÁLNÍ 3D PROSTŘEDÍ

Nejdříve je třeba si položit otázku, proč aplikovat výuku cizích jazyků pomocí 3D virtuálního prostředí. Pokud je virtuální prostředí zasazeno do rámce e-learningu, je jeho předností **individualizace výuky a přizpůsobení různým stylům učení**. Z daného úhlu pohledu vyplývá, že je nutno dbát na to, aby v rámci výuky byly nabízeny různé nástroje, a tím byla umožněna aplikaci více didaktických metod. E-learningová prostředí jsou hodnocena podle toho, kolik nástrojů nabízí. Dělat tedy obecné závěry o virtuálních světech, aniž jsou známy všechny jejich funkce, by bylo krátkozraké, a proto se příspěvek orientuje zejména na virtuální svět Second Life.

Snaha o zabezpečení více nástrojů byla nepochybně jedním z důvodů, proč byl vyvinut opensource produkt SLOODLE, který umožnil propojení Second Life a systému pro řízení výuky (dále jen LMS – learning management system z aj.) Moodle. Zmíněný LMS se umístil na 8. místě ankety Top Tools for learning pro rok 2011¹, jedná se tedy o jeden z oblíbených nástrojů pro výuku. Tento fakt je potvrzen i studenty Katedry aplikované ekonomie Univerzity Palackého, kteří se s ním setkávají již v rámci výuky na základních a středních školách. Navíc i samotný provozovatel SL se snaží rozšiřovat nabídku nástrojů např. pomocí služby Shared Media, která umožňuje zobrazení webového obsahu na jakémkoli povrchu ve virtuálním světě. Spojením Second Life a Moodle, popř. využitím služby Shared Media je tedy umožněna individualizace výuky.

Stejně jako Moodle i Second Life je relativně **dostupnou** aplikací. Základní verzi si může stáhnout kdokoliv, nicméně nároky na grafické vybavení jsou stále některými uživateli považovány za vysoké.

Deutschmann a Panichi (2009: 34) uvádějí, že 'z pohledu výuky jazyků SL v porovnání s ostatními platformami umožňuje osobní i kulturní anonymitu, vizuální reprezentaci v podobě avatara, spoluvytváření reality a sdílení kultury a fyzický charakter úkolů'.

Další nepochybnou výhodou Second Life je jeho **imerzivní charakter** daný především výbornou grafikou a možností komunikovat jak pomocí textového chatu, tak voice chatu a také

¹ Uvedenou anketu lze nalézt na <http://c4lpt.co.uk/top-100-tools-for-learning-2011/>

možnost rychle se přenášet z jednoho místa na druhé. Této vlastnosti bylo využito např. při tzv. ‘holoteaching’ (Marriott and Torres, 2009: 452), v rámci English village project, kde se studenti snadno přesouvali mezi různými prostředími a procvičovali tak situační jazyk. Virtuální 3D prostředí tedy vede ke změně pojetí studia a na základě **interaktivity** umožňuje rozvíjet nové způsoby výuky. Deutchmann a Panichi (2009:38) identifikují jako největší přidanou hodnotu virtuálního prostředí v SL autentický aspekt komunikace, z čehož pak vyplývají preferované didaktické metody s vysokou mírou interaktivity. Jedná se tedy **o posun od monologických, dialogických metod k metodám založeným na hře**, kde se předpokládá vysoká míra participace studenta, a je tedy na něj přenesena zodpovědnost za učení. Zároveň autenticita prostředí přispívá k zvýraznění sociokulturního aspektu jazykové komunikace.

3. DIDAKTICKÉ METODY

Metody v pojetí obecné didaktiky jsou míněny ‘způsoby záměrného uspořádání činností učitele i žáků, které směřují ke stanoveným cílům’ (Skalková, 2007:181). Uvedená definice je z pohledu didaktiky cizích jazyků považována spíše za užší. V širším smyslu se pak jedná o globální generální přístup k vyučování-učení cizímu jazyku, základní lingvodidaktickou doktrínu, ‘metodický směr’ (Choděra, 2001: 67). Příspěvek se bude držet první definice z obecné didaktiky.

V rámci didaktiky existuje více náhledů na klasifikaci metod. V předchozí části bylo zmíněno přenesení zodpovědnosti za učení na studenta. Metody pracující s uvedeným konceptem jsou nazývány metody založené na studentovi (Buckley a Caple, 2004: 168). Autoři dále rozlišují metody založené na lektorovi, které jsou plně řízeny lektorem (Buckley a Caple, 2004: 168). V uvedeném přehledu je využita koncepce Maňáka popsaná Skalkovou (2007: 184), a to konkrétně na základě aspektu didaktického z hlediska poznání a stejně jako u Skalkové jsou přidány metody založené na hře. V pravé části tabulky jsou pak zobrazeny rozvíjené dovednosti a konkrétní nástroje, které lze v SL využít. Je také zohledněno, zda

interakce probíhá synchronně a asynchronně a zda je metoda založená na lektorovi nebo studentovi.

Metody		Typ	Zaměření	Příklad metody	Rozvíjené dovednosti	Nástroje
Slovní	Monologické	S ²	L ³	Vyprávění Vysvětlení Přednáška	Poslech	SL učebna
	Dialogické	S S,A	St i L	Rozhovor, dialog, diskuze Řízená debata Neformální konverzace Dotazy	Mluvení, poslech	SL učebna, využití teleportu, kde se mluví daným jazykem Voicechat, chat, IM FAQ Diskuze na fóru
	Metody písemných prací	S,A	L	Písemná práce	Psaní	Chat, notecards, IM, odevzdání práce v Moodle a následná evaluace

² S synchronní metoda, A asynchronní metoda

³ L metody založené na lektorovi, St metody založené na studentovi

	Metody práce s textem	S,A	L	Skupinové čtení a analýza psaného textu Četba doporučené literatury, textů, odkazů, Cvičení	Čtení	Materiály uložené v LMS Moodle Zdroje v knihovnách v SL 'Plující text', ⁴ notecards Slovník v Moodle
názorně demonstrační	Pozorování předmětů a jevů, předvádění, demonstrace statických obrazů, projekce statická a dynamická	S,A	L i St	Prezentace v powerpoint Projekce videa Poslech nahrávek	Mluvení poslech	Využití Shared media Sloodle nástroje Uložení nahrávek v Moodle
praktické	Grafické a výtvarné činnosti Nácvik pohybových a pracovních dovedností	S	S	Workshop Plnění úkolů	Psaní	Každý avatar může vytvářet 3D objektů, má dána určitá gesta
založené na hře	Simulace, hraní rolí, hry	S	S			Teleport do určených prostředí

Tabulka č. 1 Klasifikace metod

⁴ Používaný také termín: 'Floating text' ve výuce jazyků upozorňuje na obtížná slovíčka.

Vzhledem k charakteru virtuálního prostředí se zde zejména metody založené na studentovi osvědčily a vedly další autory (Deutschmann, Panichi, 2009: 36) k dělení úkolů v rámci výuky cizích jazyků na:

- **<Sociální, komunikativní, kognitivní dimenze>**⁵

Sdílení a vytváření sociální skupiny jako zdroj znalostí

Stavění, úkoly zakotvené v sociální interakci

- **<Pocitová, kreativní dimenze>**

Úkoly zkoumající identitu

Úkoly zkoumající kulturní normy a hodnoty

Úkoly podporující umělecké vyjádření nebo výkony (divadlo)

- **<Prostorová dimenze>**

Úkoly využívající SL jako zdroj informací

Úkoly využívající SL pro interkulturní kontakt a lingvistickou výměnu

Úkoly podporující zkoumání existujících děl

Pro srovnání je uváděn také výukový design 3D zkušenostního vzdělávání (3D Learning Experience) prototypy vyučujících aktivit dle O'Driscolla a Kappa⁶ (2010: 82): Personalizace avatara, hraní rolí, lov informací, provozní aplikace, koncepční orientační běh, kritická událost, spolupráce, práce v malé skupině, skupinové fórum, sociální síť. Pro rozvíjení jazykových dovedností lze použít za určitých okolností všechny, zvláště vhodná je aktivita hraní rolí nebo práce v malé skupině.

4. DOPORUČENÍ

Následující doporučení se týkají především sestavení metod ve fázi přípravy výuky, ale i jejich praktické stránky.

Dříve než dojde k realizaci výuky v Second Life, je potřeba vzít v potaz didaktické aspekty, jakými jsou charakter učebních cílů, charakter obsah výuky, fakt, zda se jedná o doplněk výuky, anebo celý kurz, jazykovou úroveň studentů, fáze učebního procesu, rytmus, rámcové podmínky (počet studentů, čas na dodání výuky) a také zkušenosti s ICT a s virtuálním prostředím. Godinet a J.P.Moiraud (2007: 1) mluví v kontextu výuky s pomocí ICT doslova

⁵ V uvedené publikaci lze najít další členění úkolů např. účastní se debaty na konkrétní téma, vyřeš problém.

⁶ Tento design je dobře popsán Tomášem Boudou v jeho magisterské práci dostupné z <http://is.muni.cz/th/180601/ff_m/diplomka_-_konecna_podoba.txt>.

o vytváření scénářů. Dále je nutno se ptát, jaký je rozpočet na výukové aktivity a jaké technické vybavení a připojení mají studenti k dispozici. Bendová, K., Koníčková, Š., and Kubátová, J. (2011: 280) upozorňují na nutnost dobrého technického vybavení a rychlého internetového připojení a tato podmínka je stále aktuální. Objevuje se i v dalších studiích.⁷ Například poslední zmíněný fakt je příčinou, proč studenti preferují připojení z univerzitní počítačové učebny před připojením na kolejích. Kolejní síť je při každém pokusu o připojení do Second Life odpojí, ať už z důvodu nadměrného přenosu dat, či blokace portů využívaných pro voice chat. Dále v případě, že se jedná o studenty s různou jazykovou úrovní, je třeba dbát na to, aby používaná cvičení eventuálně nástroje refletovaly tyto úrovně, což se projevilo jako zásadní v případě výukové hry v rámci centra British Council v Second Life, kde studenti s lepší znalostí jazyka vykazovali lepší výsledky ve hře. Důležitým aspektem úspěšnosti byla také počítačová gramotnost studentů.

Před zahájením samotné výuky je nutno počítat s obdobím adaptace na technologii. V každodenní praxi lze pozorovat rozdíly v počítačové gramotnosti studentů. V Second Life jsou především viditelné rozdíly mezi hráči MMORPG⁸ a uživateli, kteří tuto zkušenost nemají. Na internetu existuje dostatek tutoriálů, nicméně zvládnutí všech potřebných dovedností nutných pro adaptaci vyžaduje od nezkušených uživatelů praxi. Vystává tedy otázka, do jaké míry učít orientaci v e-learningovém prostředí. Stejně tak toto virtuální prostředí klade zvýšené nároky na lektora. Je nezbytné ovládat všechny nástroje ve výuce a zároveň se připravit na omezené možnosti neverbální komunikace, která má i své výhody. Většina studentů (80%) v rámci výuky předmětu LSL uvádí, že navazování kontaktů jim připadá snazší v Second Life, rozvíjení jazykových dovedností lze proto dosáhnout na základě neformální komunikace s rodilými mluvčími. Jako pomocníka při výuce lze využít i 'bota', což je počítačově naprogramovaný avatar, který vykonává určitý úkol. Ve výukovém kontextu zpravidla usnadňuje učení a motivuje. V Second

⁷ Např. Esteves, M., et al. 'Improving teaching and learning of computer programming through the use of the Second Life virtual world', *British Journal of Educational Technology* [online]. 2010, Early View, [cit. 2010-11-22]. Dostupný z WWW: <<http://onlinelibrary.wiley.com/doi/10.1111/j.1467-8535.2010.01056.x/full>>.

⁸ Massive(ly)-Multiplayer Online Role-Playing Game

Life lze pořídit videa a použít je ve výuce k vyhodnocení chyb v mluveném projevu. Zvuková nahrávka může také posloužit k rozvíjení plynulosti v jazyce. Záznam textové komunikace umožňuje analýzu chyb v psaném projevu.

5. ZÁVĚR

Příspěvek podal přehled didaktických metod při výuce cizích jazyků a dal je do spojitosti s nástroji v Second Life a Moodle. Autorka si je dobře vědoma současného vývoje nových programů zprostředkovávajících virtuální třídy (např. Adobe Connect), které v mnoha aspektech nahradí a dokonce i předčí Second Life. Tyto programy jsou nicméně koncipované na bázi 2D virtuálního prostředí a z pohledu výuky cizích jazyků Second Life umožňuje lépe nacvičování komunikace v 'reálných' situacích. V rámci fází výuky bych tedy doporučovala pro expozici a fixaci učiva využít 2D programy a pro následnou implementaci, popř. testování znalostí virtuální 3D prostředí Second Life. Již nyní existuje propojení virtuálních tříd⁹ a Second Life a do budoucna předpokládám další propojování 2D a 3D virtuálního prostředí s tím, že metody založené na studentovi zejména kolaborativního charakteru budou směřovány do 3D virtuálním prostředí a metody založené na lektorovi budou praktikovány v 2D virtuálním prostředí.

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⁹ Ukázku lze shlédnout např. zde:
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E-LEARNING IN THE FIELD OF BIOMEDICAL ENGINEERING IN SAXONY

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Abstract:

In today's medical and healthcare areas, the ever-changing role of technology requires innovative approaches to education. At present, under the leadership of Dresden University of Technology together with other academic partners in Saxony, ideas on e-learning have been implemented in a collaborative lifelong learning concept. This includes e-learning for university students, specialized transfer courses for high school students and educational software supporting younger talents.

An e-learning software called TheraGnosos has been developed for university and further education students by using a specialized JavaScript/HTML designing tool. Various biomedical topics (biosensors, cardiac catheterization, mechanical ventilation, medical imaging, modeling and simulation, pacemaker, quality assurance) as well as general non-technical topics (basics of medical terminology for engineers) have been systematically structured. Through interactive exercises, tests and a supervised Wiki, learning of thematic theoretical background is accomplished. Our own user management system has been developed using PHP and MySQL. Individual user accounts allow detailed user tracking enabling evaluation of e-learning components. Several users have completed the e-learning program, the accompanying laboratory exercises and seminars respectively. Test users assess the software to facilitate their learning process and preparation for their exams.

We have successfully accomplished a bridge between university and young learners. Through didactically prepared online courses, we are attracting high school students to the university. In addition, we have created educational software which stimulates the interests of children in pre-school and elementary levels in natural sciences and technology. This software is animated and teaches the function of the human heart and vascular system, allowing children to comprehend the functions of their own body. The software is available in seven languages and is accompanied by a drawing book and a supplemental handbook.

Keywords:

Blended Learning, lifelong learning, Biomedical Engineering.

1. INTRODUCTION

Our intentions are divided into three stages: 1. promoting MINT and biomedical engineering at pre-school and elementary school level, 2. promoting MINT at secondary school level (UnlbELT - Closing the gap between University and secondary schools), and 3. development of e-learning components for graduate students and lifelong learning. Biomedical Engineering is a dynamically developing domain, especially because of changing demographics worldwide. It is expected that the demand on biomedical engineers will further rise in the future. In general, the demand for engineers is very high in Germany, which is exemplified by several existing initiatives to promote MINT (Mathematics, Informatics, Nature sciences and Technology) professions. At the same time, the university education system in Germany is strongly influenced by the Bologna process for harmonization of higher education in Europe. This requires the restructuring of the curricula, so that the content of information is reduced. In general, educational budgets are limited, which present problems. Tuition and supervision need to be innovated so that more students can be served on a consistent and high quality level without hiring supplementary teachers.

A possible solution to these challenges would be to implement e-learning and blended learning situations in all stages of education. Blended Learning is a didactically well-prepared learning situation, combining e-learning und presence learning. E-learning, if used properly, may reduce learning time up to 30 % [Kerres 2001]. This should lead not only to improving the quality of educating biomedical specialists, but also attract young people to study MINT and biomedical engineering. At this time, such a possibility does not yet exist for combining lecture hall presence with electronic learning in the field of biomedical engineering in Germany. Existing teaching material in distance learning is mainly based on lecture video recordings and study documents without interactivity or automatically generated feedback [Kožuško 2012].

2. THERAGNOSOS - SOFTWARE SYSTEM FOR GRADUATE STUDENTS AND LIFELONG EDUCATION

Nine modules of the e-learning software TheraGnosos are being developed:

- Pulmonary diagnostics and mechanical ventilation (Respiratos)
- ECG and pacemaker (Kardios)
- Imaging and Visualization (Imagos)
- Biosensors and biohybrid technology (Sensos)
- Quality assurance (Qualitos)
- Anatomy and Physiology (Physios)
- Biomedical Engineering - Overview (Origos)
- Modeling and Simulation (Simulos)
- Cellular transport and Nanotechnology (Nanos).
- The course "Medical Terminology" was implemented as a prototype module.
- Medical terminology (Labyrinthos), s. Figure 1.

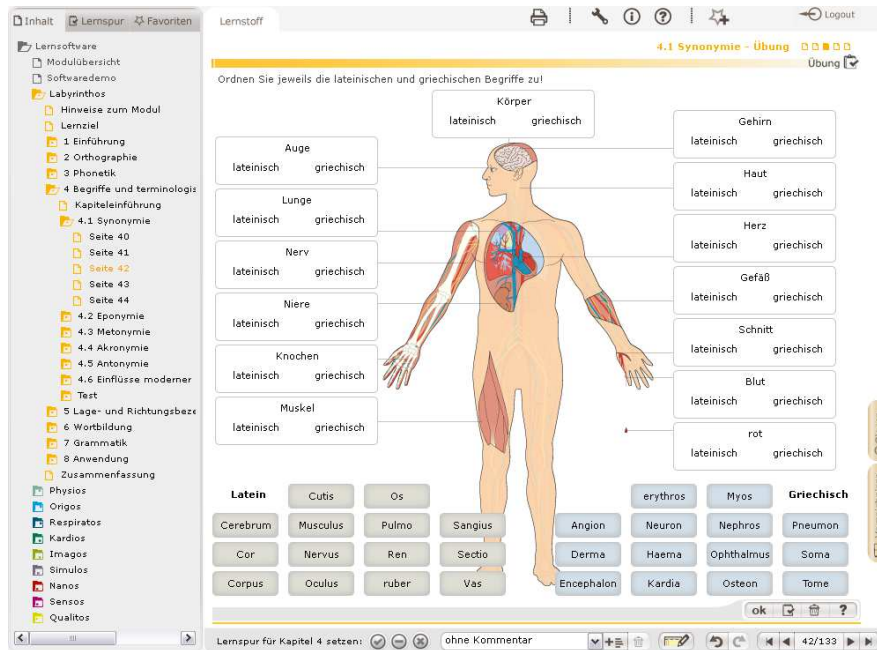


Figure 1: Interactive exercise in medical terminology

The modules are evaluated based on a comprehensive catalog of 16 criteria of specific requirements, which include: top quality programming, user interface, cost calculation and the educational preparation of the contents. These factors are coordinated effectively during the various stages of development [Abdel-Haq, 2010].

Our e-learning program framework consists of two layers: a basic matter layer of essential information, interactive exercises, tests and animations; and an extended learning layer, that includes text and tables for further reading. In order to support the individual user settings, a saving learning track and the evaluation of the software, we developed our own user management system using PHP and MySQL. Individual user accounts allow detailed user tracking enabling evaluation of e-learning components. Furthermore, the students may evaluate the e-learning software actively by filling in a questionnaire. During development, the recommendations of DIN PAS 1032-1:2004 were considered [DIN PAS 1032-1:2004].

The e-learning framework has been developed using the authoring tool IDEA for an interactive content creation based on

HTML/JavaScript (Figure 2) [Link 2009]. This Integrated Development Environment (IDE) allows building event driven pages with interactive exercises with an automated feedback. The content is structured in XML metadata files and can be exported into the SCORM-compliant format. The IDEA environment has been selected due to extended positive experience and solid individual user support from the IDE provider. It allows producing complex interactive content with rather low initial developer training. Using the IDE is a trade-off between WYSIWIG editors with only a low range of functions and complex IDEs like Adobe/Macromedia or Click2Learn Toolbook [Dietrich 2010, Kožuško 2012].

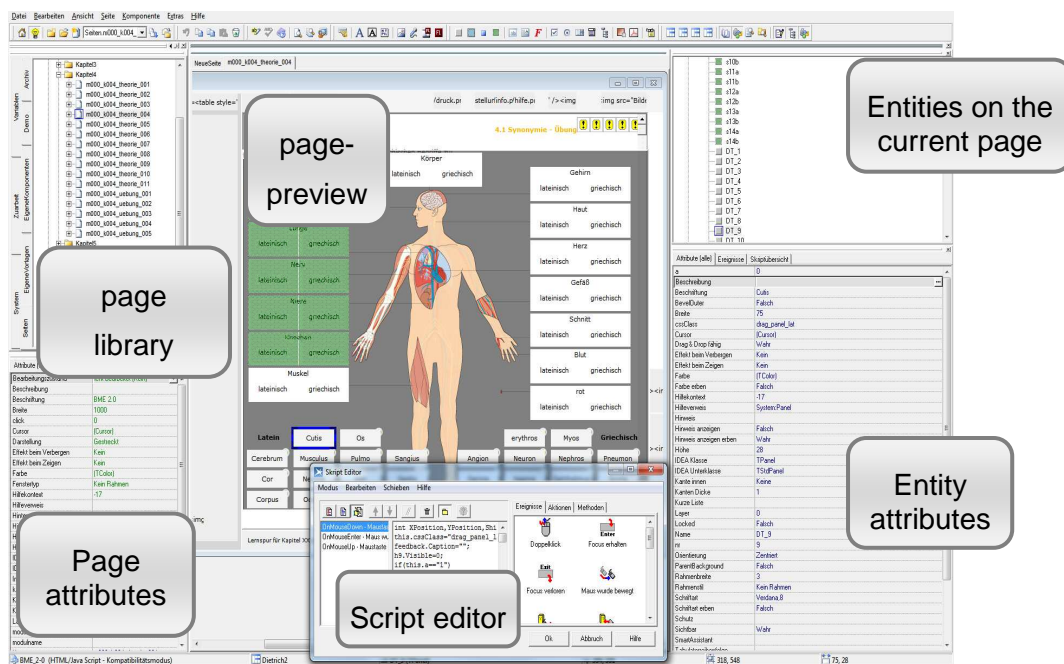


Figure 2: Integrated development environment IDEA 7 Professional

The first modules were used in the pilot phase as a supplement to the existing laboratory exercises at the participating institutions. This allowed evaluating both the private study and the presence phase in the proposed program. Particular interest lies in determining the relationship between development time and learning time, which was recorded for each page. The ratio varies between 30 for a pdf

document download from the educator's homepage and 1000 for sophisticated animation.

Factual Knowledge is being transferred in the module Medical terminology. For this purpose, behavioral approach is appropriate. In the specialized modules, constructivists teaching methods are to be used. Case studies are utilized, so that the students have to develop strategies for solving real situations (assessment of clinical data, decision on pacemaker settings etc.).

3. UnIbELT - CLOSING THE GAP BETWEEN UNIVERSITY AND SECONDARY SCHOOLS

The goal of the project UnIbELT has been to create a link between high school and attracting enrollment at the University. It allows recognizing shortcomings in learning skills and successfully delivers the knowledge base required for study enrollment. This should reduce college drop-outs and the changing between study programs. The courses are implemented within the framework of the Saxonian learning platform OPAL ("Online-Plattform für Akademisches Lehren und Lernen" – an online platform for academic teaching and learning). The main target group are pupils in 11th and 12th classes of secondary school in Saxony [Unibelt 2012] (Figure 3).

Figure 3: Online course on heart and circulation for secondary school pupils

4. OUR HEART – A SOFTWARE SYSTEM FOR PROMOTING MINT STUDIES FOR PRE-SCHOOL AND ELEMENTARY SCHOOL CHILDREN

The software (refer to Figure 4) is divided into six teaching units, building one atop the other. Thus, the knowledge of the previous chapter is anticipated. But, on the other hand, the chapters are self-contained so that each chapter can be handled independently. Each chapter is motivated by a particular question such as: How does the blood flow through the heart? At the end of each chapter, questions should be answered. Chapters 1 through 4 are recommended for kindergarten children. In Chapters 5 and 6 more abstract functions of the body are presented, so that this context can be understood first in

the early school years. Short interactive exercises are integrated in each chapter. The program has been implemented using Macromedia Flash.

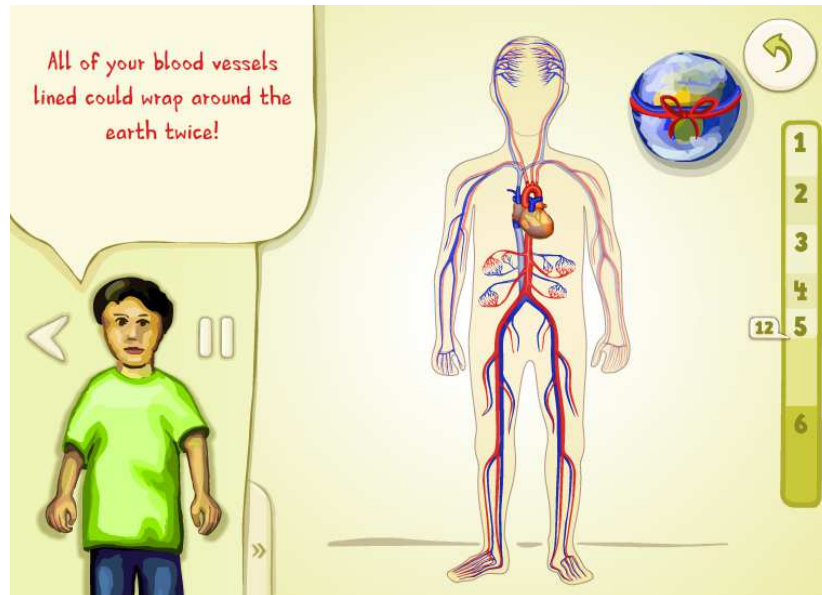


Figure 4: Our Heart – e-learning program for pre-school children

The software is attractively animated allowing the children to understand the functions of the body. This software is available in seven languages. The learning material consists of a handbook in three languages to support educators, a “working suitcase” of actual handicraft objects for interaction and a drawing book to enhance interaction. The handbook for parents, educators and teachers includes a summary of each chapter. It also provides background information on each topic. Furthermore, all of the exercises are explained in detail and a list of necessary materials for optional handwork exercises is provided. These range from forming a realistic anatomical model of a heart, to preparing 3D glasses and their use in the e-learning program [Unser Herz 2012].

5. CONCLUSION

Through the development of the system TheraGnosos, we have successfully achieved an innovative approach to education. Both constructivists and behavioral approaches have been used.

We have strategically planned a learning situation which challenges students to learn digitally at a distance, to attend group lectures and to receive support from educational professionals. The informational content of the e-learning software has been written by biomedical professionals with high academic standards. Behind the interface, it is technically composed of an elaborate structure and offers visually attractive graphics which make learning enjoyable.

With intent, we have crossed bridges between all age levels so as to draw interest to Biomedical Engineering, but also in the other math and science areas, this existing as a world-wide concern/interest. The software program for children, Our Heart serves to offer an educational situation for young learners, whereas Unibelt reaches those of youth status. And the TheraGnosos program provides a vibrant and rich experience for university students and life-long learners. In this way, Blended Learning serves as a link to the public, as it is our intention to improve the quality of education in the field of Biomedical Engineering.

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DÔLEŽITOSŤ VIZUALIZÁCIE INFORMÁCIÍ V PROSTREDÍ WIKI A V ELEKTRONICKÝCH KURZOCH PRE ZLEPŠENIE POCHOPENIA ABSTRAKTNÝCH POJMOV

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Abstract:

We have a lot of difficulties with teaching abstract concepts in classical full-time teaching. In the environment of electronic courses and in the environment of Wikis increase these problems more multiply, if we want to explain them using only a plain text without graphics, animation or video. This paper therefore aims to explain the importance of visualizing abstract ideas and concepts as one of the fundamental assumptions of their understanding and remembering. As a necessary prerequisite in this case is considered acceptance of the fact that almost all the abstract concepts can be visualized. Hereby the paper is based on the theory of multimedia learning and principles of multimedia learning. Concepts mentioned in this paper are also supported by practical survey conducted among students of Dubnica Institute of Technology in Dubnica nad Váhom in Slovak republic.

Keywords:

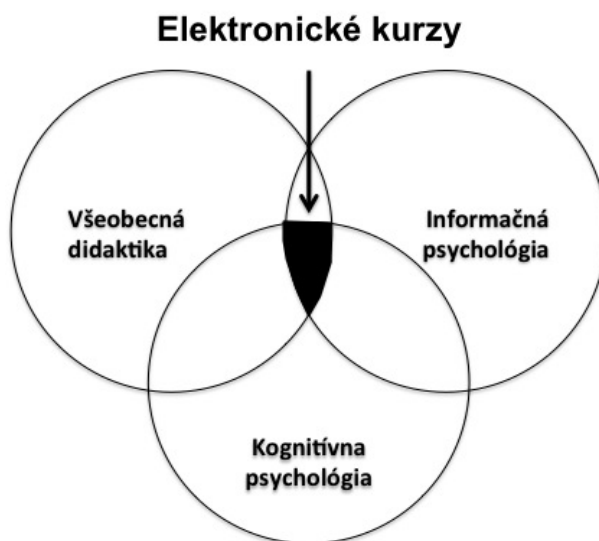
Visualization, abstract concept, e-learning, electronic course.

1. ÚVOD

Pri tvorbe podkladov pre elektronické kurzy sa stretávame s viacerými náhľadmi, na to, čo sú to elektronické kurzy. Tieto náhľady v rôznej miere oscilujú okolo optimálneho pohľadu na to, čo v sebe obsahujú a čo ich jednoznačne odlišuje od iných elektronických publikácií napríklad od elektronických skrípt. Cieľom tohto príspevku je identifikovať extrémny, ktoré sa nachádzajú v prístupe k tvorbe elektronických kurzov a zdôrazniť ústredný optimálny pohľad na tvorbu obsahu s akcentom na dôležitosť vizualizácie abstraktných pojmov, konceptov a informácií. Zdôraznenie dôležitosti vizualizácie abstraktných pojmov vyplýva najmä z úvodného prieskumu realizovaného v podobe dotazníkového šetrenia v rámci širšieho výskumu problematiky vizualizácie abstraktných konceptov a pojmov v rámci predmetu technológia vzdelávania.

2. TEORETICKÉ VÝCHODISKÁ RIEŠENEJ PROBLEMATIKY

Teoretické východiská vyplývajú z viacerých vedných disciplín. Prienikom, resp. oblasťou, v ktorej dochádza k prepojeniu a aplikácii teórie a výskumov realizovaných v týchto rozličných vedných disciplínach je práve elektronický kurz, tak ako to môžeme vidieť na obrázku č. 1. Primárne ide pri tvorbe elektronických kurzov o aplikovanie výskumne podložených princípov vyplývajúcich z všeobecnej didaktiky, informačnej psychológie a kognitívnej psychológie. Okrem vedných oblastí, ktoré sú uvedené aj v obrázku, vplývajúna tvorbu elektronických kurzov aj ďalšie závery z iných vedných disciplín (napr. umelecký dizajn). Tieto boli zámerné opomenuté s ohľadom na primárne zameranie článku.



Obrázok č. 1: Vedné disciplíny poskytujúce základné teoretické východiská pre tvorbu elektronických kurzov

2.1. Východiská vyplývajúce zo všeobecnej didaktiky

Jedným z východísk, ktoré prináša pre tvorbu elektronických kurzov didaktika je informácia o rôznych štýloch učenia sa. Štýly učenia sa, ako uvádza Coffield (2004: 62) nie sú nemeniteľné aspekty osobnosti, s ktorými sa človek rodí a zomiera. Je potrebné vnímať

ich ako preferenciu, ktorá môže byť mierna, stredne závažná alebo silná. Zároveň je pre konkrétny typ štýlu učenia sa charakteristické slovné spojenie „pružne stabilný“. Preferované typy učebných štýlov sa v čase menia a veľký vplyv na ich rozvoj majú životné skúsenosti. Vo všeobecnosti Willems (2011: 866) uvádza, že učebné štýly sa vzťahujú k preferovaniu určitého prijímania, vnímania, pochopenia a spracovávaní informácií počas učenia sa. Každý človek pri učení totiž preferuje určité spôsoby a ostatné ignoruje, alebo ich používa iba obmedzene. Tak ako uvádza Willems (2011: 866, 874), pomocou Indexu vzdelávacích štýlov je možné rozoznať štyri odlišné oblasti vzdelávacích štýlov, pričom na okraji každého jestvuje určitá extrémna hodnota:

- V prvej oblasti oscilujeme medzi *aktívne* a *reflektívne* zameranými študentmi, ktorí týmito protipólnymi spôsobmi spracovávajú informácie.
- V druhej oblasti sa zameriavame na spôsob získavania informácií. V tomto prípade sa nachádzame medzi extrémnymi hodnotami – študentmi preferujúcimi *zmysly* a študentmi, ktorí preferujú *intuitívny prístup*.
- V tretej oblasti, ktorá hovorí o spôsobe prijímania informácií je možné identifikovať *vizuálnu* a *verbálnu* preferenciu. Táto oblasť je v centre záujmu preberanej problematiky, preto jej bude venovaný väčší priestor.
- Praktická aplikácia pre oblasť elektronických kurzov:
- Pre študentov preferujúcich *vizuálne* prijímanie informácií sa odporúča používať vizuálne reprezentácie, aj abstraktných pojmov, v podobe myšlienkových máp, diagramov, videonahrávok a fotografií. Tieto informácie môžu mať podobu fotografií, náčrtov schém, diagramov, animácií, interakcií, alebo videonahrávok.
- Pre študentov, ktorí prijímajú informácie hlavne *verbálnym* spôsobom je dôležité do elektronických kurzov včleniť napísané alebo hovorené slová.

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- Štvrtá oblasť sa zameriava na proces pochopenia informáciám. V tejto oblasti identifikujeme preferenciu sekvenčného alebo globálneho štýlu učenia sa.

2.2. Východiská vyplývajúce z kognitívnej psychológie

Kedže zámerom príspevku nie je venovať sa komplexne všetkým oblastiam, ktoré sú výsledkom výskumov kognitívnej psychológie a ich aplikáciu nachádzame v elektronických kurzoch, ale príspevok sa zameria hlavne na kľúčovú oblasť kognitívnej teórie multimediálneho vzdelávania¹.

Teória multimediálneho vzdelávania detailne rozoberá líniu načrtnutú Willemsom v oblasti vizuálnej a verbálnej preferencie prijímania informácií študentmi. Mayer (2010: 32-37) na základe výskumov identifikuje dve roviny, ktorými študent prijíma informácie: *vizuálna rovina* a *verbálna rovina*. Ak dochádza k prijímaniu jednej a tej istej informácie oboma odlišnými informačnými kanálmi (vizuálnym a verbálnym) človek si v pamäti vytvára verbálny a paralelne s ním aj vizuálny model uvedenej informácie. Mayer svojimi výskumami potvrdzuje, že túto informáciu sa človek naučí rýchlejšie a zároveň bude mať vyššiu trvácnosť v pamäti.

2.3. Východiská vyplývajúce z informačnej psychológie

Predchádzajúce informácie je potrebné doplniť aj o všeobecne známe fakty o tom, ktorými zmyslami prijímame určité percento informácií. Podľa Bohonyho (2003: 29) najväčší podiel na prijímaní informácií má zrak (83%) a hneď za ním nasleduje sluch (11%). Kombináciu týchto kanálov prijímania informácií dospejeme k veľmi vysokému percentu (94%) prijímania všetkých informácií z okolia. Teda až 94% všetkých informácií prijímame z prostredia audio – vizuálnym spôsobom. Zároveň ako uvádza Atkinson (1994: 23) aj najvyššiu kapacitu zmyslových kanálov má zrak a sluch. Preto je dôležité v prostredí elektronických kurzov zachovať možnosť prijímať informácie kombináciou týchto oboch zmyslových kanálov.

¹ Niektorými označovanú aj za teóriu duálneho kódovania informácií – názov závisí od uhla pohľadu. Ak na problematiku nazeráme v zornom poli psychológie, používame druhý názov. Ak v zornom poli pedagogiky a didaktiky tak uprednostníme prvé pomenovanie.

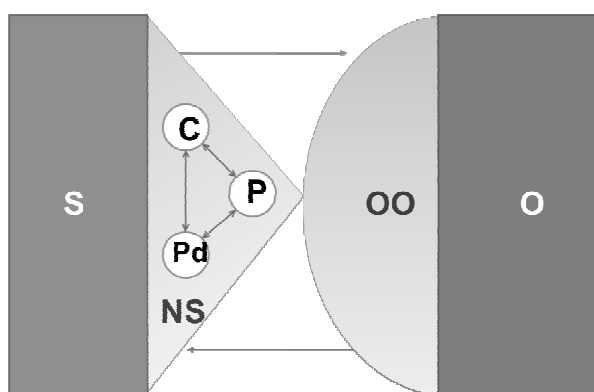
3. ABSTRAKTNÉ KONCEPTY V TECHNOLOGII VZDELÁVANIA

3.1. Schémaobsahu technológie vzdelávania

Ako uvádza Poláková (1997: 47) ide o schému systému vzdelávania, ktorý je vizuálnym znázornením abstraktného systému vzdelávania. V tomto systéme sa dá identifikovať subjekt edukácie, nástroj subjektu udekácie, obraz objektu a objekt edukácie. Ide teda o zjednodušenie, pomocou ktorého je možné študentom vysvetliť, čo všetko vplýva na vzdelávanie. Tento koncept je možné vysvetľovať v prezenčnej výučbe ako aj v prostredí elektronických kurzov dvomi odlišnými spôsobmi:

- iba pomocou slovného výkladu bez použitia adekvátneho digramu,
- pomocou slovného výkladu a použitím diagramu.

Existuje dôrazný predpoklad, že ak v prezenčnej výučbe použijeme prvý spôsob študenti sa naučia viac ako, keď tento spôsob použijeme v prostredí elektronického kurzu. Cieľom realizácie prebiehajúceho výskumu je práve zhodnotiť uvedený predpoklad a zároveň porovnať ho s druhým prístupom, v ktorom sa predpokladá, že ako v prezenčnej výučbe tak aj použitím elektronických kurzov dospejeme k približne rovnako kvalitným študijným výsledkom.



Obrázok č. 2: Schéma systému vzdelávania podľa Polákovovej (1997: 47)

4. PILOTNÝ PRIESKUM - PREDVÝSKUM

V ostatnom čase bol zatiaľ realizovaný predvýskum v podobe krátkeho dotazníka, ktorý bol zložený z troch základných otázok. Vybraných 229 študentov Dubnického technologického inštitútu v nich malo retrospektívne identifikovať a subjektívne porovnať kvalitu ich učenia sa s použitím tohto vizuálneho stvárnenia uvedeného systému vzdelávania. Okrem toho mali subjektívne zhodnotiť typ učebného štýlu, ktorý u nich dominuje. Keďže ide iba o predbežné zisťovanie, nebolo potrebné použiť niektorí zo štandardizovaných testov na zisťovanie učebného štýlu konkrétneho študenta. Tretia a záverečná otázka smerovala k zisteniu ako nazerajú na elektronický kurz, ktorý bol ale zámerne nazvaný prezentáciou umiestnenou na Internete.

Z uvedeného dotazníka vyplývajú nasledovné závery:

- Študenti jednoznačne súhlasili s názorom, že sa im ľahšie študoval systém vzdelávania s použitím vizuálneho znázornenia tohto systému (59,39% označilo možnosť *jednoznačne áno* a 27,95% možnosť *čiatočne áno*).
- Väčšina študentov zhodnotila, že je pre nich vlastný vizuálny učebný štýl (75,5% študentov).
- Iba veľmi málo študentov považuje elektronický kurz pre predmet technológia vzdelávania za zbytočný a podľa odpovede bol *nepodstatný* pre ich štúdium (4,8%).

Tieto získané údaje budú slúžiť pre ďalšie potreby výskumu.

5. ZÁVER

Vizualizácia abstraktných konceptov sa javí v predmete technológia vzdelávania ako veľmi dôležitou, čo dokazuje aj realizovaný pilotný prieskum. Keďže ide o pilotný prieskum je potrebné začať v samotnom výskume, pretože na základe údajov z prieskumu vyplýva, že predpoklad o dôležitosti vizualizácie abstraktných konceptov bol stanovený správne.

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ZVÝŠENIE KVALITY E-LEARNINGOVÉHO VZDELÁVANIA V PODMIENKACH PEDAGOGICKEJ FAKULTY PREŠOVSKÉJ UNIVERZITY

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Abstrakt:

Improvement of e-learning education quality in the conditions of the Faculty of Education of the University of Presov.

The Faculty of Education, University of Presov, has been offering distance education, in three study programmes with e-learning support for distance student, since 2005. Now, seven years after the first implementation of e-learning supported education, we consider it necessary to conduct the qualitative analysis of the e-learning education process from the perspective of demands put on the process in the context of current scientific knowledge. The article presents some of the ambitions of the Faculty of Education in the field of e-learning education quality-improving, within the project: "Improvement of the quality of education at the University of Presov in Presov", especially in the area of quality assessment of e-learning supports.

Klíčová slova:

e-learning, elektronické študijné opory, hodnotenie kvality vzdelávania

1. ÚVOD

Súčasná situácia v oblasti vysokoškolského vzdelávania je charakteristická širokou diskusiou o kvalite poskytovaného vzdelávania, o kvalite vysokoškolskej výučby, o kvalite aktérov pôsobiacich v procese vzdelávania a o mnohých ďalších aspektoch vplývajúcych na jej kvalitu. Vzhľadom na etablovanie sa e-learningu do vzdelávacích procesov, stáva sa kvalita výučby s elektronickou podporou rovnako diskutovanou témou, či už z hľadiska technických parametrov, ako aj uplatňovania pedagogických princípov.

Pedagogická fakulta Prešovskej univerzity v Prešove, začala s implementáciou e-learningu už v roku 2005 ako prvá z fakúlt PU. V tejto „pionierskej fáze“ bola vybudovaná technická infraštruktúra, a vytvorené prvé e-learningové kurzy v open-source LMS Moodle.

Vzhľadom na časový odstup siedmich rokov od zavedenia e-learningu a absencii evaluačných mechanizmov zameraných na už existujúce e-learningové opory je nutné podrobiť e-learningové vzdelávanie kvalitatívnej analýze z pohľadu nárokov a trendov, ktoré sú v súčasnosti na vzdelávanie kladené.

2. PROJEKT „ZVÝŠENIE KVALITY VZDELÁVANIA NA PREŠOVskej UNIVERZITE V PREŠOVE“

Prešovská univerzita v Prešove aktívne využíva možnosti čerpania štrukturálnych fondov, ktoré umožňujú vzdelávacím inštitúciám skvalitniť vzdelávaciu infraštruktúru a zabezpečiť tak ich konkurencieschopnosť a trvalú udržateľnosť.

V januári 2012 sa začala na pôde Pedagogickej fakulty Prešovskej univerzity v Prešove implementácia projektu „Zvýšenie kvality vzdelávania na Prešovskej univerzite.“

Časť projektu, ktorá je zameraná na skvalitnenie e-learningového vzdelávania v študijnom programe Predškolská a elementárna pedagogika, je predmetom nášho príspevku.

2.1. Východisková situácia

V novembri 2011 sme s cieľom analýzy zrealizovali dotazníkový prieskum, ktorý bol distribuovaný 49 pedagógom PdF PU. Návratnosť dotazníka bola 73,47%, prieskumnú vzorku tvorilo 36 pedagógov. V prieskume sme sa zamerali na zmonitorovanie aktuálneho stavu využívania LMS Moodle.

Výsledky prieskumu poukázali na nasledovné silné stránky, relevantné vo vzťahu k projektu:

- dobré počítačové zručnosti učiteľov ako východisko pre prácu s LMS Moodle a tvorbu elektronických učebných opôr,
- pozitívne prijímanie e-learningu zo strany učiteľov,
- existujúcu technickú infraštruktúru,

V rámci prieskumu boli identifikované nasledovné slabé stránky:

- nedostatočné vedomosti a zručnosti pedagógov PdF PU v oblasti tvorby, realizácie i vyhodnocovania e-learningových kurzov,
- technické nedostatky v existujúcom LMS Moodle,
- chýbajúca evaluácia e-learningového vzdelávania, z pohľadu pedagógov, študentov a študentiek, rovnako ako z pohľadu inštitucionálnych benefitov.

2.2. Strategické ciele PU v oblasti zvyšovania kvality vzdelávania

Prešovská univerzita v Prešove, vo svojom strategickom dokumente, Dlhodobom zámere na roky 2008 – 2013 s výhľadom do roku 2015, stanovuje pre oblasť vzdelávania a sociálnej podpory študentov okrem iných nasledovné ciele: (Burgerová 2011).

- zamerať sa na zvyšovanie a hodnotenie kvality vzdelávania,
- vzdelávaciu činnosť univerzity realizovať spôsobom, ktorý bude zárukou udržania statusu univerzity,
- vytvárať kvalitné podmienky na štúdium,
- v kontexte celoživotného vzdelávania mapovať potreby trhu práce a v spolupráci s externým prostredím ponúkať študijné programy na rozširovanie vzdelania, resp. doplnenie vzdelania.

Pre oblasť hodnotenia kvality činnosti:

- zvyšovať kvalitu činností univerzity vo všetkých oblastiach (vzdelávanie, výskum, podnikateľská činnosť),
- vytvoriť metodiku hodnotenia výkonnosti a kvality práce zamestnancov univerzity v oblasti vzdelávania a vedy a výskumu.

Cieľom projektu „Zvýšenie kvality vzdelávania na Prešovskej univerzite“ je, v súlade menovanými cieľmi, zvyšovanie kvality

vzdelávania v študijnom programe 1.1.5 Predškolská a elementárna pedagogika, na Pedagogickej fakulte PU.

3. ZVÝŠENIE KVALITY E- LEARNINGOVÉHO VZDELÁVANIA NA PEDAGOGICKEJ FAKULTE PU V PREŠOVE

Manažment PdF PU má ambície v oblasti zvýšenia kvality e-learningového vzdelávania.

„Elektronická študijná opora je hlavným nástrojom na prezentáciu vzdelávacieho obsahu a pokiaľ nebude kvalitná, nemôže byť kvalitný celý dištančný kurz“ Klement (2011).

Rovnomenný autor vo svojej najnovšej publikácii uvádza, že elektronická študijná opora by mala obsahovať:

- prvky statické, charakteristické pre formu písaného textu, ktorých súčasťou je verbálna zložka, obrazová zložka a symbolická zložka,
- prvky dynamické, charakteristické pre elektronickú formu vzdelávania, ku ktorým autor radí zvukové záznamy, videosekvencie, multimedialne animácie, interaktívne prvky a on-line aplikácie,
- verifikačný a evaluačný aparát, zabezpečujúci jednak spätnú väzbu medzi vyučujúcim (tútorom) a vyučovaným (študentom), ako aj poskytujúci študentom priestor pre autoevaluáciu študijných výsledkov.

Prvotná analýza e-learningových študijných opôr, realizovaná v januári 2012 na vzorke 10 náhodne vybraných, potvrdila predpoklad, že e-learningové študijné opory nezodpovedajú v celej šírke načrtnutým kritériám, nakoľko v nich absentuje evaluačný aparát a študijné texty vykazujú skôr známky učebníc (skrípt), určených pre prezenčnú formu štúdia. Analýza samotných učebných textov bola zrealizovaná na základe kritérií podľa Bednaříkovej (in Zlámalová, 2012).

Aj z tohto dôvodu plánujeme skvalitnenie e-learningového vzdelávania realizovať na nasledovných úrovniach:

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- stanovením oblastí hodnotenia kvality, kritérií kvality a hodnotiacich škál,
 - kvalitatívnou analýzou všetkých existujúcich elektronických študijných opôr ,
 - vzdelávaním pedagógov PdF PU, zameraného na vytváranie elektronických študijných opôr,
 - vytváraním nových elektronických študijných opôr.

V kontexte stanovenia oblastí hodnotenia kvality, kritérií kvality a hodnotiacich škál elektronických študijných opôr, považujeme za nanajvyš prínosné a inšpiratívne vytvorenie softvérovej aplikácie, umožňujúcej rýchle a efektívne hodnotenie elektronických študijných opôr na základe 42 kritérií, v 6 oblastiach, o ktorej viac pojednáva Klement (2011). Ako ďalší z podnetov pre zvyšovanie kvality e-learningového vzdelávania budú aplikované skúsenosti českých kolegov, ktorí začali s procesom tvorby Národného systému certifikácie e-learningu a e-learningových programov v ČR (Poulová 2011).

Vzhľadom na špecifiká tvorby elektronických študijných opôr, v porovnaní s prípravou štandardných učebných textov, je súčasťou projektu vzdelávanie pedagógov PdF PU, zamerané práve na vytváranie kvalitných elektronických študijných opôr. Súčasťou vzdelávania bude poskytnutie šablón pre tvorbu elektronických študijných opôr a individuálne konzultácie, týkajúce sa didaktických i technických aspektov tvorby.

Skvalitnenie e-learningového vzdelávania na spomínaných úrovniach považujeme v súčasnej dobe za kľúčové a nevyhnutné.

V ďalšej etape plánujeme implementáciu ďalších opatrení, ktoré by mohli prispieť ku zvýšeniu kvality e-learningového vzdelávania. Načrtávame aspoň niektoré z nich:

- realizáciu vzdelávania pre pedagógov, zameraného na tutoriál e-learningových kurzov,
- vyhlásenie súťaže v tvorbe e-learningových kurzov,
- zriadenie hodnotiacej komisie, na hodnotenie novovzniknutých e-learningových kurzov,

-
- zriadenie koordinačnej jednotky e-learningového vzdelávania.

4. ZÁVER

O opodstatnenosti e-learningu v podmienkach fakúlt Prešovskej univerzity nás presvedčili doterajšie skúsenosti. E-learning považujeme za inovatívnu metódu, za metódu modernizácie vzdelávania prostredníctvom informačných a komunikačných technológií. Otázkou a permanentnou úlohou je zabezpečenie čo najvyššej efektivity a kvality poskytovaného vzdelávania. Je preto nevyhnutné doplniť doterajšie skúsenosti o najnovšie vedecké poznatky a skvalitniť e-learningové vzdelávanie tak, aby zodpovedalo požiadavkám súčasnej doby, dynamicky sa rozvíjajúcim informačno-komunikačným technológiám i najnovším pedagogickým trendom.

Uvedomujeme si, že zabezpečenie kvality vo vzdelávaní je dlhodobým, strategickým procesom, ktorý závisí od množstva faktorov. V príspevku sme sa snažili priblížiť ciele manažmentu Pedagogickej fakulty Prešovskej univerzity v Prešove, ktoré si vytýčil v oblasti hodnotenia kvality e-learningového vzdelávania na najbližšie dva roky i konkrétne aktivity, ktorými sa bude snažiť tieto ciele naplňať.

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MODULARIZED E-SEMINARS FOR ACADEMIC STUDENTS IN TEACHER TRAINING AT THE UNIVERSITY OF LEIPZIG

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Abstract:

Today acquisition of information and generation of knowledge happens not only by conventional means of teaching but shift to alternative resources and channels like the Internet and appendant offers to an increasing degree. However, the integration of new channels in academic studies of teacher trainees is not common so far. The University of Leipzig is equipped with one central e-learning service center yet its potential is not being utilized by university professors and lecturers. Meanwhile, there are specific didactic and technical possibilities to employ the so far unused resources of e-learning and the competency of the students and consequently offer a broader and more individualized teaching-learning-scenario (e.g. self-organized, cooperative learning; employability; managing diversity). Based on these preliminary considerations a seminar structure was designed in line with the „StiL-Project“ to integrate most of the mentioned aspects as central components of the teaching-learning-offer for teacher trainees. The central didactic idea is the development and the application of a meta-plan/role-play-method for students as defined by constructivist didactics (e.g. Kersten Reich, 2008). With regards to content the conception primarily deals with socialization through and with media plus „web 2.0“ and their potential interaction in school context. The seminars are of modular structure and include 1) Introduction to basic concepts, 2) Additional workshops that offer the opportunity to discuss results/ problems/ insight with tutors and 3) an online platform with web tools and content-based learning units for all attendees. The seminars will no longer take place on a weekly basis. Therefore, the working and organizational structure is open in organization with modular elements that work individually and independently of preassigned spaces of time. In this type of teaching-learning setting it is possible to take account of the changing frame conditions of knowledge generation and information acquisition of students and the technical potential.

Keywords:

E-Learning, teacher training, situated learning, e-competence.

1. INTRODUCTION

Generation of knowledge and the acquisition of information are subject to constant change. These global changes are also reflected in the everyday life of students and teachers and thus directly or indirectly show in teaching-learning scenario (Reinmann, 2012a).

The massive proliferation of smartphones and tablets, and thus the mobile Internet, the deep penetration of everyday life through the Internet, the resulting fundamental changes in the everyday life, work, socialization processes and interpersonal relationships ask for new terms and conditions in the field of education (Feierabend and Klinger: 50; Herzig and Grafe: 15-19; BMBF, 2002; Johnson, L., Adams, S. and Cummins, M, 2012).

The role of the teacher is therefore no longer characterized as a mere conveyor of knowledge but to a greater extent to be located as a monitoring and networking person in the process of knowledge acquisition and generation (KMK, 2004b; Schubert: 6).

1.1 Use of digital media for university teacher training

In the teacher training program at the University of Leipzig, the field of media pedagogy, didactics and media literacy has a marginal role¹. A systematic theoretical and didactic training and the discussion of appropriate and professional use and operation of such capabilities is an essential prerequisite for a later use in school and teaching contexts (Herzig and Grafe: 95-98; BMBF: 181-182). However, with the teacher training courses job-related skills should be taught (see also the teaching qualification regulations for the new state exam courses), taking the technological progress in schools into account (BMBF, 2002; Herzig and Grafe: 181).

Second, it must be noted that the everyday use of "digital" or "new media" skills resulting in a resource, including personal knowledge management (Reinmann, 2012b: 5) for the individual and

¹ In teacher training, there are neither in pedagogy nor in technical didactics mandatory modules or seminars with the thematic focus on media literacy, media education and media socialization. This can be considered a nationwide phenomenon (BMBF, 2002: 96-98).

competency requirements² on the part of society (business, labor, communications).

Such integration of new knowledge channels and educational requirements in their immediate contexts find insufficient response in university teaching³. Although the University of Leipzig has a central point of contact for e-learning services, the possibilities of e-learning services are not being fully exploited.

2. APPROACH AND OBJECTIVES OF THE PROJECT

As part of a promotional program of the faculty of educational sciences to improve the quality of instruction for students at the University of Leipzig (StiL-project of the University of Leipzig), the idea arose to develop a concept or project that is making the effort to pick up some of these current technological and social developments and conditions and transfer them to didactic and methodological settings.

It seems almost ironic that, on the one hand, in teacher training, students are being taught topics such as dealing with heterogeneity, individual attention, open learning or self-organized learning etc., simultaneously however, in practice the teacher training classes are mostly organized in rigid structures such as regularly scheduled lectures, tutorials and seminars which take place in terms of content flexibility, but are usually limited methodologically. On the other hand pedagogical approaches such as Open learning, cooperative learning and self-organized learning are already used and tested in schools, but teachers at universities seem to only partly incorporate them into university teaching itself (Reinmann, 2009: 2). It is necessary to antiquate these rigid structures and instead provide students and faculty members opportunities to take advantage of

² The keyword "lifelong learning".

³ The lack of skills in teachers and students of teacher training show the need for continuing education, compare the results of Feierabend and Klinger, 2003: 45 and Deutscher Bundestag, : 4 and 22. The demands of teachers for better integration and "(...) even more integration (...) "computer / Internet in the school routine, see Feierabend and Klinger: 51 and BMBF: 181-182 and Middendorff, : 67-68. A socially broader phrased comment in "Die Zeit" from 05.22.2012 to tentative integration of teaching and e-Learning at German universities, Available:: <http://www.zeit.de/studium/hochschule/2012-05/Deutsche-Uni-Internet>, [22 May 2012].

individualized time frames for knowledge acquisition and generation and to provide targeted individual phases of the application of knowledge and exercise⁴.

The stated objectives of the project, based inter alia the educational standards of the Kultusministerkonferenz (2004a: 2) in art, the triad 'Production - Reception - Reflection', are following:

Students will ...

- Acquire knowledge and skills in handling and use of e-learning opportunities for future employment and the school day (use of new teaching and learning approaches),
- Experience the possibilities and utilities of e-learning services (use of new media in teaching),
- Acquire, generate and exchange knowledge on a broader and individualized basis (self-directed and cooperative learning, managing diversity),
- Present and expand obtained results obtained through various channels,
- Acquire and deepen didactic and methodological expertise in dealing with e-learning programs and techniques and adapt to the individual subjects and related facilities and for use in everyday school life process (employability),
- Experience and learn the teaching of basic skills in handling and use of computer-based and -generated work methods,
- Linking and transfer of acquired knowledge in the field of e-learning with other technical and didactic methods and subject-specific teaching methods and,
- Acquire analysis and reflection skills in dealing with possibilities of e-learning and their own related actions.

From the perspective of teachers, the following objectives arise:

⁴ The concept is meant to complement and extent the previous class lectures, rather than abolishing it.

Improve the quality of classroom study with:

- a. Dealing with diverse groups of students and with individual, heterogeneous teaching and learning goals,
- b. Acquisition of knowledge and practical experience in deployment and use of digital media in the context of teaching and learning scenarios
- c. Integration of digital media in teaching
- d. Consideration and integration of expectations and needs of students

3. PEDAGOGICAL CONCLUSIONS AND CONCEPTUAL DESIGN

The methodological and structural design of the project is based on the guiding principles of Lave and Wenger's theory of Situated Learning (1991). Some of their guiding principles are reflected in the modular structure of the seminars described later on in this text (Lave and Wenger: 33-34): (1) learning as meaning negotiation (2) importance of social anchoring of (individual) learning and situational context⁵.

The basic structure of this draft is a project seminar (Schulmeister, 2001: 261, 267) or a mixture of classroom and online course (Reinmann, 2011: 2-3) or according to Mason (1998) an "integrated model".

The focus of the project are the topics of media socialization, media education and media literacy. This triad is also intended to give a linking to the above-described situations and prospective teachers. The seminars consist of one, as mentioned above, modular structure of 1) Basic-based introductory courses, 2) work accompanying tutorials / seminars and workshops, where results / issues / findings can be exchanged with the tutors at regular intervals and 3) an online platform with Web Tools and knowledge units focussing on the contents concomitantly for all the participants. The seminars will no longer take place on a fixed weekly basis, but rather it is an open

⁵ Another guiding principle of Situated Learning, that of identity development, is understood as a universal guiding principle of pedagogical approaches.

structure in the organization with modular components that will work individually and independently from specified time periods.

The aim of the project is to shift the place of knowledge acquisition and knowledge application or the exercise of the acquired knowledge to other contexts. The knowledge transfer takes place in block seminars or as a regular event in form of a lecture. However, it does not matter if students attend physically. They have the opportunity to acquire the knowledge units externally independent of time and through live video stream or podcast. The focus for teachers are therefore rather on supervised individual or group practice and application units such as tutoring, group consultations, workshop times, etc. The support of students in terms of situated learning is the central aspect here ("community of practice", (Lave and Wenger: 98-100))⁶. This process is based on several consecutive stages.

4. PROJECT ACCOMPANYING RESEARCH

The basic assumptions and considerations as described in parts 1 and 2, and the current situation of teacher training at the University of Leipzig, result in the following questions for the research-related processes:

- How accepted is e-learning in teacher training?
- What contents and topics are suitable to be conveyed online based, or in a methodical mixed concept of classroom and online courses?
 - a. What contents and topics are used and not used by students through e-learning assessment?
 - b. Which tools are used and not used by students through e-learning assessments?
- What impact does e-learning-assessment have on performance measurement compared with performance measurement without such assessments in students of teacher training?

⁶ On the importance of care as an important component of of a teachers' job see Reinmann (2012a).

These questions are to be analyzed by both, quantitative (such as data analysis of user behavior on the learning platform Moodle, questionnaires, randomized performance tests) as well as qualitative (eg, interviews, observation attendance phases), survey instruments.

5. SUSTAINABILITY OF THE PROJECT CONCEPT IN THE FIELD OF TEACHER TRAINING AND BEYOND

Due to the modular structure of the project methods and techniques can be differentiated and individually used in other areas of teaching and / or used independently of each other.

Furthermore, the following starting points are given:

- Planned tests (evaluation, pre and post tests) can easily be used in other areas of teaching.
- It is possible to extent the structures from the e-seminars of module 3 in the teacher training of polyvalent bachelor to the F-related seminars and lectures as well as the new state exam studies teacher. In this connection it is conceivable that the assignment papers from the F-seminars could be performed not only in writing and analog, but also for example in form of e-portfolios and other e-learning facilities.
- Multi-step integration of the e-seminar in other existing modules of the educational sciences.
- Transfer of the structural framework and basic didactic concepts to other content / subject areas → adaptation of the structures.
- Allows networking with other educational concepts / structures (including subjects) as well as a broader evaluation of a comprehensive integration in other areas of teaching.

6. CONCLUSION

The aim of this project is to create potential for the teaching-learning setting to meet the changing conditions of knowledge generation and information assimilation of students as well as the technical possibilities that are forcing their way into classrooms and educational institutions. The focus here is not too much on the

absolute and exclusive use of eLearning tools, but rather on a "new combination" of proven, pedagogical approaches and concepts, taking into account the changing needs and skills of the students of teacher training and potential teachers.

Especially the accompanying scientific research is to ensure that such measures and considerations a) are being reflected and evaluated in the scientific context, and b) give feedback to the design of teaching-learning scenarios and thus lead to an improvement of study opportunities and conditions for students and teachers.

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AKTIVNÍ ÚČASTNÍK DISTANČNÍHO VZDĚLÁVÁNÍ

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Abstract:

This paper analyses activity of learners in various on-line courses of the two-year project Modern Lecturer – Modern and Effective Adult Education. In this project, which started in the Usti Region in 2010 and was co-funded from the European Social Fund, the University of West Bohemia in Pilsen developed 10 tutor-led on-line courses. The project's target group consisted of further education lecturers. This included both seasoned professionals with many years of experience and teachers who are still preparing for their career in this field. The courses were prepared with attention to detail and to pedagogical aspects, emphasizing effective learning, discussion and sharing information between learners. The participants were encouraged to effectively use information and communication technology in their teaching practice in further education for adults. Each course was then evaluated by both learners and tutors. A total of 208 learners' evaluation questionnaires and 10 tutors' questionnaires were collected and analysed. In this paper, we present questionnaire evaluation and learners' activity statistics with special attention to assignments, discussion and collaboration. Continuous and final discussions and the evaluation of all ten courses have shown which methods and what conditions promoting active learning were well received by the target group. The results and our experience have shown that methods promoting active learning are beneficial, and even necessary, in adult education, and in our case in educators training. However, the wording of the assignments and discussions must be carefully considered, their usefulness for the topic of the course must be examined and the target group must be adequately prepared and set. High quality of tutor's work is necessary for promoting active learning to bring the desired effect.

Keywords:

Life-long learning, on-line education, educators training, on-line course, feedback.

1. ÚVOD

Na Západočeské univerzitě v Plzni věnujeme dlouhodobě značnou pozornost metodice e-learningu. Jedním z hlavních témat, kterými se zabýváme, je efektivní uplatnění aktivizace studujících v asynchronních on-line kurzech. V tomto příspěvku shrneme své zkušenosti a zjištění, ke kterým jsme dospěli během projektu „Moderní lektor – vzdělávání

dospělých moderně a efektivně”, který v letech 2010–2012 s finanční podporou Evropského sociálního fondu probíhal v Ústeckém kraji v České republice. Realizátorem celého projektu byla firma Jobmarket, s. r. o.; Západočeská univerzita v Plzni do projektu vstoupila jako subdodavatel deseti on-line kurzů pro lektory dalšího vzdělávání.

Celkem bylo vytvořeno a realizováno deset kurzů: 1. Základy distančního vzdělávání, 2. Principy účinné distanční výuky, 3. Rozdíly mezi distančním a prezenčním kurzem, 4. E-learning v distančním vzdělávání, 5. Práce s LMS systémy a autorskými nástroji, 6. Metodika on-line vzdělávání, 7. Pravidla vedení on-line kurzu, 8. Práce s interaktivní tabulí, 9. Andragogika, 10. Motivace při vzdělávání dospělých.

Cílovou skupinou projektu jsou lektori dalšího vzdělávání, a to jak lektori z praxe, kteří již mají se vzděláváním dospělých mnohaleté zkušenosti, tak lektori, kteří se pro působení v oblasti vzdělávání dospělých teprve připravují.

2. DIDAKTICKY PROMYŠLENÁ KONCEPCE KURZŮ

Programy byly koncipovány jako 3–6 týdnů dlouhé on-line kurzy doplněné úvodním a závěrečným prezenčním tutoriálem. V případě kurzu Práce s interaktivní tabulí byl navíc zařazen také průběžný tutoriál, protože účastníci si potřebovali procvičit konkrétní praktické dovednosti spočívající v ovládní základních funkcionalit tabule.

On-line kurzy respektují didaktické zásady tvorby on-line kurzů. Těžiště je přeneseno z pasivní četby studijních textů k aktivní činnosti účastníků kurzů. Značná pozornost je věnována takové stylizaci textů, aby čtenář byl přímo vtažen do tematiky kurzu, důraz je kladen na interaktivitu a průběžnou podporu motivace studujících. On-line kurzy obsahují řadu podnětů pro sebereflexi studujících, zároveň orientují účastníky k získání a vyhodnocování praktických zkušeností s moderní on-line formou studia. Kurzy jsou zaměřené velmi prakticky, aby motivace studujících vypracovat i náročné úkoly byla vysoká, aby si uvědomili, že všechny aktivity v kurzu mají svůj zřejmý smysl a není možné je označit za „zbytečnou“ práci.

3. KVALITNÍ PRÁCE TUTORŮ A ZPĚTNÁ VAZBA

Reitmayerová, Broumová (2007) uvádějí, že v každém vzdělávacím procesu je třeba nalézt křehkou rovnováhu mezi direktivitou a spontaneitou, mezi

sledováním předem stanoveného cíle a svobodnou vůlí jednotlivců. Pro všechny realizované kurzy je proto typický důraz na kvalitní práci tutora dle zásad učení zaměřeného na studujícího (student-centered learning). Hlavní principy práce tutora lze shrnout takto: pozitivní a motivující přístup, individuální přístup, osobní přístup, rychlost (pravidelnost) komunikace, důslednost, pečlivost, angažovanost.

Pro zpětnou vazbu a evaluaci je v kurzech připravena celá paleta různých nástrojů. Tím, že studující jsou neustále vybízeni k reflexi nad jednotlivými aktivitami v kurzu a svými pocity, probíhá v kurzu velice účinná průběžná evaluace v rámci anket, ale i v rámci úkolů a diskuze v učebně.

Evaluačním nástrojem zařazeným na závěr jednotlivých kurzů je dotazník kombinující hodnocení různých aspektů výuky formou známky 1 – 5 a slovním komentářem.

Způsob evaluace kombinující známku a slovní komentář považujeme za nejúčinnější formu hodnocení ve vzdělávání. Ať už studující uvede známku dobrou, nebo špatnou, má potřebu ji ve slovním hodnocení vysvětlit. Z tohoto velice jednoduchého dotazníku tak získáváme od studujících často velmi dlouhé volné odpovědi a celkově mnohem víc informací než ze složitě strukturovaných dotazníků, které se běžně v těchto typech kurzů používají.

Pro jednotlivé kurzy byly rovněž zpracovány podrobné hodnotící komentáře tutorů. Tutoři ve svých hodnoceních charakterizovali celkový průběh kurzu a specifika práce se studijní skupinou. Dále uváděli, které aktivizující prvky byly studujícími hodnoceny pozitivně či negativně, ale především také to, v čem spatřují příčinu tohoto stavu.

Kurzů se účastnilo celkem 250 studujících (20 – 27 v každém kurzu). Bylo odevzdáno celkem 208 evaluačních dotazníků studujících a 10 hodnotících komentářů tutorů.

Následující tabulka ukazuje průměrné celkové hodnocení známkou, které studující přidělili jednotlivým kurzům. Dále je v tabulce uvedena průměrná a maximální míra aktivity účastníků v kurzu vyjádřená počtem prohlížení stránek kurzu a počtem aktivních příspěvků. Aktivitu studujících tabulka prezentuje jen částečně. Studující měli během kurzu k dispozici tištěné studijní materiály a off-line CD, takže někteří aktivní účastníci kurzu měli v LMS málo záznamů prohlížení.

Kurz č.	1	2	3	4	5	6	7	8	9	10
Příspěvky (max./účastník)	88	286	58	20	34	26	22	34	26	27
Příspěvky (průměr/účastník)	32,5	39,2	24,6	12,9	19	12,2	11,6	21,65	12,1	12,6
Prohlížení (max./účastník)	776	451	849	383	366	302	189	483	266	294
Prohlížení (průměr/účastník)	334,6	232,5	352,3	183,2	193,8	138,6	96,6	240,3	132,4	157,8
Průměrné hodnocení kurzu	1,29	1,10	1,05	1,33	1,60	1,07	1,09	N/A ¹	1,06	1,08

Tabulka 1: Aktivita studujících a evaluace kurzu

4. AKTIVIZACE STUDUJÍCÍCH

Z hodnotících komentářů tutorů i vyjádření studujících, ale také ze statistik účasti studujících v relevantních studijních aktivitách vyplynulo, které aktivizující metody byly implementovány s velkým ohlasem, a které byly problematické.

Aktivizující metody	
s velkým ohlasem	s malým ohlasem
Asynchronní diskuzní metody Sdílený text - wiki Zkušenostní učení a reflexe Vzájemné hodnocení studujících	On-line chat Soutěž Interaktivní slovník

Tabulka 2: Ohlasy aktivizujících metod zařazených v on-line kurzech

Je třeba zdůraznit, že žádné aktivity se nesetkaly s výrazně negativním hodnocením ze strany studujících. Spíše lze rozlišit aktivity, do kterých se studující zapojovali více a nadšeněji a ty, kterých se účastnilo velice málo studujících. Je samozřejmé, že někteří ze studujících se v evaluačních vyjádřeních vymezují i proti obecně pozitivně přijímaným metodám – např. „Všichni nadšeně komunikovali, já osobně nemám tuto potřebu.”

¹ V kurzu Práce s interaktivní tabulí bylo provedeno jen slovní hodnocení.

Někteří účastníci prošli několika kurzy a tvořili pozitivně naladěné jádro studijní skupiny. Proto bylo možné v kurzech postupně zařazovat organizačně náročnější metody založené na stále větší aktivitě účastníků.

Asynchronní diskuzní metody

Studující nejvíce oceňovali diskuze tematicky přímo související s jejich vlastní praxí. Při vedení diskuzí se ukazuje, že velký význam má zvolené téma, protože i v kurzu, kde většina studujících velice aktivně komunikuje, se může objevit téma, na které nikdo ze studujících nemá potřebu reagovat, a neatraktivní úvodní příspěvek diskuze tak zůstává zcela bez reakce.

S velkým ohlasem se setkávají diskuze ke konkrétnímu materiálu – článku v tisku, srovnávací studii, kontroverzní videonahrávce apod. Rovněž oblíbené jsou diskuze o tématech, ke kterým mají co říci studující různého zaměření vždy ze svého pohledu. Tyto diskuze považují studující za nejvíce obohacující.

Sdílený text – wiki

Studenti mohli vložit svůj příspěvek nejen do diskuzního fóra, ale také např. ve formě sdíleného textu, odkazu či komentáře. V systému Moodle k tomu využíváme modul Wiki. Osvědčilo se použít jen první stránku tohoto modulu jako sdílený prostor, vypracovat přesné zadání spolupráce a připravit ukázkový příspěvek. Možnost složitější struktury stránek wiki jsme nevyužili z obavy, aby nedošlo k technickým problémům, které by studující od využití wiki mohly odradit. Sdílený prostor je vynikající pro prezentaci individuálně zpracovaných úkolů; studující také společně tvořili např. různé přehledy metod, forem a technik nebo sestavovali soubor doporučení. Pokud je v kurzu wiki zařazena, je žádoucí, aby zapojení studujících bylo povinné.

Zkušenostní učení a reflexe

Zkušenostně zaměřené kurzy boří obvyklou představu, že praktické dovednosti si nelze osvojit on-line. Naopak se ukazuje, že individuální nácvik praktických dovedností s on-line podporou je pro studující velice výhodný, protože mohou postupovat vlastním tempem a flexibilně procvičovat ty dílčí dovednosti, které jsou důležité především z hlediska jejich individuálních potřeb. To se potvrdilo zejména u kurzu „Práce s

interaktivní tabulí”. Původně měli účastníci pocit, že budou potřebovat více kontaktních hodin. Nakonec zjistili, že kvalitní multimediální zpracování kurzu, tj. velmi názorné videotutoriály, a zkušenostně pojatý plán studia jim poskytuje mnohem větší prostor pro nácvik dovedností nežli prezenční setkání.

V rámci on-line kurzů jsou studující vedeni k získávání praktických zkušeností a jejich reflexi, a to individuální i skupinové. Pro vzdělavatele dospělých má skupinová reflexe obrovský význam především proto, aby nezobecňovali subjektivní zkušenosti, ale byli si vědomi rozdílného vnímání situací různými studujícími.

Tabulka 3: Nejúspěšnější aktivizující metody - poznámky

5. ZÁVĚR

Naše zkušenosti ukazují, že je vhodné, a dokonce nezbytné zařazovat ve vzdělávání dospělých, v našem případě ve vzdělávání vzdělavatelů, aktivizující metody výuky. Je však třeba pečlivě volit zadání těchto aktivit, zvážit, zda je jejich zařazení pro konkrétní téma studia funkční a zda je na jejich úspěšné absolvování studijní skupina náležitě připravena a naladěna. Kvalitní práce tutora je podmínkou, aby zařazené aktivizující metody výuky přinesly žádoucí efekt.

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PROGRAMMING OF TEACHING AIDS FOR SUPPORT OF MATHEMATICS AND OTHER TECHNICAL SUBJECTS IN ENGINEERING EDUCATION

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Abstract:

The paper deals with possibility to use scientific software Maple for support of mathematics and other technical subjects teaching at Faculty of Applied Informatics of Tomas Bata University in Zlín. It describes basic programming and graphical tools of the current version of Maple which we use for making of the web teaching tools destined for students of the Tomas Bata University in Zlín and other technical schools .

Keywords:

Teaching aids, mathematic, Maple, engineering education

1. INTRODUCTION

Nowadays, many scientific software enable not only to solve the real technical problems but they can also be applied in engineering education. It is due to constant development of tools usable as very useful teaching aids. On this account we use software Maple for support of mathematics and other technical subjects teaching at Faculty of Applied Informatics of Tomas Bata University in Zlín.

In this paper we will describe programming and graphical tools of the current version of Maple. They help us to model and visualize three-dimensional functions by an explanation of the subject matters at the lectures and seminars. The obtained graphics will be used for innovation of Mathematics II subject teacher at the Tomas Bata University in Zlín as we present in paper (Fialka, 2012). In the paper (Charvátová, 2012) have been described basic methods that we used programming of three-dimensional functions. In this paper we will describe basic tools for animations of two and three dimensional functions with Maple.

2. METHODS OF FUNCTION ANIMATION PROGRAMMING

We used two basic methods for animation of functions. The first method is based on programming of animation by command `plots[animate]` or `animatecurve`. The command `plots[animate]` creates a 2-D or 3-D animation on one parameter. Syntax of `plots[animate]` command has structure (Maplesoft, 2012):

```
animate3d(F, x, y, t)
```

The parameters mean:

F - function(s) to be plotted

x - x axis range

y - y axis range

t - frame parameter range

> **with(plots): with(plottools):**

```
a:=animate3d([1*sin(t),(3.0+1*cos(t))*sin(f*k),(3.0+1*cos(t))*cos(f*k)],t=0..2*Pi,f=0..2*Pi,k=0..1,scaling=constrained,shading=xyz,lightmodel=light3,frames=50):
```

```
display(a,n1,n2,n3,n4,n5,n6,orientation=[114,80],font=[TIMES,ROMAN,15]);
```

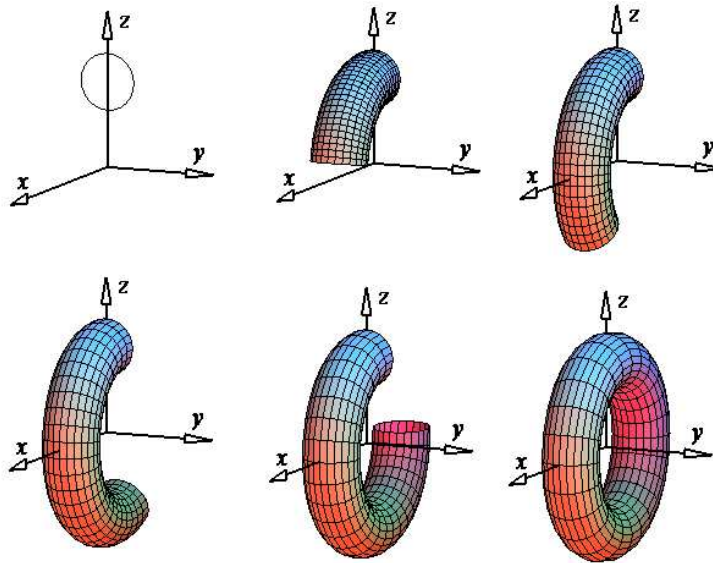


Figure 1: Show of command animation use

The `animatecurve` function provides support for visualizing the drawing of real functions in 2 dimensions. These real functions can be specified as expressions, procedures, or parametric functions. When animating the drawing of a procedure, operator notation must be used. . Syntax of `plots[animatecurve]` command has structure (Maplesoft, 2012):

```
animatecurve(F, r)
animatecurve(F, r,...)
```

The parameters mean:

F - function(s) to be plotted
r – horizontal range

```
> a:=animatecurve(x*(sin(1/x)),x=-2..2,frames=20,colour=red,thickness=4):
```

...

```
> display(a,b,c,d,e,a1,view=[-2.07..2.32,-0.55..1.49],axes=normal,font=[TIMES,ROMAN,20],scaling=constrained,labelfont=[TIMES,ROMAN,1],tickmarks=[4,4]);
```

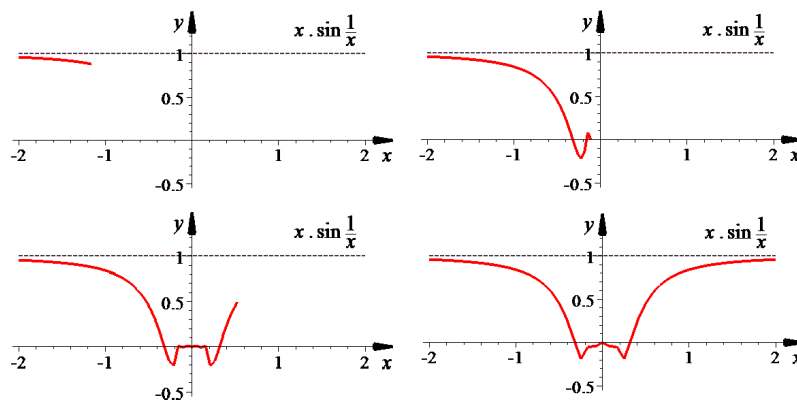


Figure 2: Show of command `animatecurve` use

The second method we used for rotating of plot including axis. For this purpose we programmed command for creating 2D or 3D

function as plot or plot3d. Moving of graphics we programmed as sequence of angles in command for space orientation. This method we show in following example for animation of function $z = x^2 - y^2$ in parametric coordinates:

```

> with(plots):
> f:=plot3d([r*cos(t),r*sin(t),r^2*((sin(t)^2)-(cos(t)^2))],r=0..1,t=-
Pi..Pi,grid=[6,60],color=yellow):
> uhly:=[seq(ss*4,ss=0..90)];
> grROT:=seq(display( f,b,c,d,e, orientation=[33-
an,68]),an=uhly):
...
> display(grROT,insequence=true,axes=normal,view=[-
1.35..1.35,-1.35..1.36,-
1.51..1.37],font=[TIMES,ROMAN,20],style=PATCH,tickmarks=[3,3
,3],scaling=unconstrained,labelfont=[TIMES,ROMAN,1],lightmod
el=light3);

```

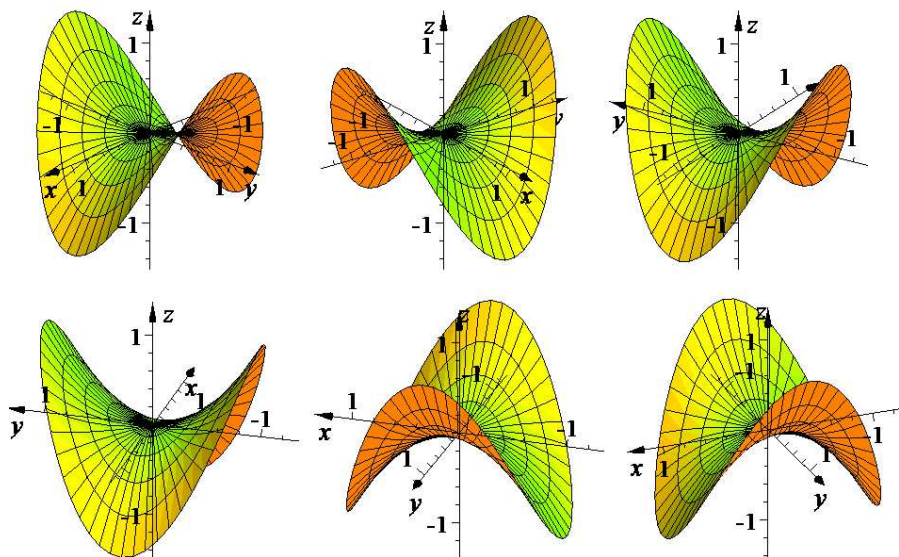


Figure 3: Show of function animation by axes rotation

3. USE OF THE ANIMATION IN MATHEMATICS TEACHING

The created animations will be included into visual web presentations which we use in teaching of Mathematics I and Mathematics II at the Tomas Bata University in Zlín. Detailed information of web presentation use we discussed in paper (Fialka, 2012).

4. CONCLUSIONS

In the paper we demonstrated basic methods by which we have programmed animations used as the teaching aids for support of education at Faculty of Applied Informatics of Tomas Bata University in Zlín. The created animations will be included into visual web presentations that will improve the effectiveness in teaching of subjects Mathematics I and Mathematics II. The presentation will be freely accessible on the Internet for several months, specifically on the websites of the Faculty of Applied Informatics.

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TUTORING DISTANCE LEARNING COURSES – COMPARATIVE EXPERIENCE FROM CZECH REPUBLIC AND NEW ZEALAND

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Abstract:

Distance learning is gaining a growing attention in last years all around the world. Thanks to new opportunities created by ICT development, students in many locations of our planet are facing increasing options represented by still enlarging portfolio of distance learning courses. But how do they utilise those options and how much is distance learning culturally sensitive? This paper summarises my personal experience as a distance learning tutor of two similar courses being provided by two tertiary institutions in two different countries. One of the countries is New Zealand where distance learning has a long tradition and is well established within the official tertiary qualification framework. In the Czech Republic on the other hand the opportunities of distance learning have not been fully recognised yet either by general public or educating professionals. So far it plays mainly a supplementary role to traditional classroom education. The comparison of my distance learning courses experience is viewed from several important perspectives – role of a tutor, approach and motivation of students, tutor-student interaction, content composition, learning platform and tools, administration support and learning efficiency.

Keywords:

Distance learning, facilitation, heutagogy, blackboard.

1. INTRODUCTION

Distance learning provides today a very diverse experience to both tutors and learners in many parts of the world. The experience described in this paper covers the basic comparative study of two distance learning programmes between New Zealand and the Czech Republic from the point of Czech tutor living alternately in both countries.

The comparison of distance learning education in those two countries can be done on several basic some assumptions:

-
- small population countries,
 - countries with open economy,
 - countries where education is highly valued,
 - countries with low barrier education access.

But there are also differences which cannot be forgotten. New Zealand is more experienced with distance learning education due to its geography and population distribution as there is a significant percentage of rural population. For those people distance learning represent often one of few or even the only opportunity how to study.

On the other hand Czech Republic with its central position in the heart of Europe, smaller area and relatively high population density represent a country where distance learning has never been forced by the geographical needs.

Country	Area	Population	Population density
Czech Republic	78.864 km ²	10.5 mil.	133
New Zealand	103.737 km ²	4.4 mil.	41

Table 1: Key Country Indicators, Dec.2011

From the mentioned facts it is obvious that both learners and tutors can have a different motivation for being involved in distance learning programmes in different countries. While limited access to knowledge can be a key factor for choosing a distance learning programme in countries like New Zealand, for Czech learners is it mostly a comfort in place and time. Because of natural mental barriers towards distance learning, many learners still prefer “face-to-face” development options. Therefore the competition with class type education is definitely much stronger in Czech Republic than in New Zealand.

1.1. Programme descriptions

Despite the fact that the topic for both programmes is similar, there are many different aspects of its implementation. The key parameters are listed in the Table 2.

Certificate in business coaching for managers and business owners (NZ)	Subject Coaching for managers and entrepreneurs (CR) as a part of MBA programme
Specific independent programme of several papers	Specific subject in MBA programme divided in chapters
Approx. 600 learning hours	Approx. learning 250 hours
Original learning materials + large portfolio of other mandatory and recommended reading	Original learning materials, no additional reading
Students required to share their own experience and learning resources	No requirements on sharing resources and experience
Social media – available and usually used	Social media – available, used only occasionally
Communication – through different channels, tutor involved in most discussions, students form smaller groups for practicing	Communication – mainly via emails, individual learners communicate to tutor, tutor excluded from student communication
Duration varies: flexible schedule provided	Duration: one semester
Different groups of students in different intakes	Consistent class in each semester
Blackboard platform – active participation of students expected	Unifor platform – participation of students recommended but not mandatory

Table 2: Key Country Indicators, Dec.2011

2. COMPARING THE PROGRAMMES

Both programmes were taught from February 2012 till June 2012 (New Zealand programme is still ongoing). There was a similar amount of students in each programme (28 students in Czech Republic comparing to 30 students in New Zealand).

2.1. Way of studying, communication and technology

The communication platform is a key component of each distance learning programme. Comparing the two platforms I can't say which one I prefer as a tutor and facilitator. I believe that both platforms are suitable for passive learning, the blackboard might be a little bit more intuitive for the learners.

In both groups there is a certain resistance regarding the technology usage, especially with the 50+ learners. The manual – provided in hard copy and on CD – does not provide too much help to the learners. Learners in both countries appreciate support from the tutor regarding using the platform or they avoid using it if not mandatory. The similar situation can be observed in using other social media like Skype. Once familiar with it, learners are significantly more willing to use those social media for communication with the tutor and among themselves.

The blended learning can be a good compromise when possible. The face-to-face introductory session was included into the Czech programme. It is not mandatory for the learners to attend it but it can help them to create more trusted relationship to their tutors. It is an advantage for the tutor as well to get to know the students personally.

2.2. Tutors and their support

Tutors work independently and the communication with the schools is limited to occasional emails or Skype calls when initiated. The opportunity to share best practice with other tutors and facilitators is

supported, in New Zealand it is a regular part of the faculty schedule. Once a year a special face-to-face event of a 1-week duration is organised at university campus to provide an opportunity for the tutors and facilitators to meet and share their experience. This is extremely valuable activity for several reasons:

- exchange of best practice and brainstorming innovation,
- teamwork support and opportunity for individual development,
- increase in loyalty and better communication.

Especially the last point is very important – tutors are working from different locations and they do not meet regularly with university representants. Therefore the need of belonging and appreciation can be experienced more strongly. When this need is saturated, it creates a positive impact on their attitude towards learners as well.

2.3. Learners, their attitude and results

Learners are expected to work more independently comparing to traditional class learning. In New Zealand the principles of heutagogy are strongly incorporated into the distance learning programmes and students are used to more active approach towards their learning. Heutagogy is a self-determined learning concept, introduced by Hase and Kenyon (2000). The heutagogical approach recognizes the need for flexibility in the learning process where the tutor provides resources but the learner designs the curriculum, not just the learning process, by negotiating the learning. The focus is mainly on development of individual capability, individualized learning and independent learning. Hase confirms that heutagogy can have a significant potential for future of learning when knowing how to learn will be a fundamental skill given the pace of innovation and the changing structure of communities and workplaces. This represents probably the most significant difference in the comparison of the two programmes as heutagogy is still practically unknown in the Czech tertiary education system.

3. CONCLUSION

Heutagogical approach needs to be introduced to both learners and tutors in Czech Republic to support the development of distance learning concept. Tutors would become more facilitators of learning process and they would be able to work with their students on more individual bases to meet fully their particular learning needs. Also the learners need to take full responsibility for their own development and play more active part in the development process. They need to develop their active learning skills and attitudes which will serve them even after the end of the programme. This is going to be an important component of true life-long learning experience.

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DEFINING EXCELLENCE—A CULTURALLY RESPONSIVE MODEL FOR CONTINUOUS PROFESSIONAL DEVELOPMENT THROUGH SECOND LIFE

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Abstract:

This paper focuses on Second Life, an immersive learning software program of a Virtual World that allows self-directed learners to actively communicate with people from different places and different cultures, with the assistance of simultaneous translation services. Teachers, with their students, can create scenarios in endless venues, focusing on concepts of culturally responsive teaching, while “meeting” educators, colleagues, and students from other cultures and countries for discussions, ideas, developing thinking skills, and participating in simulated field experiences thus providing a venue for continuous professional development.

Keywords:

Technological simulation, global perspectives, social justice, continuous professional development.

1. A TECHNOLOGICAL PERSPECTIVE FOR PRE-SERVICE AND IN-SERVICE TEACHER PREPARATION

For generations, desks and chalkboards have been the centerpiece of the classroom, with a teacher as the expositor of information to [hopefully] attentive students. And while that image still persists for those of us beyond the childhood years, the new generations of learners will gradually find such an image quaint and archaic. Because, already there is a “second life” poised to replace the current physical classroom, beginning with a Virtual World (and undoubtedly more to come) called Second Life (SL), available via the Internet.

With SL, already a virtual reality, the author of this paper will present the current possibilities and advantages of connecting traditional classroom preparation of pre-service teachers and in-service preparation with the expansive opportunities for classroom instruction

provided by this technology format which is part of the system known as immersive learning.

Currently, Second Life Viewer refers to itself as a free client program that enables its users, called Residents, to interact with each other through Avatars. Residents can explore, meet other Residents, socialize, participate in individual and group activities, and create and trade virtual property and services with one another, or travel throughout the world, which Residents refer to as the “grid”. SL is designed for users aged over eighteen, while its sister site Teen Second Life is restricted to users between thirteen and eighteen.

Built into the software is a three dimensional modeling tool based around simple geometric shapes that allows a resident to build virtual objects. This tool can be used in combination with a scripting language called Linden Scripting Language for adding movement and function to objects and can be combined with three- dimensional sculpted forms for adding textures for clothing or other objects, animations, and gestures. (Taken February 16, 2009, Second Life, Wikipedia, The Free Encyclopedia).

2. SECOND LIFE AT THE UNIVERSITY

In 2008, one of the authors of this paper in collaboration with classroom educators initiated a Second Life component to the Education Department’s pre-service course titled Elementary Methods and Curriculum. While adhering to the in-place curriculum and conceptual framework for this course, she explored the possibilities of using SL with her students. As this component was developed, many significant principles of learning (Vygotsky, 1978, Gardner, 1983, Marzano, Pickering, Pollock, 2001, Strong, Silver, Perini, 2001) became available to all the participants, principles that were previously unavailable in a “regular” classroom, because of constraints of time, student schedules, and the already established requirements. The following extensions available through SL, are listed here and then detailed, and represent only the first steps in the merging of this SL technology with teacher preparation:

- **Virtual Classroom Development** which can be modified continuously, as required, for specific subject area learning and attention to individualized needs

-
- **Subject-Area Availability and Integration** through access to the Internet and human resources
 - **Practice Teaching Simulations and Role-Playing** allowing every pre-service student to participate and interact with colleagues
 - **Distance Learning Opportunities for Developing Culturally Responsive Teaching** with “distance” being global and communication made possible through immediate translations (ex. Italian to English and English to Italian, etc.)
 - **Simulated “Field” Experiences** that take students to “courthouses, hospitals, environmental sites, geographic regions” or wherever else one can actually and, therefore virtually, reach.

The remainder of this paper describes in detail how each of the above aspects of this pre-service course were expanded through **SL**. Combined with these aspects of learning is the research that attests to their value for both classroom teachers and students and can be provided more effectively and efficiently by access to **SL**. This preparation is essential for developing quality teachers imparting a high-level curriculum who can particularly address the needs of students of diversity who may have previously been “under-served” (Rothstein, M. and E. Rothstein, 2009).

3. VIRTUAL CLASSROOM DEVELOPMENT

SL allows the teacher, as well as the students, to continuously “modify the classroom.” While most classrooms today have desks, chairs, and writing services (e.g. white boards, SMARTBoards), only a few classrooms are set up as laboratories of learning. In an SL scenario, students can set up virtual environments of cities, countrysides, museums, wildlife settings or whatever is related to the curriculum. By creating these simulated settings, teachers and students are involved in active research from the Internet and other media, which they can then present, to colleagues or classmates for true sharing and discussion. Through this simulation, the teacher guides the students in a true cross-cultural model for individualization of instruction (Maisano, 2004).

4. SUBJECT AREA LEARNING AND ATTENTION TO INDIVIDUALIZED THROUGH VIRTUAL CLASSROOM

“Planet earth is inhabited by all kinds of people who have all kinds of minds. The brain of each human is unique. Some minds are wired to create symphonies and sonnets, while others are fitted out to build bridges, highways, and computers... (Levine, 2002. 1)

This opening statement in *A Mind at a Time*, while undoubtedly reasonable to most educators, rarely serves as the basis for subject area instruction in schools. Standardized tests and even standards drive the curriculum, setting goals that *all* children must achieve if the school or schools are to be deemed successful. And even though Levine states that “tragic results are seen when we misconstrue and possibly even misuse a child’s kind of mind,” (2), competitive testing, pacing guides, and grade level requirement often take precedence over the needs of the individual child’s mind (Maisano, 2004).

Marzano, Pickering, and Pollock (2001) express a complementary viewpoint on instruction by challenging the concept of what “all children” need (rather than what the individual child needs) by asking if there are instructional strategies that are 1) more effective in certain subject areas 2) more effective at certain grade levels 3) more effective with students from different backgrounds, and 4) more effective with students of different aptitudes (9). In response to these questions, the authors state three strategies that have been shown to have positive effects, which are:

- Student-centered instructions
- Teaching of critical thinking skills
- Use of hands-on “laboratory” activities

While administrators and teachers may agree with the concepts of Levine and Marzano, they may ask, justifiably, how they could possibly create instructional formats that are “individualized” and “student-centered” when all the students must pass the same tests at the same time and know the same information which they must all learn at the same rate.

The answer, or more modestly, *an* answer to this query of school personnel, might lie in the inclusion of Second Life in the classroom which can be introduced and maintained by the current population of

pre-service and in-service teachers who enter the classroom with SL knowledge and skills which this paper addresses.

5. SUBJECT AREA LEARNING AND ATTENTION TO INDIVIDUALIZED THROUGH VIRTUAL CLASSROOM

E.D. Hirsch's second chapter in *The Schools We Need* is titled "Intellectual Capital: A Civil Right". Hirsch opens with the statement that "The need in a democracy is to teach children a shared body of knowledge"(17), which he calls intellectual capital. and "operates in almost every sphere of modern society to determine social class, success or failure in school, and even psychological or physical health" (19). Hirsch continues to explain the concept of Intellectual Capital as a necessity for economic and psychological well being, focusing on those children denied access to this "capital." He empathetically writes, [these children] "fall further and further behind. The relentless humiliations they experience continue to deplete their energy and motivation to learn." He then compares this lack of intellectual capitalism with money stating that a "child's accumulation of wide-ranging foundational knowledge is the key to educational achievement" (20).

The inclusion of SL in the teaching/learning spectrum and in the preparation of pre-service teachers can be a powerful adjunct in the development of intellectual capitalism because not only does it have the advantage of being a virtual modifiable classroom, but because it offers access to specific subject-area topics that, again following through on Hirsch, "can be broadly shared with others" for effective communication and learning (20). Through SL, pre-service teachers and students of all ages can "go to" sites on beginning reading, mathematics, chemistry, or whatever curriculum area is needed. A further advantage of this access is the opportunity to truly integrate subjects. At a SL site, "Avatars" with different aspects of knowledge can meet to present and discuss, for example, "the relationship of mathematics to chemistry, " or "the history of the English language and its affect on English spelling." Visitors to the site can bring their high-level intellectual questions and find other visitors and materials with answers. The learning is not linear and based on a pacing

guide, but circular and expansive, and dependent on shared knowledge.

6. PRACTICE TEACHING SIMULATIONS AND ROLE-PLAYING

SL gives every participant student multiple opportunities to participate and interact with colleagues. In the *History of Education in America*, published in 1994, the authors Pulliam and Van Patten wrote of the “Characteristics of Futuristic Education” 270-281, much of which they have said is not only relevant, but still needs to occur. They begin with the axiom that “Education is more than training”. Training refers to providing students with existing information that focuses on memorization and regurgitation of short-term information. The true purpose of education, they state, “requires an environment in which students are not asked questions for which the answers are known”, but which develop the “ability to solve problems and communicate in a meaningful way” (272). The classroom, as we know it, is a limited setting for pre-service teachers to practice teaching simulations and to role-play not only the teacher, but also the learners. The teacher who lectures can only hope that the “wisdom and knowledge” emanating from the lecture reaches and interacts with the brain of the learner.

Two recent publications extend the earlier work of Pulliam and Van Patten: Howard Gardner’s *Five Minds for the Future* (2007) and Daniel Pink’s *A Whole New Mind* (2005). Gardner’s “five minds” represent what he terms “five *dramatis personae*” that allow a person to be “well-equipped to deal with what is expected, as well as what cannot be anticipated” (2). The five minds, according to Gardner, are the disciplined mind, the synthesizing mind, the creating mind, the respectful mind, and the ethical mind. Gardner’s specific use of the terms *dramatis personae* tie in not coincidentally with the need for “role playing” in teacher preparation.

Daniel Pink (2005) also focuses on the mind, referring to artists, inventors, designers, storytellers, caregivers, consolers, big picture thinkers—those with minds needed for the forthcoming decades. Needed for a successful future will be those people who exhibit the qualities of inventiveness, empathy, joyfulness, and meaning. If we can imagine future teachers having minds that merge the qualities of

Gardner and Pink, we can imagine teaching and learning environments well beyond the current classrooms we now have. To begin this process, teachers of the future need to begin their training by simulating and role-playing of what is likely to be.

The addition of SL to pre-service teacher preparation is designed by its structure to foster and promote continuous interactions and role-playing, based on solving problems that confront learners and learning, stretching their minds to be disciplined, synthesizing, creating, respectful, and ethical. Every participant in a SL setting must interact cooperatively, (not competitively) a behavior, which the authors emphasize, is predictive of not only success in school, but also success on the job and in life (Pulliam and Van Patten 274). And interacting cooperatively encompasses the qualities cited by Pink. In an SL setting, pre-service teachers can be involved in all or most of these simulations and role-playing activities.



7. DISTANCE LEARNING OPPORTUNITIES FOR BUILDING CULTURALLY RESPONSIVE TEACHING & CONTINUOUS PROFESSIONAL DEVELOPMENT

These aspects of teaching and learning are automatically built into SL, with “distance” being global and communication made possible through immediate translations (ex. Italian to English and English to Italian, etc.). With SL, pre-service and in-service teachers communicate directly with a variety of educators from other countries and cultures with opportunities to become culturally responsive teachers.

Gay (2000) defines culturally responsive teaching as using the cultural knowledge, prior experiences, and performance styles of diverse students to make learning more appropriate and effective for

them; it teaches to and through the strengths of these students. According to Gay, culturally responsive teaching:

- Acknowledges the legitimacy of the cultural heritages of different ethnic groups, both as legacies that affect students' dispositions, attitudes, and approaches to learning and as worthy content to be taught in the formal curriculum.
- Builds bridges of meaningfulness between home and school experiences as well as between academic abstractions and socio-cultural realities.
- Uses a wide variety of instructional strategies that are connected to different learning styles.
- Teaches students to know and praise their own and each other's cultural heritages.
- Incorporates multicultural information, resources, and materials in all the subjects and skills routinely taught in schools (p. 29).

Ladson-Billings (1994) studied actual instruction in elementary classrooms and observed these values being demonstrated. She saw that when students were part of a more collective effort designed to encourage academic and cultural excellence, expectations were clearly expressed, skills taught, and interpersonal relations were exhibited. Students behaved like members of an extended family assisting, supporting, and encouraging each other. Students were held accountable, as part of a larger group, and it was everyone's task to make certain that each individual member of the group was successful.

As the potential of SL develops, in-service teachers have direct experiences in communicating with peers from different cultures and backgrounds. Imagine a group of pre-service teachers from University of North Carolina exchanging methods, concepts, and ideas with teachers from Sardinia, using the technology of SL to exchange materials and artifacts, share problems and solutions, and maintain on-going dialogues.

8. SIMULATED „FIELD“ EXPERIENCES

SL can take students to or wherever one can virtually reach. In *A Whole New Mind* (2005), Pink outlines six “high-concept, high-touch senses that can develop the whole new mind” that today’s and future students will need. He names these “senses” design, story, symphony, empathy, and play (5,6). While all of these senses can be elevated or raised through participation in SL, “play” can have a special place and a special value in the SL experience. Pink cites the definition of play by Brian Sutton-Smith as “to act out and be willful, exultant and committed as if one is assured of one’s prospect’ (187).

One of the pleasant school activities for most students (adult and children) is a field trip, which almost always connotes a day of fun or virtual play. A field trip is not only seeing and being part of a place outside the classroom, but means freedom to walk around, possibly touch plants or animals or unique objects, talking to classmates without disapproval, and learning “outside the box”. Yet field trips are generally infrequent, maybe not more than twice a year and almost always dependent on the school budget. Adding SL “field trips” to a school day, while not quite reality, can be a high-level substitute that expands horizons and offers visualizations beyond those that can be provided in textbooks and other written materials. A virtual visit to a courthouse with its external and internal settings can create a sense of exultation, enhanced by a scenario of role-playing set in an historic period in new geographic locations populated by “characters” of a different era and maybe speaking a different language that is now simultaneously translated on the computer screen.

9. RESULTS OF SURVEY TAKEN OF PRE-SERVICE TEACHERS AT CAROLINA UNIVERSITY IN THEIR INITIAL INTRODUCTION TO SECOND LIFE

The Ultimate Survey Analysis currently used at Western Carolina University was given to 35 pre-service education students at the completion of their Second Life course. (<http://ultracat.wcu.edu/ultimatesurvey/Analysis/RunAnalysis.aspx?analysisID=957&surveyID=2273>)

Two different questions were asked, which resulted in 70% positive responses and 30% negative responses. For the purposes of this paper, we have presented the questions and a sampling of the first ten responses to each question divided in positive statements and negative statements.

A third question asked about the challenges presented by SL, which can provide information on ways to improve the immersive learning experience. We selected ten challenges that we believe needs special attention for making SL a fully positive teaching training experience.

Question 1: How did your learning experience in a “virtual environment” prepare you for your pre-service teaching experience?

POSITIVE	NEGATIVE
<p>I know how to reach a wide variety of audiences and to teach online.</p> <p>It has given me a new resource to use in my teaching.</p> <p>I feel like I am prepared to teach students in this new technology world.</p> <p>It has given me the chance to talk with other teachers and learn more about teaching in other areas around the world.</p> <p>I have become more aware of the resources found within the “virtual world.”</p> <p>SL has provided many online resources with helpful information on teaching and curriculum</p> <p>It is a new age technology and will be an advancement.</p> <p>On SL we have addressed different situations, which have provided helpful hints for working with difficult</p>	<p>I do not think it helped me in any way.</p> <p>I don't think it has. I don't know what I am supposed to do.</p>

students.	
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Question 2. What was your biggest success from learning in an immersive world environment?

POSITIVE	NEGATIVE
<p>It was more of a self-awareness, knowing if I had a good idea and could reach a lot of people.</p> <p>Now I am more comfortable with an immersive world environment.</p> <p>Learning how to create my avatar and maneuvering it.</p> <p>I feel like I understand SL and see how great a tool it is.</p> <p>Meeting teachers from around the world.</p> <p>I could present to outside avatars with my professor.</p> <p>I found some really cool science and literature resources.</p> <p>Getting experience that I can use in my own classroom.</p>	<p>Nothing really.</p> <p>I just did not like it.</p>

Question 3. What was your biggest challenge to learning in an immersive world learning environment?

<p>Finding everything and navigating through its landmarks.</p> <p>It's not completely interactive.</p> <p>A lot to learn and sometimes overwhelming.</p> <p>Too many avatars at once in the classroom.</p> <p>The ups and downs of technology.</p> <p>Trying to gather what everyone is saying.</p>
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10. CONCLUSION

Our own experience with using the immersive learning experience of Second Life is the potential for expanding the global perspectives of both teachers and their students. While many of the teachers struggled with the technology of new software and new ways of interacting both with “avatars” and the demands of the university program, they had the unique experience of “meeting” a global world and have the advantage of “talking” in their language and getting back the translations of people speaking languages they would normally not be able to understand. The teachers could ask a wide range of questions—cultural and educational—and get instant answers, which they could then discuss later with their own group and then go back to the source of these questions for further expansion and clarification.

Thomas Friedman (2005) has stated the world is flat, a new way of looking at the globe and its potential for direct communication. Second Life, as one way of immersive learning, can be a starting point for global interaction moving us closer to the long sought after goal of a world of social justice and human rights.



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BADGES FOR (LIFELONG) LEARNING - GAMIFICATION, ENHANCED VISIBILITY OF REACHED ACHIEVEMENTS AND CONTINUOUS BUILDING OF E-PORTFOLIO AS DATA SOURCE FOR LEARNING ANALYTICS

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Abstract:

The lifetime of skills and particular knowledge is getting shorter. In parallel, the new skills are obtained as a part of the lifelong learning process. Only a part of these processes is actually recognized and even fixed in a form of degrees, certificates and references. The diversity of both personal learning environments and situations when you have to present yourself in a specific way (e.g. to the potential employer or group of friends) demands the flexible and transparent system that enables continuous building of e-portfolio of reached achievements and learning goals. The huge potential in this field is presented by the Open Badge Infrastructure created by The Mozilla Foundation. This infrastructure supports so-called "badges" granted from any issuer to anybody in the form of a digital picture. Such a file is the independent digital object with encoded information about parameters of reached achievement, issuer, earner etc. Integration of such a tool into the existing content management systems (CMS), learning management systems (LMS), e-portfolio systems, (digital) social networks, online service providers including games and also intranets could lead to the unique distributed personal learning analytics data source. This paper describes briefly the current status of implementation and also risks, threats and weaknesses of such an infrastructure.

Keywords:

Open Badges, Lifelong Learning, e-Portfolio, Personal Learning Environment, Gamification

1. INTRODUCTION

It is obvious that learning process continuous through the whole life of any person. The lifetime of skills and particular acquired knowledge is getting shorter as a new technology and learning approaches are evolving. As Brown (2012) stated 'the half life of a given stock/skills is constantly shrinking' and any person wants to be the part of the experience, participate in knowledge flow – including flow of optimal experience as defined by Csikszentmihalyi (1990) – and actively participate. But as learning is mostly creating the new, much what is created is tacit, it has not enough time to be crystalized down to explicit knowledge (dtto).

However, only a part of these processes is actually recognized and even fixed in a form of degrees, certificates and any other formal reference. Even if we live in highly digitalized and interconnected global infrastructure where most of our activities are tracked, assessed and analysed, these data are fragmented. Our electronic path at the internet and beyond in a form of locally stored (digital) data-sets still keeps the enormous potential for utilization and evaluation.

From the lifelong learning point of view, the personal learning environment characteristics' and experience with the unique 'flow participations' should be simply recognizable and offer the on-the-spot continuous feedback. There should be also possibility to present yourself in a specific way (e.g. differently to a group of friends, teacher or potential employer) demanding the flexible and transparent system that

enables continuous building of such an e-portfolio of reached achievements and learning goals.

2. BADGES AND THE OPEN BADGE INFRASTRUCTURE

The huge potential in this field is presented by the Open Badge Infrastructure created by The Mozilla Foundation (referred as MOBI; more information available at: <http://www.openbadges.org>). This infrastructure supports so-called "badges" granted from any issuer to anybody in the form of a digital picture. Such a file is basically the independent digital object with encoded information about parameters of reached achievement, issuer and earner. Any badge received from any issuer can be freely distributed as a file, presented online, verified and stored (uploaded) into the so called 'badge backpack' as the online database of recognized achievements.



Figure 1: Example of the Badge from the Mozilla's Open Badge Infrastructure (issued by the Experimental Badge Authority to the author)

Even if the idea of badges is not completely new as we can find the analogy between them and e.g. systems of medals, ranks, decorations and awards, the MOBI is unique in a transparency and openness of the infrastructure. 'It is designed to organize evidence of both formal and informal learning' (Carey; 2012) due to the fact that anyone – both person and institution – is allowed to issue the badge. The school can use this infrastructure to boost and reward the informal activities inside or outside the classroom (as a part of the virtual environment like forums and learning management systems). Existing systems of badges, e.g. badges earned via Foursquare location-based service, could be easily upgraded to provide required metadata in the proper format. However, it can be also implemented in the same way as we currently know 'liking' feature at the Facebook social network if you personally become the issuer and reward others. Or, you can provide additional evidence about certificates you managed to get, from driving licence to academic degree.

The MOBI allows full customizing of complexity of systems of badges (from simple one-level binary achievement "I did this" to cumulative achievements "I was here 5-times" and taking into account prerequisites "I achieved these two badges"). The reason is that each issuer has full responsibility for hosting and managing: (1) the description of the badge and criteria for earning the badge and (2) the evidence with information about how the specific user earned the badge (ForAllSystems; 2012).

As stated by Carey (2012) it is also a way to structure the process of education itself as 'students will be able to customize learning goals within the larger curricular framework, integrate continuing peer and faculty feedback about their progress toward achieving those goals, and tailor the way badges and the metadata within them are displayed to the outside world. Students won't just earn badges—they'll build them, in an act of continuous learning.' Therefore, 'rather than just recognizing skills, digital

badges create new opportunities to come up with creative ways to support learners in reflecting on their learning experiences and planning new ones. Skills will become obsolete, but learning experiences will continue to be valuable.’ (Brown; 2012).

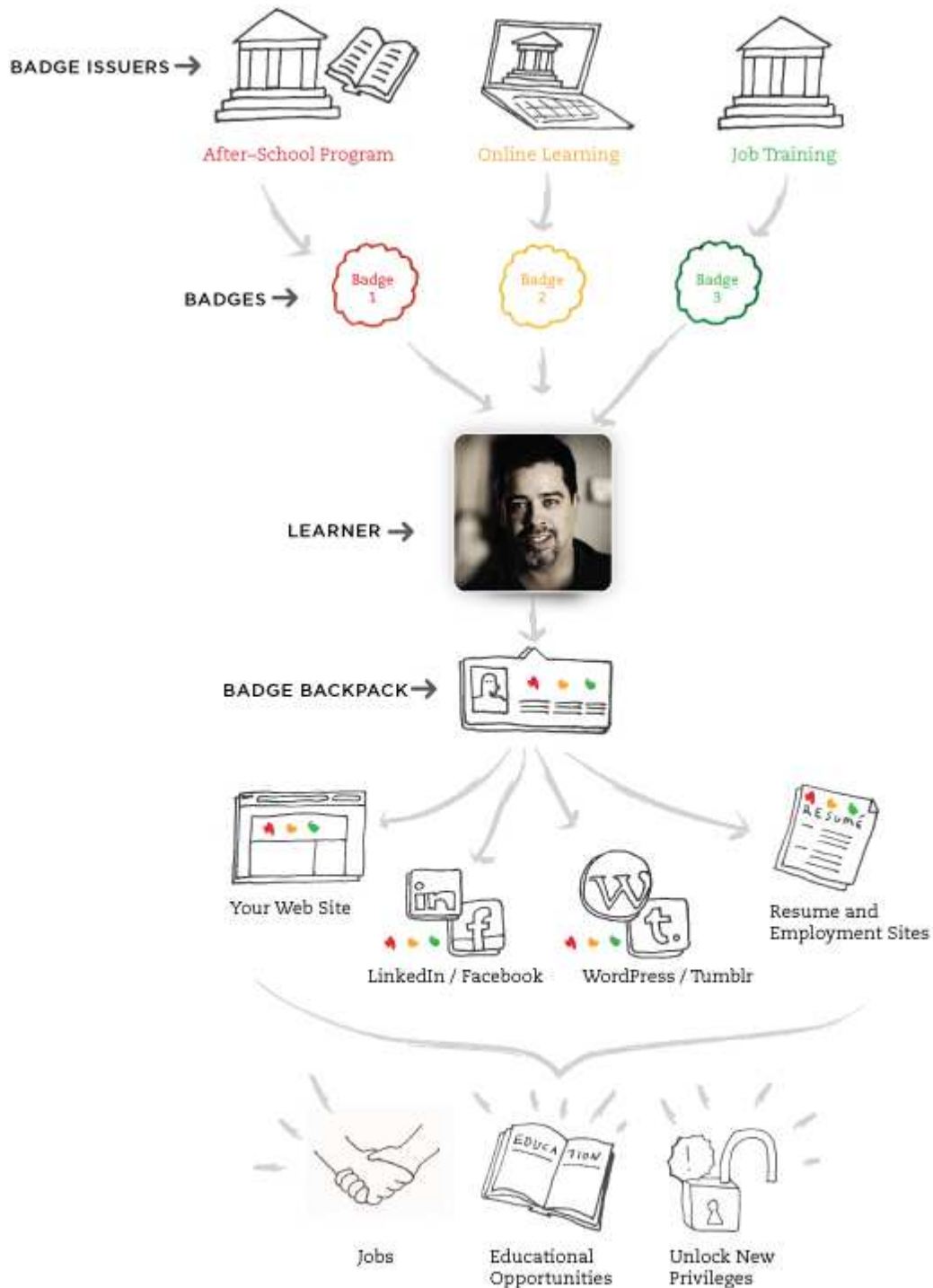


Figure 2: Mozilla’s Open Badge Infrastructure; Source: Mozilla Foundation (2012)

If we try to find the added value of this approach, we have to take into consideration not only recognition and visibility of reached learning goals. To receive a badge is ‘epic win’ (see for example McGonigal; 2011), it gives the opportunity to become a part of the elite group of proud holders of that particular – and maybe never more reachable

– badge and serve as a means of social capital (Mozilla; 2012) including enabling a progress and/or access. The MOBI has therefore very tight connection with the gamification of any activities providing one common base for all of them. The overall systems 'reward schedule' can be set to provide appropriate emotional engagement and reach the flow-experience including motivation and rewards itself. It can provide immediate feedback to activities and scaling which take into consideration individual capabilities based on other badges already earned.

Implementation into the existing systems like e-portfolio systems (e.g. Mahara), learning management systems (e.g. Moodle), content management systems (e.g. Drupal), (digital) social networks, existing online service providers including games and also intranets represents the unique possibility to interconnect all these mostly data-separated environment. Therefore, the use of MOBI could lead to the distributed personal learning analytics data source which is fully transferable and capture the (learning) path of an individual. The further implementation and actual use can also support identity building including reputation and social capital already mentioned above. Badges can also be the part of consequent mentoring processes (e.g. as a part of I-TUBE model, available at: <http://www.itubeproject.eu/>) and human-resource development (HRD) processes as such.

However, badges are still only representations of systems' outputs. Even if they to some extent allow transformation of engagement, the openness of the MOBI can also be treated as a weakness. The issuer of anyone' badges can be some unknown entity (individual or organization) or someone you know and trust (e.g. friends and colleagues but also companies, service providers or universities). There is a need to carefully investigate the background, reputation and trustworthy of these entities as there is no mechanism of some 'rating' of the issuers in MOBI implemented; the community itself is not allowed and able to correct mis-earning as it could be done in case of wiki (represented by e.g. Wikipedia). Among other identified issue – following ForAllSystems (2012) – we can highlight:

1) validity and persistence; the badges itself as a files, description of criteria for earning the badge and the evidence how the specific user earned the badge has to be available online forever which could be the most problematic point as the issuers can no longer exist or no willing to provide the OBI support in the future; this also covers the potential validity concerns as the time passes; 2) privacy, where at least learners' assessment information should be under the control of the learner; 3) the MOBI changes that could eventually lead to the obsolescence and limited usability of 'older' badges if the development of MOBI is not properly led or substantial changes in the infrastructure is necessary.

3. CONCLUSIONS

The Mozilla's Open Badges Infrastructure introduces unique set of mechanisms that allows implementation of portable skills- and activities- recognition system. Granting the rewards in a form of badges is not absolutely new idea; however, current trend in massive gamification opens wide possibilities of attracting the audience and utilising their efforts in exchange to the valuable valuation. Even if someone do not believe that 'badges fall into the category of a brilliant idea that helps to shift a paradigm' as stated by Davidson (2012), they can surely become a user-experience-friendly motivation tool that is life-changing the person (dtto), boosting the experience and showing that issuer is interested in continues feedback provision and (skills) recognition.

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LIFELONG LEARNING AND THE IMPERATIVES OF NEW TECHNOLOGIES

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Abstract:

We live in an era of technological advancement, characterized by what is popularly referred to as information explosion, where yesteryears' experiences are inadequate to solve the current social problems. Globalization and migration of people from one place to another have also resulted in the demand for new sets of skills and competencies. This is because the skills acquired in the past may be unsuitable to meet the work challenges of the present age. In this regard, we must consciously embrace the philosophy of learning to learn new skills and ways of doing things while at the same time, learning to unlearn old and unproductive habits, thus making the learning process a lifelong phenomenon for all and sundry. Lifelong learning is "all purposeful learning activity, undertaken on an ongoing basis with the aim of improving knowledge, skills and competencies" (The European Commission, 2000). If learners must be prepared and developed to acquire specific attributes and skills in meeting the challenges of the world of work while the current workforce must sustain the continuity of their jobs in the face of global technological changes, professional training and development programmes must be embraced to improve the quality of staff through the adoption of open and distance learning. This paper analysed the relationship that exists between the adoption of new technological innovation and the process of facilitating lifelong learning among the workforce, both in academia and in the corporate world and for educating the young learners through the mechanism of Open and Distance Learning (ODL). It also underlines the imperatives of new technologies including the social technologies vis-à-vis the social networks in addressing the lifelong learning needs of the community and the challenges of the 21st century.

Keywords:

Lifelong learning, Open and Distance Learning, Technological innovation, Globalization, Professional Development, Skills improvement.

1. INTRODUCTION

The philosophy of learning, has for long recognised some of the core skills and competencies like - learning to learn, problem solving,

divergent thinking, critical understanding and anticipatory learning (Braithwaite, 2010). Starting from philosophers of ancient times to modern thinkers, all have laid emphasis on the need to learn from cradle to the grave. Even the international bodies like UNESCO affirms the importance of lifelong learning as is evident from the recommendations of the Fifth International Conference on Adult Education (CONFINTEA V) held in 1997 and the Dakar World Education Forum (WEF) held in 2000. The persistent demand by the general public for placement in Higher Institutions of Learning (HIL) is a criterion with which to measure the incapability of many conventional institutions to effectively cope with the increasing numbers of prospective learners due to growth in population. Globalisation and migration of people from one place to another have resulted in the demand for new set of skills and competencies. This is because the skills one acquired one decade ago may be unsuitable to meet the work challenges of the present age (UNESCO, 2004). This therefore, calls for a more viable and economic route to widening access to and participation in higher education for the majority of people. The most plausible solution to this problem is the deliberate adoption of Open and Distance Learning (ODL) because of its positive benefits (Braithwaite, 1998; Corder, 2002; Daniel, 1998; Delors, 1996; Lajos, 1998, UNESCO, 2004) which include the following:

- It mitigates the perennial problem of restricted admission process
- It encourages learning and earning to go pari-passu. This is because it is no longer rewarding for the employers of labour to grant study leave with pay to their employees as a result of the global economic recession. Consequently too, it is also no longer attractive to the employees to resign their jobs for the luxury of full time study in the face of deepening global unemployment situation.
- It stimulates intellectual activity and skills development as a result of independent thinking arising from learners' exposure to variety of learning materials both in print and electronic formats.
- It is more cost effective when compared with the conventional higher education, particularly when it is considered from the premise of the enormity of expenditure that goes into the running

of conventional tertiary institutions to achieve the same goal of person-power development through the ODL route.

- It encourages massification of products as a result of the heterogeneity of clientele, subject coverage and geographical dispersion of learners' location.

2. CONCEPTUAL DEFINITION OF LEARNING AND LIFELONG LEARNING

Learning is an abstract, invisible, unending and permanent phenomenon (Ranson, 1998). Everyone, no matter the age, academic qualification, social level, marital status or gender difference, is bound to learn, although the pace of learning and the ability to comprehend the learnt information may however, differ from person to person (Blacklock, 1985; Manheimer, 2004). The reality is that any meaningful learning is expected to lead to behavioural change in the recipient. Braimoh (2008) stressed that human beings must constantly engage in the learning process in order to learn new ideas and to gain valuable knowledge, skills and abilities while at the same time, learning to unlearn old and unproductive habits, which may not only be injurious to the learner him/herself alone, but may also be detrimental to the developmental growth of the society in which he/she lives.

Learning can be undertaken consciously or unconsciously, it can be planned or accidental, it can be acquired formally, informally or non-formally. It is difficult as much as it is unacceptable for anyone to consider himself /herself a completely knowledgeable person, thus requiring no further training in any form. Learning in this regard will only assist to update the knowledge base of the adult learner, especially during this global technologically changing times, where yesteryears' experiences are basically obsolete for solving today's problems. Therefore, in order to meet up with the global changing world, we must aspire to become a learning society, which according to Omolewa (2008), learning starts from cradle but transcends the grave.

To corroborate the idea of learning as cutting across all levels of people and throughout one's lifespan, Oduaran (2002) opines that it

will be culturally, socially, economically, politically and psychologically illogical, unfair and wasteful to confine learning to any one segment of life, society, location (space) and time. He goes further to advice that every resource in society [that is] capable of widening access to learning must profitably be utilized, so as to promote the goal of learning to live and living to learn, particularly for the betterment of humankind in the 21st century.

Oblinger (2005) defines learning as “an active process in which the learner develops his or her own comprehension by assembling facts, experiences and practices. Learning depends on participation as well because learning is partly cerebral and partly social. Learning may basically be considered an individual activity, it is nonetheless, a social phenomenon as such activity occurs within a specific context, such as in the homes, market places, workplaces, theatres, classroom settings or even on the Net. Edwards (2005) opines further that learning takes place in a community, may be through various networks, but context - in the view of Wenger, et. al. (2002), is a set of practices or specific knowledge that the community develops or shares – should be considered as the most crucial to lifelong learning. Furthermore, Edwards (2006) stresses that learning occurs across domains and sites but it is contextual and situated. Cognitions are distributed across the learning society and therefore, situated in context. For context to be extended into dimension of relationship between individuals and variously defined others, it must be mediated through a range of social, organizational and technological artefacts. Therefore, Panda (2009) concluded that considering learning from the context of lifelong learning, it must effect a change in understanding practice in social contexts and so all social practices are therefore, learning contexts.

One constant factor in today's society is change. In order for human beings to adequately survive in the ever changing processes of life which include such things, as political scenarios, advances in science and technology, developments in ICTS, emergence of new ways of creating knowledge, socio-economic advancements, will of necessity, bring about individuals' adaptation, such as learning, re-learning and unlearning new and old things which may not be confined to discipline-based or classroom-based learning. Rather, such lifelong

learning will necessitate the acquisition of new skills, organizing innovations, refreshing perceptions and enhanced world view, for peaceful and healthy living, just to mention a few. Such modes of learning, however, could be formal, informal, non-formal, independent, remedial, distance, technology based, autonomous, group or collaborative.

One can compartmentalize learning into many boxes. As earlier shown above, however, within this premise, we would confine ourselves to the organized formal and non-formal learning processes which are consciously engaged in by individuals for the purpose of professional development. Going by this platform, it behoves the individuals to make meaningful contributions to the society in which they live as well as for the skills improvement of the “learners” for a better and quality job performance.

Literature is replete on the concept of lifelong learning, although such may not be directly associated with distance education as an alternative route, not only to complement the effort of the conventional institutions that are daily inundated with barrage of demands for admission in the face of limited absorptive capacity but also as an arena to widen access to formal education. (Moletsane and Braimoh, 1998; Braimoh, 1999; Braimoh and Lephoto, 2000; Braimoh, 2003; Braimoh and Aziakpono, 2004).

Before considering the relevance of distance learning in the context of lifelong learning, it is crucial to understand what lifelong learning means. Lifelong learning otherwise known as the triple L (LLL), has been defined as a continuum of the learning process that takes place at all places – formal, non-formal and informal – utilizing various modalities such as distance and conventional learning. In other words, it is an on-going learning process which occurs throughout one’s lifetime. In today’s world, where we all need to be a cut above the rest to succeed, it is necessary that our learning never stops. Each of us needs to keep reinventing ourselves for career development.

Knapper and Copley (2000) defined lifelong learning as:

"The single crucial element in the notion of lifelong education is to be found in the word 'lifelong': it embraces a set of guidelines for

developing educational practice ('education') in order to foster learning throughout life ('lifelong'). Lifelong education thus defines a set of organisational, administrative, methodological and procedural measures which accept the importance of promoting lifelong learning." (p.9)

In the African institutions, lifelong learning embodies the concept of knowledge and learning wherein the factors of relevance, responsiveness, access, equality and equity are inherent. The practice of lifelong learning is quite old in African education history (Omolewa, 2008). For example, in Yoruba mythology, it is a popular saying 'the dead is advised not to eat worms or millipedes in heaven!' This is an indication of the presumption that learning goes beyond after death. The ODL institutions in Africa (like elsewhere in the world) are facing some challenges: knowledge explosion; globalisation; competition from foreign education providers, advancements in technology, new skillsets and demands of modern society. From the past survival based system, the ODL system needs to embrace new ways of teaching-learning practices which would address national concerns.

One of the basic skills for success in the knowledge society is the ability to learn. With the rapid changes in the workplace, in part due to changes in technology and as a result of changing societal needs in the context of globalization, citizens must learn to learn in order for them to maintain their full and continued participation in employment and civil society or risk social exclusion. In this context, learning to learn is a quintessential tool for lifelong learning and thus education and training needs to provide the learning environment for the development of this competence for all citizens, including persons with limited opportunities (those with special needs and school dropouts) throughout the whole lifespan, (including pre-school and adult learners) and through different learning environments. (Braithmoh, 2009)

In essence, lifelong learning concept does not limit knowledge acquisition to a particular stage of human development – childhood, adolescent or adulthood, neither does it confine such to a particular place, such as the four-walls of the classroom. Rather, learning

takes place throughout life and across a range of events, activities or situations (Fischer, 2000).

According to Tight (1996), three key features stand out of subsequent accounts of lifelong education:

- First, lifelong education is seen as building upon and affecting all existing educational providers, including both schools and institutions of higher education ...
- Second, it extends beyond formal educational providers to encompass all agencies, groups and individuals involved in any kind of learning activity, ...
- Third, it rests on the belief that individuals are, or can become, self-directing and that they will see the value of engaging in lifelong education”.

In Field’s (2006) contribution, lifelong learning may be usefully thought of as a policy response by largely western governments to a changing world. These underlying changes are a move away from manufacturing to a service economy, the emergence of the knowledge economy and the decline of many traditional institutions which have been requiring individuals to become more efficient and effective in managing their lives. This has led to the realization that formal learning, typically concentrated in the earlier stages of life, can no longer sustain individuals throughout their lives.

In the view of Aspin and Chapman (2007) LLL is widely used in a variety of contexts to the extent that its meaning is often unclear. They gave the following contextual analysis of lifelong learning which goes beyond the traditional “brick and mortar” schooling.

- Home schooling where this involves learning to learn in the development of informal learning patterns
- Adult Education or the acquisition of formal qualifications or work and leisure skills later in life.
- Continuing education which often describes extension or not-for-credit courses offered by higher education institutions.
- Knowledge work which includes professional development and on-the-job training.

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- Personal learning environments or self-directed learning, using a range of sources and tools including online applications.

In his own assessment of the ongoing debate, Aitcheson (2003) expresses that lifelong education is a comprehensive and visionary concept which includes formal, non-formal and informal learning. It is extended throughout the lifespan of an individual to attain the fullest possible development in personal, social, vocational and professional life... A key purpose of lifelong learning is democratic citizenship, connecting individuals and groups to the structure of social, political and economic activity.

I want to align myself with the views of scholars cited earlier in this paper by emphasizing that lifelong learning is nothing but a spectrum where our playing field ranges from informal to non-formal and to formal education. Suffice it to say however, that over 30 years ago, Ivan Illich (1970) published his little book entitled *De-Schooling Society*. His thesis then was that there was really no need for formal schools because people can learn through non-formal means such as in apprenticeships with those who have experience and have mastered the crafts. He claimed that formal schooling was simply a process of subjecting people to the same rituals to learn the same things under similar conditions for similar purposes. This idea rightly corroborates the banking system of education as expressed by Paulo Freire in his book, the *Pedagogy of the Oppressed*. Freire (1972) viewed educators as super-imposing their authority on the students who are considered as passive receivers of educational content. He argued that instead of communicating with their learners, educators simply issued communiqués to their weak and passive receivers on whom the educators banked their knowledge and ideas for future utilization but under rigid conformity with the expectations of the educators.

As I think about it today, Illich's idea of a society without formal schools could probably be achieved especially considering the high technological environment in which we live. However, I will be apt to disagree with him that formal school is not needed. Rather, we must use such opportunity to improve the academic quality of the academy and inexperienced colleagues to teaching and learning at higher education through proper institutional mentoring paradigm. This will

encourage professional growth and development which will lead to a viable succession plan in academia.

Lifelong education in the early seventies was associated with the more comprehensive and integrated goal of developing more human individuals and communities in the face of rapid social change. On the other hand, the more dominant interpretations of lifelong learning in the universities were linked to retraining and learning new skills that would enable individuals to cope with the demands of the rapidly changing workplace (Matheson and Matheson, 1996; Bagnall, 2000). Indeed, it may sound unnecessary but perhaps we must work more carefully at the three focus areas of formal, non-formal and informal education for sometimes there is a tendency to highlight the non formal and informal learning modes thereby reducing the significance of formal education or schooling as part of lifelong learning. As has been emphasized by Rudowski (2002) and Jarvis (2002), we must not forget that formal schooling is an integral part of lifelong learning. In fact it may serve us well to systematize how we can integrate these three so that each one would feed on the other, thereby enriching the whole learning process.

Toth (2002) also raised crucial points such as how do we measure lifelong learning? What indicators are we going to use in determining whether or not we are successful in our efforts to facilitate lifelong learning for our citizens? These are very important issues that must be resolved particularly in cases where experiences have to be evaluated as in the Recognition of Prior Learning (RPL) and considered for certification purposes. At the very least, a system of equivalence, needs to be formulated. Let me therefore sum up the importance of lifelong learning as:

“If learning involves all of one’s life, in the sense of both time span and diversity, and all of society, including its social and economic as well as its educational resources, then we must go even further than the necessary overhaul of ‘educational systems’ until we reach the stage of a learning society” (Preamble, xxxiii, Faure, 1972).

3. THE ROLE OF TECHNOLOGY IN EDUCATION

We live in a dynamic society characterised by constant and sophisticated technological innovation. Many professionals who practice their trades across the different disciplines, face the daunting task of constantly updating their knowledge and skills, lest they become redundant, irrelevant and out of “professional job market”. This is because, price, choice and quality are the major determinants of demand for their services and products in our ever changing monetized economic system. This situation calls for a deliberate attempt to embrace professional development process by engaging in lifelong learning, which actually starts from the womb and perhaps transcends the tomb.

Suffice it to say, however, that lifelong learning has emerged as a new paradigm that underlines the need to maintain and continuously improve knowledge, professional competence, skills, attitudes and behaviour, in the face of the changing higher education landscape, especially in this era of technological-driven educational innovation. In order to meet the developmental needs of the society and the expectations as well as the aspirations of the heterogeneous clientele which the higher education institutions serve, particularly, the distance learning institutions in Africa, it becomes absolutely essential for staff to engage in learning to learn new ideas and processes as well as learning to unlearn old pedagogical methodologies and attitudes in the process of their knowledge and skills transfer engagements. This becomes a necessity in order to maintain product quality, considering that majority of staff members of distance learning institutions in Africa, according to Lockwood and Latchen (2004), came into this new field from the background of conventional face-to-face institutions.

According to Mchuhan’s (1964) theory, the whole world has gradually been reduced to a form of global village. This has been made possible as a result of technological development. Braimoh and Osiki (2008) stress that the developing countries cannot afford to sit on the fence about this lofty innovation, lest development which permeates all aspects of socio-economic fabric of any nation may not only remain a mirage but may also totally elude such countries. Knowledge is power and such legitimate power can practically be

derived from education. The advent and significance of open and distance learning paradigm globally and particularly in Africa, can go a long way to widen accessibility to education for the majority of working adults, and the youth in a flexible way, so that the learning and earning processes can go on side by side. Jegede (2009) corroborates this view by indicating that open and distance learning as a weapon of mass instruction democratizes and liberalizes education for flexible and lifelong encounter. He opines further, that ODL is quality assured while it allows individualised learning and at one's own pace. He however, warned that concerning the use of technology for presenting ideas or as a mass instruction, we must accept that technology, no matter what type, is only a medium and not the message. He advises that technology must be simple and be cost effective, taking cognizance of the location and type of students the institution caters for.

We cannot be ambivalent in Africa not to accept the noble wedlock of technology with education. Braimoh (2001) was, however, apt to caution that we must not be dogmatic about its use simply because such is in vogue, without assessing the facilities we have or which our ODL academics can use or those that may readily be accessible to our learners. Our ODL practice is essentially still print-based in Africa due to many inevitable national factors, therefore, a blended model of ODL delivery system will be recommended, lest we embark on initiating a white elephant project which neither benefits the learners nor yields any positive dividends to any institutional investment. Alluding to the pervasiveness of technology in education, Michau, et al (2001) opine that the internet, particularly that web, provides many new ways to teach and learn. It is not only changing the type and amount of information available but also the way trainers and trainees work. However, new technologies are already powerful means to complement traditional teaching, and they are bound to modify deeply both teaching and learning processes.

It is of note that ODL may not after-all be cheaper for the learners especially in Africa with the wholesale adoption of technology, particularly the computer with the online facility. It will be impossible for any student, whether he or she is working or not, to afford the luxury of time to be glued all the time to the computer screen in order

to read the modules for the courses posted on the institution's website. Rather, he/she may have to download and print such modules for him/her to carry along everywhere and read anytime. By implication therefore, the ODL institution is merely passing the cost of having in his/her possession, that module, indirectly to the poor student. The case may be different in other advanced countries where access to and ownership of computers are so easy. In most African countries, electricity supply is epileptic while the cost of a prolonged access to the computers at the available internet cafes may be prohibitive, especially to the unemployed learners. While we are not opposed to the use of technology for Distance Education in Africa, our standpoint here is simply to sound a note of caution that we need to adopt such technology appropriately in meeting the needs of our heterogeneous learners.

4. TECHNOLOGY, DISTANCE EDUCATION AND LIFELONG LEARNING

Panda (2008) stresses that "distance education and lifelong learning are the relatively newer developments in the transformative processes and modes of learning – the former is now well established, and the latter though broader, is still being experimented. Distance education today necessarily requires technology, and the tremendous technological developments are influencing lifelong learning considerably. It needs to analyse their relations and to analyse if at all technology is essential to lifelong learning in spite of the hype built around it". In essence, there may be an inevitable marriage of convenience between education and technology when such relationship is considered from the premise of lifelong learning, particularly in this current knowledge economy.

Since the print was invented as a revolutionary technological development, significant innovations have led to constant changes in technologies – each time the older technologies making space for the new, though all the earlier technologies remain in peaceful tandem with newer developments. Instructional technology developments started with the audio-visual movement and have come a long way through one-way broadcasting/telecast to the current forms of interactive and collaborative technologies. The traditional distributed

models of TV/radio, print and ODL have passed through the transitional models of CD-ROM, Internet and flexible delivery to reach the current converged models of networked learning environments thereby facilitating lifelong learning as well as interacting knowledge communities (Flew, 2002). “The three independent technological developments – broadcasting, telecommunications and computing – are converging together through the developments of web technology and the current Web 2.0; technological artefacts like, for instance, digital broadcasting, mobile phones and personal computers, are converging to provide a one window solution to all technology services” (Panda, 2009).

Adults as lifelong learners can further be assisted in today’s learning encounter by the new social software systems to facilitate greater informal learning. These will guarantee greater access (beyond what the ordinary classroom setting will provide) avail to a wider audience of communities of practitioners and experts within one’s boundary and across the globe. Lifelong learners can carry out activities within digital social networks (Shirky, 2003, Klamma et al., 2006) with the help of social software, that is, socially based tools and systems. The development of the second generation Net and Web 2.0 goes beyond the traditional publishing and distribution of learning resources to contribute to the creation of communities in digital social networks with freedom for self-direction and self-management (Klamma et. al., 2007). Web 2.0 has created projects such as Wikipedia, which goes beyond publishing to ‘participation’, from personal websites to ‘blogging’ (Blood, 2004), from content management to ‘wikis’, from directories to ‘tagging’, and from stickiness to ‘syndication’ (O’Reilly, 2005). Lifelong learning presupposes much of learning beyond the conventional institutional boundaries; and the new web supports lifelong learning driven by and for the learners.

There is no doubt that today, the web provides ample opportunities to adult learners to access, in one’s area of interest, a wealth of resources that could range from beginner level to the level of mastery and to engage in a variety of virtual contexts. For instance, partnering for discussion on an informal and wider scale anywhere on the globe, as Illich (1970) argued in his *Deschooling Society* , is

possible through networked computers with ever increasing intellectual sources on the web. This transform the very nature of learning moving from teacher-dominated to student-centred activity and the formal curriculum being replaced by a postmodern curriculum (Pickering, 1995) characterising a change in the culture of textual education to a more multimedia-based interactive hypertext.

As useful as technology might be in bringing about innovation in educational delivery process, especially for continuing professional development, we must be mindful also that there are some inherent but contextual limitations which we must not overlook but take into account in our lifelong learning planning process. These include such issues as:

- Consistent access to and affordability of technological hardwares by the learners due to cost as well as their geographical location;
- The copyright and intellectual property issue;
- Technological illiteracy among adult learners including the technophobic attitude of the facilitators;
- The current limited bandwidth may negatively affect learners accessibility to continuous use of multimedia resources and thus create frustration that may ultimately lead to dropout;
- The digital divide is not only about access (to computer, Net and broadband) but more importantly about the pervasive elitist orientation to access and handle the web to one's advantage;
- The incessant power interruption as a result of epileptic power supply or even non-existent of it in many of the rural and some urban centres;
- The cultural difference including class and gender discriminations which may serve as hindrances to the use of ICT for effective teaching and learning process.
- Formulation of a more acceptable, robust and veritable assessment process
- Elimination of personation as a form of cheating during examination periods among students which may further affect the

quality, image and the general acceptability of ODL programmes and products.

5. THE NECESSITY OF WEDLOCK OF DISTANCE EDUCATION WITH LIFELONG EDUCATION IN AFRICAN TERTIARY INSTITUTIONS.

The outline below are some of the benefits that can be derived from the application of technology for lifelong education by the higher education institutions in Africa, if meticulously planned.

- Lifelong education via Distance education can create scope of learning for the poor people living in remote rural areas, for the women whose life is still covered by the four walls of social systems and for those who cannot spare time for learning in lieu of their own earning schedule. To be more precise, it is the only mechanism of learning which can satisfy the need of disadvantaged and economically weaker sections of the society who reside in educationally backward and underdeveloped regions. In addition, it can help the physically challenged groups and special groups at special places like hospitals, central jails and such others.
- The concept of continuing education and/or lifelong learning is a vital component of human resource development. It includes post-literacy training for neo-literates and school drop-outs for retention of literacy skills, continuation of learning beyond elementary literacy and application of this learning for improvement of their living condition. The extension activities and the outreach programmes of the universities may be effectively handled through the Distance Education mode in addition to the conventional system.
- Due to its flexible framework of administration and teaching-learning system, distance education is easily manageable. A larger section of the aspirants for higher education who are unable to enter the conventional educational institutions for geographical, social, cultural and financial obstacles may opt for ODL system for obvious reasons. The shift in learning mode from teacher-centric

to learner-centric will enable the learners to decide 'what to learn, when to learn, how to learn and where to learn'.

- One of the main objectives of distance education is to 'reach the un-reached and serve the un-served from a distance.' To reach this target, the educational institutions must use the best affordable technologies. Starting from radio, television and computers, one can go for internet and other satellite based services to make best use of the high and/or low technology to satisfy the learning needs of the learners residing in remote corners of the country.
- Distance education is cost effective for the institution and the learner as well.
- Course-wise and level-specific diversification of different subject areas with academic and professional bias can satisfy societal needs. Vocational subjects can also be handled properly through distance mode.
- Promotion of research through distance mode in selected subject areas is possible. The topic of research may have direct bearing on administrative / teaching – learning issues of the ODL system.
- Due its openness, flexibility, technology based approach, cost effectiveness and learner-centric approach, the ODL system is gradually becoming popular as an alternative to the private institutes which extend educational facilities for affluent families of the country. One can consider ODL system as an emerging alternative to privatization.
- Through the ODL system, it is possible to transfer quality education to a large section of people within a short span of time.

6. THE GENERAL FRAMEWORK OF ACTION FOR STAFF PROFESSIONAL DEVELOPMENT THROUGH LIFELONG LEARNING IN THE TECHNOLOGICAL AGE

At this juncture, we shall present to you an idea for a general framework for staff development vis-à-vis different sectoral concerns.

6.1. People Sector Concerns

Perhaps there is no disagreement on the need to train people to be productive workers in our today's knowledge society. We all have different levels of skills and expertise to deal with the needs of a knowledge society. Some are more advanced than others, but for the most part, we all need to strengthen our efforts at providing quality educational and training support to our citizens on a continuing basis, mindful of the fact that, in general, the amount of new information and knowledge to be learned is increasing exponentially and the number of people to be educated and trained is ever increasing even if only arithmetically. On top of this, we have to provide appropriate learning support for people who are learning new knowledge that is constantly changing in leaps and bounds.

6.2. Infrastructure Sector Concerns

This infrastructure concern refers to technology infrastructure in support of the learning services that we must provide. We all know that our learning environment today is largely telematic, which is an environment that is driven by the "marriage" between telecommunications and informatics. We must have reliable and sustainable infrastructure support system if we are to deliver quality education services to our publics.

6.3. Content, Applications and Services Sector Concerns

Those who are in the business of open and distance education frequently pride themselves of being the trailblazers in the design and implementation of innovative approaches to providing educational services on a massive scale. We also know that we need to seek new approaches in the design and delivery of content. This is a key element in the value chain in education. Perhaps we should not forget also that research is a significant component of this sector for this is our way of knowing whether or not we are indeed designing and delivering appropriate content to the appropriate learner.

6.4. Policy Sector Concerns

We all understand that we must operate under a comprehensive policy framework for education that supports the goals of the society

we live in. Policies at the national, organizational and even at the curriculum levels must articulate our vision for a future and must provide for investments to ensure changes and equity of access to education that ensures competitiveness. Our educational organizations, therefore, must improve their planning and management strategies so that they can ensure the achievement of agreed upon outcomes.

6.5. Regulatory Sector Concerns

While our respective institutions are probably operating on specific regulatory frameworks, should we not be thinking of a range of standard regulatory frameworks so that we can all operate effectively and efficiently and become competitive internationally? For example, we must all abide by the rules and procedures for intellectual property rights, follow certain protocols for sharing technology and resources rather than enforce those that impede efforts to pursue education for all.

6.6. Changing of Mindset

The more serious issue is that of changing the people's mindsets. While those who are in the business of open and distance education already have migrated to the learner-centred paradigm, many of our colleagues in the conventional system remain steeped in the teacher-centred learning environment. The crucial hurdle is the shift from a teacher-centred to a learner-centred learning environment. This may not always be the fault of the teacher since in many cases it is the learner who refuses to take responsibility for his or her own learning.

Of course, changing mindsets is not as easy as changing pieces of equipment. We have to deal with three serious gaps here.

First, we are wading through a pedagogical gap, the main feature of which is a reluctant acceptance of distance education by many senior educators and education managers including the policy makers, as a viable alternative system of delivering quality education. We need to be more creative in the application of methods and techniques of distance learning so that we can resolve the issues that non-believers are so concerned about such as the age-old issue of

maintenance of standards and providing social interaction opportunities for open and distance learners.

Second, we have to contend with a technological gap. One thing is sure, though: many institutions and experts cannot seem to have enough of the gadgetry offered by the rapid technological advancements. Unfortunately, either the education providers or the learners alike cannot afford the technology or they do not have easy access to it. We must use technology to the extent that it is accessible at reasonable cost. In fact, we should revisit old technologies especially if they still are able to provide solutions to our problems.

Finally, we have to deal squarely with the fact that it is difficult to migrate from a teacher-centred learning environment to a learner-centred learning environment. This may be the most crucial hurdle. We may not be able to overcome this anomaly overnight but as we try to solve it we should further quicken our pace in moving from the traditional learning environment within the confines of the physical classroom to learning in the virtual classroom.

6.7. Research Engagement

Research activity in academia is a sine-qua-non for product quality maintenance. Research engagement must therefore, be a prerequisite for promotion and not the length of service in any higher institution of learning. Effective teaching cannot be accomplished without active research effort. The hallmark of any reputable university's activities is to strive to maintain quality and excellence in contrast to the promotion of mediocrity among its academic staff members. This is important because universities should be seen as knowledge production centres for national socio-economic development through consistent, relevant and pragmatic research output. The wrong perception of university core business by many academics in academia as exclusively for teaching and not including research is naïve. This has consequently led to the reduction in the quality and quantity of research among academics who should develop critical and analytical research skills in engaging in multi, inter and trans-disciplinary research activities. It is pertinent

therefore, for universities to formulate institutional research policy in order to build a verile research culture among the academic staff.

7. CONCLUSION

The wedlock of lifelong learning and distance education create countless possibilities. As we open the gates we must then solidly construct the culture of excellence as a strict requisite for open and distance learning. ODL institutions must see themselves at the forefront of an academic environment with vast changes in technologies to be incorporated and designed and used for true scholarship and academic rigor. There will be no compromise in excellence, in scholarship, in teaching, in research and, more specifically, in the methods and systems that help in making people teach, learn, work and succeed in their chosen fields. The quality of courses stay the same, the quality of the modules stay the same... written by only the best scholars in the field of study, where the tutor facilitates with the same academic rigor and the faculty-in-charge maintains the same standard of excellence as in the residential mode. Excellence and equity certainly can go together, most especially during these exciting digital times when academic texts are carried by hypertext, hypermedia and hyper-multimedia. In conclusion, we may want to reinforce once again, the fact that Open and Distance Learning has, of necessity, become an enviable option and an avenue through which to explore alternative pedagogies, andragogies and methodologies for effective learning and professional development.

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GENDER, TECHNOLOGY, AND REDEFINITION OF POWER RELATIONSHIP

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Abstract:

The importance of technology stems from its leading role in socio-cultural and economic transformation in contemporary world. On the other hand, the concept of gender is important because it has been exemplary for the broader and more general concepts of power, hegemony, and marginalization. The process of enculturation and acculturation plus the system of higher education, is argued are of utmost importance in shaping the future trend of technological development and transformation of gender relation. The goal of this paper is not only to study the current state of technology, gender and university but tries to find ways and means toward achieving empowerment, participation, and inclusion of women especially in the setting of undeveloped countries in this new technological paradigm.

Keywords:

Acculturation, empowerment, enculturation; gender, higher education, marginalization

1. INTRODUCTION

The concepts of participation, empowerment, and inclusion have come to occupy a focal place in contemporary social thought. The relationships between these objectives are complex and dynamic. It is, for example, not enough to promote inclusion and participation as a policy end, with no empowerment for influencing that policy. Pretences of participation may contribute to further disempowerment. Collective deliberation can be very different from seeking consensus via interest tradeoffs. Real cultural participation allowing for communicative action can lead to the fullest development of sense of belonging, critical faculty, and civil society while mere attempts to eliminate differences and reach social homogeneity may lead to

alienation and conformity. It is sought in this paper to investigate the theoretical and especially practical impacts of the research agenda developed during the undergraduate courses on gender, technology, and higher education (NERCISSANS, 2004d). The concept of gender had been chosen because it exemplified otherness and difference in all its practical, cognitive, and affective aspects in a stratified society. It is important because it correlates to the broader and more general concepts of power, hegemony, and marginalization. Technology and higher education, on the other hand, are leading factors bringing about social change in contemporary world. So as to achieve their vision and goals for development, these facilitators of change processes need to work with the community collectively and reflexively. Higher education in our contemporary knowledge intensive society constitutes the highest formal stage in the processes of socialization and enculturation, where reproduction of power relations takes place, and opportunities for instigating change are created. In addition to the manifest curricular content, the hidden aspect of that curriculum is also of the uttermost importance. Internalization of the actual relationships, experiences of participatory and interactive pursuit of educational goals, feelings of belonging and control, appreciation of other points of view, exerts more powerful impact than rational acceptance of norms and values promoting inclusiveness and celebrating diversity. In order for the universities to become agents of social change and spreading new higher values, those values must first prevail in all institutional aspects of that university, so that they are picked up at subconscious and affective levels as well as at the cognitive levels of awareness and volition. Technology, according to McLuhan, is an extension of the human somatic faculties. Technological change eventually leads to alteration of perception patterns. Nothing in contemporary world has been as disruptive as technological advances. The convergence of biotechnology, nanotechnology with information technology leads the way to consider all materials, proteins, and other building blocks of our lifeworld as software. With the omnipresence of computer and communication networks through which business can be conducted, we have stepped into the world of digital economy. The advent of the virtual world made possible by utilization of the power of simulation

and representation has changed our conceptualization of meaning, negating its very existence, stability, or at least totality. It is sought to explore the notion of a participative and empowering communication culture as a basis for healthy knowledge societies. The digital media of computer networks, because of their design and the technology upon which they function, are fundamentally different from the current mass media of television, radio, newspapers and magazines. No longer does technology in itself favor further confinement of the production and control of information to the few and the expansion of its consumption to larger masses. Every user in the Internet can be the provider as well as the receiver of information at the same time. Conceptualizing inclusion in terms of forms of participation, it is important to study not only whether people have access to and are using new technologies, but also how they are using them. There is now a fairly large body of knowledge and empirical evidence both concerning the emancipatory potential of new technologies especially in terms of inclusion, participation, and empowerment; and the threats associated with their advent in the opposite direction of reproducing the existing stratifications and making them more acute, as well as generating new digital divides. Thus there can be no instrumentalist prediction on the possible impact of new technologies. A substantive analysis will reveal the importance of the communication on how new technologies are used for the determination of the direction of their impact. The relationship between the three spheres: gender, technology, and higher education, is very complex and has multifold feedback loops. The goal of the research agenda was not only to study current state of situation and mutual impacts, but also to seek ways and means of achieving the stated social goals and avoiding the dangers of further alienation, and depletion of communicative action possibilities (LUCAS & NERCISSIAN, 2003, 2004; NERCISSIAN, 1999, 2000, 2003, 2004a-c, 2005c; NERCISSIAN & LUCAS, 1999, 2005a).

2. THEORETICAL AND EMPIRICAL STUDIES

The complex and multifaceted relationships between gender, technology, and higher education, especially in the context of Iran in general, and the University of Tehran in particular, has been the subject of several different reports (LUCAS & NERCISSIAN, 2004,

2006a-c, 2008; NERCISSIANS, 2004a-d, 2005a-c, 2006a-c; NERCISSIANS & FREMEREY, 2008; NERCISSIANS & LUCAS, 2005a-b, 2006a-e, 2007). Today's information, communication, and technology revolution has created educational possibilities never seen before. Higher education must create new ways to meet the challenges faced by today's colleges and universities and the requirements of a student body that does not constitute the elite strata in the society, but is composed of the different social groups. Virtual communities furnish new avenues for participation and community building. There is an obvious need for a detailed analysis of the ethnography of the participation of people from excluded groups in those online communities. It should be noted, however, that technologies have in the past never lived up to their potential as educational tools because institutions of higher education try to fit new technologies into the same model. Higher education has also become increasingly less concerned about learning specific skills and knowledge. The diversity that is constantly increasing in universities and colleges of today is a rich yet underutilized resource from which there is much to learn about different ways of being in the world. Students gradually recognize the value of putting themselves, rather than their professors, at the center of their own education. Access, agency, authority, and authenticity are central issues for the new subject of telepistemology: the study of knowledge acquired at a distance. Not only is the student body more diverse but today's students also learning in more different ways than in the past. The advent of cybertechnology radically empowers the individual; it also creates new tools that make possible the construction of new communities of shared interest. Research for addressing the asymmetric and hierarchical positioning of females must be based on a critical deconstruction of the socially and politically dominant discourses of gender, technology, and education. It has been conjectured that the ideal of rationality and technological thinking is bound up with cultural definitions of masculinity such that femininity is treated as antithetical to such rationality. Girls are, therefore, posited as outsiders in the technological domain. Despite decades of government and industry backed campaigns, the numbers of female students entering technologically oriented studies are far from satisfactory. Iran is a country that can boast of very rich cultural

traditions including institutions for higher education from ancient times. For decades now the country has been striving to achieve rapid development to close the gap with the industrially developed countries. However, almost complete dependence upon the extractive petroleum sector and decades of adherence to import substitution strategies have hindered the attainment of that goal and have, instead, left the economy with a non-competitive, inertia laden structure that is unable to adapt itself to the requirements of global scale competition. The imbalanced economic structure exerts little pressure on Iranian enterprises to leverage new knowledge and technology. Lack of incentives for technological innovation is directly translated into lack of funding for research activities. The population profile in Iran is also very young. The bleak outlook for future development leads them to seeking means for upward vertical mobility via attainment of higher education. The insatiable demand for tertiary education has resulted in a very competitive entrance examination and many Iranians leave the country to study abroad. Few of them return to the country after graduation. Also, many of the graduates of the Iranian universities leave the country to find better jobs. The brain drain, the causes of which according to the studies cannot be solely ascribed to differentials in economic opportunities and lack of suitable opportunities for the graduates of technical disciplines to apply their knowledge towards achieving the developmental goals of the country, has reached very high levels. In recent years, impressive advances in gender relations have taken place in the spheres of higher education and public employment. The number of female students being accepted in the very competitive entrance examinations for the Iranian universities has overpassed the parity rate so much that there is now a male education crisis in the country and a clear need of reverse affirmative action. The trend is due to the internal dynamism and structural factors rather than, or one could say despite, conscious policies. How the Universities of Iran can promote the use of information technology, especially by their female students. The university has to find solutions because: it has to adapt to the global scale shifts associated with transition to a new era of information and knowledge based societies; it must adapt to rapid technology changes and learn to use those technologies to transform itself so as to meet the challenges of new demands and

new educational philosophies; and it must adapt to a more participatory and gender symmetric environment. Electronic learning, and use of information technology and knowledge management techniques, on the other hand, is important for maintaining the academic excellence and assuring the provision of quality education to its students. They are also important because the graduates must respond to the changing needs and expectations of the business community. It is especially important for the university to resolve the problem of technology utilization by both genders because it has to act as an agent for change in the broader polity. Investigations carried out at the University of Tehran showed that rate of use of Personal computer were % 21.5 for male students and % 10 for female students. Female students were also more likely to send and receive emails, chat, and use Internet for purchasing and recreation; while male students were more likely to use the Internet mostly to get news or to search for matters of interest. The opening up of Iranian universities to the previously disadvantaged strata has mostly been a lucky consequence of the trends created by the social dynamism and renovation processes. But the inclusion of women and other social groups that had so far been widely excluded from higher education has very importance consequences in terms of new functions required from educational institutions. It is no longer considered enough to facilitate acquisition of skills and knowledge by the students. Education must also help them to live together. A two way learning process constitutes the main vision in this research. Female students must overcome all difficulties and learn, alongside the male students, to use technology effectively. The university too, must learn from its female students to develop new ways of dealing with technology. The latter process can be designated as disengendering of the technology utilization process. A smaller scale investigation, using the same methodology, was subsequently carried out for identifying the rate, purpose, and different usage techniques of the Internet by male and female students in the American University of Armenia (GEVORGYAN, 2008). The purpose was to identify those differences so as to try to enhance users' Internet experiences. The investigation revealed that majority of the students of both genders enjoyed using computers and considered the cyberspace as effective means for passive as well as active participation in news groups and

accessing enormous amount of electronic materials. Female students were more careful about new things; they wanted to know more before trying. They were not too inclined towards innovation and wanted to do things as they had done before. Male students, on the other hand, considered themselves as more proficient in computers than females. Students in Engineering and Business colleges were more proficient in computers than those of English and Political Science. Students generally used the Internet as means for improving their social status, and their career opportunities, and becoming engaged in social networks. The different results found in the two surveys can be ascribed not only to country differences, but also to the different times the studies were conducted. The improved access to information technologies and reduction of gender differences in students' attitudes toward technology reflects to a large extent the worldwide trend in rapid expansion of the Internet and bridging of the gender technology divide. It should, however, be pointed out that the American University of Armenia cannot be considered as a typical national university, and is widely conceived as a center for dissemination of modern and American business culture and organizational behavior in a country that used to be part of the Soviet Union. Furthermore, Armenia is widely believed among those countries experiencing abrupt transformation, acute unemployment, and widespread male emigration in search of better income and employment opportunities, where females become more active job seekers less prone to social problems.

3. CONCLUSION

The barriers between the university and the outside world are collapsing as people make direct contact in a forum which masks their gender, age, and other social differences and presents them as virtual equals. The system of higher education can be seen as a complex system, with intricate interdependencies and diverse factors affecting the interaction of its parts, in ways that are often difficult to predict, and educational theory is starting to use the language of complexity theory as a tool both for understanding how the education system works and for managing change within the system. The paradigm of complex adaptive system has been elaborated to capture the emergent self organizing properties of networks and

informally organized systems. To understand why simple concept of networking in academia as well as in other organizations can be so powerful, there is a need for a paradigmatic shift away from traditional learning theories. A learning activity is, in essence, an interaction taking place among learners and other members of what can be designated as a learning community. From a system point of view the network can be viewed as an evolving autopoietic system. As scientific capacity continues to grow around the world, and links are made among countries, the flow of knowledge among them also grows. Recent developments in distributed artificial intelligence and the convergence of new technologies from telecommunications, distributed computing, multimedia, and databases now make possible a network of diverse but interconnected educational and learning entities (FREMEREY, 2002; NERCISSIAN, 2007). An anthropological study of new technologies has recently been carried out along the dimensions of status and solidarity (NERCISSIAN, 2008a-b). The process of convergence leading to sociotechnical systems and ambient intelligence is analyzed from the viewpoint of reproduction of social structure and introduction of new divides. Of special interest is the inscription of representations of masculinities and femininities in technological artifacts. Regeneration of masculinity and femininity in smart environments takes place both through ascription of gendered roles to technology users and direct engendering of smart devices themselves. The research agenda itself can hardly be considered as gender neutral. Housework, as one of the most repetitive and time-consuming tasks to be executed in the home that seems ideal candidate for provision of technologically based assistance in intelligent homes and smart environments, has found very rare consideration in that agenda. Context awareness has been argued to be an important factor in endowing smart environments with communicative and cultural competences necessary for quick adoption of ambient intelligent technologies especially where solidarity oriented ideologies predominate. A substantive approach on the future of technology in society must be shaped not just by what the technologies can offer, but must also take into account factors influencing popular attitudes and propensities towards utilization of available technologies. Digital divide is not just a question of access to services but also of skills,

competences, appropriate content, access to the necessary resources and different modes of using new technologies. Ambient Intelligence refers to a vision of the future knowledge based society where intelligent interfaces enable people and devices to interact with each other and with the environment. It promises to revolutionize the role of Information and Communication Technologies in society and to transform the way we live, work, and relax through provision of timely services. The prevalence of cognitivist attitudes towards intelligence, however, pose a major problem hindering the progress of technologies related to intelligent systems and devices. With the advent of computational intelligence and the associated philosophies of connectionism and situated action, attention has shifted towards more biomotivated, embodied and collectivist views of intelligence. Too much cognitive intelligence and too little communicative and cultural competence, it has been argued, will make the device utilization hard and unpleasant. It is very important in the case of sociotechnical systems to determine who will control their actions and who will benefit from the provision of their services. Networking for change is important not only for responding to the rapid shifts in our surroundings and taking advantage of the opportunities created by the technology via exchanging our theoretical findings and practical experiences, but also shaping the future path of technological progress and modes of its utilization. On the one hand disadvantaged social strata and groups must learn the new culture associated with new technologies and be trained and empowered to avail themselves of facilities and use smart tools and devices, on the other hand those scripts, norms and values, and modes of technology utilization must themselves become non dominant centric to reflect the new needs and predispositions of a society composed of diverse communities and subcultures in which heterogeneity, far from being sought to eliminate, is celebrated as an asset supporting vitality and adaptability.

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EXPLORING THE POWER OF MOBILE EMERGING TECHNOLOGIES TO TRANSFORM LEARNING

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Abstract:

The pervasiveness of mobile technologies among young people has turned them into an ideal platform to cater for educational content both formally and informally. Whereas mobile devices have empowered mobile communication they have radically changed the educational landscape and posed certain challenges both to institutions and educators that need to be faced. The learn anywhere-anytime paradigm takes advantage of the mobile nature of mobile technologies and proposes the access to educational content during downtimes (Owaga 2010). There exists a large collection of mobile learning tools that propose the use of smartphones to create and deliver educational content that makes use of the student's environment (Daher 2010, Yin et al. 2007).

As mobile technologies become ubiquitous mobile learning has emerged to address some of these challenges in education. On the one hand, mobile connectivity is changing social and information spaces by enabling new accesses to knowledge, allowing real-time information sharing and just-in-time searches and calling for a pervasive awareness of social networks. On the other hand, ubiquitous small screens are changing attention and media zones including text-based media, and the continuum public/private, space/time has radically transformed the learning landscape.

The aim of this speech is to focus on Mobile learning to support the social construction of knowledge amongst learners by enhancing their critical, creative, collaborative and communicative engagement and to provide –at the same time– an overview of those emerging technologies that are going to suppose an impact into Higher Education in the oncoming future.

1. INTRODUCTION

As we all know, in the latest years a great shift has taken place. Our lives have changed from living in a society in which knowing how to make things was important into another one in which knowing is what matters: knowing how to access information, how to cope with constant change, how to be critical and inquisitive... According to Abdul Waheed Khan (UNESCO general sub-director) the concept of

'knowledge societies' is preferable to that of the 'information society' because it better captures the complexity and dynamism of the changes taking place. (...) In his own words, "the knowledge in question is important not only for economic growth but also for empowering and developing all sectors of society." Those of us who -as educational stakeholders- are actively involved in the educational landscape know have to be tremendously aware that we live in a time of constant change, of massive change, and in a time of unexpected challenges which affect the way in which we learn and teach, in which we communicate and interact with others and the way in which we collaborate and construct knowledge together.

Emerging technologies are considered as innovative technologies in the sense that they are reshaping the nature of education. Computer and network-based technologies now hold great potential for increasing the access to information as well as promoting learning. Schools and classrooms never before had such universal access to information. Such technologies are transforming classrooms into more engaging, collaborative and productive learning environments in which instructions can be customized to student's specific needs, interests and learning styles. Emerging technologies are more personal, networked, fun, more interactive, spontaneous, short in duration, they go straight to the point, they are ready for instant use and help to engage users to contribute and share ... Emergent technologies lead us to another kind of learning, emergent learning, characterized by the social interaction for co-construction of knowledge and meaning. Learners are encouraged to take control of their learning (by shaping learning goals and processes), to collaborate with peers to produce content and to use their own tools for investigation and exploration (Loke et al., 2010). As it was said before, instructors acting as facilitators, design the learning environment and structure learning processes (Jonassen, 1991).

At the time that a distinct learning culture emerges, in which learners take mobility and context-awareness as departing point and become more visible as innovators, creators and producers (Kukulska-Hume, 2010) they develop new skills, attributes and literacies enabled by mobile devices that offer them further possibilities to extend their learning and link the use of social media to their own context and

interests. According to the 2012 Pew Internet Report, students are more self-directed, better arrayed to capture new information inputs, more reliant on feedback and response, more inclined to collaboration, more open to cross discipline insights and creating their own “tagged” taxonomies and more oriented towards people being their own individual nodes of production.

Recent literature indicates that mobile technologies offer considerable affordances to building and supporting the development of creative, collaborative, critical, and communicative into learning practices. Several authors have referred to the capacity of mobile learning to enhance collaborative interactions and communities of practice (Colley & Stead, 2004; Stead, 2005; Barker, Krull, & Mallison, 2005, Hoppe, Joiner, Milrad and Sharples, 2003) and their theories have been revisited more recently by the studies of Kukulska-Hulme, 2010; Pachler, Bachmair, & Cook, 2010; Belshaw, 2010, Traxler & Wishart, 2011).

Mobile technologies allow the generation of significant learning activities which awaken the student’s interest, given the fact that they are considered experts in the management and consume of all kind of Mobile multimedia products. The educational exploitation of Mobile technologies in class allows both teachers and students to create and have access to educational content that can be reproduced and distributed by means of a varied sort of gadgets. Thus, students and teachers are given the possibility to produce and publish content that has been created by themselves and share it with other members of the educational community.

As mobile technologies become ubiquitous mobile learning has emerged to address some of these challenges in education. Thus, MOBILE LEARNING is not just the miniaturization and convenience of portable computing, but is transforming how we conceptualize and interact with computing and our environment, communicate, and create and manipulate information (Cheney, 2010; Pachler, Bachmair, & Cook, 2010). Mobile Learning is about ubiquitous social connectivity, instant information access, and enhancing how we view the world through digital augmentation (Cook, 2010) and it is empowering for learners, who can become content and context generators within authentic learning environments (Herrington &

Herrington, 2006, 2007) rather than simply consumers of transmitted content in classrooms.

The NMC Horizon Report 2012 Higher Education Edition is a collaborative effort between the NMC and the EDUCAUSE Learning Initiative (ELI), an EDUCAUSE Program. This ninth edition describes annual findings from the NMC Horizon Project, a decade-long research project designed to identify and describe emerging technologies likely to have an impact on learning, teaching, and creative inquiry in higher education. Six emerging technologies are identified across three adoption horizons over the next one to five years, as well as key trends and challenges expected to continue over the same period, giving campus leaders and practitioners a valuable guide for strategic technology planning.

This year's NMC Horizon Report identifies mobile apps and tablet computing as technologies expected to enter mainstream use in the first horizon of one year or less. Game-based learning and learning analytics are seen in the second horizon of two to three years; gesture-based computing and the Internet of Things are seen emerging in the third horizon of four to five years.

1. The Mobile Apps have been signaled by the Horizon Report as “the fastest growing dimension of the mobile space in higher education right now, with impacts on virtually every aspect of informal life, and increasingly, every discipline in the university”. Apps that take advantage of recent developments with advances in electronic publishing and the convergence of search technology and location awareness, make this category appalling in a higher education context in which there is a lack of apps especially tailored to educational and research needs across the curriculum.
2. Tablet computing: seen by higher education institutions are seeing them not just as an affordable solution for one-to-one learning, but also as a feature-rich tool for field and lab work, often times replacing far more expensive and cumbersome devices and equipment.
3. Educational Gaming: Educational gaming brings an increasingly credible promise to make learning experiences

more engaging for students, while at the same time improving important skills, such as collaboration, creativity, and critical thinking.

4. Over the past year, learning analytics has garnered a lot of attention. The ability to synthesize data in real-time is exciting because it changes the structure of the learning dynamic — educators can use the data to make adjustments to their teaching style that better caters to student needs.
5. Gesture-based technology has enabled students to learn by doing. Interfaces that react to touch, movement, voice, and facial expression allow more freedom in how we interact with our devices.
6. The Internet of Things, a notion first outlined by Vint Cerf as one of the many reasons to move to IPv6 to expand the address space of the Internet, is converging with smart objects, and fueling considerable innovation in how these devices communicate with each other and with us

The emerging technologies we would like to focus upon are:

2. VIRTUAL WORLDS AND METAVERSES

The use of metaverses for learning can change not just what is learnt but also significantly how we learn, it is for this reason that it is important to consider all the implications of adopting them into the learning processes and to observe which are the possible drawbacks and pitfalls of this integration (Camacho, Esteve & Gisbert, 2011). Virtual worlds can be used to create very effective learning spaces. Since they are generalized rather than contextual, they can reach all disciplines. The social aspects of virtual worlds become extremely relevant for educational purposes. These worlds lend themselves to role-playing and scenario building, allowing learners to temporarily assume identities and tasks without incurring real-world consequences. Both universities and industries have recognized the learning possibilities available in metaverses and 3D virtual worlds as spaces that offer both freedom and playfulness to create and collaborate while learning.

Metaverses and 3D worlds in education provide a unique training and knowledge sharing environment, provide great opportunities for group interaction and allow meta reflection to support activities and achieve learning outcomes, enhance collaboration and communicative skills and allow learners to transfer learning from a learning context to a real life context more readily.

Among other positive aspects, the educational use of metaverses encourages learners to gain experience working in flat organisational structures and to develop skills in building networks and communities of practice. Metaverses promote problem-solving and negotiating skills at the time that they help learners become goal-oriented and able to envisage and work to achieve outcomes. Finally, they generate skills in producing knowledge and promote –at the same time- learning through simulations and role-playing.

SIMUL@: “Evaluation of a Simulation Technological Environment for the Learning of Transversal Competences at University”, is a research project oriented to develop transversal competences of university students, created at Universitat Rovira I Virgili (Spain). Simul@ is a virtual world which blends a virtual learning environment (VLE and LMS) like Moodle, through the SLoodle module. The main aim of this project is to prove the efficiency of the technological environments based on simulations in work-related environments in the learning of transversal competences at University (concretely Self-management, and Teamwork) and it is for this reason that experimentation with learning spaces based on technological tools of simulation becomes essential: design practices in virtual worlds.



3. AUGMENTED REALITY

Augmented Reality (AR) has the goal of enhancing a person's perception of the surrounding world. Being partly virtual and real, the new interface technology of AR which is able to display relevant information at the appropriate time and location, offers many potential applications; these include aiding in education, training, repair or maintenance, manufacturing, medicine, battlefield, games and entertainment."

AR can tremendously enhance vocational studies. The ability to annotate real elements and the ability to add to reality by superimposing virtual aids, will aid in instruction and learning for those disciplines where a specific spatial configuration of elements must be learned and remembered. AR provides a means of "seeing" phenomena in 3D, thereby bringing the contextual three dimensional nature of the real world to the their learning. Textual and pictorial information in the typical 2 dimensional print-based resources loses much of the richness of the "real" world elements, and involves an element of interpretation that is difficult for some students.



Source: <http://www.flickr.com/photos/garyhayes/5240598964/>

4. GAME-BASED LEARNING

Game-based Learning contemplates the incorporation of games specifically designed to align students with real problems centered in the discipline being studied, provides learners with a sense of urgency to solve the problems they encounter, and gives them a sense of optimism. Games provide the content, structure, and medium for focused social interactions aimed at solving problems. In

the Game-based problems provide students with a reason for learning, interacting, and working together in ways only rarely seen on the traditional campus by extending learning beyond the classroom and beyond the campus. Students learn best by doing and college should be about helping students to change the world. The gamification of higher education bridges those two areas by providing students with the skills and knowledge needed to effect the changes they want to see in the world.

These are the big reasons to include games in the higher education curriculum, but they are not the only reasons. Having fun and being engaged are some of the most appealing side effects of a game-based curriculum on students.

Amongst the challenges that Higher education Institutions will have to face, we'd like to point out, as it is stated in the afore mentioned report:

1. Economic pressures and new models of education are bringing unprecedented competition to the traditional models of higher education.
2. Appropriate metrics of evaluation lag the emergence of new scholarly forms of authoring, publishing, and researching
3. Digital media literacy continues its rise in importance as a key skill in every discipline and profession.
4. Institutional barriers present formidable challenges to moving forward in a constructive way with emerging technologies.
5. New modes of scholarship are presenting significant challenges for libraries and university collections, how scholarship is documented, and the business models to support these activities.

To conclude we would like to account for the need to envision the transformation of teaching and learning for 21st-century skills and citizenship. Emerging technologies account to aid in collaboration, social interaction, and creation. On the other hand, education paradigms are shifting to include online learning, hybrid learning and collaborative models; and there is a new emphasis in the classroom on more challenge-based and active learning. There is a growing

emphasis in higher education on non-traditional learning models, which is further fueled by the integration of the emerging technologies and which has to be integrated within traditional formal education. By challenging learners to engage collaboratively in the co-creation of content, m-learning can also contribute to building distributed learning networks of diverse participants who are actively participating in creative activities, as well as critically reflecting on their own and others' practices. Furthermore, the relevance of Mobile Apps for teaching, learning and creative inquiry in Higher Education becomes evident when designing project-based workshops, geo-localization activities or using storytelling techniques to explore place and community.

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EDUCATIONAL GAMES AND SIMULATIONS AT SCHOOL: THE HIGH-SCHOOL STUDENTS' EXPERIENCES AND ATTITUDES. A QUALITATIVE STUDY

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Abstract:

The contribution presents results of a qualitative study conducted as part of a controlled experiment concerning evaluation of computer-based educational simulations held at three secondary schools in the Czech Republic. The study was initiated to 1) identify the main motivating aspects of educational games and simulations; 2) provide the understanding of how students accept them at school; and 3) help clarifying what differentiates them from the classical "drill and practice" methods. Three educational simulations were involved: Animal Trainer (animal training); Bird Breeder (genetics); and serious game Europe 2045 (political, economic, and social issues of the EU). The qualitative study followed the controlled experiment comparing the students' knowledge gained while being taught by simulations (the experimental group) and frontal lectures (the control group). Within the qualitative study we have conducted in-depth interviews and focus groups with 73 students (M=37/F=36). Our conclusions are also based on questionnaires and class observations. The qualitative results suggest that students from experimental group appreciated simulations as a tool for practicing the subject matter and better understanding its complexity. Students indicated the importance of competitive elements in educational games and simulations and the need of the frontal lectures. Some students also reported that digital simulations help them to acquire mental models better than frontal lectures.

Keywords:

Game-based learning, Educational simulations, Mental models, Qualitative study.

1. INTRODUCTION

Today, educational simulations and games (including so-called serious games), are used in multiple fields, including military training, medical and public health training, rehabilitation, and foreign language practicing (e.g., de Freitas, 2006; Hays, 2005). Many have argued that they could also support classical curricular schooling. Benefits of using educational games could have both affective and

cognitive impacts. As argued, they can increase motivation of learners (e.g. Barab et al., 2005) and improve knowledge acquisition or skills development (e.g. de Freitas, 2006; Gee, 2003; Squire, 2005; Papastergiou, 2009). However, educational games pose new challenges for the educational system (e.g., Egenfeldt-Nielsen, 2005; Sørensen et al., 2007; Sisler & Brom, 2008) and while these games gradually enter schools (e.g. Wastiau et al., 2009), it is far from clear how to design them as efficient tools suitable for formal schooling environment.

In our study we focused on learning effects of three different educational simulations implemented directly to school environment. The study was conducted on 372 high-school subjects, with the aim to verify and develop existing knowledge of mental model acquisition within learning with educational simulations, based on cognitive-affective theory of learning with media (CATLM, Moreno, 2005; Moreno & Mayer, 2007; see also Mayer, 2009).

This paper presents selected outcomes based on qualitative part of the study. The qualitative part was initiated as an additional tool to 1) identify the main motivating aspects of educational games and simulations; 2) provide the understanding of how students accept them at school; and 3) help clarify what differentiates them from the classical “drill and practice” methods. Focusing on these three questions, the qualitative study showed important results informative not only for our subsequent research, but also for general audience.

2. STUDY OVERVIEW

Three educational simulations were employed within the experimental study: *Europe 2045* (Brom et al., 2010), *Orbis Pictus Bestialis* (OPB) and *Bird Breeder* (Novak and Wilensky, 2007). Based on the type of game, two research designs were set up; 1-month (*Europe 2045*) or 1-day (*OPB* and *Bird Breeder*) learning session combined with a set of knowledge pre-tests and post-tests. Students were divided to an experimental and control group randomly, while the experimental group used an educational simulation and control group was taught by classic lecture during the learning session. The educational content was the same in both

groups and students devoted approximately the same amount of time to studying the topics in both groups.

Concerning the quantitative part, the study employed pre-test/post-test/delayed post-test design. Qualitative data collection was performed after the learning session in experimental classes and one control class.

2.1. Research instruments

Europe 2045 is an educational team-based game. It attempts to improve students' high-level skills (to increase their ability to discuss, work in teams, etc.); to teach facts about EU institutions and policies; and to help build mental models of large-scale processes and socio-political notions such as a model of "energy dependence" or "liberalism". The game is played in a multi-user virtual environment and also in the classroom, where role-playing game activities take place. Each student assumes a role of a European state leader (defines the domestic policy as tax levels and environmental protection). In the classroom, the player has an opportunity to present drafts for policy changes to the EU. Discussions about these changes are moderated by teacher. The initial state of the simulation is based on real-world data.

Orbis Pictus Bestialis and *Bird Breeder* are both of similar complexity and both less complex than *Europe 2045*. They can be classified as single player micro-games, they similarly present a simulation environment and the only notable gaming elements are the game goal and, in the case of *Bird Breeder*, score. The topic of *Orbis Pictus Bestialis* is animal training, mainly major phenomena of positive reinforcement learning and basic training techniques such as behavior capturing, shaping and chaining, and learn how to use a clicker during the training. The goal of the player is to train an animal to perform a task. *Bird Breeder* (Novak & Wilensky, 2007) is a game from a library of educational simulations of Netlogo toolkit (Wilensky, 1999). The game's topic is Mendelian genetics. Each student assumes the role of a bird breeder (or a dragon breeder in the second level) and his/her goal is to breed a specific line of birds or dragons. The student makes decisions according to a simple genetic representation of five traits, e.g. crest or wing color, sex, or he/she

analyze the underlying genotype directly from code. The game goal can be achieved by carefully selecting animals for breeding.

2.2. Methods

Focus group discussions supported by questionnaires and emotional graphs were used as the main research method for the qualitative data collection. We conducted 9 focus groups, the final research sample thus comprised 64 respondents from experimental groups (F=32, M=32) and 9 from the control group (F=4, M=5).

Focus groups took place in a separate classroom with each session lasting approximately 45 minutes. They were divided into three sections, (1) evaluation of the game used during the experiment, (2) comparison of educational game and classic lecture and (3) subjective experience of learning within the particular game. An interview scenario was always mildly adapted to the educational game used by the group.

3. QUALITATIVE STUDY RESULTS

During focus groups, several themes were emerging repeatedly and, what is more important, across the studied games. The frequent thematic categories that emerged are the following: (1) the importance of a competitive aspect and its relation to information seeking behavior; (2) game and simulation as a tool for constructing mental models and strengthening knowledge; (3) positive attitude towards educational games and simulations at school.

3.1. Competition and information seeking

Even though *Europe 2045* was the only game with explicit competitive aspects, students were spontaneously searching for competitive elements, or even inventing them, in all the games; e.g. time spent by training an animal in OPB or the amount of well-breed birds/dragons in Bird Breeder. According to focus group discussions analyses, competition was arguably one of the main activating elements for gaming activities.

Within *Europe 2045*, competition itself motivated students towards learning or information seeking. Four students spontaneously

declared, and around a third of the rest agreed, that they spent more time on preparation for the class argumentations and negotiations in order to persuade their competitors or possible supporters. Within the *Bird Breeder* and OPB, approximately one fifth of students reported that they were searching for strategies how to be more efficient and thus more successful in the play. Thus competitive elements seem to be a great tool to motivate students in the process of learning. One can object that students learn and seek for information just because they want to succeed in a specific game activity and not because they want to study the topic. This highlights the necessity to intertwine gaming and learning elements. Winning strategies should emerge from didactic purposes.

3.2. Mental models and strengthening knowledge

During focus groups, respondents commented on the knowledge differences gained through an educational game and a classic lecture. They described this difference mainly by words like “understanding”, “better representation”, “view from inside” etc. Therefore the classic elements of simulations – clear representation of the complex processes, a direct feedback on causalities of the player’s behavior, and visualizing or modelling the inner relations of the system and/or processes – subjectively help in developing representative mental models (inner reconstructions of a system or process in a conscious mind). Quotations:

“It gave me the opportunity to understand [genetics] deeper. Whenever somebody explains something to me – even two times or three times - it’s not that clear. Maybe I don’t listen all the time. It’s much better if I try it alone.” (Bird Breeder)

“I was representing Romania. I cut taxes and social support there. That brought various strikes and more homeless people. Now if I hear something like that in the news, I can better imagine the situation.” (Europe 2045)

Students proposed a combination of classic lecture and computer-based game or simulation as the best learning method.

3.3. Educational games and simulations at school

Second half of the respondents (N=39) was also asked about their attitudes towards different learning methods and subjective evaluation of their efficiency (properly speaking, about educational film, work in pairs, studying on-line sources, studying professional literature, work in groups, classic lecture, educational simulation, educational game). All students would appreciate games and simulation at school in some range. Maximum value of wished proportion was 50% and minimum 2%, while the mean and mode value was 25% (SD 2,08, median 16%). According to students' comments, those methods offer a possibility to practice knowledge and they also bring interactivity and audiovisual materials to quite monotone school practices. In minor cases, students reported also on important negative elements: e.g. if computer is connected to the Internet in the same time when the game is played, it has rather a distracting effect: when seeking additional information, the students often sink into the procrastination and Facebook chatting.

4. DISCUSSION AND CONCLUSION

From the qualitative study emerged that approximately four fifths of students perceive games and simulations mainly as a tool for practicing and strengthening knowledge gained by classic lecture or studying text or on-line sources. Generally they appreciate a classic lecture as one of the most efficient method for learning facts, while games and simulations can offer a deeper understanding of inner connections and factors within presented systems and processes.

All of the students would appreciate a use of such learning methods at school in some range, in average in 25% of classroom time. This outcome can be influenced by the strong schooling tradition in the Czech Republic where the curriculum mainly focused on factual knowledge and "drill and practice" methods (there has been an on-going school reform in the Czech Republic in the last 10 years). The study also pointed out some negative elements as possible attention distraction by internet browsing which has to be carefully provisioned.

Our results nowadays serve as a springboard to consecutive study running at Charles University: a complex longitudinal comparative

study that should help us to pinpoint features of games that are most promising regarding mental models acquisition.

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TACTILE GENERATION

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Abstract:

Our paper focuses on how technological changes have influenced our perception of the world. Firstly, we use Marshall McLuhan's theses about four different eras of people's perception of the world. Then we focus on the last generation and how they have learned to know the world through technology. We especially analyze the last two generations. We observe how the Net generation use mobile gadgets and social network sites in their every day lives. Based on these data we think that growing generation of children should be called the tactile generation as they will be captured in wireless net and will gradually become wireless cyborgs.

Keywords:

Technology, net generation, tactile generation, future

1. INTRODUCTION

We would like to focus on technological changes in the last decade and how these changes influence the last generation. We believe that understanding these changes is really important for the process of education. Once we know the background of this process well, we will be able to refine it and tune it.

Marshall McLuhan recognized four basic media ages, which he defined according to how we process information (1962). The first age was rural age of orally served information that people received by ear. Knowledge was distributed through stories. When people wanted to retain knowledge they needed to use their memory. McLuhan named it the world of ear, the world of acoustic space. The second age is the world of written culture, when phonetic script replaced the acoustic perception by visual perception. After the year 1450 the third age begun. It was a so-called "Gutenberg galaxy". Around 1450 Johannes Gensfleisch zur Laden zum Gutenberg, German blacksmith and goldsmith, invented the mechanical movable type of print in Europe. His invention started the Printing Revolution and is widely regarded as the most important event of the modern period. His printed Bible was the first mass product, the first uniformed goods (Jirak and Köpplová 2003: 19). McLuhan wrote that Gutenberg galaxy is in the eye of humans (1962). Memory is extended to books. It is the world of linear and arborescent structures (Deleuze and Guatarri 2004). McLuhan's last era begun with the invention of electricity. The world transformed into a global village (McLuhan 1962, 1964). The invention of telegraph, later radio and television abolished the connection of time and space. It is the era of the instantaneous movement of information from every quarter to every point at the same time. Telegraph, radio and television are tribal drums of our modern global village. However, we are also returning to the oral era. The following is the idea of the hypothetical proto-hypertext system, which was described by Vannevar Bush in his article *As We May Think* for

The Atlantic Monthly in 1945. The concept of the Memex influenced the development of early hypertext systems from Ted Nelson and the Tim Berners-Lee's web. These ideas and development of computers started the net era or the network society in 1969 when the ARPANET was launched (Castells 2004).

2. GENERATIONS AND TECHNOLOGIES

We will briefly describe the basic points of technological changes so we can pay more attention to the last generations and how they related to information and communication technology.

It is possible to distinguish these generations after the World War II (Tapscott 2009):

The Baby Boom (1946—64): The boomers could be called the first TV generation. They are the first generation whose members can remember that television was the centre of their household. Of course that in central Europe, these were only the people born in the last years of this period.

“Gen X—The Baby Bust (1965–76): they are aggressive communicators who are extremely media-centered. They are the oldest segment of the population whose computer and Internet habits resemble those of Net Geners and provide the closest adult experience from which we can begin to predict how Net Geners will master the digital universe. Like Net Geners, Gen Xers listen to the radio, watch TV, films, and the Internet as nonspecialist media available for everyone's use to package information and put forward their perspective.” (Tapscott 2009: 15) They are also the first generation that was partly educated by television. Education started to be mixed with entertainment for them (Postman 1985). To mention one example, everybody knows the **Sesame Street** which was first broadcasted on November 10, 1969 and its new episodes are still being produced. Moreover, Gen X are also the first generation that was influenced by videogames.

Net Generation, Gen Y, or Millennials (1977–97): People born in this period are not only consumers but they are the generation of prosumers (Toffler 1980). They consume and produce at the same time. “Eight characteristics, or norms, describe the typical Net Generation and differentiate them from their boomer parents. They prize freedom and freedom of choice. They want to customize things, make them their own. They're natural collaborators, who enjoy a conversation, not a lecture. They'll scrutinize you and your organization. They insist on integrity. They want to have fun, even at work and at school. Speed is normal. Innovation is part of life.” (Tapscott 2009: 6-7)

“For the first time in history, children are more comfortable, knowledgeable, and literate than their parents with an innovation central to society. And it is through the use of the digital media that the Net Generation will develop and superimpose its culture on the rest of society. Boomers, stand back. Already these kids are learning, playing, communicating, working, and creating communities very differently than their parents. They are a force for social transformation.” (Tapscott 2009: 2)

As prosumers they don't want to only consume products, they want to be able to influence what they are consuming, they want co-inovating products. Members of this generation also need a different pedagogical approach. “They are forcing a change in the model of pedagogy, from a teacher-focused approach based on instruction to a student-focused model based on collaboration.” (Tapscott 2009: 11)

Our civilizations function on the principles of collective collaborations and collective intelligence. However, it is the members of Net Generation who use it in such a large

scale. For example, Henry Jenkins (2006) shows this in his analysis of fans of American reality show Survivor. These fans had put together their separate knowledge about the show and had tried to reveal who would win this reality show before it was broadcasted.

Another example of collective intelligence is internet searching. Searching for information clearly has an important role in how we gather information, become more educated, and nurture our collective curiosity and intellects. As people participate in internet searching and making the process of searching as simple and streamlined as possible, we all become smarter as a result of this collective effort (Goodman 2010).
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The net generation is connected through social media. They live their lives on-line. They also socialize through these social media. They share their experience through on-line social networks. They are always connected to the Internet. Not only on laptop or desktops, but also on their tablets and smart phones. The highest smart phone penetration rate (62%) is in the age group of 25-34 years old. 50% of Android smart phone users and 43% of iPhone users are below 34 years old (Go-Gulf 2012).

Among those who are 18-24 years old, the smart phone penetration rate is hovering near 54%. Around 40% of 12-17 years old teenagers have smart phones as opposed to a more basic feature phone (Nielsen 2011). According to the United States ComScore (2009), the studies have shown that average smart phone user is much younger than the traditional mobile phone user. There were only 38,8 percent of 13-34 young people in all of the U.S. who use mobile phones. However, more than 51% of them have smart phones. Most of these smart phone users have a touch screen phone.

According to Hwang (2012: 2) “the smart phones users most care about sending and receiving information in respect to functions“. Younger of the smart users have more emphasis for the “merit“ of smart phones. Users younger than 18 tend to stress the “shortcoming“ of smart phones. They prefer smart phones without functions; they are affected by emotions and habits. Overall, Hwang’s research found out that smart phones users are looking forward to launching new features and they don’t have problem to change their habits.

For most people, smartphone is not only a tool for being in contact with their friends and family. It is also an important tool for leisure time: for listening music, setting alarm clock, scheduling, texting, instant messaging, GPS navigation, shopping on-line, playing games (Hwang 2012: 4). We should not forget that smart phones are a great tool for learning (m-learning). People use applications for looking up foreign words, for checking foreign languages or downloading Podcasts.

3. CONCLUSIONS

We think that the generation that was born after 1997 could be called the **Tactile generation**. Someone called them Z generation or Next Generation (1998- now). This generation has many similar characteristics as Net generation, but is more embedded in technologies. They use touch displays and enjoy closer interface. They are used to

controlling machine tools without a keyboard. They will be used to controlling touch smart TVs. They will learn through augmented reality. They will use it for collaborative learning projects. Gestures in combination with voice will be their main means of communication. Technology will become an extension of our bodies and minds. We will become wireless cyborgs.

We will also learn from our students and children. This trend appeared with the Net Generation and it will definitely continue. John Seely Brown, director emeritus at Xerox said: "What you find in leading organizations today is that each one of us is, in some way, an authority in some domains and a student in other domains. We must be prepared to learn major things from our subordinates and vice versa." (Tapscott 2009: 178) The future is challenging and we should try to find new ways how to learn and teach.

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V rámci DisCo 2012 připravilo prezentaci **Digital learning – future tools**, která se bude konat **26.6. dopoledne**.



Navreme Boheme, s.r.o. je dynamická a inovativní poradenská společnost. Zabývájí se zejména evaluacemi (např. hodnocením dopadů, hospodárnosti a úspěšnosti programů financovaných z veřejných prostředků), výzkumem a vývojem, a to zejména v oblasti informačních technologií, trhu práce a šíření inovací (transfer of innovation), školením v oblasti informačních technologií, jejich zaváděním a efektivním využitím, e-learningem a v neposlední řadě o analýzu elektronické stopy zanechávané v prostředí Internetu.

V rámci DisCo 2012 zajišťuje webovou prezentaci konference a v návaznosti na projekt I-TUBE <http://www.itubeproject.eu/> pořádá workshop zacílený na možnosti využití digitálního (elektronického) portfolia pro rozvoj a rozpoznání kompetencí.

Mediální partneři



Andragogika je jediné odborné periodikum svého druhu v ČR. Vychází již **od roku 1996**. Academia Economica s.r.o. jej vydává ve spolupráci s Asociací institucí vzdělávání dospělých ČR, o.s. Časopis přináší odborné příspěvky z teorie i praxe rozvoje a vzdělávání dospělých, představuje moderní formy a metody vzdělávání, systémy vzdělávání ve firmách, sleduje dění a nové trendy v oboru, informuje o nových publikacích aj. zajímavých zdrojích. Na jeho obsahu se autorsky podílejí kromě představitelů AIVD ČR i vysokoškolští pedagogové, zejména z pražské a olomoucké katedry andragogiky, pracovníci Národního vzdělávacího fondu i vzdělavatelé z praxe.



AULA je recenzovaný odborný časopis pro vysokoškolskou a vědní politiku, který se zaměřuje jak na publikování původních výzkumných prací z oblasti vysokého školství a vědy, tak na aktuální diskuse o vysokoškolské a vědní politice. Vychází čtvrtletně a je vydáván Centrem pro studium vysokého školství, v.v.i.

Ikaros, elektronický časopis o informační společnosti, se od roku 1997 se zaměřuje na Internet jako na médium, specifické komunikační prostředí a seriózní zdroj informací. V jednotlivých rubrikách pokrývá tuto problematiku od odborných článků, statí a výzkumných zpráv, přes recenze informačních produktů a aktivit v oboru až po reportáže z odborných konferencí, výstav a happeningů. Záměrem redakce je kromě snahy přiblížit problematiku Internetu z pohledu informační vědy také přinášet témata, která nemusejí s Internetem zdánlivě souviset. Vychází jako měsíčník, a to v elektronické podobě dostupný na: www.ikaros.cz

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