

Use of E-learning in the Training of Professionals in the Knowledge Society



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University of Silesia in Katowice,
Faculty of Ethnology and Sciences
of Education in Cieszyn

Use of E-learning in the Training of Professionals in the Knowledge Society

Monograph

Scientific Editor

Eugenia Smyrnova-Trybulska


Cieszyn - Katowice 2010

Reviewer

Maciej Tanaś

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INTRODUCTION

Transition to a knowledge society based on the need to acquire new knowledge and skills throughout life. Establishment of open and distance education is the right stage of development and adaptation of education to modern conditions. Its appearance may be explained as need of society in a creative, professionally and spiritually self-developing and self-learner's personality in conditions of transition to a knowledge society, on the other hand – they are considered as territorial, economic and cultural factors. The following factors contribute to and promote the success and rapid development of open and distance education:

- the need to guarantee education throughout life (lifelong learning), constantly expanding access to education and professional training;
- increase opportunities to update knowledge, professional training or self-improvement;
- increase the profitability (rent-ability) of teaching resources;
- improve the quality of existing educational services;
- the promotion of equality of access to education of different age groups;
- more inclusive education in different geographical areas;
- the provision of short-term and effective training courses for certain categories of students;
- development as an interdisciplinary educational potential and for individual disciplines;
- the provision of educational services consistent with professional and family lives of students;
- progress in the field of ICT (Internet, Web) that can increase the number of subjects taught at a distance;
- clear awareness of the importance of education internationally (Distance Education, UNESCO, 2006, http://www.unesco.org/bpi/pdf/memobpi38_distancelearning_ru.pdf).

Distance education is the subject of broad interest to different groups of researchers in most countries in Europe and around the world. There are many publications that prove that the benefits exceed the e-learning defects,

and the scale of e-learning implementation increases practically on all levels of education. With the development of information technology, the appearance of new computer tools expands educational possibilities and improves the quality of educational services offered in the distance learning form.

At the same time there are still a lot of questions that have not been answered yet. The articles of the authors included in the monograph try to do it. Among the problems raised in the materials of monograph one can enumerate the following issues:

- Can a modern educational system educate and prepare professionals to successful work and functioning in the knowledge society without e-learning?
- What factors influence the selection of the most effective, optimal, adequate methodology of Distance Learning?
- What are the common features and characteristics and differences between e-learning and traditional teaching methodology?
- Is it possible to improve the quality of teaching by personal teaching in a distance mode?
- What are the most suitable contemporary information tools for the effective distance education?
- How may look like the nearest future of e-learning, what are the new possibilities of e-learning 3.0, and can we model the new trends of e-learning without earlier analysis of its evolution?
- How can you help in rehabilitation, therapy and education of disabled children, including these with specific psycho physical disorders?
- What safety rules should be followed at the time of the organization and implementation of distance learning?
- Whether and what are the formal and legal barriers threatening the global e-learning's implementation?
- How can international cooperation and participation in joint projects help in creating a common informational and educational space and implementation of e-learning?
- Others.

The monograph includes the best pieces of work, prepared and presented by the authors from five European countries during the scientific conference entitled "*Theoretical and Practical Aspects of Distance Learning*", subtitled: "*Use of E-learning in the Training of Professionals in the Knowledge Society*", which was held on 11-12.10.2010 at the Faculty of Ethnology and Sciences of Education in Cieszyn, University of Silesia in Katowice.

The speakers were from University of Silesia in Katowice (Poland), University of Ostrava (Czech Republic), University of Silesia in Opava (Czech Republic), University of Warsaw (Poland), Graal Institute (Portugal), Gdansk University of Technology (Poland), University of Hradec Králové (Czech Republic), Church Pedagogical Institute in Graz (Austria), University of Defence in Brno (Czech Republic), Technical University of Radom (Poland), Cracow Pedagogical University (Poland), Rzeszow University of Technology (Poland) and University of Białystok (Poland).

Among the authors are the well-known scientists, young researchers, PhD students, academic teachers with a many-year training and experience in the field of e-learning, the creators of distance courses, multimedia teaching materials, educational web-sites and others.

I am convinced that the monograph will be an interesting and valuable publication, describing the theoretical and practical issues in the field of distance learning, giving proposals of solution of some important problems and showing the road to further work in this direction, allowing to exchange experiences of scientists from different universities and different countries.

Publishing this monograph is a good example of strengthening international cooperation. I am very grateful for valuable remarks and suggestions which raised the quality of the publication. Here I especially want to thank Prof. Maciej Tanaś – a reviewer of this monograph, Prof. Robert Mrózek for help in the edition of this publication, MA Andrzej Szczurek for an editorial correction. Also I say 'thank you' to the authors for the preparation and permission to publish their articles. All readers I wish a pleasant reading time.

Thank you.

Eugenia Smyrnova-Trybulska

I. THEORETICAL AND METHODOLOGICAL ASPECTS OF DISTANCE LEARNING

E-LEARNING - THE E-VOLUTION

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***Abstract:** The enormous technological change during the last decades was followed by the development of new methodologies and motivated a new social demand for teaching and learning. Distance learning become into what is commonly named e-learning. However, today's e-learning is much more than the use of technologies or than a distance learning environment.*

New challenges about asynchronous and synchronous activities in distance teaching and the necessary skills of the educators to handle it are now on the table.

An enormous amount of research is seen in the horizon, covering the didactic communication approach, contents formats, use of technologies based on new methodologies, and new ID models.

Keywords: e-learning 3.0; e-learning 2.0; b-learning; blended learning; e-learning stages

INTRODUCTION

The technological evolution during the last 7 decades could bring down one “room computer” (Mark I, 1943) weighting several tons into a small tiny laptop, weighting just a few grams and a thousand times more powerful than his “grand, grand father”.

This technological revolution was followed by an enormous change in methodologies and didactic tools where adjusted in a view to their implementation.

This is the information, communication, interactive and mobile society we are living in whereby civilizations are connected in real time all across the planet.

This results in an enormous sociologic impact in all scientific areas and mainly in education processes.

The social profile of our students has also changed. The medium average age is now older, because the: “4 years of university basic educations, are an introduction into 40 years of long life training” Lima J. (2004).

There is no doubt that students today are building their own knowledge, demanding more interactivity, more multimedia contents, they are more Web dependent, more surface learners, and wiling for more mobility, better didactic communication in presence and distance learning.

This is because, they are constructivist learners, multi intelligent, (Gardner and Flaming), emotional behaviorist learners (Daniel Goleman), interactive learners (Alcino Silva) and they are collaborative social virtual learners (George Siemens).

This results in a new way of teaching and learning, with new technologies, new methodologies.

Although a large amount of investment have been made during the last decades in new technologies and methodologies, skills are short in fulfilling all education requirements.

The questions that arise today are:

- Are we prepared to offer it?
- Do we have the right skills?
- What are the best tools, technologies and methodologies to do it?
- Is e-learning a solution? Or just learning?

Enormous amount of training, research and reflexions required to answer these questions.

1- THE DISTANCE LEARNING STAGES

We can find references about distance learning since the XVIII century (Verduin & Clark, 1991), although in practice it was not used regularly up until the mid XX century in the USA and some European countries.

The Second World War, forces an important increase in distance learning, because many young people incorporated in the war needed to go to the front line and simultaneously many of them have to be replaced in their civil jobs, with no trainers or tutors available.

In the other hand, when the war was finished, all the young people had to be integrated back in professional civil activities.

It is in this scenario that Skinner, since the mid forties starts to talk about the “Teaching machine”, but in that period he did not realise what type of “Pandora box” he was opening.

Skinner introduced in 1954, CAI (*Computer Assisted Instruction*) in his classic article (*The science of learning and the art of teaching*) he summarize the basics about “The teaching machine”. The teaching machine and the programmed texts, are the previous format of CBI (computer based instruction) turned into reality later with the PCs.

<http://www.virtualeduca.info/ponencias2009/381/Conductismo,%20Cognitivismo%20y%20Dise%F1o%20Instruccional.pdf>

To the development of educational programs it was necessary the analysis of tasks and objectives. In 1956 B. Bloom published the conclusions of his research on: “The taxonomy of educational objectives”. Distance learning evolved in different stages (Moore e Kearsley, 1996) following the development of computers, multimedia and Internet. On the other hand, technologies evolved step by step in number, complexity and potential, offering new models of distance teaching and learning (Chute et al., 1999).

1.1 First distance learning stage (-> 1970): courses contents were totally delivered by regular mail

The pedagogic approach followed for this stages and the two subsequent stages was totally behaviorist. In these stages we saw the first training courses presented in the radio (1930) and television (1954).

1.2. Second stage (1970 -1980): Open Universities

Despite what has been pointed out by Skinner and Bloom in the fifties, it was in the seventies that the theoretical bases for distance learning started for flourish, particularly as the result of “World Conference for Distance Learning”, coordinated by Wedemeyer 1972.

Michael Moore (1973), suggested that some resources should be affected to define the research areas, identify different types of distance learning and built up theoretical methods related to this area.

In 1969 the “UK Open University” was founded and Bloom was one of the consulting advisers of this project. “UK Open University” is known as one of the most relevant projects in this area and a model for many other experiences that took place all over the world during the seventies and eighties , (Daniel, 1996)

1.3 Third stage (1980 - 1990): Video cassettes and TV

The rising of video players, satellite and cable communications enhanced the importance of TV and video communication in distance learning. The audio and image quality of the contents was very fair and video players were offering the possibility of students to attend lessons “any time, anywhere” and how many times needed (for a better understanding).

Since 1985 different sets of courses were offered with a remarkable relative success.

1.4 Forth stage (1990 - 2000): Computers, multimedia, interactivity, e-Learning

Technological evolution of digital equipments and software shown new possibilities of interactivity and improved the quality of distance learning.

CD-ROMs and Internet (1990) introduced two important innovative tools, offering flexible learning. It allowed anyone to use virtual learning environments despite the place or time zone they are in. Besides that, new communication systems based on Internet, started to offer the potential of interaction among students and teachers, students with students or with specialists all over the world.

In fact this period marks the rising of the system - the beginning of the beginning for multimedia contents production, communication and distribution using LMS.

But one of the most important aspects is the evidence of a need for new methodologies in parallel with new technologies.

Some proposals on this area were presented since the early nineties:

- a) Moore (1993) considered the “curriculum” as a “structural” area and the constructivist “dialog” as a need;
- b) The “student autonomy”, was highlighted as important and called “transactional distance theory”, from Dewey “transaction” concept, which was later developed by Boyd and Apps;

There is a large consensus about the definition of distance learning. The focus is the physical separation between students and the teacher during the learning process (William, Paprock, Covington, 1999).

One of the most coated distance learning definitions produced by Moore and Kearsley (1996) says: in the courses the teaching and learning process is running in separated environments and it is necessary special techniques over the curriculum formulation, teaching, communication, organization and administration. However, it is also important to point out that it is based on new methodologies that the learning process takes place and becomes effective.

A new vision for using more interactivity, multimedia, graphic animation, audio, and video (steam video 1997) hypertext, and communication over email, chat and “focus groups”, was the dream of many authors and course coordinators in that period, but still difficult to implement.

Students started to be seen as active partners, using different technologies.

In fact the use of this format was very limited up until the mid of the first decade of 21st century, because short bandwidth available and it's high cost did not allow a proper utilization.

On the other hand, the enormous amount of new technologies available were being used without the necessary new methodologies. This may have turned distance learning activities into “technological noise”.

There is a final question: What is e-learning today?

2. ONLINE LEARNING ENVIRONMENT

When in 2000 we were talking about e-learning, for sure we were talking about distance learning.

However, when we talk today about online learning, are we exclusively talking about distance learning? Not necessarily.

Today we can be talking about distance learning supported in presence activities or presence learning supported in distance activities.

In fact, we are in the presence of an emerging concept in constant evolution.

The increasing use of online tools in presence teaching makes online tutoring as a daily support tool with excellent results to improve the learning quality.

What is the changes that justify that?

We could see that the nineties were a brake-even period for a qualitative change in distance learning. Important technological evolutions, software development and communication facilities occurred during this period. Mainly, very fast computer's CPU, allowing video and audio editing. Hard discs, with very high capacity and rotations superiors to 7.200 rpm, able to capture video, "stream video" available after 1997 diffused over the Internet (1990) / WWW (1991), video projectors, etc.

Software to produce audio and video contents and presentations start to be available.

But only after Internet was available with a faire bandwidth and price (in the first decade of XXI it was possible to use it in good conditions for education purposes. Only after 2000 video conference communication tools were available in acceptable quality and prices, for education 1x1 and "many to many" in the format of virtual classrooms. Because of high cost of available platforms and only after 2004 open source LMS platforms were available, it was possible its use in all education levels.

3. E-LEARNING EVOLUTION

World education evolved at all levels, from kindergarten to university, pos graduate degrees or long life learning. Several reasons are pointed for this such as, political pressure over results of bad school results, the imaginary on using ICTs, the challenge from the Bologna methodology, and the common use of computers, social communications nets and 3D environments.

The new learning theories of the digital era emphasize the importance of asynchronous interactivity (related with Web 2.0 (Downs S., 2004) and (O'Reilly, 2005)) as well as synchronous interactivity, collaborative work and the inducing connectivism (Siemens G., 2005). The latter is accepted as an evolution learning process based on technologies, complemented by socializations, mobility in the collaborative and informal learning.

Daniel Goleman (1999), in his "Emotional intelligence Theory" suggests the use of pedagogic games and other emotional intelligence activities to increase the learning quality.

This emotional oriented approach opens an opportunity to the use of 3D environments as eligible and valid tools for the education proposes.

From our experience on using Second Life and Active Worlds, we find a good potential, but some didactic limitations when used in some education environments.

According to the needs of our student's profile, teachers should update their technological and methodological skills. This means a permanent training in areas like:

- New collaborative learning methodologies;
- Formative evaluation;
- Online tutoring, the use of virtual classrooms, video conference tools and virtual group work;
- Tools, to produce contents in multimedia format, pedagogic games, the use of interactive synchronous and asynchronous tools;
- Know how to use online platforms for managing contents (LMS) and other supporting interactive animations like 3D and Muvs.

Rosenberg (2001), emphasized that teaching today means different forms and formats, like presence teaching, online teaching, virtual teaching, mixed teaching and other.

According to García et al - (2007), Bernárdez - (2007), Bernal - (2007), there is no sense in trying to develop opposite terminology and make the "black and white game". It is much more important to integrate the differences and complementary but mainly to improve teacher skills

An interesting study ordered by the US Government about online education states important rules and methodologies about it (Means, B. Toyama, Y. Murphy, R. Bakia, M. Jones, K. May 2009).

According to Means B. (2009), "online learning" is "learning totally or partially using Internet. This definition exclude: printable documents, the use of TV or radio".

This definition is not consensual. Some other authors use a broader definition accepting a large use of different electronic equipment - more or less what is usually called today as "online learning" or "e-learning".

The e-learning definition has changed over the years and included different contents, but always expressed a relation between learning and the use of computers.

The first used names were CBI (*Computer-Based Instruction*), CBT (*Computer-Based Training*) or just CBL (*Computer-Based Learning*).

During the nineties e-Learning was referred as distance learning.

In 2001 Rosenberg (¹) introduced a reflection about the separation between distance learning and e-learning, saying: “e-learning is one format of distance learning, but distance learning might not necessarily mean e-learning” ...

Rosenberg, wanted to “separate waters”: on one side, distance learning supported by documents sent by post or other traditional means, as not being e-learning; and on the other side, teaching and learning supported by electronic equipments and tools.

Today there is the consensus that e-learning incorporates online tools and techniques, with contents distributed in multi modal format (printable, videos, audios documents etc.) using interactivity in asynchronous or synchronous tools using virtual classrooms or in presence or distance teaching.

In this regard, some authors are saying that: “the revolution introduced by e-learning, lead that not even in presence classrooms, learning will be as it was in the nineties”.

As such, in the beginning of the XXI century e-learning evolved into a blended format: comprising presence and distance learning broadly called b-learning.

We can say that this was the end of distance learning in its pure format. For long duration courses, from a pedagogical point of view, it is convenient that learning is completed in a mixed format: presence and distance learning.

But in a short period, with technological improvement, particularly over bandwidth size, communication and video conference software and better teaching skills, the possibility of using virtual classrooms and synchronous activities can arise as an full alternative to presence learning.

What we have today are contents distributed asynchronously and tutoring in presence or virtual format.

This approach is being done according to Web 2.0 recommendations.

¹ Rosenberg, Marc; 2001, e-Learning: Strategies for developing knowledge in the digital age; NY, MacGaw-Hill

4. E-LEARNING STAGES – FROM E-LEARNIG 1.0 TO E-LEARNING 3.0

Today the focus of the debate is: “e-learning stages”.

During the last decade the concept of e-learning changed and evolved. It can be typified in three different phases.

What distinguish the different phases is: the presence of interactivity or not; the existence or not of multimedia contents; and the existence of synchronous and asynchronous online support.

The evolution of technology, pedagogic methodology and teachers skills allow us today to use all the above mentioned approaches. ⁽²⁾

This systematization is a result of our research and was presented and debated for the first time in 2008 in Argentina – Cordoba Learning International Conference and in November 2008 Russia at Izhevsk University International Conference (Figure 1) ⁽³⁾

We decided to promote collaborative research involving several colleagues (Florentino Blázquez, Sixto Cubo, Xabier Basogain and K. Olabe) from that we have presented a communication at London University in World Mobile Symposium – March 2009. ⁽⁴⁾

This subject has been submitted to several debates and international conferences such as.

(Videos can be seen at) ⁽⁵⁾

² Reis A. (2007), Media Knowledge and Education, University of Innsbruck, INSB 978-3-902571-67-0

³ Reis A. (2008), From e-learning 1.0 to e-learning 3.0, Izhevsk University International Conference (10-14 November) proceedings ISBN 978-5-903140-42-8

⁴ Reis, A. et al (2009) To be or not to be mobile learning, World Mobile symposium, London University, <http://www.londonmobilelearning.net/>, ISSN 1753-3385

⁵ Video repository can be seen at: das conferencias referidas está acessível em: <http://thegraal.ccems.pt/course/view.php?id=51>

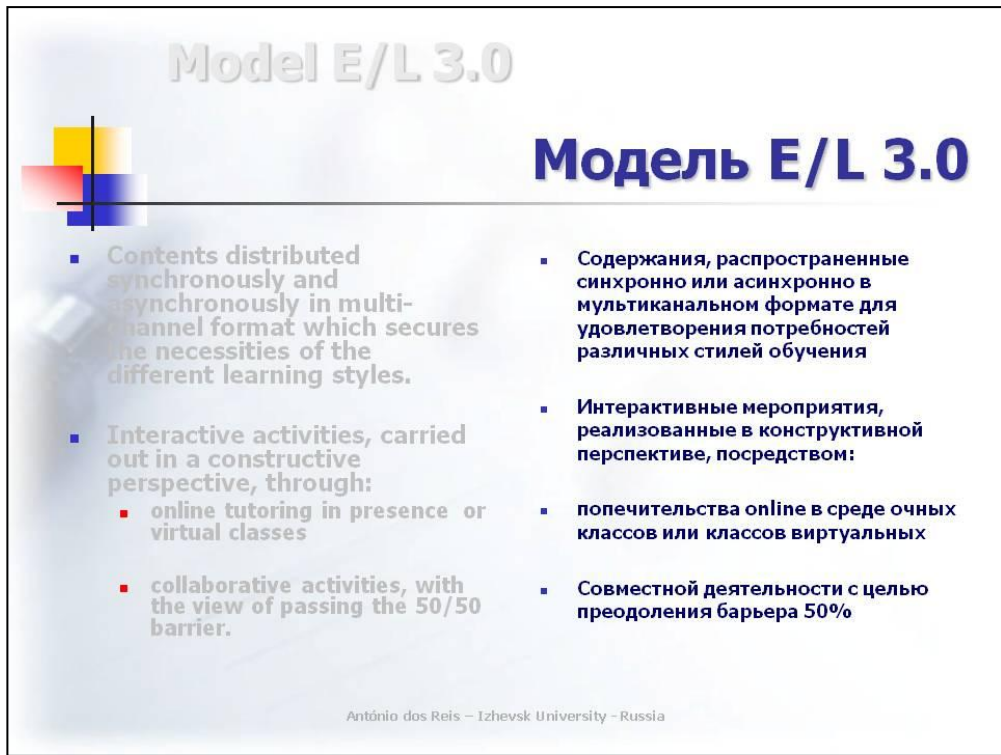


Figure 1. Model E-Learning 3.0.

Extremadura University – Debate conference – September 2010

Jönköping University - Sweden - March 2010

Expo didáctica –Barcelona Autonomic University – March de 2010

Rouin University – France – January de 2010

Hamedstad University – Sweden - January 2010

OLC&W 2009 – Online Learning Debates Cycle “Online Learning Conference & Workshop” 2009

Creative Learning conference – Lisboa November 2009

Nitus Autumn Conference – Sweden – November 2009

Conference DIM (Didactic y Multimedia) – Barcelona Autonomic University - September 2009

Jorevir 2009 Conference – Universidad Pompeu Fabra - Barcelona - September 2009

MoodleMoot Euskadi – Basque country University - 2009 May

VWBPE - Virtual World Best Practices in Education – March 2009

Diverse 2008 – Inn Holland University Conference – March de 2008

First e-learning Stage (2000 -)

e-learning (1.0) – Courses were structured in a self learning format and only lectured virtually (distance learning). Contents were distributed in pdf or word prints and no interactivity existed. At the end of the course students were normally submitted to final presence examinations.

Very early, students and teachers realized the limitations of this approach and a mixed solution of presence and distance learning was recommended - usually called “blended learning – b-learning”.

Second Stage (2004 -)

e-learning 2.0 - In 2004 Stephan Downs and O’Reilly start to present their ideas about Web 2.0.

Stephan and O’Reilly, called for a more dynamic WEB and stressed the importance of interactivity with important repercussions in education environment.

A major important topic was the interactivity and multimedia content in asynchronous format. Teacher – student; student – contents; student – student. The tools available for synchronous activities like virtual classrooms or video conference were few and very expensive and they required quite a high bandwidth.

The content mainly distributed was using the following tools: forums, chats, wikis, blog all of them using asynchronous format, integrated or not in LMS (Stephen Downs 2005, 2007, 2009 y Tim O’Reilly 2005).

Third Stage (2006 ->)

e-Learning 3.0 - The technologic evolution, mainly related to communication tools is was a relevant factor for the third stages. Video conference and virtual classroom software are offered at much lower prices and require much less bandwidth. ISP suppliers offer sizeable bandwidth at fair prices. Simultaneously, LMS platforms are being offered at “open source”, like Moodle, Joomela and other. From a technological point of view distance learning requirements are now fulfilled in good conditions. This means that, there are available asynchronous distribution and communications tools for synchronous online tutoring.

Now, we are facing a new quality challenge on distance learning. It doesn't matter if it is called: CBL, ICT, e-learning, online learning or any other thing, technical tools are available to work with quality at any education level.

Everyday better and better tools are being offered to facilitate the teacher's job and the student's learning. But, learning and teaching tools require more skills from teachers and students.

In 2006 Stephan Downes, presents a new view over a web 3.0. This view includes that web should be more effective over browsing and searching in terms of semantic and obtained results. Although, the relation between his "future view" and education science was short.

In 2006 we could again say that we were facing a new phase of e-learning.

e-Learning 3.0, which emerged from "connectivism" based in the George Siemens approach, which includes mobility, multimedia contents and online synchronous interactivity.

The main aspects used in this environment are:

The use of new technologies supported in new methodologies;

The use of LMS to distribute asynchronously contents and manage courses, in distance and presence learning;

Online synchronous tutoring support, using audio, video, white boards and other tools in virtual classrooms;

Continuous formative evaluation supported by online activities;

The Blend learning concept has changed from a mix of presence and distance learning into asynchronous and synchronous activities, whether if in presence or virtual format using virtual classrooms;

The main synchronous virtual tools used are: virtual classrooms, e-round table, Webcast, video diffusion, e-workshop, conference call.

Hart (2008) identifies three stages of e-learning and associates them with Web 1.0, Web 2.0 and Web 3.0. In fact he could establish a relation between Web phases and e-learning phases.

Basogain X. (2009) reports that: "In (Reis et al, 2009) the formulation of e-learning 3.0 by Reis, is different from Downs, because he introduces a pedagogic environment and the new e-learning stages includes several didactic tools also used in presence and distance learning" (Figure 2).

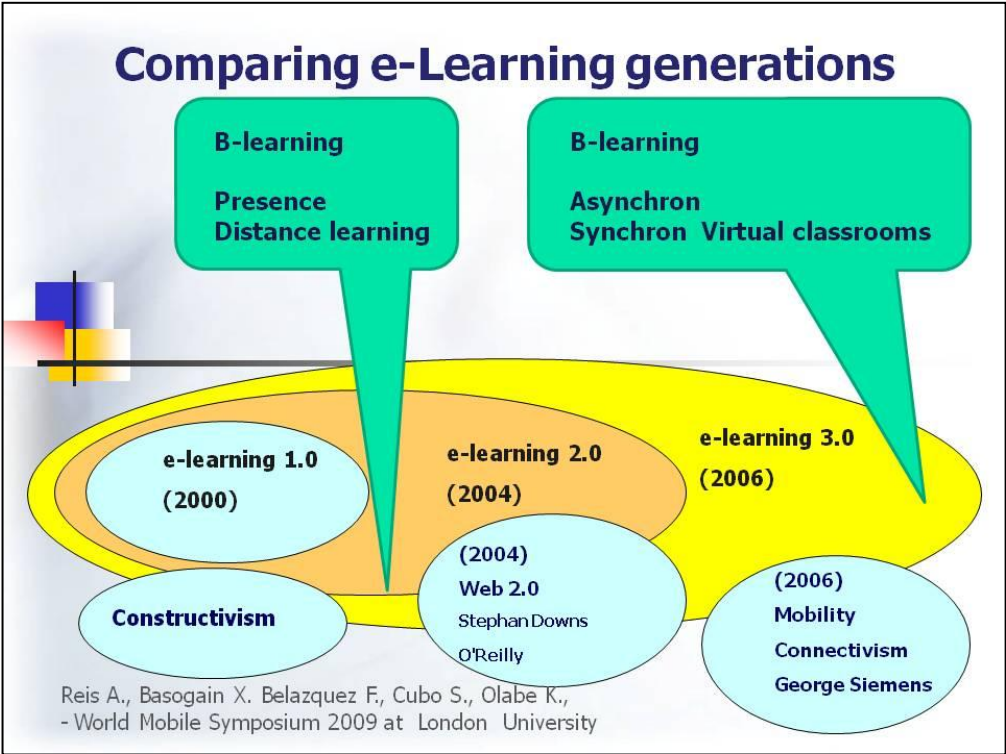


Figure 2.

Table 1.

Summarizing e-learning stages

	Distribution Asynchronous Contents	b-learning presence / distance	Interactivity		b- Learning Asynchr onous/ Synchron ous	Multim edia
			Asynchr onous	synchron ous		
e-Learning 1.0	Y	N	N	N	N	N
e-Learning 2.0	Y	Y	Y	N	N	Y
e-Learning 3.0	Y	Y	Y	Y	Y	Y

A relevant aspect that should be pointed out is that the changing from one phase into the next did not eliminate the didactics of the previous one, it only

introduced new didactic tools, new methodologies and build a richer learning environment.

CONCLUSION

The technologic evolution that took place during the last two decades, in terms of hardware and software was followed by the improvement of new teaching methodologies.

The sociologic environment (demographic student's profile) changed substantially.

Gardner's and Flaminig theories about students different learning styles were confirmed.

It is obvious that students become "digital learners", multi modal learners "web dependents" and surface learners. They have now more difficulty in understanding narrated messages than multimedia contents (Prensky, M. 2001, Digital Natives, digital immigrants; Institute of social research; Kaiser Family foundation 2003).

A new Long life learning attitude, new learning styles and the preference in many cases for distance learning courses, makes us think about the importance of new formats to distribute contents and communicate with our students.

Today, new information and communication technologies, the Internet and multimedia contents are present in presence or distance learning.

Although an enormous amount of investment has been put in teacher's training, the average level of skills are still below the needs and requirements.

Students should also have training on how to study in a constructivist learning approach.

In about 10 years, e-learning crossed through three phases, from unidirectional and non interactive, into the asynchronous distribution of printable and multimedia contents complemented with interactive, and synchronous tutoring.

Technologic and methodological evolution during the XX and XXI centuries, introduced three e-learning phases.

- First phase / e-learning 1.0 - - distance learning, using uni-directional teaching and printable documents;

- Second phase – e-learning 2.0 - b-learning (distance and presence learning) using of LMS, multimedia contents, and interactivity in forums, chats, web blogs, wikis, and the multimedia revolution;
- Third phase – e-learning 3.0 - the use of virtual classrooms, allowing synchronous interactivity, “connectivism”, social nets, new b-learning format (asynchronous and synchronous presence or virtual), general use of multimedia in Internet, emerged the third stages (Reis A. Izhevsk University 2008),

Today when we talk about e-learning, it is very confusing because some people are talking about e-learning 1.0, others are talking about e-learning 2.0 and some others might be talking about e-learning 3.0 or even talking about a mixed concept.

Today, the focus of this question is much more than technology; it is also new methodologies and new skills used in the pedagogic process.

The analyses of constructivist instructional design models like “Dick and Carney” (1990), “Kemp, Morrison e Ross (1998), “ADDIE”, “Smith and Regan” (1999), and other, do not report any methodology related with synchronous interactivity. Only “Jonassen” (1999) OLE and CLE models reports learning interactive activities like “coaching” and “scaffolding”, using “virtual conversation” in group work and learning communities, although the references are made as topics and in a very surface-level approach.

It is important to emphasise that all these models were presented more than ten year ago, and obviously can not be up-to-date because of the enormous technical evolution since then.

It is important as well to report that all the evolution in learning ID models or e-learning stages’ methodologies always incorporate the previous methodologies, making them richer and more complete.

From our research conclusions, we could find out some important areas for future research like:

- Defining new teacher skills at all education levels;
- Define the best technical profile of virtual classrooms, as well as new methodologies to use them;
- New use for virtual classrooms in specific areas like teaching deaf students in distance learning environment;

- The use of pedagogical games in virtual environment, as well as 3D and MUVs.
- A new ID model that integrates the functionalities and profile of e-learning 3.0 stages.

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INTELLIGENT VIRTUAL TEACHER

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Abstract. *This article describes the principles of a so-called intelligent virtual tutor. This is a programme system for managing education, automatically adjusting to the individual characteristics of the student and his/her learning style. It modifies its teaching to both static and dynamically changing characteristics of the student. For this the virtual teacher needs a sufficiently rich supply of various styles and forms of education as well as plenty of information on the style of learning, type of memory and other characteristics of the student. The paper describes the structure of maintaining this information and its use by the virtual teacher for intelligent learning management.*

As opposed to the semantic website and other current trends of individualization of education, this concerns a new original approach to individualizing education, which enables adaptation of the teaching material, not simply a run-through of these materials or user environment.

Key words: e-learning, adaptive education, virtual teacher

INTRODUCTION

In the homeland of J. A. Comenius, every child knows that proper education should be “school by play”, led from the known to the unknown, from simple

to complex. Today's children and youth are born hand in hand with the computer and internet, and soon this will concern the entire population, so they more readily take to appropriate computer-led instruction than classic instruction. Well-built computer educational programmes are a game, they do not tire, but rather motivate, support fantasy, competitiveness, and resulting knowledge is longer-lasting. Almost all of us must study our entire lives, in adulthood mostly in the form of distance study and self-study. But ever fewer students participate in even classic non-compulsory education at universities, and so they too actually study from a distance.

1. MOTIVATION FOR RESEARCH

We know from classic education that teaching large numbers of students at once in school slows down and bores some students, on the contrary for others it is too fast and they cannot keep up with understanding everything. Other students are indeed satisfied with the pace of education, but may not be satisfied with the educating style of every teacher. They thus close themselves to certain subjects and their results are needlessly worsened.

These are all reasons why the need for individualization of education is in the interest of optimizing the learning process of every student. This means teaching each student to match his/her knowledge achieved so far, skills and learning style. We easily realize that it is not possible to teach every student individually in presentation teaching. In the time of developed e-learning, internet, SW tools and HW technology however, it is no problem to implement such teaching on a computer. In technical terms, the computer is capable of presenting information in many ways, it integrates the actual "counting", working with text, images, sound, video, it can manage everything, record it, maintain statistics and analyze.

There just remains designing a suitable theoretical model of individualized adaptable education and then implement it.

Of course here begins the main problem. Many pedagogues and psychologists have for years been dealing with classification of learning styles of students or a description of education styles of teachers, but their results mostly end with testing proposed types of styles. Many informatics specialists on the other hand have designed and implemented learning management systems that support provision of educational support to the student, they test the student's knowledge, they maintain records, perform statistical analyses, enable communication of all users, etc. Of course they do not know how to teach different students differently based on their personal

needs. This is normally because the authors of these systems are computer science specialists who use available technological capabilities of computers, but do not apply all pedagogical and psychological principles to optimize education.

A wider team of specialists must resolve this interdepartmental problem – pedagogues, psychologists, methodologists, informatics specialists. We have been successful in assembling such a team.

1.1.The target person is the student

We will continue to understand a student as every person who studies something, from a child to secondary schools and universities, adults in life-long education up to University of a Third Age participants. As a student, such is individuality from many aspects. We may distinguish the characteristics of students, relating to study, from various points of view. Students

- have a different degree of talent (type of intelligence) for various fields,
- have different preliminary knowledge of the currently studied subject,
- have varying learning styles,
- have varying types of sensory perception, memory type and level of memory training,
- need differing depth of knowledge, understanding, use and application of attained knowledge,
- prefer varying types of cooperation with the teacher, with classmates,
- have varying motivation levels towards learning, varying family backgrounds, varying habits on when and where to study,
- vary in momentary capacity for concentration, find themselves tired, etc.

1.2.It will not work without a teacher

The ideal experienced teacher understands how to adjust to the individuality of the student, knows his/her constant characteristics, understands his/her current deviations, and adjusts the speed and style of explanation to this, optimizing the educational process.

If the student learns without direct contact with the teacher, he/she ordinarily uses textbooks. It is possible to understand a good text book as another form of a teacher; the author has put into it his/her optimum explanatory approach, content and level of detail of submitted information. We know that classic

textbooks are augmented by the direct explanation of the teacher, whereas the textbook for independent study - self-study, distance – are supposed to replace both the explanation of the new material and communication with the teacher, training material, etc.

It is possible to also study without the textbook (thus without a teacher) for specific material, to search for sources of information in libraries, on the internet, in encyclopaedias. But then neither the period of education nor the result would probably end up being optimal. Students must gain their bearings in the massive amount of information, correctly distinguish necessary information and that of lesser importance for the chosen study objective, and must not get bogged down in unimportant details. They must recognize important parts and find examples of them, and resolve tasks for solidifying knowledge and gaining practical skills. The student him/herself normally cannot handle all of this without at least a basic outline of the subject – syllabus – (brief replacement of the teacher).

1.3.Intelligence of automated education

Teaching using computers has been around for a long time. It is currently called e-learning, and in the most general sense means use of the internet environment along with the learning management system (LMS). Stored in it are partly the educational supports, partly functions for learning management support and finally an information system recording students, their activity and results.

One of the aspects according to which the level of the educational system is judged, is his/her intelligence. By modifying the Turing intelligence test we may define:

An intelligent education programme is such a programme for which the student does not recognize whether he/she is being taught by a live teacher, the student communicates with the teacher by means of the computer and utilizes all advantages of the computer and the internet.

The intelligent programme adjusts to the student in such a way that when the student reacts incorrectly, it answer with a different, slower or more detailed explanation, points out mistakes, adds examples, etc. On the other hand, it offers a talented and motivated student a view of the wider implications of the covered material. It preferentially provides the practitioner with motivating practical examples, and begins to give the theorist an explanation of theory and then moves onto practical application.

2. THEORETICAL MODEL OF ADAPTABLE EDUCATION

From the brief introduction we see that intelligent education software, adjusting to the individual characteristics of the student, must be capable of substituting a good, experienced teacher in maximum measure, i.e.:

- recognize and record personal characteristics and learning style of the student,
- teaching supports must be structured in such a way that it would be possible to manipulate them based on the student's needs,
- teach the student according to his/her learning style in the corresponding form and procedure,
- regularly check correct understanding of all knowledge and test the skills that the students have attained,
- evaluate the long-term results and derive from them consequences for the next teaching method,
- enable various forms of communication of students and tutors,
- maintain necessary records on students, subjects, and teachers.

The first five of these points will be the main object of our interest, whereas the others are normal, routine functions of LMS.

We may display the theoretical model of the intelligent educational system as follows:

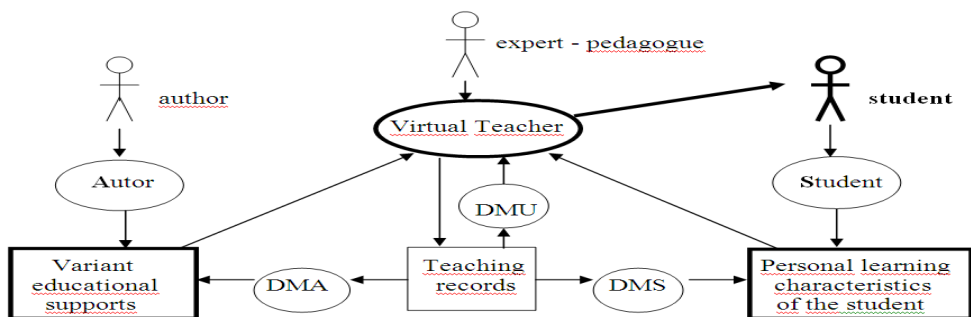


Figure 1. The theoretical model of the intelligent educational system

In the following chapters we will gradually describe the system in greater detail. We will first focus on the student and his learning styles, then at the adaptable structure of educational materials, furthermore on the so-called

virtual teacher, thus a management programme reflecting the individuality of the student and selecting for him/her the optimum learning style. In conclusion we will mention the feedback acquired through analysis of a report with the help of three data-mining modules.

3. THE STUDENT AND HIS/HER LEARNING STYLE

So that the managing educational programme could react to various personality types of students, it must know a number of characteristics of the student and other attributes, which have an influence in the student's learning process. There will be several different types of these characteristics in total in terms of their acquisition.

- we may gain one group of personal characteristics from a student directly with the help of an appropriate questionnaire or test,
- further information on the current knowledge of the student tested prior to commencement of teaching,
- The third group of characteristics is gained by long-term monitoring of student study activities; these characteristics serve as feedback during current teaching, but in the future also to corrections of the entire educational process.

The most important characteristic is the student's learning style. There exists rich, previously mentioned research in this area, and a number of characteristics are described that determine the learning style. We performed a detailed analysis of published classified teaching styles and we selected n-thousand characteristics, which determine the learning style according to various authors.

Our aim is to determine the minimum multiplier of characteristics (determining the learning style) that are mutually independent of each other. For new we have defined after consultation with specialized pedagogues and psychologists the following list of characteristics selected from publications. We will analyze their independence gradually, until a sufficient number of students, methods of statistics and data mining will be tested. We are currently testing, recording and for decision-making of the virtual teacher we are using the following "static", i.e. infrequently changing characteristics:

- type of sensory perception {verbal, visual, auditive, kinaesthetic}
- emotive aspects, level of motivation to study

- social preferences, prefers to study alone – in the pair – in a group
- tactics of learning, including
 - systematic manner, during study the procedure is sequential - random
 - method of compiling information by theoretical deduction - experimentation
 - procedure of compiling information that is detailistic (from below to above from detail to whole) - holistic (from above down from a general overview to details)
 - the concept of depth – strategic – surface study
 - auto-regulation, level of capability to manage alone his/her study

During the course of study a “dynamic” quality is recorded, recording the “level of comprehension” of taught material. Records are kept for each taught subject independently and they are regularly amended according to current regular responsibilities of the student to control questions and assigned tasks.

There exists another theory about types of intelligence; H. Gardner has described nine types. Each field requires a different type of intelligence, and possibly does not require certain others. This information should be recognized in the future, and recorded and accepted during education as well.

Another important factor of the process of education is the initial knowledge of the student necessary for studying new material. For this it is necessary to test the student, and this test is already a part of intelligent educational support.

Finally it is necessary to record the course of study of each student, a record made per subject, chapter, and paragraph – on his/her complete studying, verification of knowledge and quality of result, or on retesting for verifying the resilience of attained knowledge.

All described characteristics are available to the virtual teacher, which selects the optimum educational style of each student according to these characteristics.

4. AUTHOR AND STRUCTURE OF EDUCATIONAL SUPPORT

Source educational material is necessary to manage education. It is not possible to use for intelligent education any chosen textbook or other chosen

source – encyclopaedia, memoirs, and internet. Not even a good distance textbook in the classic sense will suffice.

For the virtual teacher to adjust to varying personalities of students, it must have educational material elaborated by other differing methods – like when an experienced teacher reacts to a differing depth of knowledge, differing talent and approach to study, reactions, habits and other characteristics of the student.

There also exists a series of publications on the teaching styles of teachers. But these mainly deal with classification of types of teachers, classifying how teachers teach from various perspectives. We did not find a consideration formulated to the contrary: how the teacher should teach when dealing with a student of a given type? We asked this question and reached the following thought.

According to pedagogical principles, we divide the educational material into elementary parts containing one integral piece of information. We call this elementary part a **framework**. Now we consider various ways to elaborate the framework.

The basic difference in the form of support will be based on the type of **sensory perception** of the student. Therefore each framework will have sensory **variations**: one with high level of text (for verbal type of students), with many pictures, graphs, tables, animations (for the visual type), spoken words, audio recordings, communications, discussions (for auditive type) and creative tasks, designs, etc. (for kinaesthetic type).

A different division of variations will be based on concepts of students – depth, strategic, superficial or based on level of comprehension. Every teacher knows this: some students need only the standard explanation, others need to be explained the material more slowly, in greater detail, with more examples. And for still others, in an effort to keep them from being bored, it is advantageous on the contrary to make available a greater scope of information, correlations to a different problematic. We distinguish these explanatory variations as the so-called **depth** of explanation. Each of them may be in various sensory variations as mentioned above.

But still a series of other characteristics influence the learning style. It is not possible to propagate more and more variations. But let's consider in what way the explanation for these further characteristics differs.

The theoretically well-prepared study type will prefer the ordinary classic explanation in the order of explanation (theory – exposition – examples) – verification (control questions – assignments). The unmotivated student will

first need motivation to study perhaps for instance by means of motivational practical resolved examples – followed by explanation of the principles of resolution – only then theory – control exercises. The student incapable of self-regulation will need a detailed guide, leadership towards what to study or do first, what next. The holistic student will first need a brief overview of the entire chapter, and only then gradual movement into more detailed information.

Notice that the explanation for all examples of various types of students differs mainly in the **order** of segmented parts of the explanation within each variation. We call these segmented parts **layers** of variations and we then perform an analysis of the types of appearing layers.

The elementary information of the framework corresponds for example to a newly introduced concept, and may contain parts containing motivation for its introduction, definition, explanation of used concepts, fixation of new concepts by giving them context, their application as examples of use, verifying test questions and tasks to be resolved. According to the named parts, we introduced layers entitled Motivational, Theoretical, Semantic, Fixating, Practical, Questioning, Tasking. Aside from this, the text book was to contain organizational pedagogical information; these are in the layer Navigational.

The following image contains the structure of educational frameworks.

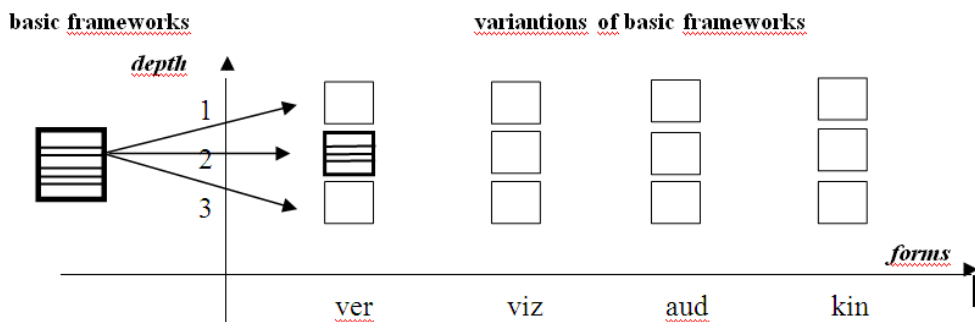


Figure 2. The structure of educational frameworks

The author of support must elaborate all variations of the framework and divide them into layers. It is many times more difficult work than compiling a distance textbook. The author must be experienced and creative, capable of

putting him/herself in the place of various types of students. Of course the sensory variations are only a technological problem, and the good textbook author also uses content of the depth variations, perhaps under another name. There remains division into layers, and this will present no challenge to the experienced author.

Educational supports compiled and structurally imbedded in this way enable flexible changing of the style of education.

5. VIRTUAL TEACHER AND ITS TEACHING STYLE

We have defined sufficient information on today's student and his/her learning style, and we have available educational materials elaborated in the aforementioned styles, formats and level of detail.

Now awaits our most difficult task: to describe rules according to which, in regards to the student's learning style and to the objective of education, a suitable educational style and appropriately elaborated frameworks will be selected. Then, to present these to the student and regularly check his/her proper understanding through questions and assignments. If so, continue, if not, explain the material again in a different way, in greater detail, offer more examples, etc.

Experienced pedagogues or a psychologist take part in formulating rules. Rules are determined for the virtual teacher.

Rules defining the teaching style suitable for a specific student have a basic shape of type

If the student has characteristics $A = a \wedge B = b \dots$,

then use variation $VAR = var$ and order of layers and depth $\{(V1, H1), (V2, H2), \dots\}$

For the characteristics of the student defined above however there would have to be a great many of these rules – for each combination of values of characteristics (a, b, ...). Therefore a database of rules does not contain already “prepared” rules for each type of student, thus for each combination of characteristics, but contain so-called “elementary” rules. These always have on the left side just one or two characteristics. The resulting rule for the specific student is then formed from elementary rules. In the simpler case their unification, for more complex or even conflicting cases a special algorithm has been formulated for compiling the student's learning style.

The basic student education style is applied to each framework or group of frameworks, or dynamically changes based on the reactions of the student.

6. FEEDBACK ON THE PROCESS OF EDUCATION

Initial information on the student gained through a questionnaire or test, need not always be precise. There may be several reasons for this – inaccurately comprehended questions, intentionally and unintentionally incorrect answers, influencing of answers by the momentary mood of the student, etc. It is therefore appropriate to regularly monitor the course of study and reactions of students to questions and regularly assess them.

This feedback of the system has several levels and many utilization methods.

- The lowest level are questions and tasks used during the course of education as a check of comprehension of the studied material and a check of the level of acquired skills. It is a part of the process of education and is used by the virtual teacher to immediate management of education.
- The middle level is formed by automatic adjustment of the “comprehension” of the student, if it repeatedly differs from the set value (or initially unknown) value.
- The highest level is formed by statistical and data-mining processing of the entire report on the course of education of all students. According to material importance it is further broken down as
 - assessment of data on individual students, analysis of the conformity of set characteristics with the course of education, on the basis of results possible adjustment of set characteristics;
 - assessment of data on individual subjects, lessons, frameworks, layers, analysis of peripheral results amongst students (for example always correct or on the contrary always incorrect answers, etc.), for non-standards results notification to authors;
 - assessment of the success rate of given rules for the virtual teacher; in the event of repeatedly unsuccessful rule notification to a pedagogy expert.

This complex feedback enables monitoring of students, educational supports and even expert rules.

CONCLUSION

From the described principles of intelligent teaching it is clear that it is an extensive project requiring cooperation of several types of experts. In this brief overview of the entire system of individualized education, a number of partial and relating problems, both theoretical and practical, have not been mentioned. Some of them are only named in this project, whereas others are being or have already been resolved.

The entire project is supported from European Structural Funds within the framework of the Education for Competition Operational Programme under the title “Adaptive Individualized Education in E-learning“. Thanks to the financial support of this project it was possible to engage in cooperation the mentioned series of experts.

The subsystems Student and Author are currently theoretically resolved on the described level, and the subsystem Virtual Teacher is mostly resolved. Work is being performed in the Virtual Teacher on ambiguous and conflicting situations upon design of the learning style of the student and also on the theoretical model of the protocol and its analysis. Theoretically resolved subsystems have also been implemented. To implement the entire system, the original learning management system (LMS) Barborka was chosen, which has been resolved for a long period and is applied at the project partner school, at VŠB-TU Ostrava [Ostrava Technical University]. Its version Barborka 3 has the mentioned expansion of the subsystems Student and Author and the new subsystem Virtual Teacher, enabling adaptable education.

At the beginning of next year, 2011, its adaptable version will undergo pilot testing on students.

In order to test, it is of course necessary to have educational material elaborated into variations in the described manner. Work is ongoing in parallel on creation of educational materials. The authors are also supported by the aforementioned ESF project. For creation of educational supports, several subjects from various technical fields were chosen: from computer science, a foreign language, a natural science subject, a social science subject and a technical subject. It will thus be possible to test both the aptness of proposed theoretical principles of the structure of educational supports for various types of subjects, and their usefulness for adaptive education.

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DEVELOPMENT OF EDUCATION WITH THE USE OF ICT (INFORMATION AND COMMUNICATION TECHNOLOGIES) IMPLEMENTED IN MODERN FOREIGN LANGUAGE STUDIES

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Abstract

The theme of education recurs as an important strategy for lifelong learning. The article discusses the clear advantages which are gained by those who place the educational offer on the Internet. Nowadays, teachers are expected to understand how to prepare different types of educational materials and the different ways they can be placed on the Internet, as well as applying evaluation systems tailored towards the use of new technologies, which are now included in the range of teacher's duties.

Keywords: lifelong learning, new technologies, creation of educational materials

INTRODUCTION

Modern foreign language courses at academic level take into account the needs of the labour market. In doing so, these courses focus on training not only language specialists but also specialists in cultures and with the skills necessary to be effective teachers or translators, thus employing new technologies.

The methods and techniques of distance learning provide educators with the possibility to design excellent teaching aids, while the Internet provides the young with a greater number of options about which the older generation did not even dream. Although a lot has been written about the advantages of placing courses on the Internet in terms of end users, not much has been said about the advantages it may provide course authors.

1. PREPARING ACADEMIC STAFF FOR CREATION OF EDUCATIONAL MATERIALS

At the University of Silesia (US), there are several hundred of potential course authors who have so far participated in training workshops. Of these, several dozen have been completed training within the Department of Philology. The set of courses is shown in Figure 1:

The screenshot displays the website of the Centrum Kształcenia na Odległość (CKO) at the University of Silesia. The header includes navigation links: 'strona główna | platformy wspomagania nauczania | aktualności | US'. The main content area is titled 'SZKOLENIE Z SYSTEMU MOODLE (spotkanie 6, grupa 4)' and provides details about the training session, including the date (Wednesday, July 7, 2010, 09:00), location (Philology Department, 2.53), and the instructor (Paweł Pawełczyk). A calendar on the left shows the month of September 2010. The right sidebar contains contact information for the CKO, including the address, phone number, and email.

Menu Główne

- Informacje o jednostce
- Aktualności
- Szkolenia i prezentacje platformy MOODLE
- Pracownicy CKO
- Platformy e-learning
- Wydziałowe
- Projektowe
- Szkoleniowo-testowe
- Inne
- Rada Programowa Centrum
- Pomoc dla użytkowników
- Wirtualne klawiatury
- Mapa dojazdu

Aktualności

wrzesień 2010

Pn	Wt	Ś	Cz	Pt	So	N
		1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30			

Szkolenia

SZKOLENIE Z SYSTEMU MOODLE (spotkanie 6, grupa 4)

środa, 07 lipca 2010 09:00 |
 Rodzaj: Szkolenie z obsługi platformy MOODLE - na poziomie roli w systemie:
 Prowadzący: [Paweł Pawełczyk](#)

Główny odbiorca: Studium Praktycznej Nauki Języków Obcych
 Spotkanie nr: 6
 Grupa nr: 4
 Data i godzina: 07.07.2010 r. - godzina 9.00
 Miejsce: Wydział Filologiczny, I piętro, sala 2.53
 Prowadzący kurs: Paweł Pawełczyk

Zapraszamy również pracowników innych jednostek.

Szkolenie zgodnie z regulaminem CKO jest **BEZPŁATNE**.

Więcej artykułów...

- SZKOLENIE Z SYSTEMU MOODLE (spotkanie 5, grupa 4)
- SZKOLENIE Z SYSTEMU MOODLE (spotkanie 4, grupa 4)
- SZKOLENIE Z SYSTEMU MOODLE (spotkanie 3, grupa 4)
- SZKOLENIE Z SYSTEMU MOODLE (spotkanie 2, grupa 4)
- SZKOLENIE Z SYSTEMU MOODLE (spotkanie 1, grupa 4)
- PREZENTACJA SYSTEMU MOODLE - WiNoM
- PREZENTACJA SYSTEMU MOODLE - WiNoZ
- SZKOLENIE Z SYSTEMU MOODLE (spotkanie 7, grupa 3)
- PREZENTACJA SYSTEMU MOODLE - WPIP (po zmianie terminu)
- PREZENTACJA SYSTEMU MOODLE - WPIP
- PREZENTACJA SYSTEMU MOODLE - Instytut Informatyki

Kontakt

Adres:
 Centrum Kształcenia na Odległość
 ul. Będzińska 39 p. 303
 41-200 Sosnowiec

Centrum pracuje od poniedziałku do piątku w godzinach:
 7.30 - 15.30

E-mail:
[mgr Paweł Pawełczyk](#)
[mgr Tomasz Pawlik](#)
[mgr Agata Rembisz](#)

Telefon:
 +48 (32) 368 97 97

Komunikatory:
 gg: 24031621
 skype: cko.us

Szkolenia

- 2010 (25)
- lipiec (2)
- czerwiec (4)
- maj (2)

Figure 1. An example of information on training workshops for academic staff placed on the website of CKO (Distance Learning Centre) at the University of Silesia

The first stage was to acquaint the academic staff with the Moodle platform. One of the positive aspects of this platform is the fact that it allows for the possibility to carry out all the operations without necessarily being familiar with programming web sites. Thus, the members of training workshops very quickly and with great ease designed the content using ready-made and useful materials in document form, such as TXT, DOC, PDF, PPT, audio-multimedia materials as well as animated and video film forms (e.g. MP3, MP4, SWF, FLV, MOV, AVI) and HD materials available in so-called, full-streaming.

Taking into account the range of platform possibilities, as many as six types of different users can use it depending on their abilities and levels of computer literacy. Moreover, the platform includes several modules tailored to ask questions and automatically evaluate the users. Users are assessed as they would be in non-computer based learning, therefore using the same academic grading system. This means that the platform allows for greater control of accessibility as well as offering the opportunity to control and perhaps limit, if need be, the amount of time users have to complete tasks. It also provides the possibility to place not only questions but also answers in random order every time the section is opened. It is worth mentioning that there are several forms of communication – both synchronous and asynchronous. What is more, the system provides course authors with the ability to monitor users' work. Finally, it should be mentioned that the module structure enables the platform to be developed and allows for installing only those elements which were used beforehand. All these advantages have been valued and used significantly. See Figure 2.

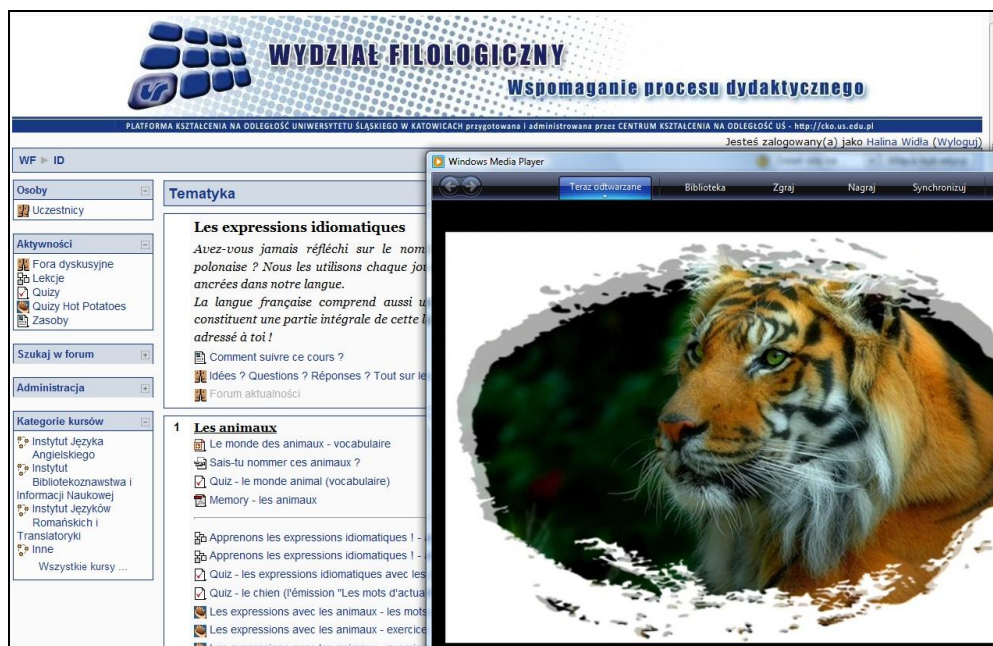


Figure 2. The e-learning platform website of the Faculty of Philology

As e-learning becomes more attractive, the number of computer tools that enable teachers increases to include not only ready made multimedia aids, but now also offers the possibility for the teachers to design new aids by themselves. The applications enabling learners to develop interactive exercises, and in particular, the helpful tools, are unique in creating a learning

process which allows for a 'hands on' approach to processing new information and new abilities.

Implementing these types of activities in the teaching-learning process, in this case FL teaching-learning, is highly advantageous in adapting tailored exercises to meet students' real needs. Moreover, the up-to-date technological solutions enable users to implement special tools both those which are closed in their function (such as special tool programs allowing them to design a range of interactive exercises), and those tools which are integrated with so-called open information systems that the program tools set up. Thus, distance learning platforms can become more and more popular in the FL teaching-learning process. The choice of particular tool may depend on a wide range of factors connected not only with estimating its educational value (such as a type of proposed exercises, the possibility to add different multimedia aids or personalising programmed returnable information, etc.), but also those which decide about the technical value of the tools.

In terms of the latter, researchers believe that parameters such as the level of difficulty, quality and type of implemented document, electronic editors, forms of proposed interactive activities, etc. influence the use of selected tools and their possible implementation into the teaching process (cf. Rougier, 2005, Delaby, 2006).

Another challenge faced by the modern FL teacher is that of working with computer programs which help in translation, e.g. create, edit and use translation glossaries TM (Translation Memory) and TD (Terminology Database). Teachers must be able to use CAT (Computer Aided Translation) tools with ease and understand their new educational abilities, in order to train future translators effectively. Yet, taking into account computer programs, the course must be equipped with materials which aid the teaching process or an offer of courses run entirely on-line. It does not refer to program tutorials but an offer of classes during which users are shown how to use the abovementioned educational aids. As a result, teachers will face new duties, such as preparing laboratory activities, implementing a new subject to the academic curriculum of language faculties at US and running tutorials in computer laboratories.

2. THE RESULTS OF TRAINING WORKSHOPS


2.1 European projects

Preparing academic programs and didactic aids as well as providing academic curriculum utilising methods and distance learning techniques as


part of the UPGOW project has become a catalyst for e-learning development at US. As far as the future plans are concerned, as many as sixty-nine training modules are to be placed on the Moodle platform as part of the UPGOW project for 2008-2013. These courses will aid end-users even after course completion. It is for this reason that the authors of future courses have chosen topics which will only be connected with lectures with reference to the present programs included in the academic curriculum. Only these modules which will obtain a positive opinion, in terms of methodology and information, will be gradually made available to users. It is worth noting that thirty-two lectures were prepared during the first two years of the project. What is more, there are twenty-six that are currently being prepared by academic staff of faculties, such as Mathematics, Physics, Chemistry, Computer Science and Science of Materials, the Faculty of Biology and Environmental Protection, Geology, Social Sciences, Arts, and the School of Practical FL Teaching. Although this form of courses is used by a great number of academic staff, it should be mentioned that as many as 1700 students have logged onto the platform so far. More information is provided in Figure 3.

UPGOW Jesteś zalogowany(a) jako **Halina Widła** (Wyloguj)

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Paweł Pawełczyk	pawel.pawelczyk@us.edu.pl	Sosnowiec	Polska	8 godz. 4 min.	Modyfikuj Usuń

Figure 3. Information about Moodle platform users as part of the UPGOW project

2.2 Multimedia used by translators

The needs of the labour market should be of prime concern within the academic curriculum of the study of modern languages. Specialists of foreign languages and cultures, are expecting to complete their studies and be familiar with the skills, as well as new techniques and tools necessary to enter the labour market at a competitive level. Modern language studies are aimed at increasing the level of advancement amongst academic staff in using new technologies in translation, developing their computer literacy to make materials that are based on new technologies more focused on education. It is of utmost importance that the academic curriculum and programs at the department of foreign languages be modified. What is more, a new course *The computer tools and multimedia in translation* will be enhanced and introduced. See Figure 4.

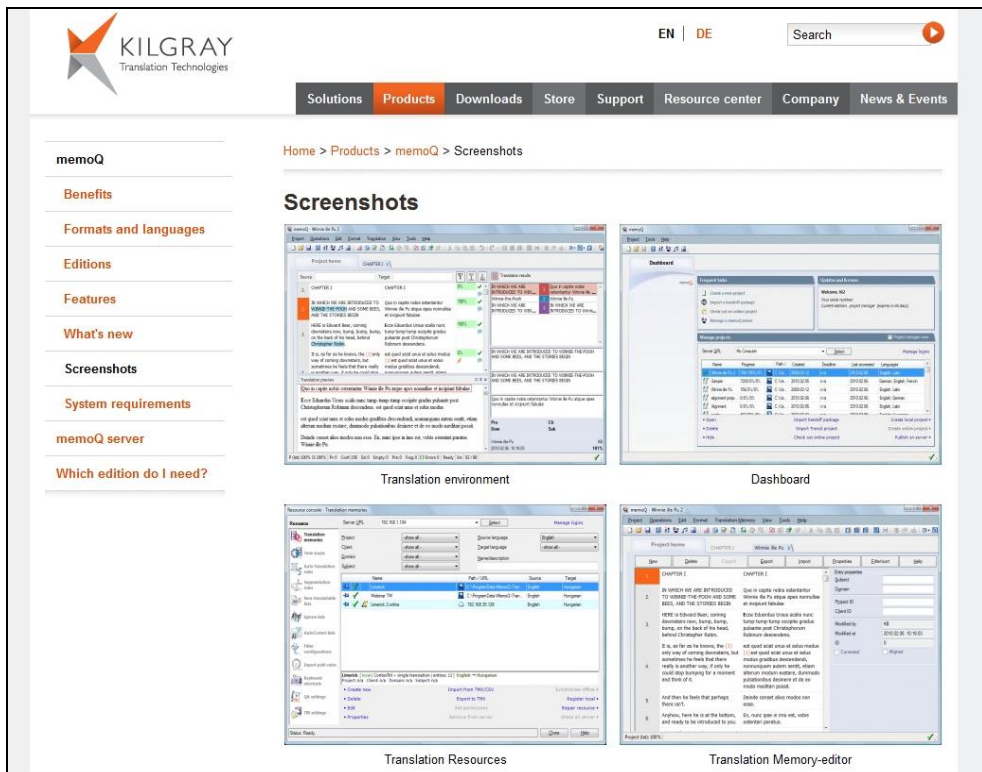


Figure 4. The website of the producer of MemoQ program which supports the translator's work

The Bachelor degree graduates at the Department of Foreign Language Studies are the target group for the project. The new course *The computer tools and multimedia in translation* requires considerable modification in the number of hours it is offered. Ultimately, the course is destined to run for 90 hours, 60 of which will be treated as a training in the computer laboratory and 30 hours as distance learning treated as a part of *Multimedia skills in translation*. This new course will run in the autumn and spring semesters and is to be offered to students who are preparing to obtain an MA degree in foreign language studies. The course aims to provide FL graduates with necessary skills making them more competitive and valuable on the linguistics labour market.

2.3 Multimedia skills for teachers

In terms of FL teaching, there are three significant factors which need to be taken into consideration when choosing computer tools for the production of interactive language exercises:

- The type of language task chosen is able to be programmed using the particular computer tool,
- The specific type, quality and authenticity of the language material is able to be exported,
- The type of feedback report available within the given tool.

The third factor, feedback reports, is perhaps the most important of these from the perspective of the end user as it is a core element in the ‘acquiring/performing of foreign language communication abilities as it is not possible to make any progress without having the faintest idea about the language level we have reached’ (Dakowska, 2001: 37).

These factors may have an impact on not only the choice of computer tools, but also in terms of the pedagogical value of the same informative exercises in the direct way.

2.3.1 Types of language tasks

Taking into account a type of mastered language skills, Mengenot (2002; 2006) suggests dividing the students’ language work utilising computer tool into three main groups:

- a. *exercises* (primarily focused on activities regarding language correctness, which are often based on non-authentic documents)

- b. *closed activities* (which provide the possibility to use language in a communicative manner and therefore used in more authentic situational contexts than the first group of exercises)
- c. *open tasks* (which aim towards the production of real language communication and a diversity of interactions that results from doing a selected and defined task)

According to Mengenot (2002; 2006), *open tasks* are all the more valuable, when they are based on authentic linguistic documents and as well as authentic in terms of society and culture and which require students to call upon a wide spectrum of activities in order to deal with them effectively. These tasks depict complex and problematic situations, relating to students' creativity and enabling them to build really and fruitful communication with the other participants who are involved in the activity. Also, taking into account the limited possibilities of creating dialogue with a computer, *open tasks* can be carried out only with reference to real interaction between each task user (e.g. student vs. student, student vs. teacher), which may take place only if appropriate communicative tools are available (on-line) or with direct involvement (i.e. face-to face contact).

Overall, it seems evident that *open tasks* imply the utilization of productive skills, *closed activities* enable users to develop their receptive skills, while *exercises* make the participants more sensitive or eager to work on individual elements of language subsystems (e.g. phonetics, grammar or semantics). Referring to the main objective of FL studying, which is the ability to use a language in various communicative situations, it is without a doubt that *open tasks* play the most important role in developing students' communicative competence. However, productive abilities are strictly connected with receptive abilities and with a knowledge of the rules of language structure use, which is only possible to acquire by implementing *closed activities* and *exercises*.

Depending on educational needs and goals, the technological solutions available enable teachers to carry out all three types of the language activities. In terms of *exercises* and *closed activities*, teachers have a diverse range of tool programs at their disposal; it should be pointed out that the majority of these programs are available for free on the Internet. Considering the type and number of language tasks proposed, those programs can be grouped as *one-task programs* (enabling users to complete only one type of the task having one or a number of variants) and *multi-task programs* (enabling the users to perform a number of types of the tasks or their sequences that are interlinked thematically or logically) (cf. Półtorak, 2007).

Furthermore, *one-task programs* are the most readily available and utilised, which, in turn, taking into account their character, can be divided into three subgroups:

- *Quests* or *Questions-Réponses* that are the most popular quiz generators which generate exercises (which are also called simple generators of interactive activities).
- The programs that enable to focus on receptive skills such as *ECT* programs (aimed at development of reading comprehension) or *Cantare 2* (intended for developing listening comprehension).
- The programs that give the opportunity to create different types of games and language quizzes such as interactive crosswords (e.g. *Crisscross Words*), puzzles, 'goose game' (e.g. *La Vouivre*) or 'hangman' (e.g. *Le Pendu*), memory games (e.g. *Memolang*), creating interactive stories (e.g. *Q'andary*) and many others.

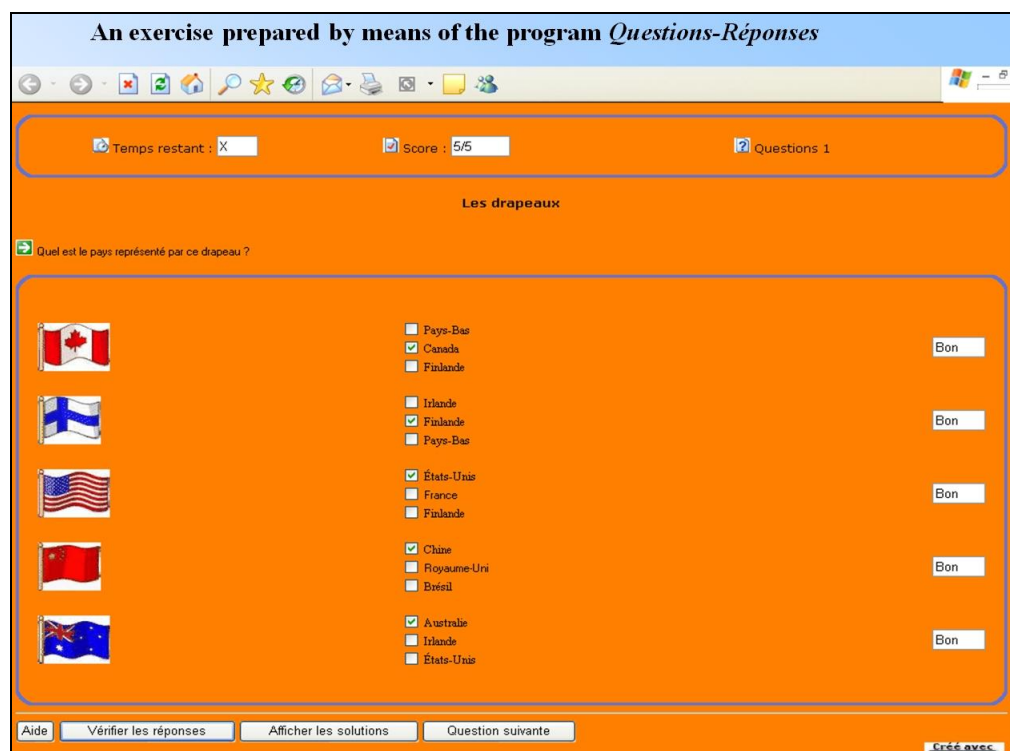


Figure 5. An example of the exercise prepared using the *Questions-Responses* program

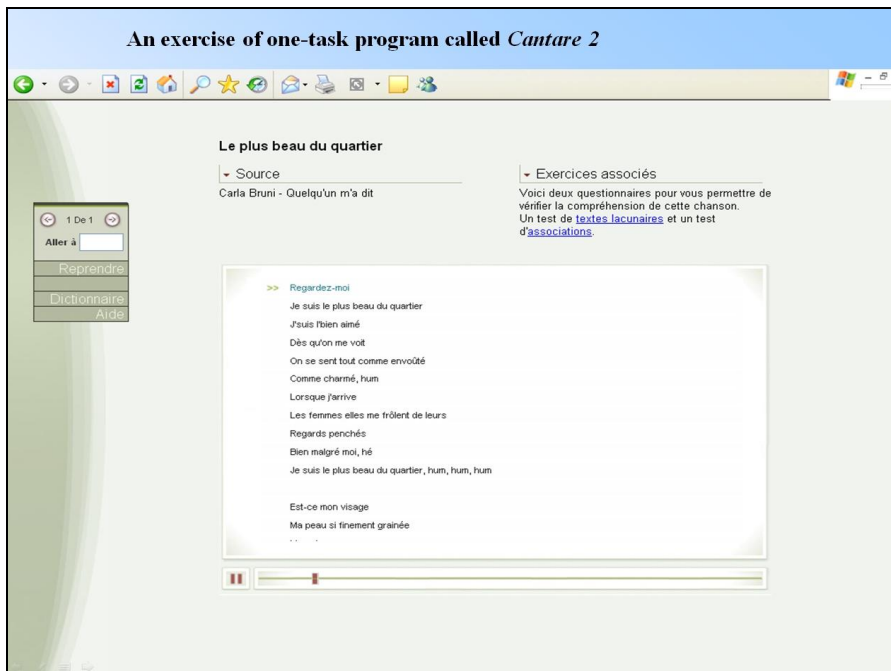


Figure 6. An example of *one-task program* called *Cantare 2*

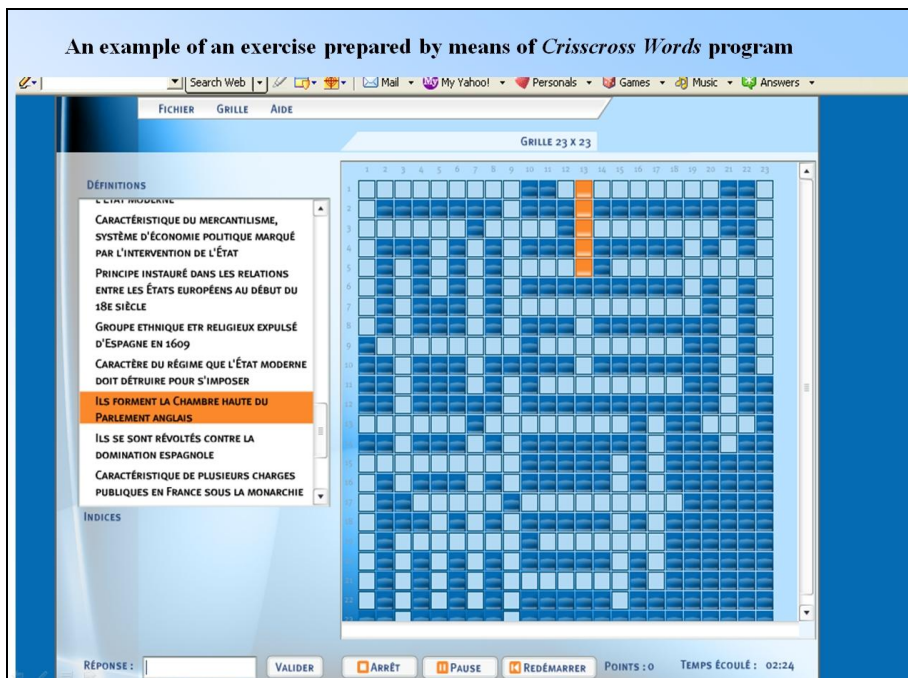


Figure 7. An example of an exercise prepared by means of *Crisscross Words* program

In terms of *multi-task tool programs*, *Hot potatoes*, *Netquiz Pro* or *Quiz Faber* are the most popular since they enable the students to do language exercises including different types of quizzes, crosswords, exercises with empty gaps, sentence or word puzzles, matching pairs, dictating and so on. Because of special technological solutions of these programs (e.g. the other possibilities to add different types of multimedia files) as well as their non-linear characteristics (opportunity to add different hyperlinks with internal and external resources), they are designed to prepare both exercises aimed at practising various language subsystems and developing receptive abilities. (As the amount of information must be limited in this article, more details about *one-task* and *multi-task tool programs* can be found in Póltorak 2008).

Due to the open characteristics and the opportunity to provide real interactions between the participants of the educational process, the distance learning platforms, such as Moodle, allow teachers able to prepare not only single tasks, which are open or closed, but also whole classes, thematic modules, training workshops or courses. It is worth underlying that the tools for synchronous and asynchronous communication (e.g. forums, chats, emails, etc.) substantially enhance the repertoire of the types of communication between participants during completing the selected task as well as making it more real and authentic.

The most popular types of *open tasks*, such as various language projects of webquests, which are placed on the distance learning platform in our Institute (the Institute of Romance Languages and Translation Studies), are carried out during graduate seminars on FL methodology of the practices and procedures used in the process of teaching French as a second language.

2.3.2 Language material

In terms of independent learning, interactive activities require the teacher to have clear objectives before students are able to work independently. On the other hand, teachers should choose language material that is expected to be included in the prepared exercise which will form the core of students' language work.

Having analysed the problem of the characteristics of a language that is the main issue of the language teaching-learning process, Coste (1981) distinguishes four fundamental notions which are closely connected such as:

- A real language that is used (*langue usitée*) depicting a real use of the language by native speakers;

- A described language (*langue décrite*) which is connected with a wide range of diversified analysis, theories or linguistic models;
- A language that is taught (*langue enseignée*) which, based on the academic program, is selected by the teachers or authors of academic textbooks;
- A language that is acquired (*langue apprise*) which is a real effect of the educational process.

Relations between the separate categories may be highly differentiated depending on educational goals, teaching methods, didactic aids implemented in the teaching-learning process, and so on. The ideal situation arises when a language that is acquired is as closely similar to a native speaker's language as possible. For this purpose, the teaching material (*langue enseignée*), which was recommended by the supporters of communicative approach, should be rich, diversified, authentic, depicting real situations of language use, etc. (cf. Germain, 1993).

Continuing the issue of the tool programs that support users while preparing different language tasks, the question arises concerning possibilities and limitations of using those programs. To a certain degree the choice of language material is directly determined by the type of tool program and the language task itself. Generally, simple generators of language exercises or programs designed to create language games have a limited number of options. They are confined to real language content, the selected thematic groups or grammar structures, which make simple generators rather elementary and depicting real language communication. In the area of tool programs used to create closed or open language tasks, the problem is perceived in a different way. Owing to the fact that they have a non-linear structure, these tools enable users to implement diversified and authentic language material; the diversification of which depends on clear educational aims.

It is worth turning our attention to another crucial aspect connected with the specificity of the FL teaching-learning processes. In this case natural language is the main subject that is able to depict the real world in a limited or poor way. Natural language, in comparison to computer tasks, must be subordinated to the rules of artificial languages, such as programming languages. It is especially noticeable in the case of tool programs which are less advanced technologically. Furthermore, the programming languages used and the algorithm sequences implemented give the authors of proposed interactive exercises little room in which to manoeuvre.

2.3.3 Online FL courses

In terms of using distance learning platforms, and in particular, the variety of potential forms and methods of work, the student's feedback may also be just as diverse. First of all, depending on the needs and types of tasks, the teacher is able to decide which type of feedback is available by the students when they complete their tasks. Furthermore, the teacher is able to choose the type of feedback which is not only of informative value for the students, but also of supportive value when the students carry out the selected tasks in stages. In this case, the help which is offered to the students may emerge in a wide range of forms (from extra didactic materials that are useful in order to understand a task, via (on-line) links to dictionaries, lexicons, encyclopedias, or different types of documents and information, which may be helpful in dealing with an exercise, etc.) as well as exercises at different levels. Secondly, since synchronous and asynchronous communication tools are available, the proposed feedback can appear not only in a form of communiqués generated automatically by the system after the student's answer (in the case of the tool programs, this works similarly). Additionally, feedback may emerge in the form of more reactive information, place in the present time or later, directed to the whole group or individual students.

Undoubtedly, a good point of this form of feedback is its individual character and adjustment to real problems in specific types of tasks which the students face. Moreover, the in-built tool programs make it possible to control the student's advancement. Then, distance learning platforms and some of the tool programs provide teachers with a variety of methods of feedback that refer to the individual stages of the task performed by the students, the frequency of using additional materials, preferred types of chosen aids, etc. These pieces of information can be of practical help in adjusting the prepared tasks to the student's individual needs (in order to find more detailed discussion about feedback which is acquired using the electronic system cf. Póltorak, 2009). Therefore, courses placed on distance learning platforms can be highly effective. This type of online FL courses has been run at the University of Silesia. The Italian on-line course for all students at the university is one of the most interesting examples. Within the framework of this course, a group of students is taught by our academic specialists to reach A2/B1 level; they are then offered further learning on the distance learning platform by Italian academic teachers from the University in Napoli. Consider Figure 8:



Figure 8. The Moodle platform of the University of Napoli

3. ASSESSMENT

3.1 The character of feedback

In terms of feedback, there is a distinction between *objective* and *subjective feedback*. In the area of information, i.e. electronic feedback, which is obtained by the students and teachers, is treated as pieces of information based on facts concerning the student's progress in the learning process. On the other hand, information that is based on the individual participant's opinion on the course and the teacher's work is more subjective.

3.1.1 Electronic feedback

As far as professional literature is concerned, there are three basic types of electronic feedback which are directly connected with the evolution of the concept of the learning process:

- *Feedback-as-reinforcement* which is the result of the behaviourist approach to learning that should lead to enhancing the student's production of the correct answer; according to the authors of this concept, this should provide the student with significant enhancement and repetition during subsequent attempts (cf. Kulhavy, 1977);

- *Feedback-as-information* which is connected with the cognitive concept of the learning process, according to which feedback is treated as a special type of help that enables the students to organise or modify their knowledge by means of information provided, for instance about, their mistakes as quickly as possible after placing their answers, or about the essence of their mistakes; at the same time the students follow the explanations as to how to correct their inaccurate answers and adjust them to their individual abilities and their level of advancement; and inaccurate answers are not underlined in any special way (cf. Jaskuła, 1995: 46);
- Finally, in accordance with structural theory, in terms of feedback, the main emphasis is put on supporting students in the process of broadening knowledge and improving existing knowledge. Feedback that the student receives is exported so as to give ready solutions and relevant data enabling the students to understand any problems that are presented as well as look for their solutions (cf. Mory, 2004).

It is worth mentioning that the feedback that a student may acquire in dealing with interactive language tasks may be perceived as double natured: feedback may be generated automatically by means of comments received from the data provided by the authors of the selected tool program or information collected and directly delivered to the system by the teacher. All in all, it should be noted that the majority of tool programs are designed so that the teacher can use their ready-made or self-programmed feedback that should be of an informative and diversified nature, which is immediately displayed as comments to the student's answer.

These comments may supply the students with correctness of the chosen answer as well as include an extra piece of information provided to explain the accuracy or inaccuracy of answer using grammar rules. Only in some cases the authors of the tool programs refer to feedback based on behavioural concepts; it is, however, a rare practice in the newest tool programs. Despite the fact that tool programs have limited technical solutions and they do not offer any structural feedback, some of them (e.g. *Net Quiz Pro* or *Ordidac*) are very useful in providing excellent opportunities for implementing different types of 'help', 'hints', 'references', etc., which the students may choose to use to successfully complete tasks.

3.1.2 Participants' feedback

Apart from electronic feedback, the participant's subjective feedback based on the completed questionnaire is of high importance. This is why the

process of preparing sets of modules for courses, the teachers, academic staff, should take into account aesthetics so that courses on the Moodle platform can be a source of creative inspiration to the students who may be looking to go into teaching profession.

For instance, the two-year pedagogical course (cf. Figure 9) is a good example of raising and developing the participants' FL teaching qualifications and broadening their knowledge with particular care.

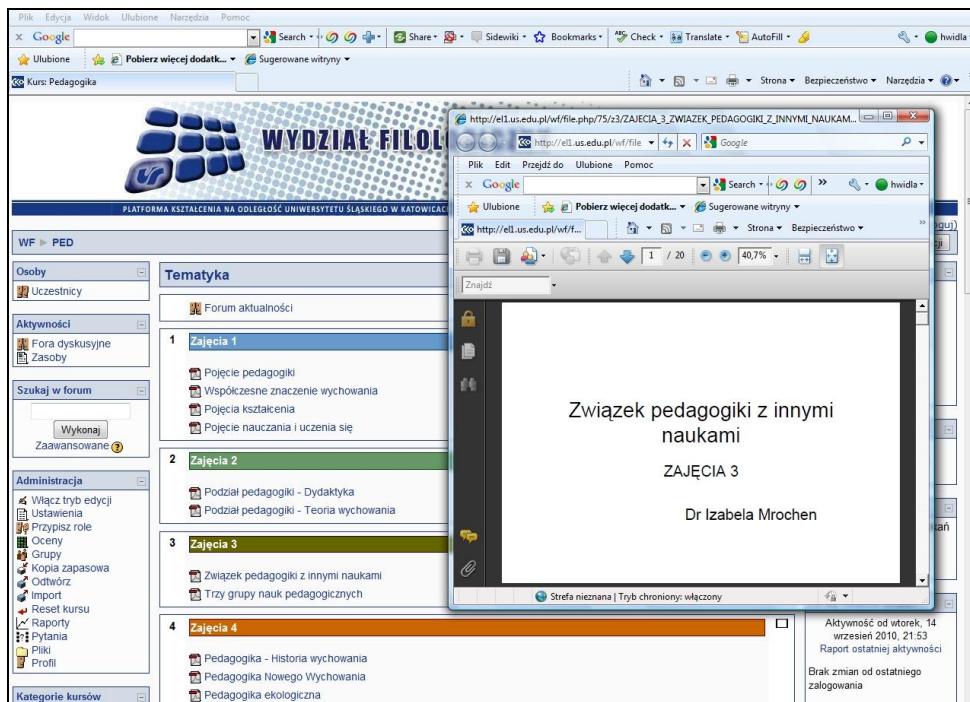


Figure 9. The modules of the pedagogical course on the Moodle platform

3.1.2.1 Description and goals

The course is aimed towards university students of the Department of Foreign Languages (e.g. the Institute of Romance Languages and Translation Studies, the Institute of English, etc.), - those who are graduates with Bachelor degrees as well as Masters graduates, or even post-graduate students, who wish to teach foreign languages. As the group of students is diversified, the classes during the first year are conducted in Polish. Then methodology and didactics of FL teaching classes are taught in smaller groups to enable the participants to use the languages and therefore learn more effectively.

Acquired competence is expected to be consolidated and used in a number of practical strategies/techniques implemented during their practicum lessons at different types of schools.

The subject matter of the course centres around topics connected with future activities and problems emerging during the FL teaching process as well as broadening their knowledge and exploring new cultures (cf. Figure 10). All in all, the participants are expected to acquire and complete their knowledge to make the appropriate teaching decisions regarding their future classroom activities to benefit the language development of language learners.

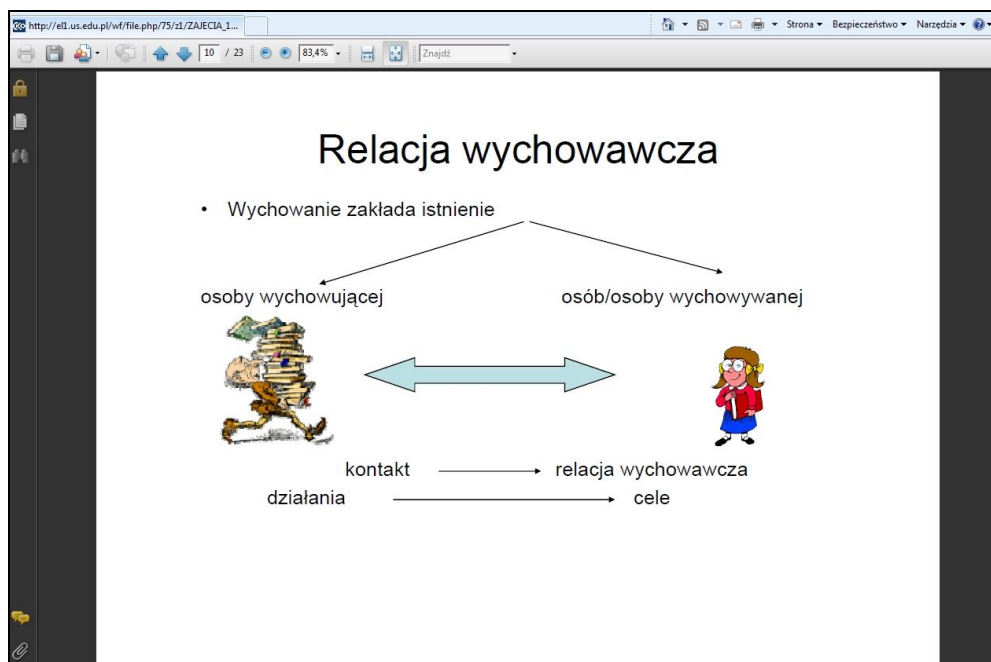


Figure 10. An example of a Powerpoint presentation within the framework of pedagogy classes – one of 18 modules

The course is designed in order to offer 75 hours of psychology, 75 hours of pedagogy, 150 hours of FL didactics, 30 hours of voice emission, 15 hours of educational law and occupational health and safety, 15 hours of new technologies in FL teaching, and 150 hours of pedagogical training at school. The first two semesters concentrate on theoretical aspects of pedagogy, psychology and didactics, which is the initial stage of solving problems that may appear in the classroom. These include issues regarding discipline, motivation, classroom management, gradual emergence of verbal

communication, primary and secondary conditions for FL learning, receptive and productive skills, etc.

The authors/academic staff of US use the features of Moodle very effectively as they prepare a wide spectrum of popular software at work, for instance, Powerpoint presentations to make lectures more effective. Furthermore, the course is made up of modules (cf. Figure 9) which are created using the Moodle platform.

The authors use flexibility of the Moodle platform, such as combining text, short videos found on YouTube (cf. Figure 11), interesting links to other websites containing more study materials (language games, lesson projects, diagrams, etc.), pdf documents, etc. so as not to limit their own creativity and provide interesting solutions.



Figure 11. An example of a YouTube video presentation on English diphthongs¹ added as an interesting didactic aid.

¹ <http://www.youtube.com/watch?v=M2CrPFycyug&feature=related>

According to Dakowska (2005, P. 216) the use of recordings provided, in our case in the modules, should be strongly recommended as an obligatory part of a FL learning.

It should be emphasized that quality teaching must involve presenting didactic aids illustrating the real use of the FL.

3.1.2.2 The evaluation of the courses by the target users

Taking into account the strategies and techniques implemented in the pedagogical course, we shall present the pedagogical course participant's opinion on e-learning quality and usefulness (see Appendix A). With regard to the course participant's subjective opinion on the effectiveness of e-learning, the results are presented in Figure 12.

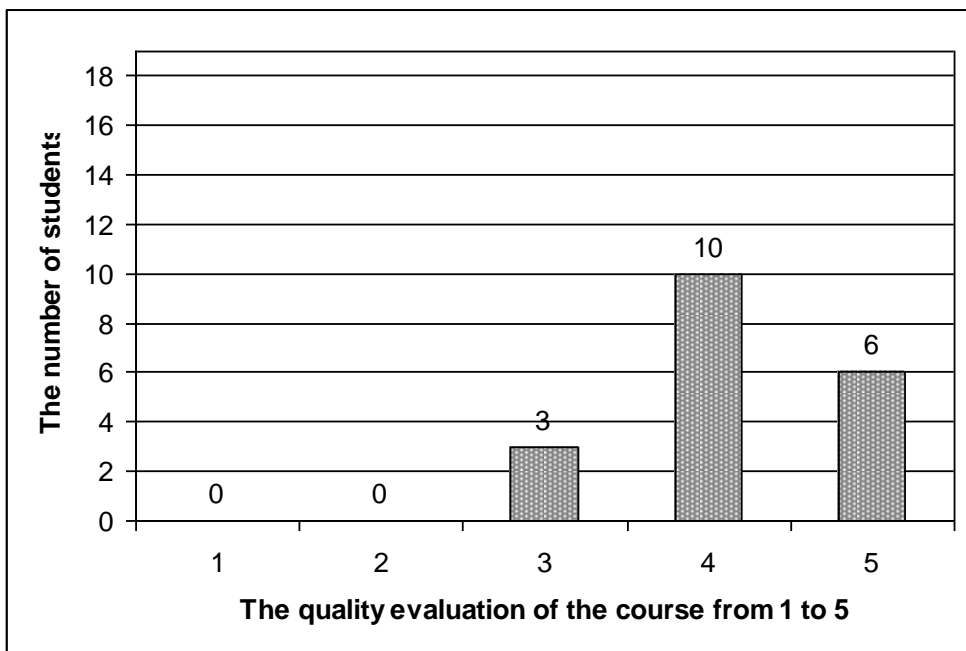


Figure 12. The results of the pedagogical course participants' opinion on the quality and usefulness of the Moodle platform as a course support

This follows from the results of a questionnaire survey showing that a large portion of the respondents are satisfied with the course (see Appendix B and C). More detailed qualitative questions and answers are displayed in Table 1.

Table 1.

The course participants' answers to the questions included in the questionnaire

Questions presented course participants	I fully agree	I partially agree	I partially disagree	I fully disagree
	Number of course participants	Number of course participants	Number of course participants	Number of course participants
Do you agree that the course venue was well-prepared?	10	9	0	0
Do you agree that the course length was satisfying?	13	7	0	0
Do you agree that the course content lives up to your expectations?	11	8	0	0
Do you agree that the academic teachers were well-prepared?	12	6	0	0
Do you agree that the lectures were easy to understand?	10	9	0	0
Do you agree that the course overall fulfill your expectations?	7	10	2	0
Do you agree that the skills and knowledge acquired during the course will be useful in your future teaching?	7	9	3	0
Would you recommend this course to others?	6	13	0	0
Overall, do you agree that you are satisfied with the course?	5	13	1	0

Analysing the results presented in Table 1, the majority of course participants are satisfied after the first year of the course. The questionnaire was conducted in June 2010 and 19 students answered the questionnaire. The first part of the table displaying the course-satisfaction, most of them (13 out of

19) believe that duration of the course is acceptable, 12 claim that the academic teachers were well-prepared, 10 students are satisfied both with the venue and the comprehensive way of presenting pedagogical and psychological issues. In terms of the second section of the table in which the students express their opinion, it is worth noticing that 10 of them claim that the course fulfilled their expectations. Furthermore, 13 of the participants are willing to recommend the course. Only 5 students were not completely satisfied.

4. CONCLUSIONS

The enormous practical advantage of e-learning is that teachers are provided with the opportunities to use new technologies which can be implemented in education - both teaching (providing the users with knowledge about preparing various educational aids and the different methods of placing them on the Internet) as well as evaluation (which is gained through providing users with a range of possibilities of checking and evaluating student's work as well as self-evaluation).

Furthermore, dealing with these tasks, at each stage of programming exercises and activities, commands or evaluative systems, users discover the complexity of mental operations in the subsequent phases of FL acquisition.

What is important here is the fact that in the framework of tool programs and their limited characteristics, generating them with feedback is reactionary to the student's answers. Firstly, it means that the teacher cannot support and check the student's work all the time (immediately) after students having provided the answers. Secondly, the students can gain the information only to the answers which are predicted by the teacher in advance. However, it is possible that the feedback information received does not correspond to the answer (this is particularly pertinent in the case of inaccurate answers). That is why the teacher is expected to do extra preparation, in order to deal with this type of feedback more effectively. The teacher's work is based on a detailed analysis resulting in the ability to foresee eventual problems that may emerge during the language tasks.

One of the factors which should further encourage all those who are responsible for e-learning to undertake a wider spectrum of exciting new challenges is the very fact that in June 2010, the University of Silesia was awarded for 'modern educational techniques' as part of the competition for the 'Most Innovative and Creative University in Poland'.

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APPENDIX A

QUESTIONNAIRE – illustration of the question format

QUESTIONNAIRE

Academic year 2009/2010 (July 2010)

This questionnaire is constructed to collect the opinions of the participants of pedagogical course

regarding the implementation of multimedia technologies in the FL teaching-learning process.

Survey participants remain anonymous.

1. I am a female/male student at the Faculty of

.....

2. The year of study....

.....

3. How high or how low (with 1 being the lowest and 5 the highest) do you assess the suitability of the teaching methods supported by the *Moodle* platform in teaching FL classes:

1	2	3	4	5
---	---	---	---	---

4. Rate, from 1 to 5, the usefulness of information broadening your knowledge in pedagogy:

1	2	3	4	5
---	---	---	---	---

4. Indicate to what extent you agree or disagree with each of the following questions:

	I fully agree	I partially agree	I partially disagree	I fully disagree
Do you agree that the course venue was well-prepared?				
Do you agree that the course length was satisfying?				
Do you agree that the course content lives up to your expectations?				
Do you agree that the academic teachers were well-prepared?				
Do you agree that the lectures were easy to understand?				
Do you agree that the course overall fulfill your expectations?				
Do you agree that the skills and knowledge acquired during the course will be useful in your future teaching?				
Would you recommend this course to others?				

5. Your general opinion:

Overall, do you agree that you are satisfied with the course?	I fully agree	I partially agree	I partially disagree	I fully disagree
---	---------------	-------------------	----------------------	------------------

6. Indicate what you would like to change to improve the quality of the course:

.....

.....

.....

.....

.....

7. Space for comments: if you have any ideas how to make the course more attractive and satisfying, please elicit your comments:

.....

.....

.....

.....

.....

Thank you for completing this survey!!

APPENDIX B

An example of the course participant's opinions on pedagogical course

ANKIETA EWALUACYJNA**rok akademicki 2009/2010 (lipiec 2010)***Ankieta służy zebraniu opinii uczestników kursu pedagogicznego na temat wykorzystania technologii**multimedialnej w prowadzeniu zajęć dydaktycznych**Wypowiedź jest anonimowa.*

1. Jestem studentem/studentką na specjalności filologii angielskiej (specjalizacja w tłumaczeniu)
2. Rok studiów trzeci (rok akademicki 2009/2010)
3. Proszę określić w skali od 1-5 przydatność poznanych metod kształcenia w oparciu o platformę Moodle w prowadzeniu zajęć dydaktycznych:

1	2	3	4	5
---	---	---	---	---

4. Oceń w skali od 1-5 czy na zajęciach zostały przekazane wiadomości poszerzające Twoją wiedzę w zakresie pedagogiki:

1	2	3	4	5
---	---	---	---	---

5. Proszę zaznaczyć odpowiednie pole:

	Zdecydowanie tak	Raczej tak	Raczej nie	Zdecydowanie nie
Czy miejsce prowadzenia kursu było dobrze przygotowane?	X			
Czy wymiar czasowy kursu był wystarczający?	X			
Czy treść kursu odpowiadała jego tematowi?	X			
Czy wykładowcy byli dobrze przygotowani?	X			
Czy treść wykładów była przekazywana w sposób zrozumiały i przystępny?		X		
Czy kurs spełnił Twoje oczekiwania?	X			

Czy nabyte umiejętności i wiedza będą przydatne w Twojej pracy zawodowej?		X		
Czy polecilibyś ten kurs innym?		X		

6. Ocena ogólna:

Czy ogólnie rzecz biorąc jesteś zadowolony z kursu?	Zdecydowanie tak	Raczej tak X	Raczej nie	Zdecydowanie nie
---	------------------	-----------------	------------	------------------

7. Określ, co Twoim zdaniem było słabą stroną zajęć

.....

.....

.....

8. Jeżeli masz jakieś sugestie, które pomogłyby udoskonalić zajęcia, prosimy o ich wymienienie:

.....

.....

.....

Dziękujemy serdecznie za wypełnienie ankiety!

SPOT-THE-DIFFERENCE – TRADITIONAL EDUCATION VS. E-EDUCATION

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Abstract: *In the article two modes of education have been compared: the traditional mode as opposed to asynchronous distance mode using the Internet. Five fundamental differences have been indicated and their influence on course designing has been discussed: the paradigm of the unity of place and time, the way of communicating – the Internet enforces the use of text as the basic form of communication; the internal structure of classes – traditional courses have the same form while Internet classes can have many different forms; the learner – in distance education, the learner does not appear as a physical individual; the teacher – the on-line model changes both the figures and the role of the teacher.*

Keywords: e-learning, instructional design.

INTRODUCTION

E-learning: teaching with the use of a computer connected to the Internet is one of the forms of education known for a few dozens of years – PLATO III system classes started in 1967 at the University of Illinois can be recognized as the first on-line lessons, see (PLATO, 2010).

This form of education is a successor of distance learning making use of traditional postal services and broadcasting media (radio and television). While distance learning is over 200 years old (shorthand courses via correspondence announced in “The Boston Gazette” in 1728 can be recognized as the beginning), the quality of such learning in comparison with the traditional face-to-face teaching is still discussed. This is the standard to which all other forms of teaching are compared. It was justified to discuss the quality of distance education in the times before the Internet. Practically

impossible interaction with the teacher and no contact with other students of the same course caused that the distance education was in fact self-education, and this form of gaining education has always been considered inferior (what is not contradicted by the cases of genius autodidacts).

The application of the Internet in distance education has totally changed its nature. There are still no face-to-face meetings (except for so called blended learning: form of teaching using both, the Internet and direct meetings), but this does not mean that there is no contact between the students and the teacher. In fact, in case of e-learning, the student-teacher interaction is even more frequent and direct than in traditional teaching. Course participants can co-operate and discuss in spite of the fact that they may never meet face to face. However, such contacts are very much widespread outside of educational area, what proves that they are fully acceptable and even desirable. So the Internet has brought distance education in the form of e-learning closer to traditional, what has been confirmed by researches of quality and effectiveness of this form of education.

Why then should we again look for differences between traditional education and e-learning? In this paper, the reason for indicating the differences between the two is the systematic approach to course designing. The use of the state-of-the-art communication technology forces changes at practically every stage of the course designing process, from their structure through the composition of materials and conducting the course to the certification of the participants. Conducting of a distance course must be obviously different from common lessons in a class, since they take place neither in one room nor in one time. How to conduct such classes, was the topic of many studies (e.g. (Salmon, 2004)). Also much has been said about learning at an Internet course (e.g. Clarke, 2008)). In both cases it is not possible to repeat actions and measures as in traditional teaching and learning. It seems obvious that designing and preparing of an e-course is also different than traditional. However, in spite of extensive literature of instructional design, e.g. (Clark & Mayer, 2008), (Dron, 2007), still the basic form of designing of an Internet course is to transfer a traditional course to the Internet. It is usually achieved by the means of posting into an e-education platform some text files containing (extended) notes to the lecture, and building few quizzes. Quite often this is not preceded by the necessary didactic considerations.

An Internet course must be treated as another form of classes. As workshops, seminars and lectures are each planned in a different way, so Internet classes must be planned in a distinct manner. In this paper, the most important differences between traditional and on-line classes are highlighted, what

fundamentally influences the manner of preparing. In Chapter 1 the basic system differences resulting from technological limits and conditions are discussed, while Chapters 2-6 deal with other differences resulting from the distinction of the distance form of teaching.

1. DESIGNING OF INTERNET DISTANCE COURSES

E-courses must not be thought of as a traditional lessons, i.e. in the terms of what is supposed to happen at a defined place and time. To the contrary, an Internet course is pre-determined by the applied media and technology, and by participants' experiences stimulated by them (Horton, 2006). Designing of classroom lessons is based on programming the teacher's actions. Students activities result from the teachers' actions, but they derive from what the teacher does and to what he encourages. There is no point of discussing teacher's actions and measures in relation to an Internet course. Moreover, teacher's actions are not directly observed by the students. The way how the students present the results of their activities and work, or even subsequent actions leading to carrying out the assignments must be planned beforehand. One may suppose that an Internet course consists only of homework similar to those given at school. The difference however is much bigger (see Chapter 6): there is no other work. So it is necessary to plan appropriate methods of conveying how the student works, not only what he has produced.

Designing of an Internet course has also one more important feature: an e-course must be planned comprehensively to a far higher degree than in a traditional one. An implementation of a project of on-line classes on an e-learning platform (or in any other way: the following remarks relate to any technology used in education) needs relevant time. Even the simplest text files require proper technical editing and graphical design, and must be converted to the format most suitable for the intended goals of presenting this text. Also pictures, illustrations and multimedia files have to be properly processed: production of an audio or video record (of proper quality) according to the screenplay included in the project is a time-consuming process (and also needs other outlays, but in this case we draw attention only to the time necessary to prepare the physical form of the course). Production of a simulation, an interactive animation or an educational game may last even longer. So all the materials must be prepared and embedded into the e-learning platform before the commencement of the course. Hence a project of such course must come into being as a whole – to the tiniest detail – even earlier. Of course, it should be so also in case of classroom lessons; it would also be very good if such project came into being before the classes start. But

it needs not be so detailed as in case of Internet classes. Classroom lessons are characterized by certain dynamics, which makes it impossible to plan everything very precisely in advance. If, e.g. a teacher does not cover all assumed topics and so the students do not reach the goals foreseen in the syllabus, then a part of the next lesson must be assigned for completing the previous, and this requires a new lesson synopsis. It seems appropriate to design traditional classes in two stages. The first is the distribution of the material — the division of the planned content to the class hours. This of course requires a strategic plan of teaching all topics. The second stage is to plan subsequent lessons. This stage, contrary to the first one, which should take place before the commencement of the course, may be carried out before each lesson and relate only to one or two nearest meetings. Such way of planning classes has one big advantage: in the plan for the next lesson it is possible to implement the conclusions from the previous ones. Then the plan is more elastic and can be adjusted to learners' expectations and level. Unfortunately, such way of planning on-line courses is impossible due to technical reasons already discussed. In special cases it is possible to prepare subsequent modules just before placing them on the platform, but for a price: it is impossible to make full use of the available technology, as such courses would have to be based on the simplest solutions allowing to prepare materials on time, and so they would be limited and unattractive, and thus discouraging the participants.

2. DIFFERENCE No. 1: ORGANIZATION

Traditional classes have only one type of organization: it is the meeting of the teacher with the students. Regardless from its internal organizational form — a lecture, seminar or workshops, the class starts when all the participants gather (more precisely: the teacher and enough students to begin), and ends in a pre-defined time. The teacher plays the leading role, he initiates the students' actions and organizes all activities (also those, which consist in giving the initiative to the students).

Internet courses may be organized in very many different ways. The organizational scheme depends of three attributes: rules of communication, access to materials and relation of the classroom courses to on-line ones (Rudak & Sidor, 2010). It is possible to differentiate three basic models of courses, which structures cannot be presented in one schema.

An Internet course in the form of *self-teaching classes* is practically the set of materials divided by tests to check the level of acquired knowledge and skill.

It is pre-assumed that the student is left to his or her own resources and the presented material, and he has no contact whatsoever with the teacher or other learners.

Classes in the form of a *blended course* can take place in two modes. Some of them are organized on line, like for example on an e-learning platform, and some in the traditional form of direct meetings. The form of such course depends on the relation of the hours of classroom lessons to Internet lessons, and from their placement (usually in terms of time) within the course. Obviously these are classes with a teacher, who must lead the classroom part.

A model of the *on-line course* (with a teacher) has only Internet classes, but with the simultaneous participation of the teacher. He can play various roles, but his presence allows many actions bringing a distance course closer to traditional. The teacher may participate in discussions, give instructions, check and comment on open problems and students' works, organize students' activities, motivate them to work etc.

To establish the organizational framework of an e-course should be the first designer's decision, assuming that the substantive content, educational goals and target group are beyond his authority and have been defined earlier. This decision has a key meaning for the whole project, since it immediately determines certain general shape of classes and limits the number of available means for the sake of achieving the goal. Indication or elimination of course elements on the ground of this decision is meaningful at every level, from strategic, concerning the course as a whole, to the lowest, concerning concrete teaching methods. For example, a decision of a course in the form of a self-teaching classes makes designing easier from one side: there are no discussions or group work, so there is no need to design discussion fora or their leads. On the other hand it tremendously limits the possibility of checking learner's knowledge; in practice, only test are left (while in various forms, but they are still closed assignments).

Such an important decision must be taken on strong premises. The fundamental one is the possibility of implementing the course in a determined mode. There exist certain topics or subjects within these topics, which are impossible to be taught remotely, and this impossibility is an immanent part of the content to be taught. In (Bednarczyk & Rudak, 2009) features of university subjects are given allowing to differentiate such topics, which cannot be taught over Internet, and methods of identifying them. The use of the given rules allows to accept or reject certain models of courses immediately. For example, if some subjects cannot be taught over Internet,

then to accomplish the whole course, it is necessary to have traditional classes, so a blended mode course must be selected.

A theoretical possibility of teaching planned contents, i.e. the implementation of didactic goals, is not the only premise of selecting a determined form of Internet classes. An important factor is also the general didactic goal, which sets the course purpose. For example, if the planned course is supposed to be in the form of instructions available at any moment when a need to instruct one or many people arises, then it might or rather should be designed as a self-teaching classes. Teacher's direct participation is not necessary. Also communicating with other users is redundant; additionally, due to the nature of making the course available to the students, no other participants are possible. An example of so designed and prepared course is the Library Training made available for the University of Warsaw students.

When analyzing the general didactic goal, the course purpose must be taken into account, the planned way of making it available and the target group. If the course is supposed to be a training or instructing, then a self-teaching classes is a good choice, while university classes and teaching of basic knowledge need a work with a teacher. If an e-course is supposed to have editions distinctly differentiated in time for a strictly defined group of participants, then it is practical to have a teacher, while continuous access (accomplishing the "Just in Time" principle allowing to commence the course at any moment) requires a self-teaching course, as the organization of teacher's work would be both, very difficult and very expensive. Courses assigned for novices in a particular field need a work with a teacher more, than addressed for advanced people, since specialists do not need teacher's help to broaden their knowledge, if they have proper materials and general instructions how to study. In a target group, also the geographical distribution of the course participants is important. For example, it is necessary to consider very carefully the number of direct meetings, if people living far from the venue of the classes would have to participate, because frequent journeys will be uneconomic for them. Should this be the case, it is better to consider and on-line course than a blended one.

3. DIFFERENCE No. 2: TIME AND VENUE

Traditional classes have their time and venue determined. To participate, one must be present at the indicated location at a defined time. In case of an Internet course, it is usually assumed that there are no limits regarding time and place of learning. This is not, however, fully justified. The situation is

different in each of the mentioned model of Internet courses. In practice, a self-teaching classes does not impose any limitations with respect to time and place of learning, but courses often constitute part of a wider programme of studies, and this implies dates of completion, what limits the freedom of choice of time assigned for learning. On-line courses with a teacher impose even stricter limitations. These are usually organized in the form of *edition*, that is they start and end at a defined time. This adds up to the course internal organization, usually in the form of a schedule of access to materials and submitting works or solving tests. All that imposes time limits, when a participant should learn. The student's freedom is limited to the choice of time, when he or she gets acquainted with the materials and solves the tests. This is certainly a basic difference in relation to classroom course, although sticking to the schedule also requires punctuality, so as not to be late with submitting works planned in the schedule.

Blended courses are quite close to classroom courses, since a part of them constitute face-to-face meetings at a determined time and venue. The other part is an on-line course, usually with a teacher and a detailed schedule. However due to the direct part, the limitations of the freedom of choice of learning time and venue are much more stringent than in other models.

In order to take into account the influence of departing form the paradigm of the unity of time and place of teaching and learning in the design of the course, the whole didactic process must be planned before each lesson is designed. The distribution of material — the division of planned content into separate units is not sufficient. One must realize that in each model of an e-course, the separation of teaching and learning times occurs, what must be taken into account, when planning the classes.

During classroom courses, the teacher quickly gets the knowledge, whether a group of students has mastered the presented content at a level sufficient for further learning. If not, he can modify the subsequent lesson to contain a form of supplementing the gaps together with introducing new subjects. In an Internet course such flexibility is almost impossible, and would require much effort (it is necessary to write new materials down, perform editing and make-up and to post on the Internet platform, most possibly adjusting other materials and the structure of the subsequent modules). Another problem is the time of recognizing the gaps in students' knowledge. In an Internet course, due to the lack of unity of teaching and learning times, the diagnosis of students' knowledge is possible only after the formal completion of a determined phase of learning — it is when all participants finish their tests, submit their homework and send the solution of open problems, take part in

an assessed discussion etc. It is usually too late to supplement the identified gaps "on the spot", and the instruction sending them back to the materials from the previous parts of the course may be ignored.

A solution to the mentioned problems are very stringent checks of how well the students have mastered the content of the course. In the project, *milestones* must be assigned — characteristic points of the course, which, if passed by the students, guarantee, that they are sufficiently prepared for further stages and should not have problems caused by the lack of required skills and knowledge. An e-education platform provides suitable tools to accomplish this task. For example, the resource "*lesson*" of Moodle's e-education platform performs this function very well: it can block the passage to the next portion of material, if the student does not answer correctly the test questions. Should this be the case, the lesson can either force the return to the last materials, or indicate other materials helping to understand the content presented in the basic part (see e.g. (Rice, 2008)).

Free selection of learning place is usually understood so, that a student from the school local environment can learn with the help of his computer located in the school computer room, but also in an Internet café, and thanks to mobile Internet technology, at a park, in a boarding house in the mountains or by the sea. Such limitation of the postulate of a free learning place does not influence either the course design or the forms of content presentation. The free selection of place can also be understood from the point of view of a student from outside of the closest environment of the school offering the course. Thanks to this freedom, people from different social circles, countries, and — what is most important — cultures may participate in the course. This must be taken into account first of all in the manner of presenting the content. For example, in Europe (zone of Christian culture) a dog is considered man's friend and is frequently met in iconography, while in Islam, the same animal is rather treated as impure and at least ignored. Hence in a course directed to various cultures, such differences must be taken care of.

Not only cultural differences are related to the learning place, also differences resulting from the student's social environment. For example, a simple biological experiment showing the differences in the concentration of cell sap, which requires the use of potatoes (see (zadanie.pl, 2010)) becomes extremely difficult (and expensive) in Southern Asia due to limited access to potatoes. Such assignments should not be placed in e-courses directed to all around the world.

4. DIFFERENCE No. 3: COMMUNICATION

Communication in e-teaching has been described comprehensively (compare e.g. (Bednarek J. & Lubina E., 2008), (Rudak & Wilkin, 2010), (Wallace, 1999)), directing attention to the fact that it is based on written text, or rather, on the image of written text. Regardless of how fast the technology of data transfer develops, still the text coded in the form of alphabet characters is the simplest message form to be sent, and this is why it is so commonly used also in education. One must notice that this is far from natural way of human communication (from the same language zone). The speech is the simplest and most common communication method. Moreover, in direct meetings, also non-verbal signals are used, called body language. We do not necessarily realize how we read the facial expression, gestures, body movements of the person we are listening to, and subconsciously we supplement the verbal message. The Internet communication, on which the e-learning is based, is deprived from the natural features of transfer present in traditional teaching. The written text remains the base, transmitted by the means of a soulless, cold medium: a computer connected to the Internet (Wallace, 1999).

In classroom teaching, the whole communication is natural. Is it the teacher talking to the class or to a single student, or the students talking to each other, all that is natural, nobody thinks of what channel should be used, what tool should be applied to prepare the message, or how to convey an appropriate message. In case of e-education, the communication between the participants must be designed. If the course is supposed to be self-teaching classes, then there is no communication, as there is no teacher or other students. So there remains only the interaction with the resources made available. In case of the on-line course (or a part of a blended course), communication methods must be selected. Depending on the course type and purpose, it is possible to decide who, when, according to what rules, and to who may or should send messages. It must be also decided, who may have access to those messages.

The e-course allows three types of interaction between the participants: all to all, the teacher to all, and the teacher and a student individually without access of any third party. Most always all three possibilities are used for the sake of the best accomplishment of the assumed educational goals. It is however possible to imagine lessons (like e.g. work in a virtual laboratory) requiring only the exchange of information between the instructor and the student, not disclosed to others (so each learner performs the experiments according to his own plan and comes by himself to conclusions from observing it). The course designer decides on the forms of communication between the participants, on the applied tools and on the access to those tools.

All these decisions should be justified by the accomplishment of concrete operational goals derived from the main educational goal of the designed classes.

5. DIFFERENCE No. 4: THE TEACHER

An e-education teacher must be considered in a different way than traditional. This statement is a result of organizational differences between the two types of teaching, and also from additional teacher's duties in distance teaching. The main difference between the traditional and e-teacher is the multi-functionality of the latter. Depending of the model of Internet courses (self-teaching, blended or purely on-line courses), the teacher may appear in many forms.

The first form is the same as in traditional teaching, hence as a *person*. However, apart from the classroom lessons in the blended teaching model, the students do not have such contact with him as at direct meetings. This does not mean that the contact is worse or more difficult to establish. It is simply different, since it is realized by the means of technology and Internet communication methods. Commonly in e-learning, the students more frequently use tutorials, more often ask the teacher questions than in traditional learning. The technology is the reason, which allows to ask a question as soon as the need arises: an e-mail may be sent at any time of day or night, also posting a message on a forum is not limited by time. In this sense, the contact with the teacher is easier than at an university, where it is necessary to wait for lecturer's office hours, and take into account that the tutorial time is limited and many students may come.

The teacher is a person in e-teaching: he conducts classes, participates in discussions and directs to proper solutions, gives tutorials, provides instructions, checks and comments on open problems, assesses students' works. So he performs all standard duties, like in traditional teaching. However, the e-teacher must also take care of that the course participants form a social group, since it has already been proved that people learn better, when they have the possibility to communicate with others, to take up a co-operation and to express emotions (Mietzel G, 2000).

The second form of an e-course teacher is a *virtual teacher* (see e.g. (aWaves Academy 2010), (Stuff.co.nz, 2010)). It is a name of a software controlling an imaginary teacher (a person, thing, character etc.), which helps to learn. The simplest (and most primitive) example of such software is the Microsoft Word 2000 and 2003 Office Assistant — Mr Clipit — in the shape of a paper

clip. The virtual teacher, which has some elements of artificial intelligence, acts as if on his own, imitating the work of a real teacher. In fact this is a help system, concerning not only technicalities of the course use, but first of all the presented content. Such a teacher answers questions, asks questions, gives hints, whispers the answers, praises for achievements or reproves for errors, so replaces a real teacher.

The third teacher's form of an Internet course does not appear as a physical or virtual object. It is simply *the system*, which controls the process of educating. This system may be very primitive, just allowing access to subsequent materials, it opens and closes quizzes and stores their results, conveys the written in advance information to the student. The teacher system may, however, be enriched. The first steps are: automatic reminding of dates of subsequent assignments, providing access to new materials, if the test concerning the previous material has been passed (so works, for example, a Moodle's platform lesson) and allowing access to the final test basing on the results of assignments from all the course. Such system may be even more developed, so it selects the most proper didactic path for each student, basing on his achievements and errors.

The influence of the teacher form on the Internet course design is tremendous. In fact, after the decision on the course organization, the choice of the teacher form is the second so important decision of the author. Of course, many factors influence this decision (among them the didactic goal, budget, target group), and quite often this is not the designer's decision, but it comes together with the order for the construction of a determined course.

The selection of the teacher as a real person gives maximum possibilities and minimum limitations. Any internal structure of the course may be designed, use any teaching methods, or even plan direct chat meetings, video conferences or classes in a virtual class. The only limit is the necessity to incorporate proper communication facilities and tools allowing the teacher to perform his functions. For example, a good tool to integrate the group is a social forum, where the teacher gets acquainted with the students and vice versa, and the students socialize among themselves. So such forum should be provided in the course.

The lack of a physical teacher introduces many limitations at the start, as not everything can be done automatically. The worst limitation is... the lack of the teacher, so there is nobody to check the open assignments, to moderate over discussions, to comment on the students' works, to control group assignments etc. The course must have then self-teaching classes, so it

becomes a (modern) handbook with the functions of interaction with the materials and verification of knowledge.

6. DIFFERENCE No. 4: THE LEARNER

It is possible to express two basic rules differentiating the traditional class from the *virtual*, resulting from replacing direct contacts between the teacher and the student with contacts through a medium of a computer network.

1. In e-learning, the teacher is not in a position to survey the student's action in the course of learning.
2. In e-learning, the teacher assesses only the ready product submitted for assessment.

The first rule may be discussed. The student's actions in distance learning can be surveyed by the records made automatically by the distance learning platform. The logs contain usually the dates and times of logging in and out, the times of platform use, and even the names of used materials. It is not possible, however, to be sure that the student has spent all the recorded time studying the materials. He could enter the platform, open a file... and start different activities, like e.g. explore web sport pages. Moreover, the distance learning logs inform only of formal student's activities: entering the platform and using determined materials. The teacher gets no knowledge of the way of material use or, what is most important, of aspects of the learning process. In traditional learning the teacher also cannot observe the student making his homework, however he keeps in mind the student's class behaviour, his activity during classes, his statements. This provides additional knowledge of the student, of his intellectual capabilities and the methods of approaching problems, and so it makes easier to understand him and to adjust teaching method. In distance education, there is no such observation, and e-learning platform logs cannot replace it.

Also the student's self-reliance is very important to observe. In direct contact conditions, e.g. in a classroom, it is relatively easy to check the student's self-reliance. On the other hand, in distance education this is simply not possible. The technology simply become an additional incentive to make use of someone's texts and ideas, and to conceal the actual author.

The other fundamental rule: the teacher gets from the student his ready work and only this, is unquestionable. The work in the digital form, it is always clean, there are no crossings-out (often indicating the path of reaching the solution), no notes, no comments etc. It is finished, and usually stripped of

spontaneous elements (each message and text can be read and corrected by the author before dispatching). From the form of work it is not possible to deduct any additional information helping to understand the student's way of thinking, recognize his gaps, and finally to assess his work.

These rules are in practice reducible to one simple (and somewhat perverse) statement: *in e-education the student does not exist*. Instead of a student, there appear his posts on fora, solutions of open assignments and other works, test results, system log records, perhaps some mails and an image pinned to the profile. All these elements must be looked from the angle of Internet communication (see Chapter 4). So the image of the student built of these elements does not have to illustrate his actual features, it rather represents what the student wants to show. Next, the teacher does not see the student, only receives his works, so it is impossible to determine whether the student really understands the topics or is really able to fulfill the instructions. It is possible to apply here the mental experiment similar to the John Searle's *Chinese room*: the teacher sends an instruction and receives somehow generated response without any additional information on the way how it was built. In this system even good replies do not prove that the student understands the topic and has mastered the material.

In order to take into account the above characterization of the e-student in the course design, it is necessary to plan the student's activities in a manner allowing to incorporate it in the mechanisms of monitoring the student fulfilling the assignment. In traditional teaching, the teacher surveys the students solving the problems, while in Internet courses the observation must be built into the actions. S. Juszczuk in (Juszczuk, 2003, pp. 206-207) presented an extensive list of methods applied in e-teaching. Some of them already have monitoring features available for the teacher. Various discussions belong to this group. E-learning platforms incorporate *fora* — tools for organizing discussions. Statements presented on the fora are stored and easily available for all users including the teacher, so the monitoring of discussions is ensured by the mechanisms of distance learning platforms.

Most of students' activities within an e-course consists in the use of the computer to edit an essay, find needed information on the Internet, calculate data etc. It is worthwhile however to include in the project certain activities forcing the students to perform determined actions or steps without a computer. The students may collect data by observation of e.g. street traffic, perform simple chemical, biological or physical experiments (as described in Chapter 3), make tests, take measurements etc. In this case it is necessary to plan precisely the method of informing the teacher of the performed exercise.

Presentation of just conclusions is not enough, since there is a suspicion that the student has not performed the exercise by himself, but somehow has learnt the results. This of course misses the target, it is not the result, what is important, it is the learning of observation methods, and drawing self-reliant conclusions. Then it is important to express the requirements for submitting the exercise documentation in a way making it impossible to omit self-reliant accomplishment of the assignment. There are many possibilities to design such assignment with the description of documentation and ways of submitting for assessment; examples can be found in (Bednarczyk & Michałowicz & Rudak & Sidor, 2009).

CONCLUSION

Teaching over Internet is as old as the Internet itself, since from the very beginning this medium was used for conveying knowledge. It seemed that together with the creation of e-learning platforms and special Internet applications facilitating the management of educational resources as well as creation and participation in e-courses, e-learning became adult. It was expected that the created courses will be well adjusted to the medium of Internet, take advantage of e-education platforms capabilities and will make use of extensive set of tools available in the Internet for the teacher and the student. The practice, at least at universities, is different. Most of on-line courses are created by simple transfer of classroom lecturers to the Internet and by enhancing them with quizzes consisting of closed problems. If a course will be lead by a teacher, open assignments and sometimes discussion forum appear. Can such actions produce educational success? The researches show, that the answer is negative (Bork, 2001). This paper tries to explain why such a procedure cannot bring a desired result.

Teaching and assessing of student's progress on the road of gaining knowledge and skill occurs always in a didactic situation made of the teaching content, the teacher and the student, and the relations between them: communication, organization of teaching and educational equipment. From the six named elements as much as five (all except the teaching content) are among (or are related to) differences between traditional teaching and distance teaching through the Internet. The described differences are so important, that it is impossible to bypass them, and this is why it is impossible to obtain a good e-course by simple transfer of the classroom course.

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METHODS OF MATHEMATICS TEACHING VS. DISTANCE EDUCATION

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Abstract: *The subject of the paper can be placed in the context of the research scope of one of the trends of mathematics didactics described as: **problems related to mathematics teaching updating and distance education**. The research aim of the paper is an attempt at evaluating the practice of applying various mathematics didactics methods and distance learning, and subjecting it to a two-facet analysis: what is it like and where is it heading? The objective of the work is to find answers to three research problems: 1) how is the practice conditioned by the circumstances and what is the quality of mathematics teaching at both secondary school and academic levels?; 2) what are the challenges for mathematics didactics methods in a contemporary school?; 3) what are the forms, types, models and tools in distance learning? All this makes the author refer to some survey-like studies, the research results of international teams of scholars, as well as the results of his own study, observations and reflections, see e.g.: L. Beddou and C. Mauduit (2001), F. Arzarello(2005), A. Pardala (2006, 2007, 2008).*

Key words and phrases: *methods of mathematics teaching, distance learning, problems teacher's practice teaching, problem solving, forming mathematical activity and creativity.*

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INTRODUCTION

At the macro level numerous aspects of mathematics usefulness have been strongly emphasized. The steadily growing importance of mathematics as well as mathematical methods for problem solving in the modern world have

been generally recognized. According to P. J. Taylor (2003), mathematics and mathematics teaching, particularly high standard teaching, are of the key importance to problem solving affecting our world's existence and the planning of its future. All this gives rise to and brings into being new trends in mathematics teaching and especially within the scope of practical application of various mathematics teaching methods and distance learning. Consequently, one can see a dynamic and evolutionary increase in mathematics standards at school, which in turn results in yet another wave of mathematics teaching reforms. In Poland, such reforms are intrinsically connected with the implementation of the Bologna conference decisions, and they also aim at a profound reform of the secondary school diploma examination including its standards and procedures, the selection of problems as well as an extramural system of evaluating the diploma exam.

This work is an extension and some kind of modification of our previous work, see: A.Pardała (2008). The subject of the paper can be placed in the context of the research scope of one of the trends of mathematics didactics described as: problems related to mathematics teaching updating and distance education. The research aim of the paper is an attempt at evaluating the practice of applying various mathematics didactics methods and distance learning, and subjecting it to a two-facet analysis: what is it like and where is it heading? The objective of the work is to find answers to three research problems: 1) how is the practice conditioned by the circumstances and what is the quality of mathematics teaching at both secondary school and academic levels?; 2) what are the challenges for mathematics didactics methods in contemporary school?; 3) what are the forms, types, models and tools in distance learning? All this makes the author refer to some survey-like studies, the research results of international teams of scholars as well as the findings of his own study, observations and reflections, see also: A. Pardała (2006, 2007). The second theme of the work focuses on the lack of interest in mathematics as a school or university subject. The fact that in many countries of the world pupils and students seem to ignore mathematics more and more is a source of concern not only for university professors. Post-secondary school graduates and students, thinking of their job prospects, decide to choose potentially more practical subjects that may be of direct use in environmental protection, biotechnology, medicine and applied informatics. Furthermore, the work, based on the survey among informatics students, points to two key questions facing the contemporary mathematics teaching in the institutions of higher technical education in Poland. The first one is: where are we?, which refers to the sensitive issue of a growing gap between secondary school and academic mathematics. The other alarming problem is:

where are we heading, that is, what are the possible consequences of the educational reform and the new secondary school diploma examination for mathematics.

The third theme of the work points to and takes a critical stance on the application of both classical and modern methods for mathematics teaching practice. The author tries to find out what are the joys of communing with mathematics. The summary contains the author's opinions and final comments, based on the look "from the outside" and "from the inside", on the methods of teaching mathematics (in particularly distance learning) at schools and at technical colleges in Poland in the context of the reformed education and the ideas of the Bologna Conference, which are just being implemented.

1. QUALITY OF MATHEMATICS TEACHING IN VIEW OF SOME RESEARCH WORK

The occurrence of a gap between school and academic mathematics has been known in many countries and it is not typical only of Poland. The authors researching the problem say among other that: it is not a coincidence that many students are not well prepared and many of their "great achievement" relate to significant gaps in their knowledge of the basics of mathematics, see: www.lms.ac.uk/policy/tackling/report.html. This can easily be seen while teaching mathematics to first year students who used to have good secondary school mathematics background. Switching from the secondary to the academic education was for them a rude awakening because of their problems with academic mathematics. It is also well-known that the quality of mathematics teaching in the case of first year students is not satisfactory and that only about 50% of freshmen manage to pass their first year final exams in mathematics within their exam session time limit. The causes of such a situation are manifold. The hitherto obtained results of diagnostic tests point to the need of further research attempts at how to bridge the gap between secondary school and academic mathematics. The relevance of such a study is consistent confirmed by the diagnosis formulated in the report entitled Tackling the Mathematics Problem, prepared by the Institute of Mathematics and its Applications, the London Mathematical Society and the Royal Statistical Society. It shows a considerable concern of academic mathematicians, scientists and engineers about the mathematical level/potential of first-year students. First-year students have demonstrated: 1) considerable lack of knowledge of necessary calculation techniques and how to smoothly and accurately make use of numerical and algebraic

calculus; 2) they show low analytical capacity when they come across simple problems which require more than one step; 3) their lack of understanding of: what is mathematics? In particular its importance for accuracy and proof, see: www.lms.ac.uk/policy/tackling/report.html. The concern for the quality of mathematics teaching and mathematical awareness of students springs not only from inadequate teaching methods, but also from: 1) reformed or not yet reformed curricular policy, 2) detailed mathematics teaching curricula accepted for implementation, 3) current mathematics course books and literature, 4) ways of using didactic tools and the information technologies in school (and college) mathematics teaching practice.

The above diagnosis is also consistent with the results of survey among the first-year students of computer science at Rzeszów University of Technology. It aimed at comparing mathematics teaching methods, teaching materials and ways of involving students in the lesson used at secondary schools and the institutions of higher education. The respondents' opinions opened our eyes to this reality, although the curiosities relating to methods of teaching mathematics and the quality of teaching itself perceived by them are rather incoherent. Nevertheless it was possible to establish some facts. Some of them are: 1) There is an enormous difference between a secondary and a higher education institution. In the latter the student has to switch from the "I am taught" to "I teach myself" mode. The teaching methods and mathematics education are not correlated. A higher education institution maximizes its requirements to reach education aims whereas the secondary school policy consists in minimizing and diversifying its standards with regard to the pupil education bias. Some respondents hold a view that both the standard and the extent of secondary school mathematics knowledge need to be upgraded and corrected at a higher education institution. Only when indispensable mathematics rudiments have been mastered, can students successfully acquire and fathom a new mathematical knowledge adequately to the needs of a particular course of studies. 2) The substantial difference between mathematics teaching at a secondary school and technical college consists in the attitude to theoretical problems, applications and preferred teaching methods. At a higher education institution the student's independent work is the key to mastering and understanding the material and problem solving. This is, unlike in a secondary school, the most recommended method of teaching. 3) There is also a psychological aspect of the secondary school-college interaction. There often appears a strong emotional bond between secondary school pupils and teachers. At a college, the bond disappears and no attempt to rebuild that kind of relationship is made. Students are subjected to "assembly line education". They are thrown on the production line of the

mass education process and the acquisition of knowledge is checked and evaluated with a much preferred written exam. In the interaction with the teacher the student is most often identified with his album and index book number.

On the other hand, the widely available higher education has clearly exposed the “weaknesses” and shortcomings of the secondary school mathematics education. They are also pointed out by the analyses and research results published by the Central Examination Board (CEB). There are complex causes of the situation which can be interpreted as a cumulative outcome of the shortcomings also found at the lower education level. In my opinion, they have their roots in the mistakes of the 1960-1970 mathematics teaching reforms and later on, accepted for implementation, new concepts of mathematics studies and additional training courses for teachers. Further causes are of awareness-related nature, for example the stereotypical behaviour called “three z’s” (in Polish) standing for swotting up, passing (an exam) and forgetting (it). That dropping standard of teaching mathematics is also due to the secondary school diploma examination reform which removed mathematics from the set of obligatory diploma exam subjects. Currently, strategic decisions have been made to stop and avert the alarming tendencies. From 2010 mathematics will be reintroduced as an obligatory diploma examination subject and the standard requirements to function as the basis for the secondary school-leaving maths exam have already been published. The mathematics teaching syllabus basis has been modified. The CEB is busy carrying on relevant information campaign and public disputes articulating the following premises: 1) It is not only the question of choosing mathematics as one of the school-leaving exam subjects and later a course of studies. 2) Mathematics also means an attitude, a way of thinking based on the respect for truth and willingness to look for reasons and their validity. The European Parliament advocates the intensification of mathematics competence development.

The introduction of Bologna convention obliges our country to harmonize education systems. Consequently, we have to respect the education standard: a school graduate should possess the skills of using main mathematical principles and processes in every day private and job related situations as well as following and evaluating a sequence of arguments. He should be capable of mathematical reasoning, understanding a proof and using mathematical terminology to communicate and applying appropriate teaching aids.

Let us also focus our attention on the present teaching practice and what determines the use of classical and modern mathematics teaching methods. Is teaching mathematics conservative and does it favour only a traditional approach? Perhaps there should also be some room for up-to-date methods.

2. EXAMPLES OF THE APPLICATION OF CLASSICAL AND MODERN MATHEMATICS TEACHING METHODS

The evolutionary development of mathematics has had its “crucial, shake-up” moments. For example, in geometry there have been three turning points: 1) transition from the concrete to the general, 2) transition from one geometry to many kinds of geometry, 3) transition from “true” to formal geometry, see R. Duda (2005). During that process of development one can distinguish specific methods of practising mathematics, its teaching and research. On the other hand, the development was accompanied by the progress of classical trends in the philosophy of mathematics, for example such as Platonism, Logicism and Intuitionism. The concepts of I. Lakatos, R. L. Wilder and R. Hersh pointed out their limitations. I. Lakatos’ philosophy of doubt created an image of vivid and dynamic mathematics that cannot be defined as a self-contained subject. Then, R. L. Wilder showed that mathematics is part of culture, depends on the cultural tradition of a civilization and has an effect on its progress. So which mathematics teaching methods are characteristic of the development of that branch of science and its teaching practice?

The one that belongs to the canon and has been known since the ancient Greeks is the heuristic method developed by Socrates. It is still popular with contemporary mathematic teachers. It is also accessible to most pupils, but it may not bring the results we hope to achieve. That uncertainty is eliminated by the deduction method applied by Euclid in his *Elements*. The two philosophers set the pattern for lecturing on mathematics and its teaching which was also an example of how to arrange mathematics and make it precise. Through centuries it has also been modeled on not only by natural sciences. The two methods have set their stamp on the evolutionary development of mathematics and its didactics. Despite the passage of time they are still applied in mathematics practice and teaching. Their renaissance could be seen in the 20th century in the works of J. Polya, I. Lakatos, D. Hilbert, bourbakists as well as other eminent mathematicians and they are still blooming.

An attempt to popularize classical and contemporary methods of teaching mathematics was made by M. Mikołajczyk (2005). Her work is of

informative nature and points to some assets of the two methods. It may inspire research and scientific inference for didactics theory and practice. The authoress' opinion is that heuristic methods are the right approach to teaching in general and to mathematics teaching in particular. She lists the characteristics of good heuristics - the heuristics method to contrast them with those of a method advocating deduction based teaching. In the other part of the article the authoress tries to catalogue the teaching practice heuristic tricks addressed to the pupil (student). She illustrates them with varied, appropriately chosen examples from school and academic mathematics. Now, let us focus on further aspects of these mathematics teaching methods demonstrated in the examples below.

2.1.Example 1

Referring, during the teaching process, to S. Banach's statements on analogy and showing the pupil (student) analogies can be a natural source of mathematical discovery, encouragement and joy. The analogies M. Mikołajczyk suggests should be as follows: 1) between different worlds (flat and three-dimensional worlds, simple and curved ones or those with a matrix other than that of Euclid's), 2) between notions, 3) between methods. She provides relevant examples referring to theorems or notions the pupil (student) should know, such as, for example: Pythagoras' theorem and its spatial equivalent, twin numbers, triple numbers, Pythagorean fours. To add variety to the routine mathematics teaching one can use such heuristic tricks as: random associations, questions with inversion that can generate open sentences, interesting maths problems and problem situations plus ideas how to solve them. M. Mikołajczyk also draws our attention to other characteristics of heuristic teaching. They are unexpected motivations, stimuli of mathematical creativity: giving up formalism in favour of intuition; changing the approach to the problem and its solution; looking for symmetry in situations where it is not apparent; keyboard (making use of a calculator or a computer) exploring the regularity or formulating hypothesis. Here, it is worth adding that mathematical circles do not reject the fact of the existence and importance of intuition for the creation of mathematics and teaching it, see: A. Pardała (1995, p.42-43)

The above examples from the teaching practice demonstrate that among the catalogued methods those more preferred are: 1) teaching by giving examples and through examples, 2) teaching through problem solving, 3) teaching through packing and unpacking mathematical knowledge. In that context we may quote A. Karp (2007): The most important form of mathematical activity in mathematics classes is, and has probably always been, problem solving.

2.2.Example 2

The ideas outlined above and trends of updating mathematics teaching and stimulating mathematical creativity correspond to the experience gained by the French Association, Math Pour Tous, described in the work by L. Beddou and C. Mauduit (2001). In this concept the teaching of mathematics is based on investigative activity and dedication of as many pupils and students as possible. Here, one tries to follow or imitate some behaviours, patterns and principles characteristic for scientific inquiry, such as: discovering by asking questions; learning by research; stimulating creativity and imagination; appreciating the importance of error in learning; learning how to listen to, communicating/discussing and exchanging the ideas, etc.. An academic teacher is a supervisor who puts forward a number of tasks and problems whose solution would not make use of the already “acquired knowledge”. The teacher running such a workshop is obliged to stimulate the work of particular pupils or groups of pupils (twin groups) . The results must be presented on-line or during a conference. The pioneers of the concept are G. Polya, I. Lakatos, I. David, E. Marchisotto and others. The unique nature of the concept and the educative action “Math en Jeans” (*Math Pour Tous*) consists in its being addressed to all the pupils and students concerned and not only to their elite – i.e. prospective research workers or professional mathematicians. Besides, the teacher and the pupil (pupils) begin from the same level. The pupil, getting an open problem, has an impression of doing new things and demonstrates his emotional attitude by saying: “I have solved”, “I have found”. Here is an example of the problem – **Conway’s Sofa**, solved during this educational activity:

Let us consider a corridor consisting of two parts, either 1 metre long, at an angle of 90° to each other. Along the corridor we want to carry a sofa represented by an undeformable flat figure S . An example of the figure may be a square with each side 1 m long. What is the largest possible area of a sofa with area exceeding 1 m^2 , which can be carried along the corridor ? What can be said about the problem when the corridor consists of several parts ? What happens when the angles at which the corridor turns are not right angles ? ; see: L. Beddou and C. Mauduit (2001, p. 24).

At the beginning young people find the problem rather difficult: how to mathematically describe the situation and the movement of the figure?; how to construct examples of the figures or sets of figures satisfying the given conditions?; is there any relation between the shape and the surface plane of the figures and vice versa? Concretization or extension of the problem seems only too natural here. A successful attempt at solving it requires some

mathematical skills and activities as well as further studies. One can notice the participants change their attitude to the problem and its solution as: 1) it is necessary to substantiate such things as: “it is obvious that...”, or “it can be seen that...”; 2) one has to be open to the reasoning of the others; they are or may be right; 3) one must be aware of the extent of the obtained solution (a partial solution, a solution for a set of figures and the description of their properties, knowledge of only some theorems useful for finding the solution, etc.).

2.3.Example 3

The work of S. Grozdev (2003) presents synthetically the reflections and Bulgarian experiences in the field of stimulation of the students' mathematical activity and creativity. The author reveals that the background of the methodology of working with students preparing for national/domestic and international Mathematics Olympiads is based on the implementation of the advice of H. Freudenthal, J. Piaget, H. Poincare and a Bulgarian educator I. Ganchev. The first of the mentioned above states that *in mathematical teaching the taught one should pass through the following stages: first stage – instinctive rediscovery, second – conscious application, third – formal definition*, see: H. Freudenthal(1973). With reference to the first stage, J. Piaget says that *a complete acquisition of knowledge occurs in the rediscovery process only, which needs creation of problem situations*. Following H. Poincare, however, *to create means to distinguish and choose*. And further S. Grozdev admits that successes of the Bulgarian students in the International Mathematical Olympics result mainly from the following actions:

1) *Our special attention to the „revision” activity is connected with the so-called a hierarchic approach to investigating and systematizing students' cognitive activities in the preparation for Olympiads. The “revision” activity, which is discussed in the present note, is concretized in individual reading through personal notebooks and is in a direct relation with “keeping a notebook” activity. The latter activity is a result of the above mentioned search, collection, investigation and systematization of topics, methods and problems. In its turn the “revision” activity influences (up along the vertical) successful problem solving, creativity and scientific research.*

2) *The main task in the preparation of gifted students for a successful participation in Mathematics Olympiads is to stimulate their cognitive and will for individual work and research. Some people say that it is very simple to become a scientist.*

FINAL REMARKS AND CONCLUSIONS

Towards the end of the 20th century the contemporary views on education were polarized into practical and theoretical ones. In the literature, two trends and courses of thinking, humanistic and that related to informatics and mathematics can be distinguished and characterized. There also emerged new tendencies in mathematics education, see: A. Pardala (2006) which influence modern mathematics teaching methods. One of them is the tendency towards narrow pragmatism, global computerization and application of IT technologies to teaching mathematics. The discovery of the functional asymmetry of the two hemispheres of the brain by R. Sperry, the Nobel Prize winner in 1981, made educationalists and specialized educators think how to practically translate it into reformed educational systems and also in mathematics teaching. This originated, among other things, an intense interest in the so-called “left hemisphere mathematics” and “left hemisphere instruction methods” as well as in their possible use in the process of mathematics education, see: I. F. Sharygin (2000), p. 6-19. The question now is how to harmoniously make use of the left and right hemisphere capabilities, also with respect to teaching mathematics to a pupil (student). However “left hemisphere mathematics”, narrow pragmatism and the growing application of IT technologies in educational and learning practice may form a dangerous combination. Namely, they can negatively affect the environment of a man and, consequently, his biological nature. Such overcrowding in mathematics teaching and learning may create “homo computeric” or “homo informatic” who will replace “homo sapiens”. On the other hand, at present the Internet has become the basis for global communication. The www world, the world of websites, is beginning to engulf the educational space and determine the external behaviour of the teacher and his school as well as the professor and his university, i. e. enforce its use in education, which involves benefiting from on-line didactic materials and placing our own ones in the Internet. Irresponsible application of the IT technology can, to some extent, impair memory training and motivation. Why should we learn in a traditional way or try to memorize something when the computer and the Internet are at hand. The situation and the IT technologies may pose other dangers to the quality of mathematics teaching, i. e. they can discredit mathematical proof.

Here is an example: The American Monthly, November 1998, published an Alfred Manaster’s article on measuring the quality of teaching mathematics in the 8th form in three countries, the USA, Japan and Germany. Let me quote some of his interesting conclusions: 1) mathematical proof takes place most often during geometry lessons as it is required by the syllabus and the

evaluation of American school standards, 2) mathematical proof takes respectively: 53% of all mathematics lessons in Japan, 20% in Germany and 0% in USA. Thus, it is sensible to quote, as I. F. Sharygin does, the words of the outstanding Russian Mathematician, V. J. Arnold taken from his paper *Antiscientific Revolution and Mathematics* presented at the International Congress of Papal Academy of Sciences in Vatican, October 26. 1998: “those who will not be masters of the rigorous of mathematical proof at school will never be able to tell the difference between a true and false proof. It is very easy for irresponsible politicians to manipulate such a man”.

Presently, there is in fact no need to convince pupils, parents and professionally active teachers that computers and also other means and tools of the information technology help the pupil learn and aid his development and education; in general, they support the didactic process. The impact of the development process in information and computer technology on contemporary educational changes and education methodology is enormous. New methods of sending and processing the information penetrate every sphere of human activity (including education) in informatics society and create new prospects of alternative forms of education. Distance education is also called distance learning. It is a method of mathematics teaching and other subjects which has been used in various courses for years. Among them there is distance learning whose components are e-learning, web based training and computer based training. E-learning is defined as telelearning making use of the computer technology and the Internet. This as well as computer based training and web based training can support traditional methods of learning mathematics. E-learning can take the following forms of teaching: 1) synchronous – conducted in real time and involving real-time communication between the student and the teacher, 2) asynchronous – the participants of the educational process do not communicate with one another in real time, 3) self study – no contact between the student and the instructor, combination of approaches e-learning solutions aid the traditional teaching process which called blended learning. Dynamic development of e-learning, mobile phone technology and PDA devices (Palm and pocket PC) gave rise to a new teaching method: mobile learning which may also contribute to effective mathematics teaching. M-learning provides also a possibility of teaching mathematics at a time convenient for both the teacher and the pupil (student). In distance learning four models can be specified: 1) the same time the same place, 2) the same time different places, 3) different times the same place, 4) different times different places.

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METHODOLOGY FOR CREATING ADAPTIVE TEACHING SUPPORT

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***Abstract:** There's been a relatively large amount written about adjusting forms of education to different types of students. This problematic reaches into the area of not only information technologies and e-learning, but obviously in no small part in the area of pedagogy as well. This topic is currently one of the key topics being resolved at the Pedagogical Faculty of the University of Ostrava. In this paper we attempt to examine in greater detail the problematic of educational study materials for adaptive teaching on the basis of a pedagogical analysis of initial expectations.*

Key words: learning style, teaching style, framework, layers, study supports

INTRODUCTION

One of the basic building blocks of adaptive teaching is a place to store study materials. In order for us to prepare tailor-made study for each student, it is necessary to have study material available that has been compiled in differing variations, in various forms. If we want to adjust education individually to meet the learning style of the student, we must compile study supports in an other than classic manner.

1. STUDY SUPPORTS AND ADAPTIVE TEACHING

The form of most e-learning courses today is derived from distance textbooks, and sometimes from the scripts of classic education. The text-based part of teaching support corresponds to pedagogical principles for designing a teaching, materially didactic aid, in the case of electronic learning

it is augmented by multimedia learning elements, feedback and testing components.

Although a generally applied methodology exists for creating distance study supports, each author has his/her own style of explaining the material and verifying knowledge, one's own so-called teaching style. Generally even the structure of the textbook they create will correspond to this style. So it is possible to say that each study support varies in this sense – various authors structure curriculum in different ways. Often authors precisely propose a theory without its more loosely formed explanation with examples of applications, whereas others on the contrary are dedicated to practical examples without asking questions regarding theory to precisely formulated concepts, etc.

For an e-learning system of teaching to adapt, it must have teaching supports available that are created variably, to be able to present to each student in varying ways. One possible approach to creating variable supports is that the author creates several textbooks of the same teaching material, whereas the author uses a different teaching style each time. But this method is not exactly advantageous. First the author with his/her own individual teaching style will incorrectly use a number of other teaching styles. The second reason is that there are a great many types of potential students. Creating a new teaching style for each type is completely unrealistic [ICTE2010].

2. PEDAGOGICAL STARTING POINTS OF EDUCATIONAL STYLES

When creating a methodology of creation of an adaptive textbook we began with general pedagogical principles of teaching. Education is generally formed by learning (activity performed by the student) and teaching (activity performed by the teacher). Aside from the teacher and student, the teaching environment is also an essential element in the teaching process. In our case we're concentrating on the electronic teaching environment. We will adjust this form in maximum possible measure so that while studying, students would not feel abandoned, unaided or otherwise frustrated. We will gradually describe individual parts of teaching from the aspect of the pedagogical base in classic teaching, and we will propose their implementation in the e-learning form of education.

3. ENVIRONMENT SUPPORTING TEACHING

The task of the teacher is to find the balance in methods and procedures so that every student would receive the opportunity to develop. The task of the teacher in classic presentation is also to create an environment supporting learning. For consideration of an environment supporting learning, we offer the Fend's concept of the necessity to consider in two dimensions (according to Grecmanová and col., 2000, p. 86). One of these dimensions expresses contradiction between the democratic and autocratic teaching methods; the second emphasizes the topic of relationship to school work, its content and its methods towards life or distance from life of the learning individual (Figure 1).

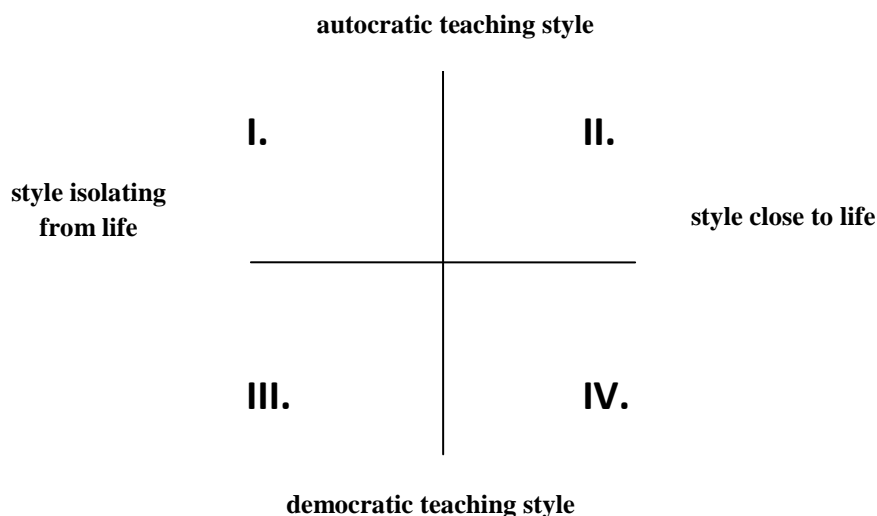


Figure 1. Dimension of the climate according to teaching method (Fend, podle Grecmanová a kol., 2008).

The democratic teaching method forming a democratic climate is co-created by use of appropriate teaching methods (cooperative methods, roll-playing and acting, demonstrations, observation, independent work, etc.). The democratic climate supports development of independence, self-realization, planning, responsibility – all these qualities are both welcome and important in the electronic environment. It offers the opportunity towards reflection on learning and self-reflection. But a democratic approach in and of itself will not resolve every problem, it may slide into the periphery lacking clear sense and closure. It is also necessary to add the dimension of meaningfulness,

realization of its correlation to true life material. For this it is necessary to work in a human manner, such as by problem or heuristic methods, project teaching, and observation in real conditions. It is thus possible to support the strengthening of the feeling of meaningfulness of schoolwork, and thus the meaningfulness of learning and education.

This is a description of classic education. How does the e-learning education form deal with this problem? It offers alternation between various education methods based in part on its preferred learning style, and in part on the momentary psychological state of the one being taught – the student. This area will be resolved with the help of adaptive algorithms, which gradually originate on the basis of cooperation of a team of psychologists, pedagogues and informatics specialists.

4. THE TEACHER'S TEACHING ACTIVITY

What should the teacher do, first in classic presentation teaching, to satisfy demands on the course of the learning process? What should be the teacher's approach towards students?

1. The teacher is to build an environment without stressful situations, and not belittle a student.
2. The teacher is not to derail competitive amongst students. Competition in reasonable measure is advantageous but only to the level that motivates the student.
3. The teacher should reward creativity, the courage to engage in difficult tasks and complex problems, criticism, critical thinking, and confidence in thinking. He/She should appreciate willingness to express an opinion and defend it, the willingness to share one's thoughts.
4. The teacher should respect the needs of the student.

(everything loosely according to Grecmanová and col., 2000, Kovalíková, 1995, Pasche and co., 1998, Hunterová, 1999)

The teacher in electronic education has a tougher position – he/she does not come into personal contact with students, and resolves many problems implicitly with the aid of electronic communication with the student.

The teacher as a source of information is easily replaceable. But here are the roles that the teacher plays are irreplaceable:

- The teacher as a facilitator, who supports the learning process by arranging teaching material, highlights what's important, helps establish objectives and watches over their achievement. The teacher searches out hidden potential in the student.
- The teacher as a coordinator, a person who arranges common activities of the students, gives room for sharing experiences, cooperation. The teacher supervises use of the potential of social dimension of teaching processes.
- The teacher participating in learning processes, which by the fact that engagement is achieved into learning activities, becomes the model of the learning individual.

The pedagogue sees the teacher as such. How will we implement his/her activity in the e-learning environment?

5. PHASING EDUCATION

Individual teaching methods applied by the teacher must be implemented into a framework of a certain meaningful sequence of teaching steps. In many textbooks one may find the teaching process phased into three parts: motivation, exposure, fixation. The task of the motivation phase is to excite interest of the student in the curriculum content, the exposure phase is the phase of conveying the curriculum content, the fixation phase should enable shoring up of the knowledge, skills and habits accumulated by the student.

This design however is not the only one available. It is even possible to imagine that it is not always utterly suitable.

We are striving for a simple comparison of two basic models of teaching – the three-phase teaching process model with a model founded on constructivist principles:

1. phase: evocation – each instance of learning starts by the student realizing and expressing in words what he/she knows or thinks, by the student being cognizant of the presented topic, and also formulating unclear matters and questions that he/she has to the topic, and for which he/she will seek an answer in the next phase;
2. phase: realizing meaning – confrontation of the pupil's original concept of the given topic with the source of new information, opinions, newly formulated correlations (attempt, attention, text, film, story-telling, lecture, etc.);

3. phase: reflection – the student reformulates his/her understanding under the influence of new information and discussions with other students, the realization of what he/she has just learned, which has been confirmed from original impressions, that on the contrary were overturned, realization of opinions and positions of others (classmates, teachers) towards the theme.

In what ways do these two models differ?

Table. 1

Comparison of phases of teaching in two models

Phase of classroom hour “by “traditional” model	Phase of classroom hour by constructivist model
MOTIVATION	EVOCATION
EXPOSURE	REALIZATION OF MEANING
FIXATION	REFLECTION

The difference can be seen in the emphasis of the main actor, which is in the “traditional” model the teacher (mainly concerning the phase of his/her work), in the constructivist model it is the student (concerning the phase of the student’s learning). More generally there is a difference in the concept of the teaching process and its relation to the learning process. While segmentation into the phase motivation – exposure – fixation is an outside segmentation, determined by organizational breakdown of the hour, phased evocation – realization of meaning - reflection relies on the internal processes of the student’s learning. In what way is this possible to resolve within the framework of e-learning?

6. LEARNING PROCESS

From pedagogy textbooks it is known that the training-educational process as a system is formed by a series of elements that fulfil various functions in the system and have various priorities. The training-educational process, even though first and foremost fulfilling the educational function, is not functional and does not achieve the required results if it does not respect the objective of the superior system, which is the overall formation of the personality. In

other words this means that what's first is an outlook of how the person is, what position he/she maintains, character qualities, individual predispositions, social background and surroundings and then it is necessary to adjust the training-educational process.

From this basic requirement comes the entire concept of creation of a new educational model. The adaptive quality of teaching will primarily depend on the personality of the student. We'll begin resolving the area of the educational process itself, specifically preparation of study materials for the education described by this manner.

Upon creating adaptive textbooks, we start in part from the general method for creating distance textbooks, and in part from the pedagogical basis of the educational process. The entire course material is classically separated into chapters and sub-chapters. In the subchapters we named individual thematically integral areas as frameworks. We thus name the framework as elementary educational units, which explain one partial topic. The framework is the main object of our interest upon structuring an adaptable textbook, to which we will propose variations of teaching.

7. STRUCTURED THEMATIC UNITS – FRAMEWORKS AND LAYERS

The initial information according to which we will base ourselves upon proposing the textbook structure will be an identified instructional style of the student and individual qualities determining this style. We repeat these qualities [ICTE 2009]: type of sensory perception, motivation to study, social preferences, tactics of teaching (detailistic procedure – holistic, depth concept – surface, theoretical – experimental method) and capability of self-management. The process of learning furthermore influences the regular level of comprehension of the student.

So what variations of the framework will be formed?

The most obvious qualities of the learning style is the type of sensory perception, the second is the quality of regular understanding of the explanation. We chose these two basic criteria for creating frameworks in differing variations – the type of explanation for the type of sensory perception of the student, and depth of explanation of curriculum.

Therefore each framework will have sensory **variations**: one with high level of text (for verbal type of students), with many pictures, graphs, tables, animations (for the visual type), spoken words, audio recordings,

communications, discussions (for auditive type) and creative tasks, designs, etc. (for kinaesthetic type).

The second criterion will be dividing variations based on depth of interpretation. Study materials will be created in a form submitted in so-called universal depth. This will be used as primary. For students who would not understand such a formulated interpretation, will have prepared a variation of a modified interpretation (in more detail, from another angle of perspective, etc.) and on the contrary, for students motivated towards the given theme the variation will be enriched with interesting facts and special qualities of the given theme.

The author of the study material will create individual frameworks in four sensory and three depth variations – a total of twelve variations within a single framework.

A different procedure for creation was published at the conference ICTE2010. Variations differing only in form and depth of explanation do not suffice in covering all necessary differences in the explanatory style. The explanation must also react to other differing personal characteristics of the students. By analyzing these student qualities we arrived at a result, where the explanation also differs in the order of segmented parts of the explanation and regular testing, or organizational information.

Dividing the framework into segmented parts – into layers – will aid us in performing adaptation of the explanation style of the framework. The **layer** of the framework is the name given to the homogenic part of the framework in terms of the phases of the educational process (explanation of theory, clarification, consolidation, verification of knowledge, motivation, education management).

8. TYPES OF LAYERS:

- **Explanatory** – group of layers containing their own explanation of the covered material. This concerns the following layers:
 - T Theoretical** – containing theory: definition, terms, rules, algorithms, etc. In terms of education, this is the most important type of layer.
 - S Semantic** – explaining the introduced terms, formally described theory, containing additional information to the theoretical layer, explaining correlations arising from theory, etc.

- F Fixation** – with the aid of repetition, other formulations and alternative concepts, implemented into the wider context to facilitate better memory of theory.
- R Resolved examples** – contain examples for applying theory, resolved “textbook” examples. For students they act as examples for resolving their presented assignments.
- P Practical** – contains resolution of examples from practice, which use theoretical knowledge.
- **Testing** – a group of layers for regular testing of acquired knowledge and fixate this theoretical knowledge with the aid of tasks or assignments to be resolved. This concerns the following layers:
 - O Questions** – theoretical questions from the covered material. Questions may serve only as checking the student or the student uses them as an adaptive algorithm for handling the next explanation.
 - U Exercises** – “textbook” exercises to be resolved.
 - X Practical exercises** – exercises from practice.
- **Other layers**
 - M Motivational** – motivating information on the subject, lesson or framework, which would justify the benefit of study to the unmotivated student.
 - N Navigational** – didactic or organizational information, a kind of guide for lessons of covered material, recommended study methods, etc.

Information on the form and depth of explanation and type of layer that is necessary to record in so-called metadata. Aided by metadata, the system can then select and manage the proper sequential order of teaching. [ICTE2010].

9. METHODOLOGY OF AUTHOR CREATION OF TEXTBOOKS

The theoretical model of adaptable teaching must be verified from multiple aspects:

- textbook authors must verify the realism of elaboration of variations of frameworks divided into layers,

- appropriate SW must be designed and implemented for the theoretically described structure of the author database,
- variable textbooks into the SW system must be stored and its functionality and meaningfulness must first be pilot-tested by the authors, then by those collaborating on the method and finally by pilot students,
- based on experience, the theoretical model, the method of author creation and even developed SW may be adjusted.

The result of the methodical part will be a methodical guideline for authors of adaptive textbooks.

For author creation, the following “form” has been designed in MS Word, into which authors will write their textbook texts. Each variation of each framework (sensory and depth) is recorded onto a separate form. The author writes into the left wide column the actual teaching and testing text, and in the right column he/she records the metadata, i.e. the accompanying information on type of variation and its parts. The author may thus concentrate on the actual content of the textbook and its division, and the metadata burdens the author only in minimum measure (table 1).

SW for adaptable teaching is developed in parallel to the methodology and pilot lessons. The LMS Barborka learning management system of the partner university VŠB-TU [Technical University Ostrava] is applied as a basis.

Also within the framework of the project ESF Adaptive Individualized Teaching in E-learning, several authors from various areas of education (natural science, foreign language education, philosophy, etc.) elaborate parts of the thus-conceived study supports.

Table. 2.

Subject: **name of subject**

Lesson: **name of lesson**

Framework: name of framework	MHRam = 1-10
Variation - depth	MHZnam = 1-10
Variation – form	MFor = vis, ..., kin
content of layer T	MVrs = T
...	MVrs = S

		MVrs = F
		MVrs = R
		MVrs = P
		MVrs = M
		MVrs = N
Formulation of question formed (text, image, ...) + type of answer	MTot=Txx	MVrs = O
1. answer formed, expected	Ma= A/N	
...		
other parameters of question		

CONCLUSION

In conclusion let us summarize the current state of elaboration of the project.

Learning styles of students and the structure of teaching supports are theoretically elaborated. Work continues on the method of author creation and formulation of rules, assigning an appropriate teaching style to learning styles.

SW is implemented that distinguishes learning styles and SW enabling recording and manipulate the teaching styles. There is ongoing work on implementing a control system for recording and use of pedagogical and psychological rules.

After practical implementation in the next academic year, we will know the results of the pilot testing, and we'll have the opportunity to compare the proposed procedures and recommended rules with truly tested education.

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II. PRACTICAL ASPECTS OF DISTANCE LEARNING. DISTANCE LEARNING AND LIFELONG LEARNING

THE CONCEPT OF EPICT (EUROPEAN PEDAGOGICAL ICT LICENCE) AND THE IMPLEMENTATION IN AUSTRIA, KPH GRAZ

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Abstract: *EPICT – The European Pedagogical ICT Licence is a comprehensive, flexible and efficient in-service training course introducing a European quality standard for the continued professional development of teachers in the pedagogical integration of information, media and communication technologies (ICT) in education. The EPICT course concept offers educators basic ICT skills on a personal and a professional level through focusing on the pedagogical integration of ICT in the teaching practice. Teachers follow four compulsory modules and four optional modules selected from a pool of 12. Each module has two integral parts: ICT integration in education and ICT skills.*

Keywords: *ICT, EPICT, facilitator, EPICT at the KPH Graz*

INTRODUCTION

EPICT combines pedagogical knowledge of ICT integration with basic ICT skills training. The basic philosophy is that when upgrading teachers, one without the other makes the training useless. The philosophy of the European Pedagogical ICT Licence is that one without the other will not meet teachers' need for professional upgrading.

All the themes of the course have both pedagogical/didactic elements and ICT skills elements. The participants form teams and work together on

developing instructional material and learning scenarios for their own daily practice. Through electronic communication a facilitator challenges the teams on pedagogy and subject-specific ICT on the basis of their descriptions/assignments. The course is flexible offering participants the opportunity to organize their work with the course material individually. The assignments result in concrete learning scenarios that teachers actually use in school.

Thus the Pedagogical ICT Licence is a course concept that offers teachers basic ICT skills on a personal and a professional level, through focusing on the pedagogical integration of ICT in the teaching practice.

The EPICT product offers content, organisation, technical platform and certification of facilitators and national nodes. The EPICT product is available in a number of national adaptations and versions, and in a 'generic' version in English.

The prospect of being able to join a European Group and thus benefit from a fully operational, well-documented and evaluated conceptual framework complete with content, administrative tools etc. will be attractive to regions/countries not yet active in this field.

When a country/region selects EPICT as its approach to teachers' professional development (PD), it gets a well-documented and tested European and international concept that has proven its efficiency in a number of European countries, but also in African and a few other parts of the world.

Adding the fact that EPICT has been successfully applied in a number of countries as culturally diverse as in Europe Austria, Denmark, Greece, Ireland, Iceland, Italy, Hungary, Norway, the United Kingdom and in other continents Africa Cameroon, Ethiopia, Ghana, Uganda, in Asia India, in Australia Tasmania, and makes EPICT not only a very attractive option but also a "safe bet" to new countries/regions. And there are current discussions with Lithuania, Croatia, Slovenia, Spain, Middle East and Singapore.

1. WHAT IS EPICT?¹

EPICT is a flexible in-service training concept. EPICT, the European Pedagogical ICT Licence, is a comprehensive, flexible and efficient in-service training course introducing a European quality standard for the

¹ http://www.epict.org/about_epict/index.html

continued professional development of teachers in the pedagogical integration of information, media and communication technologies (ICT) in education.

EPICT comprises content, method, technology and processes, all of which are controlled internationally by the EPICT Group and nationally by the EPICT country, enabling the national environment to obtain both recognition and accreditation for its professional development.

2. THE EPICT CONCEPT

EPICT combines pedagogical knowledge of ICT integration with basic ICT skills training. The basic philosophy is that when upgrading teachers, one without the other makes the training useless.

The training course is realized through blended, flexible learning where the methodology applied is team-based and involves process-oriented learning, problem-based learning, collaboration activities and team-based assessment.

3. WHY EPICT?

EPICT is one of the very few – if not the only – trans-national approach to PD in the pedagogical application of ICT in teaching and learning. EPICT is not just about learning ICT skills; it is how to pedagogically apply those skills for student training.

A European programme that is well-documented, tested, evaluated and in operation in seven European countries is without parallel in the area of in-service teachers' professional development in pedagogical ICT integration.

4. EPICT IS MORE THAN JUST ICT-SKILLS

4.1 The philosophy and the pedagogical method of EPICT

Teachers should learn ICT skills needed for their own teaching and be encouraged to produce relevant work which they are able to take into their own classroom lessons. This integrated approach has much more success in involving teachers and in having a lasting effect within their classroom teaching.

EPICT was developed with the overall assumption that teachers do not just need to learn ICT skills; teachers need to explore ways of integrating these

skills into their teaching. EPICT is characterized by the following key principles:

- All themes of the course have a pedagogical rationale. Participants work with ICT-skills related to these themes. No ICT without a pedagogical rationale.
- Course material inspires and offers ideas of how to teach about and with ICT.
- Participants work in teams where teachers together develop material and learning scenarios for use in their own daily praxis.
- The team is challenged pedagogically and ICT-wise through an online dialogue with their facilitator.
- Many teachers from the same school participate simultaneously. This means that information technology and its role in teaching, learning, collaboration and communication is on the school's pedagogical agenda.

Teachers need professional development in ICT and pedagogy. No matter how highly skilled the teacher is in the technical usage and in the personal use of software tools, she will need professional development in the pedagogical application of ICT in teaching and learning scenarios. For most teachers this does not happen as divine intervention....

The philosophy of the European Pedagogical ICT Licence is that the ability to apply ICT in teaching and learning is not something that can be achieved through desk research. Teachers have to work with the computer, think ICT integration, contemplate pros and cons, plan learning activities that integrate ICT – and receive coaching from experienced teachers that have been through the same process themselves.

In teacher teams participants must take their point of departure in their everyday life as a teacher in a particular school and with a particular group of students. The European Pedagogical ICT Licence bases its pedagogy on teamwork, development and focus on the process.

4.2 Pedagogical method

In a Pedagogical ICT Licence course we try to practice what we preach. This is not a 'sit-down-and-listen-while-I-tell-you-about-problem-based-learning-and-active-involvement-of-the-students.-Then-go-home-and-do-exactly-what-you-have-always-done' kind of course. Educators are challenged and moderately pushed into describing and documenting learning activities that

integrate ICT and simultaneously to develop ICT products and explore the potentials of the computer, the Internet, electronic communication etc.²

Teachers are challenged and moderately pushed into describing and documenting learning activities that integrate ICT and to develop the ICT products needed to initiate that learning activity.

Teachers are challenged to use contemporary learning methods that are focal points in the current pedagogical debate. You can say that they are put in the role of their students, trying out the methods central to contemporary education.

In teams they discuss articles and examples of good practice and they describe a learning situation that they will use as their point of departure for their module assignment. An outline or draft of this learning activity is sent to the facilitator for response. The facilitator then comments, reflects and constructively criticizes the draft and challenges the team to rethink and further improve their work.

Upon receiving this response the team contemplates the facilitator's comments and finishes the assignment, which is then sent to the facilitator for final approval (Figure 1).

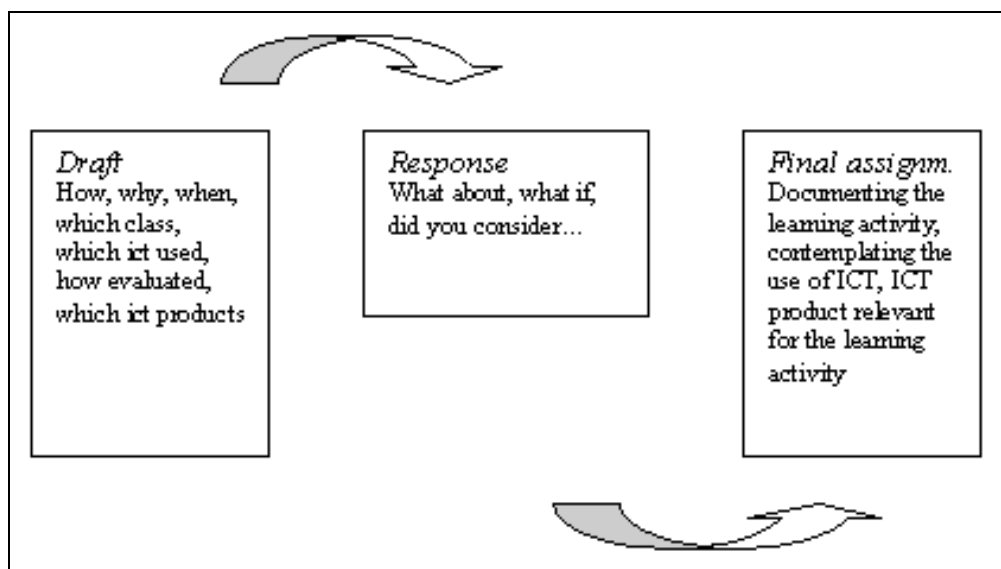


Figure 1: The process of developing a task, feedback and optimization of the task

² http://www.epict.org/presentations/files/Ulla_Gjorling-Full_Paper.doc p. 4

The level and sophistication of the assignments vary from team to team - there is no absolute level. Focus is on the process and the assumption that all teachers can learn more and have a right to be challenged and make progress.³

Basic ICT skills are generally a prerequisite for participation in the training course. But above all, the participants will be met at their own level and encouraged and challenged individually; such individual challenge will raise each participant to a higher level (Figure 2).⁴

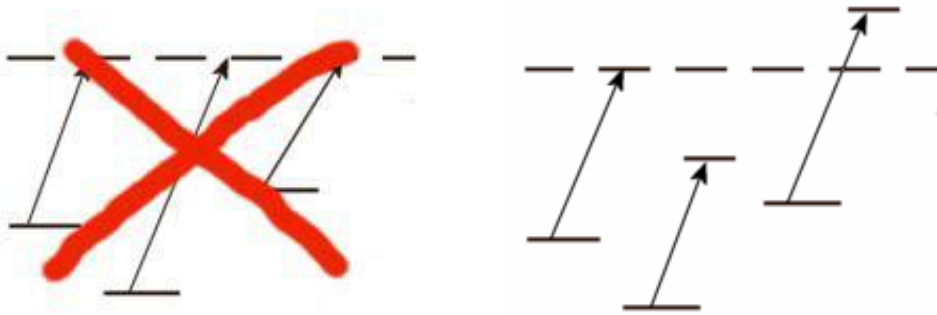


Figure 2: No fixed level of competences - all teachers develop their competences

4.3 Flexible learning

The European Pedagogical ICT licence is realised through flexible learning. The course is opened by an introductory day where teachers meet and get acquainted with each other, the course and its content and have the opportunity to discuss the objectives of the course with each other and the facilitator.

The introduction also deals with the necessary technical and basic ICT skill elements that make the teacher able to continue the course after the introduction. During this introduction the teachers are divided into teams of 2-4 participants. The course always covers 24 weeks or more; and during this period the teacher (participating in one or more teams) hands in eight assignments to the facilitator (Table 1).

³ http://www.epict.org/more_than_ict_skills/pedagogical_method/index.html

⁴ vgl. http://www.epict.at/file.php/8/Fuer_MentorInnen/20080130_EPIC-Status.pdf S. 2

Table 1.

Introductory day	E-learning course period of n modules	Evaluation
Facilitator and all participants are present. <ul style="list-style-type: none"> • Course concept • Methodology • Basic ICT-skills 	<ul style="list-style-type: none"> • Course participants work individually with ICT-skills and in teams with issues concerning ICT-integration in education • Course participants meet in teams, discuss and prepare drafts for tasks, contemplate facilitator's comments and finish the tasks. • Facilitator provides comments, challenges the team and approves assignment. 	Course participants fill in the evaluation form

4.4. EPICT in Pre-Service Training⁵

In-service training is necessary for a long time still. However, the way forward is to make sure that new teachers and educators have the competencies required to successfully apply ICT in their everyday practice. Therefore they are to learn these skills as an integrated part of their further education study program.

The objective of the Pedagogical ICT Licence for student teachers is to ensure that the student teacher acquires:

- Insight into the impact of ICT on the role of teachers and students and on the pedagogical and organizational development of the school,
- Insight into the impact of ICT on the development of the subject,
- Basic ICT skills,

⁵ http://www.epict.org/presentations/files/Ulla_Gjorling-Full_Paper.doc S.3

- Insight into and experience with team-based work in a net-based learning environment.

In comparison with the in-service training, the characteristics of the pre-service approach are

- Same focus on ICT in general classroom learning, pedagogical application of ICT,
- Same material as for in-service training, annually updated,
- Same licence/certificate as for in-service teachers, recognized by school owners,
- Different assessment.

5. CONTENTS OF THE EUROPEAN PEDAGOGICAL ICT LICENCE

Teachers follow eight modules in the following order: Three compulsory - Four optional - Final compulsory (Figure 3). When reading the names of the modules, always keep in mind that the content is focussed on the pedagogical use of ICT in education, thus all modules cover both the aspect pedagogical integration and the ICT-skills.⁶

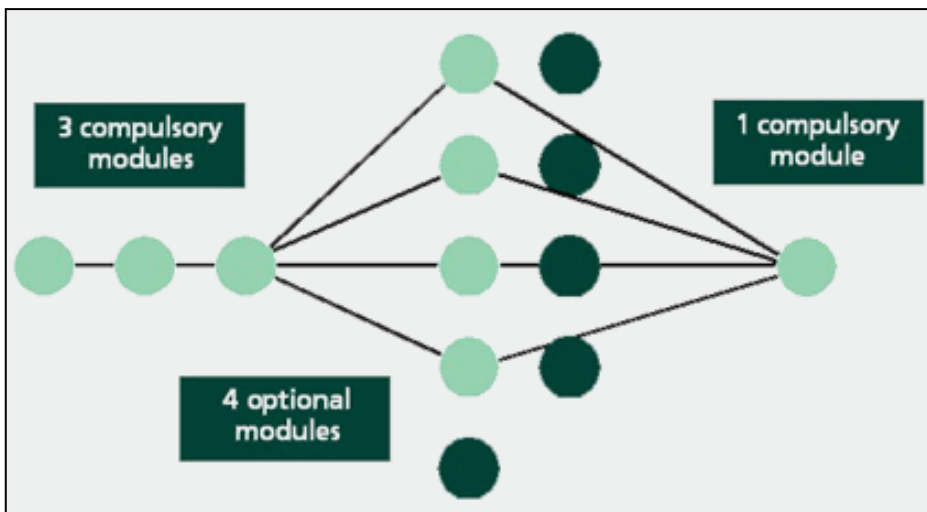


Figure 3: Compulsory and optional modules

⁶ http://www.epict.org/presentations/files/Ulla_Gjorling-Full_Paper.doc S. 2

5.1 Compulsory modules

For the whole certificate, there must be worked out four compulsory modules and four optional modules.

5.1.1 Lets find something on the Web⁷

Most teachers have probably experienced how students behave when they can lay their hands on a computer: the very first thing they do is to open an Internet browser, and soon the students browse music files, SMS sounds or something else on the Web.

In class, you will, very often, have to persuade the student to start the relevant software for the tasks of the lesson. Once they have started the application, a spreadsheet or a word processor, they will typically switch back and forth between the Internet browser, which is always running in the background, and the 'classroom application'.

Every time the student gets bored or does not know what to write, he switches to the browser. Often music applications from the net 'accompany the work'. To many students the use of the Internet is simply a part of everyday life just like the cell phone or radio and TV.

The Internet is playing an ever more important role in society. There are almost no areas of life that are not affected in some way by the Internet. For this reason we need to make the Web not only a tool but also a subject of study in school. This module deals with some of the aspects to be considered when using the web in class.

The module introduces central concepts and tools that will help you to find your way around on the Internet, to find precisely the information that you need, to assess and evaluate it and to process it to fit your particular purpose. In addition to this the module offers inspiration on how to integrate the Internet in teaching and learning and how to make the Internet available for children with special needs.

5.1.2 Type a Text⁸

Writing is an important skill to master. Although new technologies have changed and will continue to change the way we communicate, the importance of writing and written communication continues to grow. Information technology has, if anything, only increased the amount of written communication.

⁷ http://www.epict.org/public_content/module_summaries/compulsory_modules/A/index.html

⁸ http://www.epict.org/public_content/module_summaries/compulsory_modules/B/index.html

At the same time many work processes in our society have changed from individual processes to processes where we work together, share information in writing, give each other written feedback, prepare reports, specifications etc. as the basis for our work.

This development has also influenced teaching methods in our schools. The focus on process writing in modern pedagogy is an indication of the increased importance of writing in society in general. While learning to write, our students also learn how to handle the change in working methods.

The module focuses on text and writing, on the integration of images and sound in the text document, on synthetic speech and on the use of spell checkers and other text tools.

5.1.3 Where Are You Now?⁹

E-mail is the preferred form of communication for many people collaborating across firms, regions and countries. The advertising agent, for instance, mails his draft copy to the customer; the consultant sends her report electronically to the project group; the secretary “mails” the minutes of the meeting to the board of directors – and every day thousands of people send their orders to the world’s largest bookshop on the Internet.

Because it is possible to send the same e-mail to several people at the same time, and because one can attach files of any type to an e-mail message, it is a form of communication that is well suited for people who collaborate on common projects.

E-mail, SMS and other new technologies have changed not just the way the way we collaborate, but also the way we communicate and behave.

New technologies allow us to create new kinds of communities. You may have heard about MySpace and Blogger. Here people may present themselves, their views or interests. Other people may read or comment their presentations.

The module deals with communication and collaboration in general. Many new modes of communication have arisen - and most of them are heavily used by the students outside an educational context. The module explores how these tools can be utilised in teaching and learning.

⁹ http://www.epict.org/public_content/module_summaries/compulsory_modules/C/index.html

5.1.4 Work methods and ICT¹⁰

As an organization the school is under pressure - from politicians, "users" (both students and parents) and opinion makers. One demand that is being voiced regularly is that schools need to change focus and develop into a skills- and competence-based environment. At the same time both teachers and the school as such are met with demands of increased professionalism, internationalization, etc.

The task of the school is to provide students with an opportunity to develop the skills necessary to become independent and active citizens in the network society.

This requires rethinking the structure of the school, rethinking the organization of learning and the content of the learning process as well as the roles of teachers and students. The content and concepts of the school subjects are developed in the light of information technology and globalization.

There are, however, a number of barriers to the dynamic development of the school as an organization. The traditions and habits dominating in many schools today can only be changed through an active and continuous effort.

Our societies are characterized by swift information flow, knowledge sharing, network and cooperation. Thus the overall strategy of the school must be based on these very same features.

5.2 Optional themes¹¹

The teams decide, which four optional modules they choose:

5.2.1 Layout

Here, teachers are required to produce their own learning resources. The candidate will guide students in their own production processes and evaluate the subsequent student outputs.

- Layout and learning (for print, for screen, for web),
- Presentations and layout,
- Web-page design,
- Word processor and desk top publishing tools.

¹⁰ http://www.epict.org/public_content/module_summaries/compulsory_modules/H/index.html

¹¹ <http://www.epict.org/files/EPICTsyllabus.pdf>

5.2.2 Digital images

The teacher uses images in his/her own production, students use images in their productions and images are the object of teaching and learning in media-oriented subjects.

- The student's use of digital images,
- Evaluating images, including manipulation,
- Students' understanding of pictures, including using images aesthetically,
- The use of digital images in a learning scenario,
- Students' use of pictures as a media,
- Use of software for image processing,
- Image file formats.

5.2.3 Presentations

Using digital presentations and associated technologies provides a new genre that combines oral and written/image presentation. Teachers use presentations for teaching, learning and communication, assist their students in their production of presentations and evaluate the resultant student presentations.

- Presentations in teaching and learning
- Simple, branched and time-operated presentations
- Possible processes and work flow when the class produces a joint presentation
- Presentations and layout
- The presentation designer and simple presentations
- The presentation designer and multiple presentations
- The distribution of presentations

5.2.4 The production of web pages

Teachers will produce their own web resources, assist their students in the production and publication of web resources and evaluate the resultant productions.

- The production of web pages for teaching and learning,

- The design of a web site,
- Websites and responsibility,
- Publishing a web site.

5.2.5 Spreadsheets

Spreadsheets can be used in a vast number of contexts – to calculate, to model, to simulate, to illustrate through graphs and to provide a glossary.

- Spreadsheets in teaching and learning,
- The dynamic potential of a spreadsheet,
- Dynamic models,
- Research uses of the spreadsheet- for instance questionnaires and surveys,
- Basic examples of games that can be simulated in a spreadsheet,
- Spreadsheet and figures,
- Graphics in a spreadsheet,
- Models and spreadsheets,
- Templates for games and spreadsheets.

5.2.6 Internal databases

Different uses of internal databases in teaching and learning, including differing views on how databases can be integrated into teaching and learning practice.

- Steps taken when building an internal database with students,
- The elements of a database,
- Database tools,
- Constructing and producing reports.

5.2.7 Using digital learning resources

Sources of digital learning resources, their use within various learning scenarios and their evaluation by the teacher in terms of relevance and application within a given context.

- Digital learning resources in teaching and learning,
- Different genres of digital learning resources,

- Evaluating digital learning resources,
- Evaluation criteria for web sites.

5.2.8 ICT and working methods

Applying new working methods and tools.

- Using digital mind maps in teaching and learning,
- Using digital logbooks in teaching and learning,
- Using digital portfolios in teaching and learning,
- Web resources for teaching and learning,
- Searching, evaluating, processing and dissemination of information,
- Software for mind mapping,
- Software for digital logbooks,
- Formative assessment.

5.2.9 IT as a compensatory and supportive tool

ICT in special needs education both to compensate and to support.

- Scanning paper-based material,
- Editing text,
- Synthetic and digital speech,
- Prediction tools,
- Support for the dyslexic user,
- In-built Software Settings,
- Scanning paper-based material,
- Alternative pointing devices.

5.2.10 The use of computer games in teaching and learning

Capitalising on the interactive nature of computer games and the popularity of this genre with students.

- Computer games,
- Game consoles,
- Gender differences in the selection of games,

- Game genres,
- The installation and development of computer games.

6. QUALITY ASSESSMENT

The quality of a particular course depends upon a number of interchanging factors. The Pedagogical ICT licence quality control operates through the following initiatives:

6.1 Certification of facilitators

Facilitators must participate in a formal training of facilitators. He must be a practising educator within the field of that particular Pedagogical ICT licence, he must have passed the licence in advance and he must attend the annual updates to maintain his certificate. The training of facilitators focuses on the facilitator's role as an e-moderator and on the written response to participants. The contents, method and material of the particular licence are other focal points. Annual updates are carried through for facilitators. Here additions and revisions of the material are discussed, and experience and knowledge about the role of the facilitator is shared. If a facilitator does not participate in these annual updates, he loses his certification.

6.2 The role of the facilitator

The pedagogical ICT facilitator is one of the cornerstones of the EPICT concept, and also one of the reasons why the concept has been a success in many countries all over the world.

Paulo Freire, pedagog in Brasila, 1921 - 1997, coined the term „facilitator“. ‘Pedagogy Of The Oppressed’ (1970, manuscript 1968) is the most widely known of educator Paulo Freire's works. It proposes a pedagogy with a new relationship between teacher, student and society. From his own experience helping Brazilian adults to read and write, the book remains popular among educators in developing countries.

Carl Rogers (1902 – 1987), American psychologist who originated the nondirective or client-centred approach to psychotherapy, emphasizing a person-to-person relationship between the therapist and the client (formerly known as the patient), who determines the course, speed, and duration of treatment. Rogers edited his most famous work ‘Freedom to Learn. A View of What Education Might Become’ in 1969. Sometimes Rogers is said to be the creator of the term ‘facilitator’.

Now the term is used in EPICT. The pedagogical ICT facilitator is a central resource person mentoring colleagues who are not that confident with using ICT and media in education, because the focus should be on the process of facilitation, i.e. on the *interpersonal* skills, and *not* on technical skills of the facilitator. "The task of the facilitator is to *facilitate*, i.e. help the person being facilitated develop his or her own *personal* understanding, competences and skills" (Ingesman and Højsholt-Poulsen). "The role of the facilitator is to facilitate, and not to instruct or to teach ... This is something that typically teachers are not particularly good at: they are used to telling what is right and what is wrong, and to marking and grading ... But first and foremost, the facilitator should challenge the teacher or team. The central point of the EPICT facilitation process is to make the team go further than they could on their own, to make them think, speculate, argue for whatever they have done in their assignment/learning scenario. The facilitator should, however, also understand that he or she needs to meet the team ... The essence of constructive feedback as we see it: build up, do not tear down" ((Ingesman and Højsholt-Poulsen).

We are convinced that the teacher in the future has to be a facilitator.

7. THE IMPLEMENTATION OF EPICT IN AUSTRIA, KPH GRAZ

7.1 The EPICT implementation project in Austria

In the autumn of 2006, a team of Austrian experts from the Federal Ministry of Education - now BMUKK – reported on the suitability of the EPICT certificate for implementation in the Austrian school system - both in initial- and in-service training; to investigate and to suggest the next appropriate steps. This EPICT exploratory project was successfully completed on 7 March 2007. The project recommended under this EPICT implementation project has been running since autumn 2007.

The timeframe for the implementation of the EPICT- project was the establishment and implementation of as medium-term as possible, for all teachers in Austria to have mandatory basic ICT competency standards pedagogical-didactic oriented for the needs of the school.

Under the motto "EPICT - or something better", the Danish development EPICT tested and evaluated the project.

The kick-off was in the autumn of 2007. All public and private colleges of education and the College of Agricultural and Environmental Education were

already part of the Rector's directive, with specific project teams actively working together.

In intensive discussions with EPICT the conviction has grown, contributing to the successful realization of the EPICT courses in school e-learning, to the professionalization of teacher training, the establishment of colleges of education, and their constructive collaboration and innovation in Austrian education .

The e-LISA academy was assigned an office in Austria EPICT set. This provides for the implementation of the courses required EPICT, supportive measures and the required infrastructure. Now hundreds of teachers and prospective teachers are going through EPICT courses in all educational institutions in Austria.

7.2 EPICT at the KPH Graz

According to the agreement between the Austrian Ministry of Education and the Rectors' Conference of the Pedagogical Universities in Austria, all students who, by 2012, should be completing the EPICT course would, in the spring of 2009, be asked by some colleagues to assign the EPICT training content to our curricula. By order of the study commission, EPICT became compulsory in our curricula in September 2009.

In October 2009 the first students began EPICT, initially on a voluntary basis. Over the last two semesters, however, it was shown that the take-up of EPICT in training was not at an optimal level. Starting the EPICT training in the first semester is not useful because the students do not have any experience of planning lessons and also many have too narrow a knowledge of IT.

Based on these experiences, the contents of EPICT were reassigned in the curricula to the summer of 2010. It was ensured primarily that EPICT was included in practical training from the third semester.

Even for our university's own professors it has brought about a lot of changes. A few who sat the pilot courses had already dealt with EPICT. Many colleagues, however, still remain very sceptical. After the first experiences with students and many conversations with executives at the College EPICT, a new dynamic in relation to EPICT was revealed this spring. Ten colleagues completed the training as EPICT-mentors. These colleagues were encouraged to address the issue of e-learning. We hope that through these initiatives a new culture of learning and teaching at our

university will be developed and, subsequently, by our students in many of our country's schools.

CONCLUSION

EPICT (the European Pedagogical ICT Licence) is an attempt to create a comprehensive international standard for the continued professional development of teachers in the pedagogical use of ICT in education.

Currently it is probably the only CPD concept for teachers focused on the pedagogical integration of ICT that has been adopted by organisations in a number of widely different countries.

The course concept was developed in 1999 by the Danish Ministry of Education. The intention was to set up a comprehensive, national course concept to ensure that all teachers had the skills and competencies necessary to integrate ICT in the classroom, as they were required to do according to national curricula.

So far, the course has had around 60,000 Danish teachers participating (more than 66%), and independent studies have documented its impact. The concept proved to be robust, scalable and adaptable and was later developed into an international version that can be localized and adapted to specific national requirements. In many countries the concept has also been integrated in initial teacher training. See www.epict.org.

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USE OF DISTANCE LEARNING IN THE TRAINING OF PROFESSIONALS IN THE KNOWLEDGE SOCIETY

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Abstract: *E-learning - is one of the basic, modern forms of teaching today. In the present article will be considered and presented some trends, statistics, examples, most recommended information and educational technologies in distance learning, and also a place for distance learning in the knowledge society and its role in the preparation of today's leading professionals will be mentioned.*

Keywords: distance learning, open education, knowledge society, information technology, educational technology, CLMS MOODLE, today's leading professionals.

INTRODUCTION

E-learning - is one of the basic, modern forms of teaching today. At once more of the online learning institutions offers various options. Most online schools offer degrees in the following and many, many more: Law, Criminal Justice, Management, Information Systems, Education, Accounting, Psychology, Computer Science, Engineering, etc. (<http://onlinelearningmag.com/maximizing-career-opportunities-online-degree/>)

Online learning also offers many different levels of education. From courses offering accreditation in certain areas of the field you already work in to intensive PhD programs, the online degree you desire is available.

A person who begins online learning will also not be left alone with online learning problems. Almost all programs provide access to learned professors and professionals already working in the field that a person would like eventually to enter. Online education offers all the benefits of traditional

institutions without the restrictions. Moreover, each student would take an advantage of group discussions, career guidance and one-to-one help.

The past few years have shown a surge in online education. Simultaneously, it is worth remembering the formal and legal aspects, including the accreditation of institutions offering online education. Today, they are becoming more and more common place. Much of this is due to a rigorous accreditation process that online schools are required to complete. Accreditation ensures that such a school has met established standards to ensure a high level of educational quality. If already a field of study, specialty, degree have been selected and accredited school has been found, one must be prepared for the educational experience which will broaden the horizons as well as a potential future career (<http://onlinelearningmag.com/maximizing-career-opportunities-online-degree>).

In the present article we will consider and present some trends, statistics, examples, most recommended information and educational technologies in distance learning, and also mention a place for distance learning in the knowledge society and its role in the preparation of today's leading professionals.

1.ROLE AND PLACE OF OPEN AND DISTANCE LEARNING IN A KNOWLEDGE SOCIETY.

The best way to support the above statement is to quote Columbia University professor Eli Noam (1995) who said: "In the past, people came to the information (knowledge, education, *comment-by-author of the article*), which was stored at the university. In the future, the information (knowledge education, *comment-by-author of the article*), will come to the people, wherever they are". This quotation may be supported by another one. "In the past people also came to the teaching, while in future, the teaching also will come to people, wherever they are" (Noam, 1995, UNESCO, 2002). This future happens now.

The concept of "open learning" refers to the aim of opening up education. Lewis (1997) defines open learning as follows: "Open learning has two main thrusts: enhanced student access and the development of student autonomy. These aims are achieved through widening a student choice over aspects of the learning process. The choice may be widened over the time and place of studying and even over the curriculum itself, once access has been gained: choices, for example, of content, pace, method media and assessment. These curriculum choices develop great autonomy: through the structured and

supported exercise of choice in their learning, students work more independently” (p. 3) (UNESCO, 2002, http://www.unesco.org/bpi/pdf/memobpi38_distancelearning_ru.pdf).

The purpose of the UNESCO’s project "The knowledge base for open and distance learning in higher education" - to give managers the information and tools to facilitate decision-making and policy development in open and distance education and management. Project is intended primarily to improve the quality of open and distance higher education. In developing countries, the knowledge base is fully met the expectations of the authorities, are increasingly perceiving the open and distance learning as a means to expand access to higher education. The knowledge base has been launched by UNESCO in 2002 and since then it provides information that assists managers in establishing a system of open and distance education and the management service of its institutions. The project has created three regional databases on open and distance learning: for Africa, Asia-Pacific region and the CIS and Baltic countries. Inter-regional decision-support tool involves significant issues of quality assurance of distance education. In 2006-2007 project covered two new regions: the Arab countries and the zone of Latin America and the Caribbean (http://www.unesco.org/bpi/pdf/memobpi38_distancelearning_ru.pdf).

The following factors contribute to and promote the success and rapid development of open and distance education:

- the need to guarantee education throughout life (lifelong learning), constantly expanding access to education and professional training;
- increase opportunities to update knowledge, professional training or self-improvement;
- increase the profitability (rent-ability) of teaching resources;
- improve the quality of existing educational services;
- the promotion of equality of access to education of different age groups;
- more inclusive education in different geographical areas;
- the provision of short-term and effective training courses for certain categories of students;
- development as an interdisciplinary educational potential and for certain individual disciplines,
- the provision of educational services consistent with professional and

family lives of students;

- progress in the field of ICT (Internet, Web) that can increase the number of subjects taught at a distance;
- clear awareness of the importance of education internationally.

Reduce the gap in knowledge. Transition to a knowledge society based on the need to acquire new knowledge and skills throughout life. UNESCO addresses the main challenges of the XXI century education and concentrates all its efforts to promote open and distance education contributes to building a knowledgeable society in the context of learning throughout the life. UNESCO's activities in this area are described in more details in the following (www.unesco.org/bpi/pdf/memobpi38_distancelearning_ru.pdf).

Establishment of open and distance education is the right stage of development and adaptation of education to modern conditions. Its appearance may be explained as need of society in a creative, professionally and spiritually self-developing and self-learner's personality in conditions of transition to a knowledge society, on the other hand – they are considered as territorial, economic and cultural factors. According to experts' assessments, among the best ways to get education of high quality and the most popular form of getting it which had hitherto been considered, was the stationary learning while, the most accessible one, is now open distance learning. Professional competence of professionals who got education in the stationary form, was evaluated as the highest.

Extramural form of education is more oriented towards the preparation of professional-practice. Open and distance learning has many advantages in comparison with a fixed stationary and weekend courses. It relates to the availability, low price, self-sufficiency, flexibility, accessibility, modular character, quality, cost-effectiveness, state-of-the-art technology, large audiences, social balance, global reach, the new role of a teacher, positive effect on a learner and others. In addition to the equal opportunities of education received by different strata of the population, open and distance learning like no other logic of development of the education system and society in general, becomes the most important needs of a particular person. Distance learning actually changes the root of modern educational paradigm from the concept of the physical movement of students from one country to other country to the teaching of the concept of using a mobile remote access to school resources and education (Smyrnova-Trybulska, 2007).

The distance learning gained a special popularity in countries characterized by: *first* - a large territory, the distance of the learner's place of residence from

the place of studying, and *secondly* - the different levels of life, and *thirdly* - a fast-growing economy, the *fourth* - the presence of a high level of unmet demand for services education. Overall, analysis of the contemporary situation regarding distance learning in the world testifies the fact that the development is uneven, from practice to theory. This situation largely determines the partial contradictions and doubts in the eyes of specialists in remote teaching, its status in the system of education. Studying foreign and native literature on this matter shows that there is a mass of experiments in the field of distance education, various programs, projects at the level of higher education, corporate, region, country. In this world there are various models of distance education and training, which have both general and specific characteristics, for example: 1. *Correspondence teaching*. 2. *Across Mass Media (radio - television)*. 3. *Across Mass Media (radio - television) with interactive telephone, fax, computer and vision*. 4. *Computer - assisted teaching*. 5. *Teleconference systems*. 6. *Across computer net*. 7. *Teaching using videoconferencing systems and video phones* (Juszczuk, 2002); 1. *Self-education is regarded as the complete absence of contact between a student and a tutor*. 2. *Asynchronous teaching*. 3. *Synchronous teaching*. 4. *Hybrid teaching (also known as blended learning)* (Juszczuk, 2002, Wenta, 2005, Tanaś, 2005, Mischke, 2005); 1. *Integration of the direct (stationary) and distance forms of teaching*; 2. *Network teaching (The autonomic network courses; The information and education environment.)*, 3. *Network teaching and case - technologies*. 4. *Distance teaching based on interactive television (Two-Way TV) or the computer video-conference*. (Polat, 2004), others. Currently, the most popular and at the same time, the most promising model is the hybrid model - the *Hybrid teaching (or Integration of the direct (stationary) and distance forms of teaching)* (Polat, 2004, Juszczuk, 2002, Mischke, 2005, Tanaś, 2005).

Specification is usually conditioned by socio-economic and socio-cultural characteristics of education systems. It takes into account the technical, scientific, educational, methodical and organizational situation in each of specific educational institution, university, corporation or etc. In this way, open distance learning is considered as a realization of the possibility of a rational combination of measurable educational programs, technologies and forms of learning in order to achieve maximum efficiency of the education process.

Entry point of open and distance learning - understanding the purpose of continuous education of man (Lifelong Learning), ts. the appropriate concept of a continuous human development as a personality-oriented spiritual and ethical values throughout the life; of the continuity of the learning process as

a feature, whose essence is reflected by the categories of unity and direction, heredity and order, flexibility and momentum; of continuous learning as an organizational and pedagogical principle governing interdependence, trade various stages and degrees of education and training of man; of a system of continuous training as the only set of state and non-state educational institutions at different levels and the importance of different institutional and procedural characteristics, together with that characterized the organizational and substantive unity, continuity of correlation, providing an overall everyone a real opportunity to receive and constant improvement of general education and vocational training, spiritual needs, and cognitive, determination and successful transition of its "learning trajectory" (Krasnova, Tavgen, 2005, Smyrnova-Trybulska, 2007).

Open distance education is such a social institution which provides a variety of human services, teaching, allowing him to learn continuously, to ensure receipt of reliable scientific content, assimilation of modern expertise, training the necessary practical skills. Access to a similar system enables each learner to build the trajectory of science, which most fully corresponds to its educational and professional skills, regardless of the location. As a consequence, the interconnected network of educational institutions, which provides educational services to create the space, the relationship of heredity and programs on the basis of which it becomes possible to meet the aspirations and needs of the population. In this way, it creates the possibility of multidimensional mobility specialist in the educational and professional space (Figure 1), its development through education and continuous education and professional advice (Krasnova, Tavgen, 2005, Smyrnova-Trybulska, 2007).

The quality of open learning is secured through the presence of feedback from the teacher learner, and the wide use of interactive teaching. Teaching allows interactive engagement of students in the process of pulling the active acquisition of knowledge. The higher degree of learner activity, the higher quality of learning: the memory remains 10% of what you hear, seen 50% and 90% worked out from long time. Depending on the type of learning new material to varying degrees, the school is understood and remembered by students:

- assimilate the lessons of 5-10% of the material;
- through independent reading of the school literature - 10-20%;
- during a group discussion of school material absorbs up to 50%;
- in the practical application of new material, its degree of ownership of

school close to 75%.

The highest degree of ownership (90%) attained while teaching others.

More precise technologies, methods, forms of distance learning are described in the last chapter of this article.

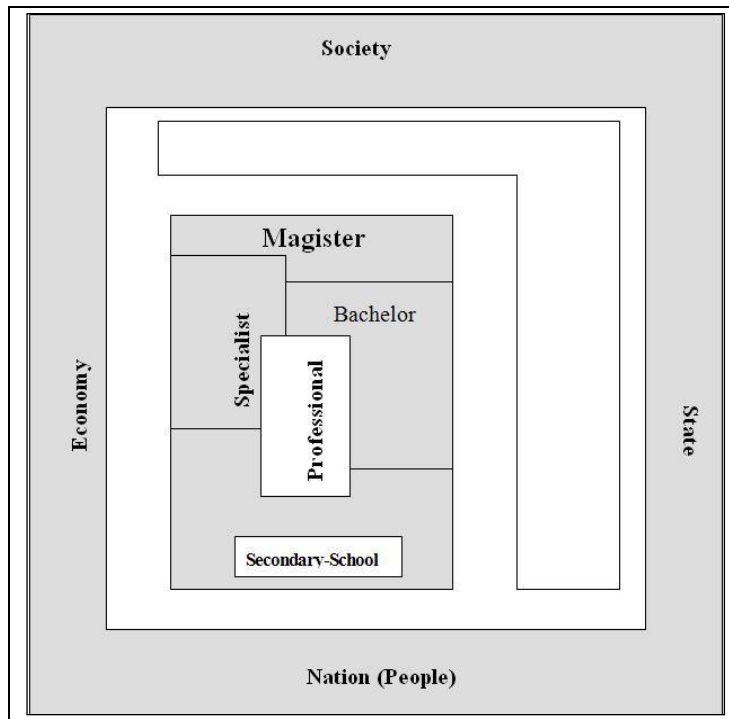


Figure 1. Diagram of the open educational and professional space in the knowledge society.

The implementation of e-learning in the system of open distance education, business-application feedback is implemented through the development and application of new technologies, primarily pedagogical and Internet-technologies, means and methods of teaching (Krasnova, 2003). In this way, after reviewing the relevant features of an open learning system at a given stage, one can say that they are particularly relevant to questions related to the development of training content, methods, forms and technology of learning, and improving the quality of education. Lifelong learning system is currently focused on the solution of tasks a professional - personality of a student, specific types of activities and range of functional responsibilities, that constantly change (Tavgien, 2003, Smyrnova-Trybulska, 2007). Moreover, such a system helps schools, graduates and institutions adapt themselves more effectively in the labor market in the new socio-economic

conditions.

The main lines of regulation and development of distance learning can be identified as follows:

The first direction - carrying out the preparation, raising the qualifications and training of the participants (lecturers, teachers, students) using the technology of distance learning. Application of these technologies will prepare professionals, especially educators, to organize an increase in managerial skills of employees and associates of educational institutions and other organizations, teachers and school methodologists, institutions, employees of enterprises, make the training, refer to the current competent construction materials and formulate practical skills in various objective areas, including professional areas.

The second direction - the application of technology for distance learning in order to provide additional services to students of higher educational institutions. In order to enhance social security of graduates on the labor market, to prepare professionals capable to compete, it is essential to attract students to science through the various stages of additional vocational training programs, which should bring up the conditions of graduates for professional activities. These programs allow students to:

- get the second degree or even the third one in higher education the remote training at another university can be implemented in parallel with the time course in primary education;
- obtain additional qualifications;
- realize an additional learning, a new profession;
- acquire the necessary professional skills, including IT.

As a result, professionals can receive training in the converging fields of knowledge. The combination of receiving further education in obtaining the first higher education offer the possibility of obtaining two diplomas from two directions, provided the organization of classes in a convenient form for students and convenient time. This is done by a system of open distance education appealing to students, shaping them with confidence in its high-quality professional training.

The third direction - further development of the post-secondary education before higher education. Use of modern information and communication technologies can increase the work to a new level of professional orientation of young people by carrying out remote student Olympiad and conferences,

the organization of in-depth study subjects and to prepare students to enter higher education institutions.

In this way, the emergence and development of the open distance learning system - an objective process that runs under the influence of two basic factors - computerization and globalization. Global objective of the system of open distance education is to prepare students for a wholesome and effective participation in social activities and expertise in a knowledge society.

2.DISTANCE LEARNING IN THE UNESCO DOCUMENTS

Much attention of distance learning of higher education in a globalized knowledge society is given in the documents of UNESCO.

A well-known publication “Higher Education in a Globalized Society UNESCO Education Position Paper” (UNESCO, 2004) is talking about the *Trends and issues* of development of the Higher Education in a Society.

Particularly, “in the context of globalization and knowledge economies, higher education in its knowledge producing and disseminating function, is recognized as an essential driving force for national development in both developed and developing countries. At the same time, in its universality and international dimensions, higher education can be seen as both an actor and reactor to the phenomenon of globalization (UNESCO, 2004).

The four key elements of globalization relevant to this discussion are: the growing importance of the knowledge society/economy; the development of new trade agreements which cover; trade in education services; the innovations related to ICTs; and the emphasis on the role of the market and the market economy (UNESCO, 2004).

These factors in turn have been the catalysts for new developments in higher education including: *i)* the emergence of new education providers such as multi-national companies, corporate universities, and media companies; *ii)* *new forms of delivering education including distance, virtual and new face-to-face, such as private companies*; *iii)* greater diversification of qualifications and certificates; *iv)* increasing mobility of students, programs, providers and projects across national borders; *v)* more emphasis on lifelong learning which in turn increases the demand for post-secondary education; and *vi)* the increasing amount of private investment in the provision of higher education. These developments have important implications for higher education in terms of quality, access, diversity and funding (UNESCO, 2004).

To be responsive to new developments in higher education provision, the *Study Abroad* publication, a key resource of UNESCO to promote student mobility, needs to address new forms of learning, and new types of learners. The need for effective student's input in this publication was stressed. The publication will be revised to include courses offered through open and distance learning. In addition, it will include a guide for potential learners multiple entry points and diversity of learning (e.g. age, culture, geography, needs). For the first time, all key information provided in this publication will be provided free of charge on the UNESCO website, including access to the database. Finally, in view of the need expressed for greater information on new developments, the need for an electronic space to share information on activities of the Global Forum was identified (UNESCO, 2004).

An important consideration of distance education in developing the concept of higher education is assigned to "World Declaration on Higher Education for the Twenty-first Century: Vision and Action and Framework for Priority Action for Change and Development in Higher Education": (Paris, 1998). In particular, the Article 8. "*Diversification for enhanced equity of opportunity*" (Paris, 1998) says: (a) Diversifying higher education models and recruitment methods and criteria is essential both to meet increasing international demand and to provide access to various delivery modes and to extend access to an ever-wider public, in a lifelong perspective, based on flexible entry and exit points to and from the system of higher education. (b) More diversified systems of higher education are characterized by new types of tertiary institutions: public, private and non-profit institutions, amongst others. Institutions should be able to offer a wide variety of education and training opportunities: traditional degrees, short courses, part-time study, flexible schedules, modularized courses, supported learning at a distance, etc. (Paris, 1998).

Also, the Article 12. "*The potential and the challenge of technology*" (Paris, 1998) says: "Creating new learning environments, ranging from *distance education* facilities to complete virtual higher education institutions and systems, capable of bridging distances and developing high-quality systems of education, thus serving social and economic advancement and democratization as well as other relevant priorities of society, while ensuring that these virtual education facilities, based on regional, continental or global networks, function in a way that respects cultural and social identities". (World Declaration on Higher Education ... (Paris, 1998)).

3. SOME STATISTICS FOR STUDIES ON-LINE

The statistical data on the scale of online learning in different countries vary over time. Simultaneously, four characteristics which affect the scale of deployment and popularity of distance learning are described in the previous chapter. Notwithstanding some discrepancies in the statistics one can conclude that regardless of some discrepancy in the forefront of countries with a developed system of distance learning are the United States, Australia, Canada, most European countries, Russia and some others. Available statistics illustrate the rapid increase in the scale of development and proliferation of distance learning in Europe and around the world.

The publication (Allen, Seaman, 2008) represents the sixth annual report on the state of online learning in U.S. higher education. In particular, the online enrollments have continued to grow at rates far in excess of the total higher education student population, with the most recent data demonstrating no signs of slowing: 1) Over 3.9 million students were taking at least one online course during the fall 2007 term; a 12 percent increase over the number reported the previous year. 2) The 12.9 percent growth rate for online enrollments far exceeds the 1.2 percent growth of the overall higher education student population. 3) Over twenty percent of all U.S. higher education students were taking at least one online course in the fall of 2007 (Allen, Seaman, 2008). More detailed information about online education in USA could see in Allen E., Seaman J., (2008) *Staying the Course*, Online Education in the United States.

The report from the analysts of IBIS World organization says that online education is growing rapidly in Australia. Australia has 39 Universities, virtually all of them offer studying at a distance. Number of students eager to choose distance learning from year to year becomes bigger of what once was. It was estimated that it could increase by 24.3% over the next 12 months, which is two times faster than in any other industry (<http://www.study-in-australia.org>).

Such a development is the result of a combination of several key factors: the increase in acceptance of online education as a valuable alternative to traditional teaching face-to-face, intensive use of broadband Internet services, improved resources and teaching methods (so-called real-time lecturing, podcasts, web-cams, virtual laboratories) and the economic slowdown. The biggest advantage of the sector, however, is convenience: the ability to learn at any time and place.

Since its foundation in 1993, more than 120,000 people studying in the OUA.

Last year the number exceeded 28,000 OUA graduates, an increase of 12% compared with mid last year. This year, registration for the first cycle increased by 22.5%, and the second cycle of 27%. Open Universities Australia (OUA), which are owned University Curtin, Griffith, Macquarie, Monash, RMIT, Swinburne and the University of South Australia, Australia's largest provider of higher education in the form online. Online learning is an alternative education for those who have crossed the age of university standard (18 to 25 years). Stuart Hamilton says that most OUA students are people with age range 25-39 years, and almost 70% are women. But he adds that also have 18-year-olds and 60-year-olds (and older!) (<http://www.study-in-australia.org>).

Employers in Spain are interested where he earned a diploma only. That's how it's not asked. At 1.4 million new students entered, almost 200 000 online studies began (Borowski, 2010).

This is over 10,500 more than five years ago, gives the Spanish daily "El País". Ever-growing number of students opting to study via the Internet, is linked to the proliferation of newer and newer technologies, and still giving of himself to forget the crisis.

The issue price for studios are not the most important thing here. This is the same for virtual studies, as well as traditional. Lecturers UNED (Universidad Nacional de Educación a Distancia), which take 60 000 virtual students each year, argue that because of the crisis more and more people realize the need for professional development. Surviving in the labor market requires continuous development of their competence in all directions. Online mode of study allows for simultaneous learning and work. While the programs of study do not differ from the traditional and the requirements are less, or for some, not for others (Borowski, 2010).

The main western universities most actively implementing distance learning are: University in Michigan (USA), University in Maryland (USA), University in Sydney (Australia), Open Universities (Australia), Curtin University (Australia), Open University in London (Great Britain), Open University (Spain), University in Hagen (Germany), University in Ostrava (Czech Republic) and others. Now about 80 % of European and American universities to a large extent apply distance forms of learning.

According to data of analytical tests carried out by UNESCO, 8 million people in Russia wanted to receive an education or improve their skills remotely, similarly volunteers in Kazakhstan about 800 thousand people. In Ukraine there were 2.5 million people (Polat, 2006).

Among the Russian universities offering distance learning are: Moscow Institute of Steel and Alloys, Moscow State University, Krasnoyarsk State University, Institute of Radio and Electronics in Taganrog, Novosibirsk State University and others. According to UNESCO data, Russia has 200 universities offering distance learning (Polat, 2006).

Among the Ukrainian universities offering distance learning are: Kiev Academy of Technology, National Pedagogical University name M.P. Dragomanow, Kherson State University, Kharkov Academy of Technology, National University of Kyiv-Mohyla Academy and others.

In Poland, studies on the Internet is still in its infancy, although the university continues to grow and widen the choice. Universities and academies in Poland have prepared a platform for studying using the Internet. It is Polish Virtual University - a joint venture of the Academy of Humanities and Economics in Lodz and the University of Maria Curie Sklodowska University in Lublin.

Studies of first and second degree are offered in education, political issues, science and in administration. Such a virtual educational offer is an excellent solution for busy people, for mothers raising small children and invalids. Virtual students have the same rights as traditional students: They receive student's ID; enjoy all the discounts for students and are eligible for student's loans. In spite of that studying online is still not too popular in Poland. Nevertheless, the situation has been changing. The Internet continues to dominate post-graduate studies and specialization courses. Social issues are also included into consideration.

There are some mere stereotypes describing "distance" students, as students in default who receive inferior education. That is why the PVU in its brochure endorsement adds that the traditional graduates receive diplomas of the Academy of Humanities and Economics in Lodz, without any supporting scientific information over the Internet. It seems that in application for employment in the west, such information on graduation would not be a reason for the complexes, on the contrary - given a certificate of determination, versatility and self-discipline. One of the reasons hampering the dissemination of study are issues which are not fully regulated by formal-legal system (Borowski, 2010).

Although the June 10, 2008 was adopted Decree of the Ministry of Science and Higher Education, for the matter what conditions must be met to enable to conduct teaching activities at this studies with the use of methods and techniques of distance education (Journal of Laws No. 90, item. 551), the

number of hours of classes for full-time and part-time, offering the use of methods and techniques of distance education, cannot be greater than 60% of the total number of hours of classes defined in the standards of training for various disciplines and levels of education, with the exception of practical classes and laboratory. At the same time the classes remotely, satisfying the conditions described in the Regulation, may be regarded as equivalent to the occupations, conducted in the conventional mode. A more profound analysis, and formal and legal aspects related to education on-line in Poland and abroad - that is the subject of another, separate article.

Among of the Polish universities, which implement distance learning one may enumerate: University of Warsaw, University of Silesia (Katowice), Academy of Mining and Metallurgy (Cracow), Polish Virtual University in Lublin, Gdansk University of Technology, others.

4. LIFELONG LEARNING AND E-LEARNING

One of the most important educational challenges which is present practically in all European countries is the creation and development of a system of «education functional and effective during all life» (LLL - Life Long Learning). It is mentioned in the Bologna Declaration to which Poland is a signatory.

Therefore one can confirm that at present high technologies and knowledge societies play an important part in human life; our times are both marked by increased levels of activity in old age and accompanied by active efforts to keep knowledge up to date. Besides, social processes are taking place faster than before.

Simultaneously, there are now a rich variety of Information and Communication Technology (ICT) tools, which can potentially be used in innovative ways to support learning, providing the opportunity for students to take control of, and personalize their learning. Coupled with this there has been a fundamental shift in the nature of society; the world in which we live is dramatically different from that of our grandparents. As a result, the nature and purpose of education has changed; in part in response to the changing nature of society and in part given the changing perspective on what education in a modern context is for (Gráinne, 2006, Smyrnova-Trybulska, 2010).

5. ON SOME TECHNOLOGIES THAT ARE RECOMMENDED FOR USE IN E-LEARNING

In the context of developing a coordinated strategy for the successful implementation and use of e-learning in the preparation of specialists in a knowledge society worth mentioning is the first aspect of the use of appropriate information and educational technology.

5.1. Some informational technologies in distance learning

Nowadays it would be hard to come across higher education institutions (faculty), schools, kindergartens, vocational training institutions, teacher training centers or other educational institutions that do not maintain their own website. More and more educational institutions are launching distance learning systems or components in response to the needs of both learners and teachers. The implementation of distance learning is being facilitated by increasing availability of information tools and means which, in turn, are being developed as a result of advances in information and communication technologies, and particularly web-based technologies. All of these developments have contributed to the emergence of multifunctional, quite reliable, user-friendly distance learning tools (Smyrnova-Trybulska, 2009).

These include more advanced tools such as content learning management systems (CLMS's), including open source systems (MOODLE, Claroline, Dokeos, Atutor and other systems) supporting practically all phases of the learning process as well as content management systems CMS (e.g. Mambo, Joomla!, Drupal, Nuke PHP Apache), enabling users to quick launch vertical portals such as educational portals, featuring various services, including those with return email links but requiring initial configuration and subsequent maintenance by an IT specialist. Solutions developed using Web 2.0 technology (Blogs, Forum, Wiki, Chat, WWW, RSS, CSS projects, open repositories of audio and video materials, and pod-casting and other forms of social software etc.) are also available; they can be used by all users, including those without any special IT training. Web 2.0 is not a new worldwide web or the Internet; it is a new method for using the Internet's existing resources. Web 2.0 is the informal designation of Internet sites and services launched after 2001 which primarily rely on the content generated by users visiting the site or service. Web 2.0 was designed to facilitate interactive information sharing, to enable Internet users to use personalized web pages. Generally, websites have become more user-centered. It is hard to overestimate the importance of CLMS systems and Web 2.0. services in efforts aimed at achieving educational goals nowadays as the underlying principle of education is shifting towards personal-oriented education,

focusing on the learner and on the development of the learner's mental faculties, creative abilities, personal qualities as well as the ability to think creatively and critically. The most popular and fast-developing MOODLE system, based on tenets of social constructionism and the concept of micro-worlds (enabling learners to explore course environments), implemented by Jean Piaget and Seymour Papert, has yet to realize its broad educational potential. Thanks to its open code and broad spectrum of resources offered, MOODLE can be flexibly developed, adapted and modified to meet the various needs of learners, teachers and educational institutions (Smyrnova-Trybulska, 2009).

5.2. Some educational technologies in distance learning

Analyzing educational technologies, the most recommended for use in distance learning systems, in particular using MOODLE system, are the following technologies:

- *Technology of the personality oriented teaching.*
- *Teaching in cooperation* (cooperative learning);
- *Technology of diverse teaching;*
- *Taking into account and apply the principle of individual approach;*
- *Technology immersion in the subject environment*, based on the theory of constructionism (Piaget, Papert), in the design and organization of distance learning;
- *Technology fully assimilate in the organization of distance learning* (Smyrnova-Trybulska, 2007).
- More details we analyze thanks to the *certain principles of technology of personality oriented teaching.*

Interesting location and concentration of ideas in the field of humanistic pedagogy personality oriented teaching is manifested in a number of principles formulated by Van Parreren that can be successfully adapted in distance learning, for instance in the distance course in MOODLE system (Levites, 2003, Smyrnova-Trybulska, 2007):

Principle 1: Raise students' motivation for continuing educational activities, it can be based on personal experience of students (for example, such a motivation can be fixed, targeted use of ICT in the teaching process and remote forms of teaching and emphasis on self-education, timeliness and acquired desire competence in the field of IT in the future teaching and

professional activities).

Principle 2: Learning dialogue, ts. in cooperation with the learners and not in accordance with the principle of "top down" (This principle can be successfully implemented not only in traditional teaching, but also in the remote after the application of various tools for synchronous and asynchronous dialogue: Chat, Forum, e-mail, Skype, Yahoo Messenger, ICQ, internal messaging systems in distance learning systems, for instance in MOODLE, and others).

Principle 3: Teach diagnostically: a continuous follow the progress of students is required, improve and support if necessary (for example, in the CLMS MOODLE using a variety of instruments for monitoring the performance of pupils and their activity: log (input to the system), activity, assessment et al., this principle can be implemented successfully.)

Principle 4: Separate the contents of the teaching parts and tasks. This approach should be varied for different categories of students to ensure a fully-oriented basis for various categories of students and to transform the structure of their school motivation (or cognitive interests). For example, the distance course is modular, hierarchical structure, composed of various units, components, resources, allowing for flexible working and provides a differentiated approach to students.

Principle 5: Provide for the school content (action - trainee model: objectively oriented; personality oriented) *at various levels* (physical, perceptual, mental (J. Galperin)). This is necessary to ensure that the process interiorization proceeded as efficiently as possible. This principle is successfully implementing the distance learning systems used by various components of distance courses (lesson, quiz, forums, task, etc..). Multimedia materials and different tools to interact *with students, teachers and students among themselves*. The access to these course components is usually temporarily unrestricted, what can assure favourably the passage of the interiorization process.

Principle 6: Learning in the appropriate pace, using appropriate means and tools (computer, telecommunications, electronic textbooks, multimedia, educational programs, remote online courses and others.) or *media* (e.g., oral speech, literate speech, model, graphic, symbols, audio-recording, video, etc.). All these measures, tools, media may be available in distance teaching (including the use of CLMS MOODLE).

Principle 7: Teach and assist students at their actual capacity (for example: a set of communicative and mental actions and their way of life conversion

experience) and not at the level of the external characteristics of the responses of students in the performance of school tasks. Van Parreren opposes the mechanical memorization of facts unrelated to evaluate the progress of students on the basis of an informed treatment of any conceivable inventories (the notion of content generalization by W.W.Dawydow). This principle can be successfully assisted by the application of artificial intelligence elements in the system CLMS MOODLE, for example, available in the lessons and other components of the distance learning course (of course, in appropriately designed methodology course).

Principle 8: The capacity for reflection and evaluation by the students themselves of their additional progress (sense of competence). In this context, Van Parreren puts an unusual proposal, which lies in the fact that the adopted grading system changed to a set of assessment criteria, developed jointly by students and teacher (Amonashwili). According to Van Parreren proposed scheme does not replace, and complements the system tables (Montessori). The distance learning system MOODLE can create their systems of assessment (in degrees, points, percentages, descriptive, etc., this time with the students, and when assessing how students are learned, or in the performance of individual tasks, tests, their knee-jerk response), conduct joint discussions about the merits of the forum, virtual workshops, etc.

Principle 9: Provides a set of tasks for the group before that, as students will work independently. Help is needed, therefore, to avoid the "rigidity" of actions, speech, thought (in the system MOODLE all tasks are first developed by the teacher and then placed in a course, time access to them is regulated by the teacher and may be limited (for example, shortly before activities or unlimited)), by e-mail, sending the forums and other means of communication. Tasks can also be sent to the appropriate pre-e-mail address of the learners in order to per-acquainted with them.

Principle 10: To stimulate the initiative and creativity of learners in order to manage the content in question far deeper than the traditional methodology (Creative tasks, project method and others. Are successfully carried out primarily with the use of IT and remote forms of teaching).

Principle 11: Favour the real formation of subjectivity, which is precisely the positive attitude to learning subjects and particularly in the self-determination, responsibility, autonomy in relation to cognitive activity. A properly designed remote course (for example, in the MOODLE system) can successfully provide a friendly, stress-free atmosphere of learning for every student without pressing from the teacher and other students and create a positive attitude toward learning the subjects.

Principle 12: Provide for the climate conditions in the auditorium, leading to the development of integrated social-personality students. The components of the system MOODLE fill the opportunity to work individually as well as a team, the implementation of joint projects, tasks, contact us at the time working and learning, thus providing conditions for the climate in the audience, leading to the development of integrated social-personality students.

6. EXAMPLES FROM OUR EXPERIENCE

The aims, conception as well as the methodology of implementation the e-learning on University of Silesia (US) as well as the activity of Distance Learning Centre of US became exactly and respective described in the article (Widła, Mrocheń, Półtorak, 2009). One of first and the most actively functioning of distance learning platforms on US is the platform of Faculty of Ethnology and Sciences of Education in Cieszyn (<http://el2.us.edu.pl/weinoe>). Most of the technology described in the previous section is successfully used in the implementation and duration of training future teachers and active at the Faculty of Ethnology and Sciences of Education in Cieszyn using distance learning platform, based on the MOODLE system. Aims and examples of distance learning platform for Faculty of Ethnology and Sciences of Education in University of Silesia were more fully described in the previous articles of the author (Smyrnova-Trybulska, 2009, 2010), in order to:

- 1) provide pedagogical support for teaching programme courses, run in the full-time and part-time mode (hybrid learning),
- 2) train future teachers in distance learning – to use e-learning in own profession and to act as tutors,
- 3) help teaching staff as well as graduate and post-graduate students to carry out scientific research and pedagogical experiments,
- 4) provide access to educational materials for students and other users,
- 5) foster international cooperation, in particular, through international projects.

One of the examples of projects in area of e-learning is a project "E-learning – as a Road to the Communication in a Multicultural Environment", which was coordinated by the author of the article. International educational project supported financially by International Visegrad Funds (IVF) "E-learning – as a Road to the Communication in a Multicultural Environment" (No

10920089), implemented in collaboration with University of Ostrava (Czech Republic), Matej Bel University in Bańska Bystrica (Slovak Republic), project be realized from 01.08.2009 to 28.02.2010 and has been successfully completed. The aim of the project has been to address the problem of fostering close cooperation and strengthening relationships between the Czech Republic, Poland and Slovakia. In particular, the project was designed to promote regional cooperation among Visegrad countries through support for research and educational projects as well as through e-learning and LLL programmes, conferences, workshops, and the development of regional educational environments as well as training of teachers in the field of ICT and E-learning (<http://weinoe.us.edu.pl/projekt-miedzynarodowy-e-learning-droga-do-porozumiewania-sie-w-srodowisku-wielokulturowym>, Smyrnova-Trybulska, 2010).

In the context of the article topic, I would like to give some results of surveys conducted at the end of one of the e-learning courses - "MS Word and its possibilities" from the subject of Information Technology by students of pedagogy (Figure 2, Figure 3, Figure 4). This course was one of the three in which the prospective teachers took part in course of realization Information Technology subject Programme (generally there are more than 40 distance courses available on the faculty platform). The surveys were reflective in nature while the evaluation related to the students' opinion about the course and their assessment in terms of substantive, methodological, technological, organizational, and e-learning as technology, methods and forms of learning.

One hundred eighty two students participated in anonymous surveys. Below some results of several surveys are presented. They show strongly positive views of students about the course, about their achievements as regards the subjects of the distance course as well as e-learning effectiveness. Comments are minor, having no conceptual character and of course, will be considered when updating the distance course. Similar positive results were obtained at the time of questioning students at the end of Excel and Power Point Courses. It embodies the hopes that we are moving in the right direction and adjust to demands and expectations of students, making the requirements at once more ambitious, sophisticated and advanced.

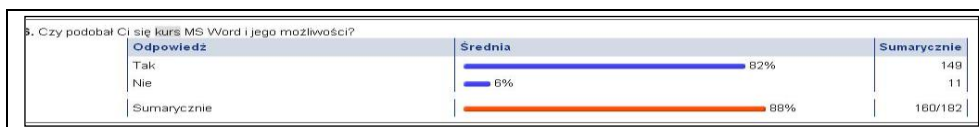


Figure 2. Responses to a question: "Do you like the course "MS Word and its possibilities"?"



Figure 3. Responses to a question: “I learn how to improve my professional practice”.

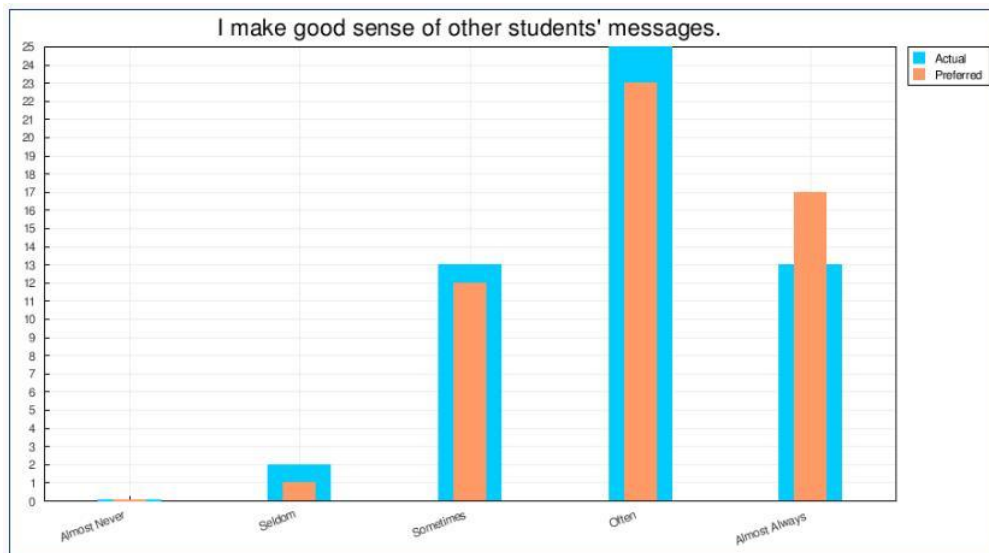


Figure 4. Responses to a question: “I make good sense of other students’ messages.”

Meantime problems and challenges are to be resolved, inter alia:

- Preparation of academic staff in e-learning;
- Time-consuming in the development of remote courses,

- Frequent, time-consuming and laborious updating of the IT courses (it is difficult to keep up with emerging new versions of software (MS Office 2000, 2003, 2007, 2010, etc.), so it is worth concentrating more on developing generic skills in students;
- Regular and systematic implementation of new multimedia technologies, the development of "smart" tutorials;
- Updated version of CLMS (such as MOODLE), (in the case of universities, including deals with the technical platform administrator);
- Reliability, speed and performance of Internet connections and the cost of Internet access (which is sometimes less current, but the problem still exists, especially for users);
- And many others.

CONCLUSION

Described and presented in the article surveillance and analysis of existing expertise in the country and abroad in the use of e-learning to prepare professionals to deal with the knowledge society, years of own experience regardless of the number of still existing problems and challenges convince the users that it is difficult to find alternative education for distance in today's rapidly growing knowledge-based society, which requires some trained personnel who quickly update their knowledge and skills, steadily expanding and upgrading their skills, possessing universal competence as well as specific professional skills, habits of cooperation in a team (including the conditions of globalization, in an international team on the Internet), communicating in foreign languages, etc. To sum up one should say that only international cooperation, joint projects, exchange of experience in Europe and the world in theoretical and practical aspects of distance learning make it possible create an efficient, optimal strategy for the implementation of e-learning which should be continuously improved and adapted to one's needs.

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SUPPORTING FIRST YEAR STUDENTS THROUGH BLENDED-LEARNING - PLANNING EFFECTIVE COURSES AND LEARNER SUPPORT

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Abstract: *Higher education has been actively encouraged to find more effective and flexible delivery models to provide all students with access to good quality learning experiences. Blended-learning, commonly defined as an integration of traditional face-to-face and online approaches, is now proposed as one solution which is addressed to student's learning needs. This paper describes students opinion about using e-learning techniques and their participation in courses provided in different ways as additional help (as additional material for students, as obligatory material, as e-tests) and expectations of first year students.*

Keywords: blended-learning, quality of learning, traditional learning, telecommunicational and computer technology.

INTRODUCTION

During last classes in the second semester students filled in a survey which included several questions. The aim of that survey was to gather information about students and their opinion about using e-learning techniques during first year education. The gathered information made it possible to know what factors influence students results. Researches introduced in this paper are

based on ca. 6 hundred surveys from 4 faculties of Technical University of Gdańsk. In this paper we attempt to give an answer to key questions: How can we find new improved methods in education and which e-learning techniques can be more attractive for students?

1. THE DIRECTIVE IN THE HIGHER EDUCATION LAW

Virtual reality of computer networks is becoming more and more omnipresent in our lives. The internet is playing a more and more important role in education, recruitment, trade, exercising power or in entertainment. For these reasons it is important to consider the problems which encounter both the lecturers preparing material that would be accessible on the net, and the students while using new technologies.

The directive in the Higher Education Law from 25 September 2005 allows introducing e-learning in Poland. It should be noticed, however, that this version of the directive does not concern classes run solely via e-learning methods. This is a ministerial regulation concerning so-called blended-learning. This is complementary (hybrid) learning, combining traditional and internet classes. Here is a fragment from this directive:

§ 5 The number of teaching hours both at full-time and part-time studies held with the use of e-learning techniques can not be greater than:

1. 80% - in the case of units at Universities having the right to confer post-doctoral degrees,
2. 60% - in the case of units at Universities having the right to confer doctoral degrees,
3. 40% - in the case of all other units at a given University of the general number of hours of classes stated in the educational standards for specific fields and subjects of studies and their levels, excluding practical and laboratory classes.

And directive from 9 May 2008 changes above form to:

§ 5 The number of teaching hours both at full-time and part-time studies held with the use of e-learning techniques can not be greater than 60% of the general number of hours of classes stated in the educational standards for specific fields and subjects of studies and their levels, excluding practical and laboratory classes.

Gdansk University of Technology, like other universities in Poland, keeps trying to formulate clear regulations for e-learning courses. At our university

we still have the problem of the role of e-materials in the academic teacher's assessment and there is also a problem with formulating the criteria for including the hours devoted to e-learning into the teachers' syllabus.

2. METHODOLOGY

In this paper we considered ca. 6 hundred surveys from 4 faculties of Technical University of Gdańsk – Architecture (A), Chemical (Ch), Civil and Environmental Engineering (C), Electronics, Telecommunications and Informatics (E).

All together, our learning centre carried out more than 3 thousand surveys on 8 faculties from which we chose 4 faculties that, in our belief, should be the right representatives for technical universities.

The first question from the survey concerned having computer abilities and Internet access.

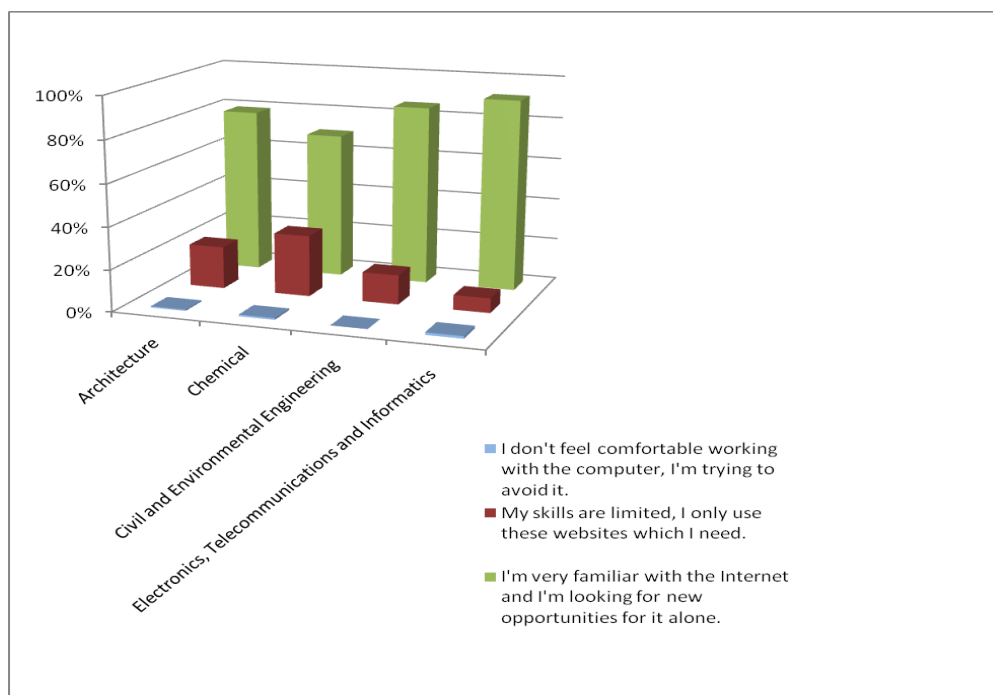


Figure 1. How would you assess your abilities to using the Internet?

As we can see from above figure, the first year students have great confidence in their skills in using the Internet.

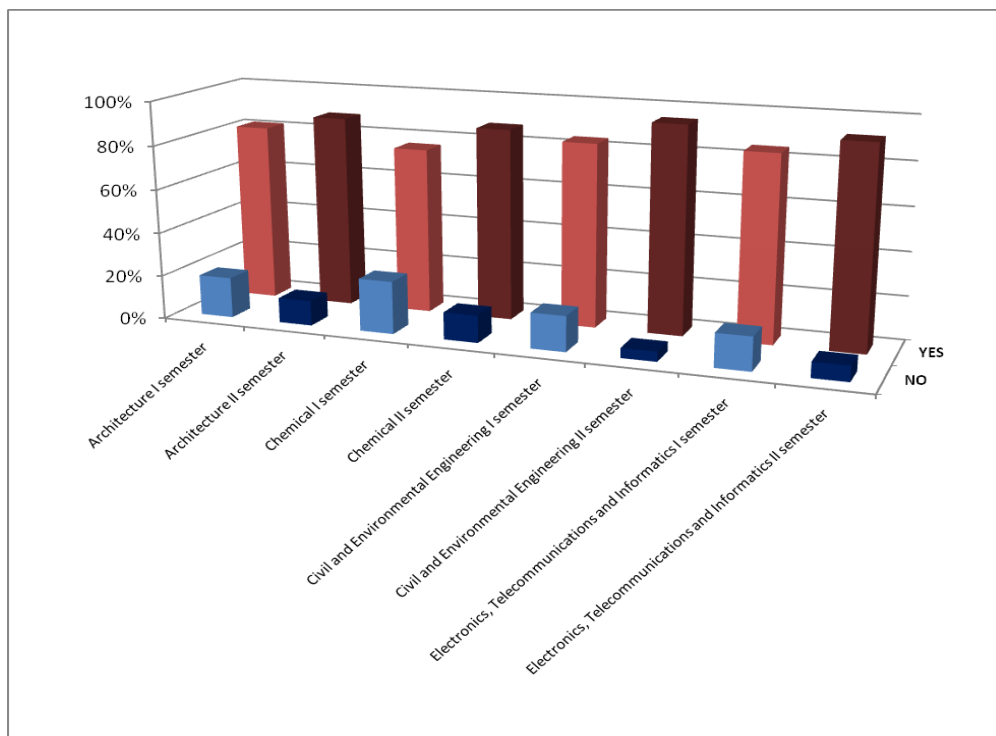


Figure 2. Did you have unlimited access to the Internet at the beginning of I / II semester?

From Figure 2, we can see that the percentage of students who do not have unlimited access to the Internet significantly decreased (for example at the Civil and Environmental Engineering Faculty from 16,22% to 4,5%, and at the Chemistry Faculty from 24,03% to 12,4%). Because of that, starting an obligatory e-learning course is more recommended for the second semester students. However, e-courses could be successfully introduced as additional material (not obligatory) even for the first semester students.

The next issue, that we became interested in, is the amount of time spend on the Internet by students (Figure 3 and Figure 4).

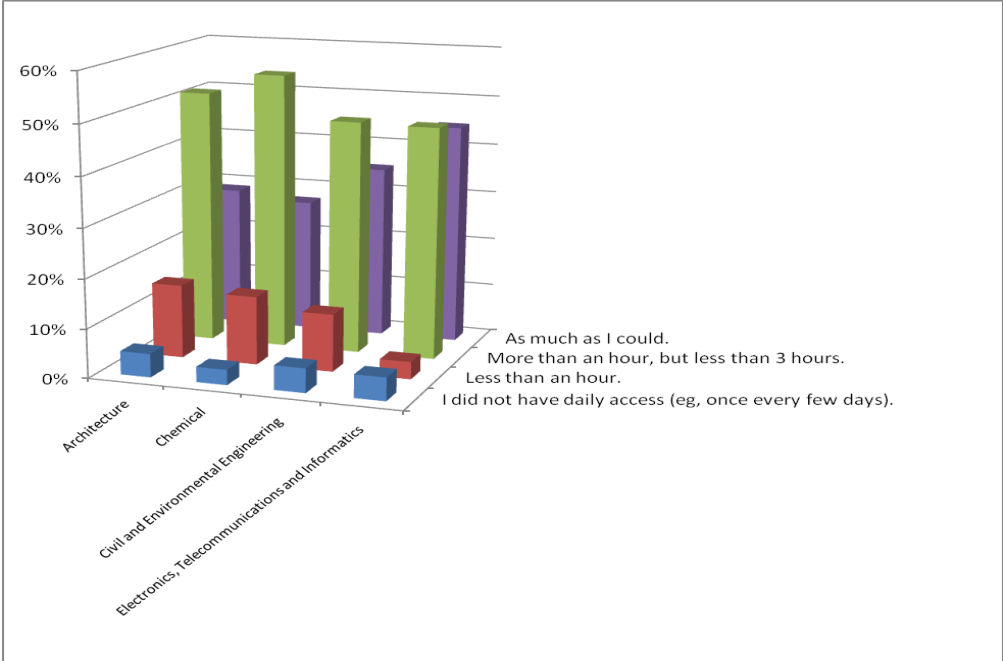


Figure 3. How much time per day did you spend on the Internet during the first semester?

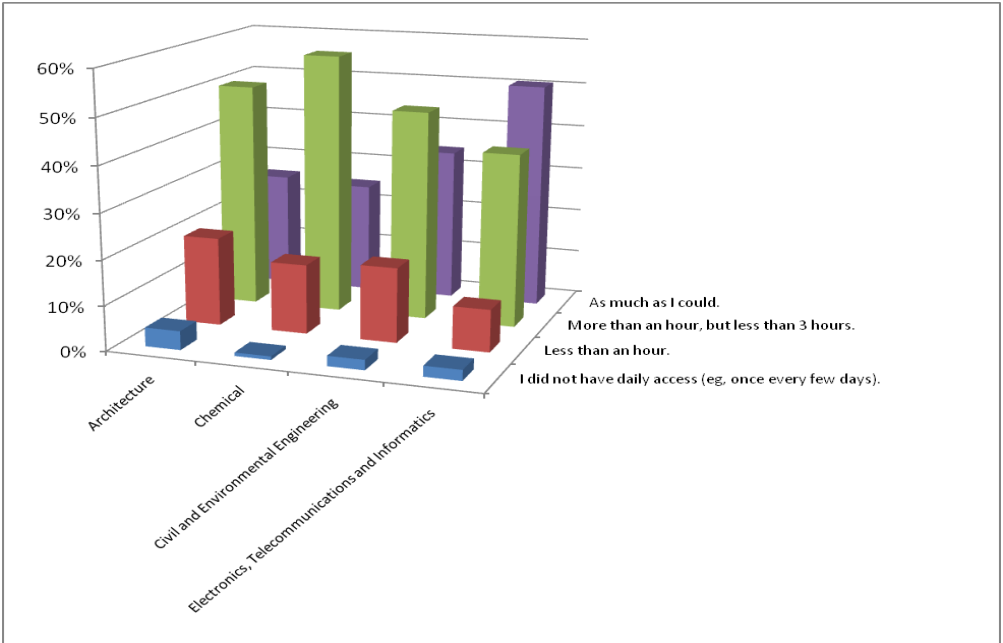


Figure 4. How much time per day did you spend on the Internet in the second semester?

When we compare the Figure 3 and Figure 4 we can see that the students from three faculties (Architecture, Chemical and Civil and Environmental Engineering) spent slightly less time on the Internet in the second semester. The exception is the Electronics, Telecommunications and Informatics Faculty where the number of students using the Internet more than 3 hours a day rose by more than 6%.

We can also try to consider the relations between the number of hours spend on the Internet, especially between the amount of time needed to find helpful information for studies, and the average grade in mathematics after first term (Figure 5 and Figure 6).

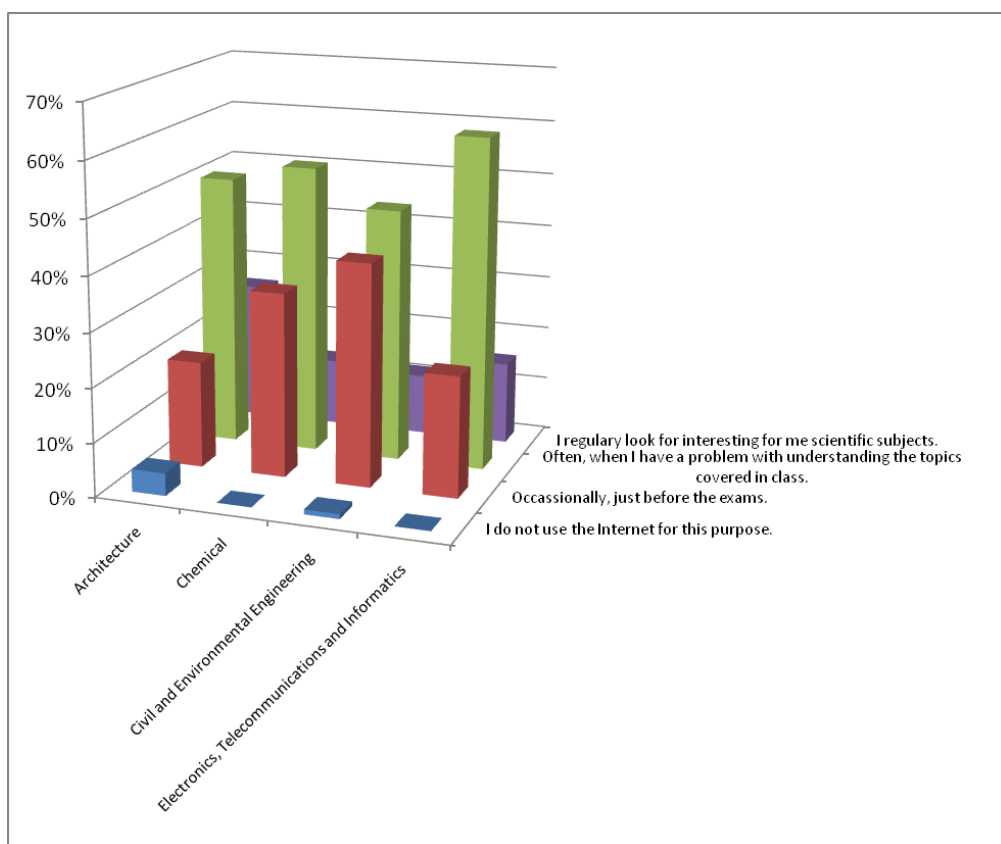


Figure 5. How much time spent on the Internet did you use to search helpful information for your studies ?

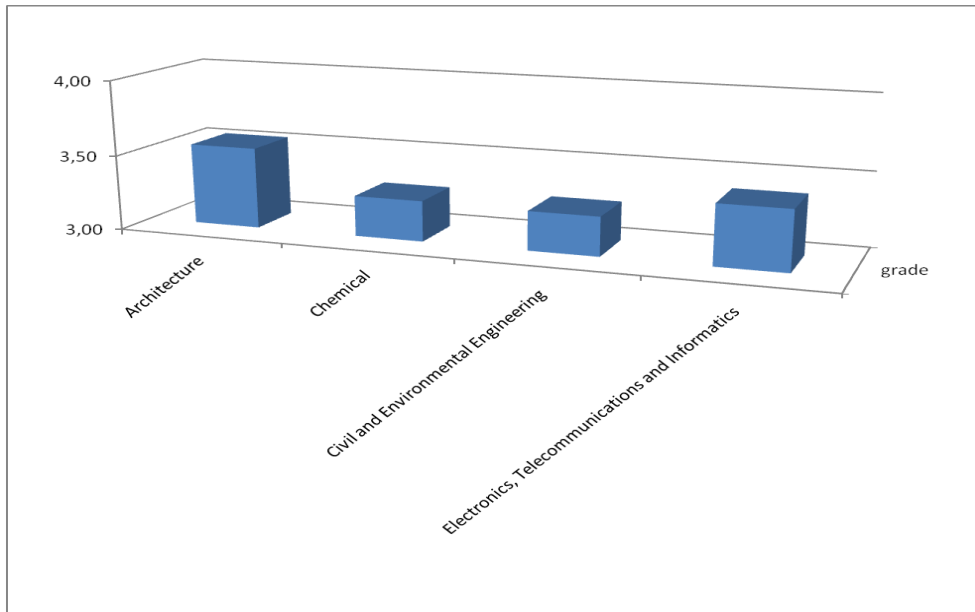


Figure 6. The average grade in mathematics after the first term of the academic year.

As we can see, we should carry out more detailed survey and an analysis connected with individual students to examine a realistic influence of using the Internet on the students' grades.

In the next part of the survey we were interested in students views and opinions on the methods and techniques of distance learning (Figure 7, 8, 9).

We can see clearly, that most of the students reject the possibility to replace traditional classes with online e-courses (Figure 7). We can also noticed, that the more involved in the work with the Internet students are, the easier for them is to adjust to this way of teaching (we can compare Figure 5 and Figure 7).

The students have completely different attitude to the idea of evaluation via e-learning platforms (Figure 8). In many additional opinions, they suggested that working with e-learning courses should give extra points to the general grade, but it cannot be the replacement for traditional way of passing the subject.

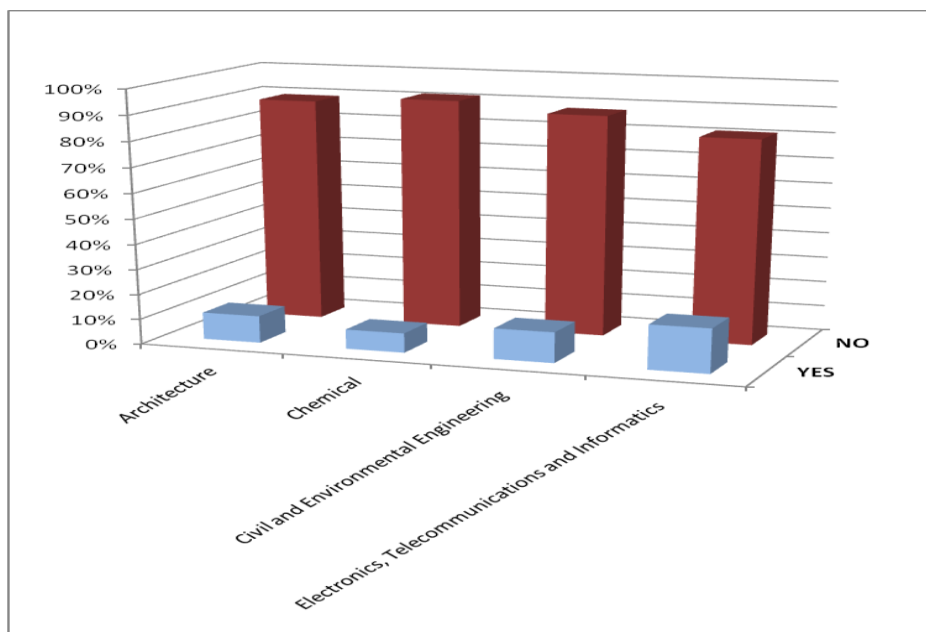


Figure 7. Could the Internet courses, in your opinion, replace the traditional face-to-face classes?

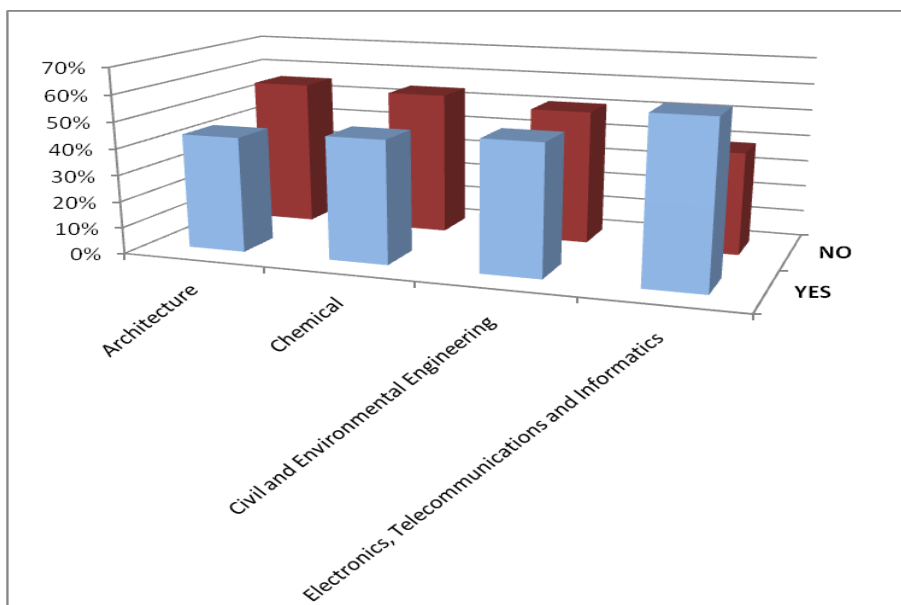


Figure 8. Could the Internet courses, in your opinion, be a part of the subject's finale grade?

The survey also shows that the students need personal contact with lecturers (Figure 9).

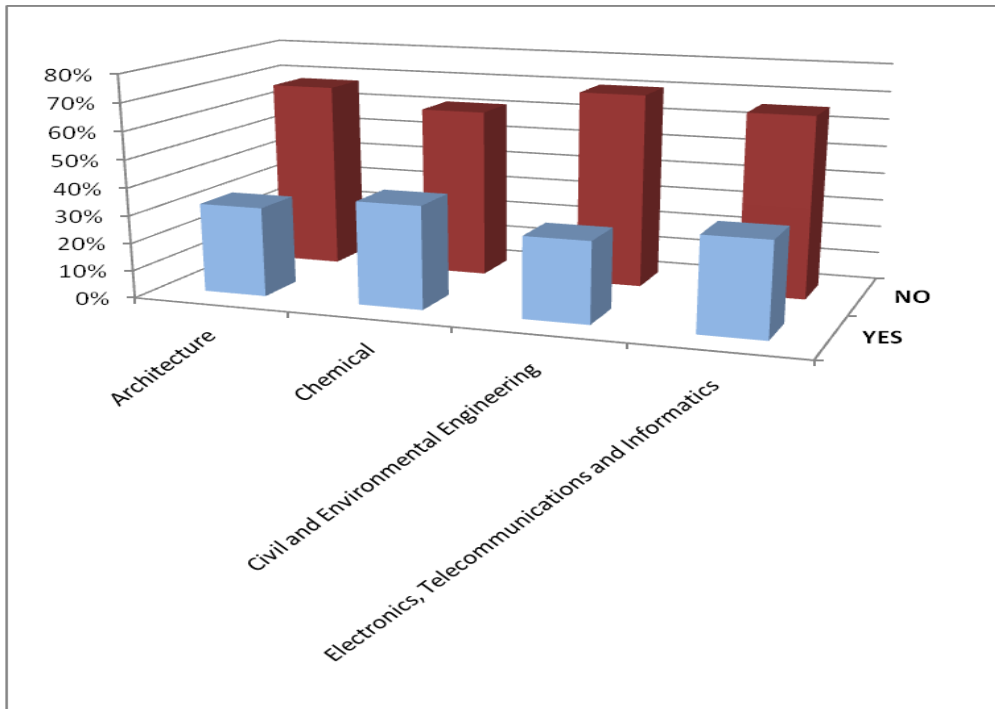


Figure 9. Could the contact via the Internet with a lecturer replace the traditional consultations ?

This was highlighted in the last question of the survey where students could write their comments, for example:

“Consultations via the Internet would have been useful, but it cannot replace the face-to-face meetings. If such consultations were available on the Internet, then both sides would have to have a camera to, for example, see the solutions and the way of thinking. ”

“Many students could not find enough motivation to learn more at home or student hostel. Nothing can replace the traditional contact with the lecturer.”

As we can see, despite the very strong commitment of students in the use of the Internet, their attitude to the classes and consultations run solely via e-learning methods is clearly negative.

From students' personal opinions written below the questions, it shows clearly that they reluctantly relate to the scientific classes run via the Internet.

However, they are still very interested in materials that would be accessible on the Internet and helpful with their studies (Figure 10).

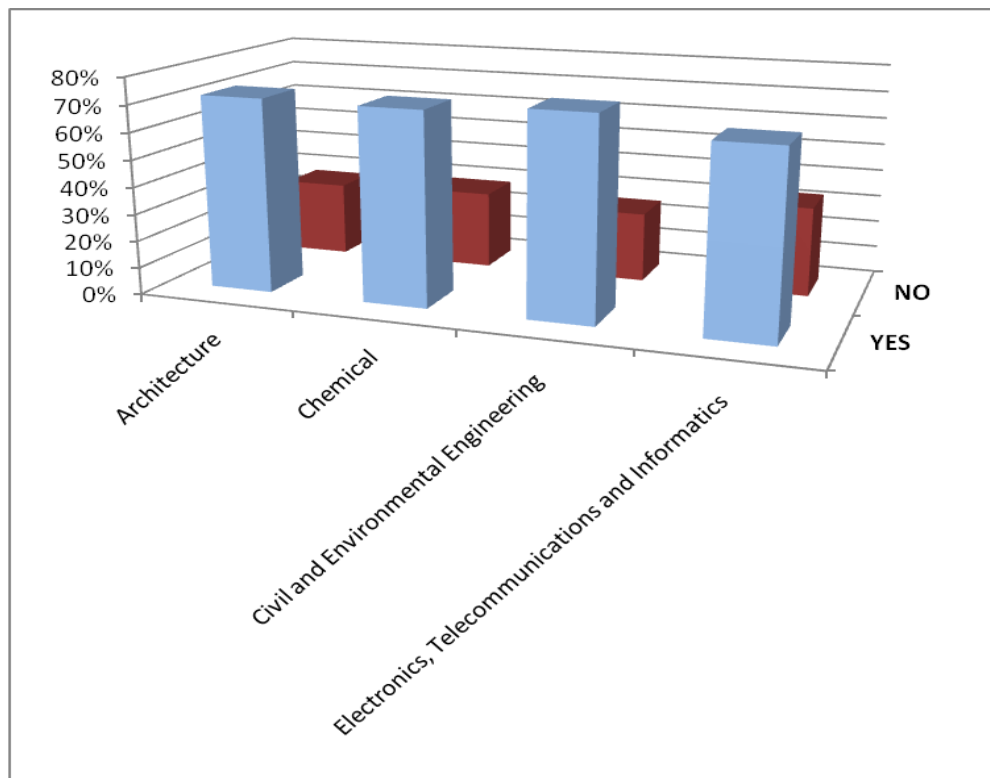


Figure 10. Are you interested in using the mathematical portal, which generates tasks and place for solutions, saves your results in database or sends them to your teacher?

3. BLENDED-LEARNING AS ADDITIONAL HELP IN PRACTICE

At present at our university we have e-learning courses basing on the university Moodle platform.

It is possible to use the e-learning course in different ways as additional help (as additional material for students, as obligatory material, as e-tests). Depending on the requirements of the teacher holding a given course, the students' participation in the e-courses can be either obligatory (the teacher has to have some statistics) or optional.

At present we have three kinds of courses at the Mathematics Teaching and Distance Learning Centre:

- General ones - such as "Math Compensation Classes", "Math Forum" (at which students can ask questions about any field of mathematics);
- Specialist ones - concerning a given field of math, e.g. "Linear Algebra-Informatics";
- One semester long courses - for a given faculty - e.g. "Math for Material Engineering II semester"

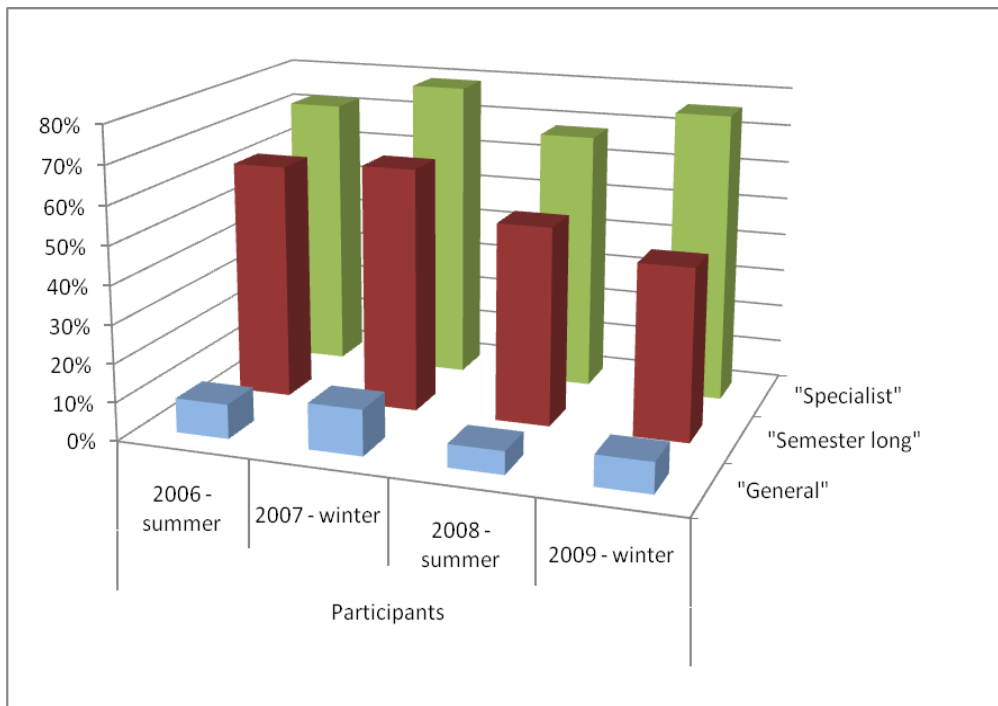


Figure 11. Statistical data concerning courses provided by the Mathematics Teaching and Distance Learning Centre.

Here we can see, that the most popular are the specialist courses, usually lasting about two weeks. They require from student short-lived but intensive involvement and are associated with the current material on traditional classes.

CONCLUSION

There is nowadays a big pressure on making e-learning courses and world-wide-web pages on the internet support three-dimensional objects with motion, shading etc. This creates a lot of possibilities, but also brings some new problems in learning and in teaching. Blended-learning is a very

important element of an integrated information system. One has to admit that organizing such a course well requires a lot of time and energy - one should be prepared well both technically and factually. Good prepared e-courses should be constructed by the whole teams of teachers:

- An expert responsible for the outline of the subject prepares source materials and exercises, etc.,
- A methodologist - e-learning specialist - decides about the spectrum and the kind of information technologies to be used,
- A team of computer scientists prepares electronic versions of the educational materials.

It should also be remembered that introducing e-learning is not a closed process. One should analyze the effects and introduce changes - otherwise the existence of a dynamic platform and the courses will not be possible. This way of organizing work brings in new possibilities of organizing the educational process, which should present in interesting way standard base for regular students and interesting problems outside the curriculum. It is certain that students treat the internet and its reserves as a natural source of information, knowledge, contacting friends – they spend a lot of their time writing blogs, chatting in discussion groups or playing games on the net. We have to use this as a new method of improving education process and do not forget the great importance of the traditional education.

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CREATING A COMMUNITY FOR DISTANCE LEARNING AT THE UNIVERSITY OF BIALYSTOK

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Abstract:

In this paper the way first stage of developing e-learning and creating an academic community for good functioning distance education at the University of Bialystok is presented. This way contains a few steps: choice of e-learning platform, academic teachers training, creating and implementation first e-courses, first experiences and opinions of students and teachers, plans of research on effectiveness of distance education at the whole university. This case study may be used as some kind of good example of practice for institutions less experienced in this area and as an invitation to cooperation in research on effectiveness of e-learning.

Keywords: e-learning, blended learning, effectiveness of distance education.

INTRODUCTION

Distance learning becomes a part of educational offer of each higher school. It gives a bigger chance to gain students from abroad, to enrich methods and tools of education, to give the better possibilities of studying for weekend-students: less number of meetings in the institutes, possibility of learning at home in any time, in any place, saving money and time. At the University of Bialystok we could develop e-learning under the project „Modern and Effective Education in Cooperation with Enterprises” founded European Fund under Human Capital Programme.

1. ORGANIZATION OF ELEARNING AT THE UNIVERSITY OF BIALYSTOK

Before realization of the project some individual attempts of using e-learning platform Moodle took place at the University of Bialystok. They had not a character of a general system of distance education at the whole university. Plan of a complete system of actions in this area has been created when the university received financial support from European Fund. A lot of publications were analyzed before creating this plan.

1.1 Intentions

This plan contained a few steps:

- choice and purchase of an equipment (servers proper for long-term development of distance learning, for big number of users and big number of e-courses etc.),
- choice and purchase of a proper software: e-learning platform, database software etc.,
- creating Multimedia Section (it may be treated as a Center of Distance Education at the university; the role of working there informatics specialists is to train users of e-learning platform, to help authors of e-learning courses in preparing advanced multimedia elements of content and to advise users in their problems solving),
- implementation of all elements of „e-learning environment”,
- training 300 of academic teachers (it is a little bit more than 30% of academic staff at the university) in operating e-learning platform and rules of creating e-learning courses,
- creating 200 e-learning or blended learning courses (some kind of repository of e-courses) that will support education in the area of subjects taught at all faculties at the whole university,
- research on effectiveness of education supported by elements of distance learning,
- continuous work on creating academic e-community, because development of distance education may be successful only when all involved participants will work as a one community.

1.2 Hardware and software solutions

Powerful machines have been bought as servers, also proper hardware and

software for Multimedia Section, also new equipment for one computer laboratory located at the Institute of Informatics, because we needed a proper laboratory for teachers training.

Very interesting situation happened around choosing e-learning platform. Several companies were invited to present their platform and the discussion about the coherent conception of informatization of the whole university was generated. The government of the university took part in this discussion and finally platform Blackboard has been bought, because it consists of several modules useful in many areas of academic life. E-learning module has been bought for project money, „social module” for money of the university. It is very interesting in this platform that it is possible to create e-community very easily. It is possible to learn more about Blackboard At the websites indicated in references.

2. TEACHERS TRAINING

2.1 Aims

There were two aims of the course:

- to familiarize academic teachers with properties, functionalities and operating of e-learning platform Blackboard, from two points of view: teacher's and student's,
- to introduce the way of composing a scenario of e-learning course and preparing e-learning course from didactic point of view, including forms of interactivity and multimedia didactic tools.

2.2 Schedule of the course

Course consists of two kinds of activities:

- seven four-hours-long meetings in the computer laboratory; each participant has access to Blackboard (Figure 1) on a separate computer and is logged in one e-learning course as a teacher, in the second one as a student. All functions of the platform are described by trainer and all actions are displayed by the projector,
- ten hours devoted to the own work of participants: five hours for creating a scenario of a particular e-course (mostly the topics were taken from among the courses taught by participants), five hours for preparing materials (in digital form) the e-course,
- two hours of work at the platform at the role of students; participants

had to fill in questionnaire and made one exercise just to get credit.

The topics of seven meetings in the computer lab were:

1. Introduction to e-learning: the idea, main properties, advantages, types of distance learning, ergonomics standards, structure of e-learning course.
2. The idea of scenario of e-course. Examples of scenarios. Introduction to operating platform Blackboard: Modules of „My desktop”: tools (Figure 4), announcements, calendar etc.; Content Collection; presentation of example of e-course (we chose a topic „Playing a Guitar” for this course (Figure 2), because it is good for everybody, does not require a specific knowledge and allows to use different multimedia didactic materials).

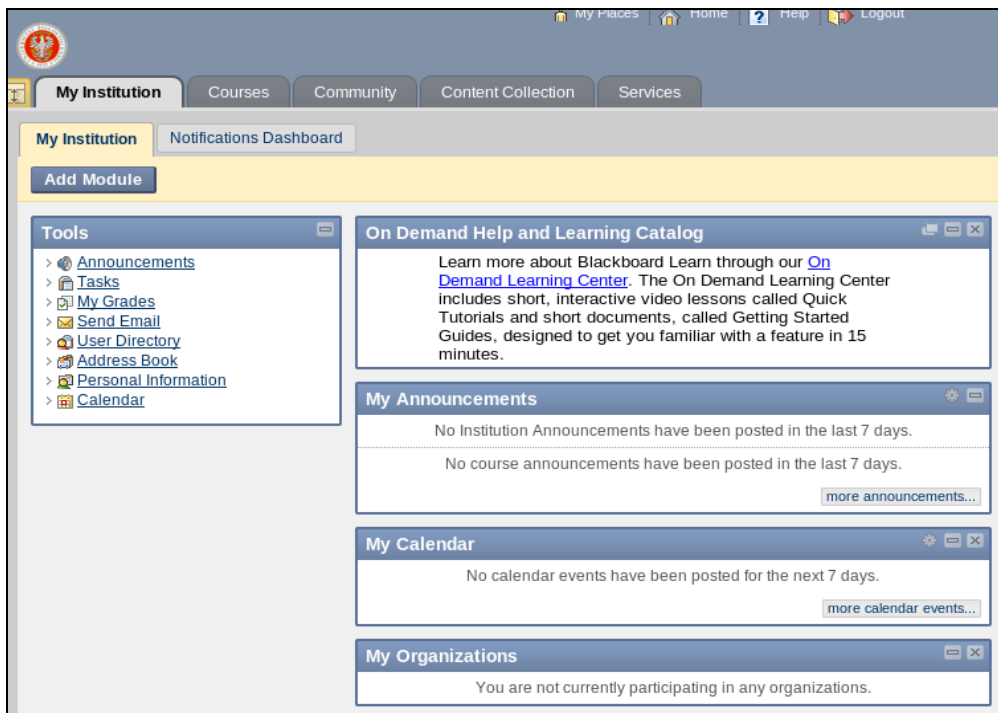


Figure 1. The opening page of Blackboard after logging

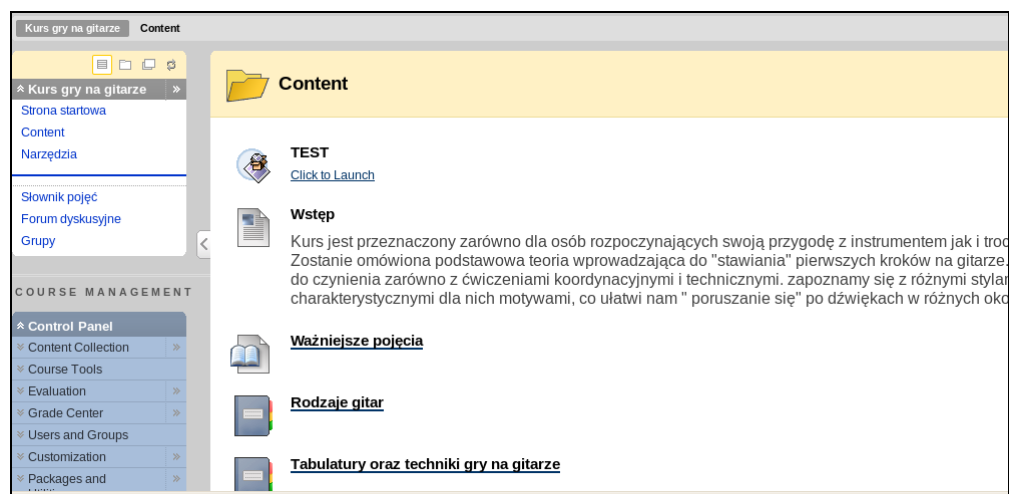


Figure 2. Content of a course (part)

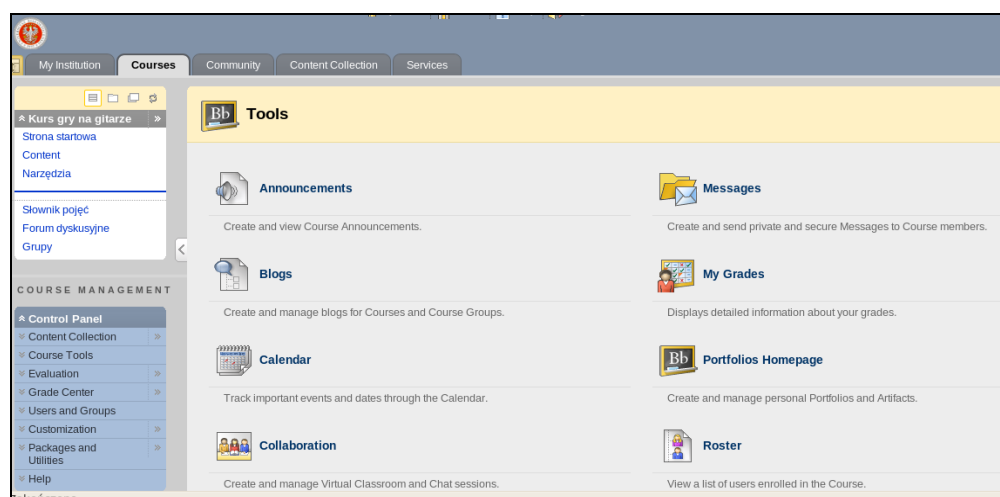


Figure 3. Tools

3. Uploading a course at a platform: this part of a course takes place after ten hours of individual work of participants on their own scenarios and didactic materials for e-courses on selected topics and now the participants step by step upload their courses on a platform. They add modules of a course (lessons), links and audio and video elements to a content.
4. Testing knowledge on Blackboard; tests, sets of exercises: participants

receive a file with questions and exercises of different types and have to create a complete test, then to upload test into content, then to log in as a students and solve their tests. It is a collecting data for next lesson.

5. Operating Grade Center (Figure 4):

First Name	Last Name	Test - Gitara	Kolokwium	Egzamin końco	Wynik sem.lets	Ocena sem.zim	Total
Awramiuk	Elzbieta	-	-	-	- (-)	-	-
student	test	15.00	29.00	50.00	66.13%	- (-)	196.00
student	test	14.00	15.00	-	49.14%	- (-)	34.00
student	test	18.00	-	-	60.00%	- (-)	18.00
student	test	-	-	-	-	- (-)	-
Student_01	Test_01	-	-	-	-	- (-)	113.40
Student_02	Test_02	32.00	-	-	110.34%	- (-)	32.00
Student_03	Test_03	5.00	-	-	17.24%	- (-)	5.00
Student_05	Test_05	-	-	-	-	- (-)	1.40
Student_06	Test_06	-	-	-	-	- (-)	105.00

Figure 4. Operating Grade Center

6. Groups Management. Portfolio.

7. Self work: participants can solve their own problems in the individual work and discussion with a trainer.

3. FIRST COURSES AND FIRST EXPERIENCES

3.1 Scenarios

About two hundreds of academic teachers were trained until now. They created about one hundred of „serious” scenarios fit to subjects taught at the university (it was not obligatory during the course; participants could create any scenarios, even about their hobbies). Model of scenario was adopted from Workshop that I participated in organized by Association of Academic E-Learning in Warsaw in 2009. The plan of scenario is:

- Title of e-course,
- Planned didactic aims,
- Number of hours: totally and on-line,

- Getting credits,
- Number and size of modules,
- Detailed description of modules.

3.2 Courses

In the spring semester of academic year 2009/2010 several courses started, so now we have first results of evaluation and first experiences. All courses were realized in blended learning model. About 50-60% of topics were taught on-line, the rest – traditionally.

The list of these first courses;

- Soil Science – Faculty of Biology and Chemistry
- Creating Websites - Faculty of Philology
- Approximate Methods of Differential Equations Solving – Faculty of Mathematics and Informatics
- Psychopathology – Faculty of Pedagogy and Psychology (Figure 5)
- English Language – Faculty of History and Sociology
- German Language - Faculty of Pedagogy and Psychology
- Reading - Faculty of Philology
- Children's and Youngster's Literature Reading - Faculty of Philology
- Regional Education - Faculty of Pedagogy and Psychology
- Intelligent Multimedia Tutoring Systems - Faculty of Mathematics and Informatics

Teachers used different didactic tools including texts, images, movies, audio materials.

Here we have the example of using a movie illustrated types of tics.

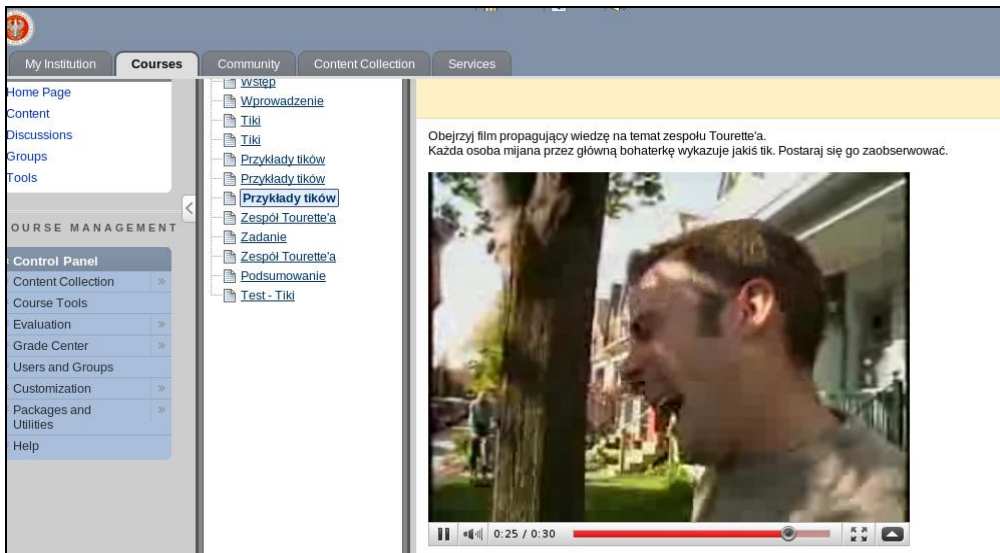


Figure 5. Movie used in Psychopathology course

Authors of materials have to deliver content of a course in files that fit to standards established at the university. It concerns only texts and pictures. Everybody may count on help in making advanced animation, movie or audio material. This help is offered by specialists working in Multimedia Section at the university.

Students are enrolled to e-courses automatically via system USOS. It is a system of students registration and collecting all information about their outcomes.

After realization of above mentioned e-courses teachers and students were asked to fill in a questionnaire with their opinions about this new method of education. Their opinions are very important, because we are on a stage of early development of e-learning, so everything that helps to improve the whole process, is very useful.

3.3 Questionnaire for teachers

Questions:

1. Did students eagerly participate in blended learning education?
2. Did this new method change students' way of learning? If so, how? If not, why?
3. How blended learning influenced on durability of students' knowledge

and efficiency of their outcomes? Did it give another visible results?

4. What is the most valuable in this way of education?
5. What was the most difficult in this way of education?
6. What should be changed in the future in this way of education? What should be saved? What should be improved? How?
7. Other remarks

Answers:

Only one teacher answered first question: No. Mainly teachers wrote that students were interested in new way of learning because it was a new method and also they did not need to spend so much time at the institutes and could learn at home. Also teachers concluded that students had to be more active and self-contained during learning via Internet than in traditional way, because:

- each e-learning module contained an exercise, question or other task (or tasks) for students – students could receive marks for fulfilling these tasks,
- students were forced to search for information from different sources.

Very important conclusion: Teachers did not notice significant differences in durability of students' knowledge and way of their preparing to exams in comparison with a traditional learning. Teachers suggested to conduct an experiment with two groups (taught in blended learning mode and traditionally) in order to investigate differences in effectiveness of learning.

Also teachers were very glad because of possibility of using multimedia materials; they wrote that this kind of didactic material was the most valuable for students and students like them very much.

Many „other remarks” may be taken as the plans for the future, for example: „Short course of operating e-learning platform for all students is necessary; it should be prepared and led by specialists from Multimedia Section”.

3.4 Questionnaire for students:

Questions:

1. Did introducing elements of distance learning change your way of learning? If so, how? If not, why?
2. How blended learning influenced on your understanding topics, durability of your knowledge and efficiency of your outcomes?

3. Was fulfilling all duties connected with distance education difficult? Please, justify your answer.
4. What is the most valuable in this way of education?
5. What is the most burdensome in this way of education?
6. What should be changed in the future in this way of education? What should be saved? What should be improved? How?
7. Other remarks

Answers:

Generally, students well assessed blended learning. They praised individual pace of learning, even necessity of harder and more systematic work on each module was for them positive, because caused bigger mobilization and activity. Students positively assessed the influence of blended learning on their preparation to exams and wrote that fulfilling all tasks related to new method of learning was not difficult.

Students complained about:

- technical problems with the platform,
- lack of personal contact with a teacher.

As for technical problems, it was a first stage of development distance learning and implementation of the platform at the university, so some technical problems appeared. Now this situation probably will not repeat. As for lack of personal contact with a teacher: this problem shows that students are not used to keep professional contact via Internet. Discussions at forum and chat were accessible, emails could be used, but it was not enough for students; they needed traditional contacts. Now should be mentioned that it was blended learning, not full e-learning, so students spent at least 40-50% of time on traditional lecture or other activities from particular course in front of teacher (we can say: face to face), but some problem appeared.

I gathered more than one hundred questionnaires from students. A detailed analysis is prepared as a report addressed to Vice-Rector for Students and Teaching Affairs.

4. INVESTIGATION ON EFFECTIVENESS OF E-LEARNING

Above mentioned questionnaires were a some kind of tool in investigating

first impressions of students and teachers. As usual, when new method of education and new didactic tools are introduced, investigation of effectiveness of education supported with these novelties is necessary. We must remember that our main aim in such moments is to make this effectiveness better, so such investigation is planned at the university, but before it I wanted to recognize opinions of academic teachers about methods of such investigation and gather their proposals of concrete activities. I made this small research at the end of a course for teachers and formulated the following task for them as a part of getting credit:

Dear Colleagues,

All teachers are anxious to teach effectively. Introducing new form of education always causes new hopes for new achievements of higher effectiveness in comparison to traditional teaching. This effectiveness must be investigated in scientific research.

So I ask you to give a short proposal (based on your knowledge/intuition/experience):

How research on effectiveness of e-learning should be arranged and conducted at our university?

I gathered more than one hundred answers. Teachers had various proposals. The most interesting are:

- questionnaires for teachers and students (this form of investigation has been already used at the end of semester and results are shortly described in this paper),
- classical pedagogical experiment,
- monitoring activities of students on platform in a real time,
- pre-test and post-test,
- traditional exams.

Probably we will apply all above mentioned proposals in the research. I suppose that second semester of academic year 2010/2011 will be the main semester of this research. First semester will be devoted to preparing the methodology of research. It is a huge work, because problem concerns the whole university. A lot of publications from this area have been analyzed already and a lot of them will be analyzed in the nearest future in order to prepare the research in the best possible way.

CONCLUSIONS AND PLANS FOR THE FUTURE

We are at the beginning of our way to creating well-organized and well-functioning academic e-community. Also we are at the beginning of our way to implement well-functioning process of education supported by using elements of distance education. But after our first experiences we are the optimists. Many teachers who did not trust this method before the training and preparing the own course, now like it! They ask how many courses might be prepared and led by one teacher.

We have time until July 2011 – it is a date of the end of our project. Until then we want to achieve all indicators assumed in the project and start (maybe under a new project) next step: preparing educational offer in English language. Then we would have more students from abroad.

Of course, we will make research on effectiveness of e-learning (in many respects) all the time. So now I would like to invite all people and institutions interested in this activity to cooperation in the research and creating international wide e-community.

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GOVERNMENT PORTALS RESOURCES ON TEACHING NATIVE LANGUAGE IN NEW SOUTH WALES (AUSTRALIA) AND IN POLAND (EUROPE) AND THEIR ROLE IN BUILDING NEW SOCIAL CONSCIOUSNESS

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***Abstract.** Contents of government portals for teaching native language stimulate changes in social consciousness more effectively in post-colonial Australia than in post-totalitarian Poland. Materials of the Board of Studies NSW are personalised and updated by gate-keepers representing different educational circles and contain information associated with teaching, marking and examining directed to teachers, pupils, parents and employers. In Poland educational materials are dispersed between the MEN (Ministerstwo Edukacji Narodowej, Ministry of National Education), CKE (Centralna Komisja Egzaminacyjna, Central Examination Commission) and eight OKE (Okręgowe Komisje Egzaminacyjne, Regional Examination Commissions). Teaching is separated from evaluation. The transmission of signal model dominate. Personalised are only contents of regional portals.*

Keywords: native language, assessment, updating, personalising, social consciousness.

PURPOSE AND METHOD OF INVESTIGATION

Poland and Australia are two countries diametrically changed over last decades. In post-colonial Australia multicultural society was formed, in post-totalitarian Poland multi-political parties system and freedom of speech have been introduced. In Australia colonial categories of thinking were eliminated from social discourse as well as from teaching of English culture and language, after natives Australians were granted civil rights in 1967. In Poland though, scientific descriptions, film adaptations and thinking

categories created during censorship and before 1989 political changes still function in teaching of Polish language.

Teaching of English language in Australia falls into line with unity of multicultural society by introducing it into contemporary English culture, into which majority of the world is included. Through making available educational materials on the Internet educational space available at school and at home, from Australia, England and USA and from the rest of the world is created. Materials recommended in portal *Board of Studies NSW* represent Australia as well as Europe (e.g. William Shakespeare), USA (e.g. Emily Dickinson), Asia (e.g. Alice Pung), South America (e.g. Severn Cullis-Suzuki) and Africa (Anwar Sadat). Hence, reading materials are partially common. Thanks to learning English language in Australia students are prepared for effective communication in every contemporary English-speaking society. That is based on learning cultural codes which exist in texts (especially in novels, short stories and films). Additionally, use of internet materials in teaching native language develops skills in use of Internet as the most important mean of communication in 21 century.

Government internet materials on teaching English language in Australia may be inspiration to teaching Polish language in Poland and to consequent elimination of post-totalitarian thinking categories from social discourse. Additionally, in 2007 thirty nine millions of Poles lived in country and about twenty one million abroad, therefore Polish Diaspora of 35% Poles is sixth in its size in the world after Ireland, Jewish, Armenian, Alban and Portuguese. Higher number of citizens living abroad comes from only three countries: China, Russia and Italia. However, the percentage of citizens living abroad is lower [*Polonia w liczbach*]. Moreover, during 2004-2006 numbers of Poles living abroad temporarily increased from one million to one million nine hundred fifty thousand [*Informacja o rozmiarach i kierunkach emigracji...*]. Many Polish emigrants, migrants and Polish minority in the East identify with country of origin and teach their children Polish language. Good quality portal about teaching Polish language, contemporary Polish literature and culture might be very helpful to them.

NSW High School Certificate is today highly regarded in the world. In New South Wales paper handbooks are not used any longer because students find materials on the Internet. Portal *Board of Studies NSW* existing since 1990 therefore was chosen as an example of good practice in posting educational materials and twenty years of experience in use of electronic educational materials and associated with technical advancement of Australian teachers and their students in its use. This advancement is manifested for example by

the fact that for gifted students on the *Board of Studies NSW* there is available since 2010 *Higher School Certificate. Distinction Course* in Philosophy. This program has been prepared by academics from the University of New England and is delivered as e-learning.

The Australian education – similarly to Polish one – is continuously reformed. *Australian curriculum on English language, Mathematics, Science and History will be available for implementation since 2011* – informs president of *Board of Studies NSW* [*The Australian Curriculum...*].

Hence, the aim of this investigation was comparison of educational materials associated with teaching English language in high school (*Stage 6*) available on government portal of New South Wales with government materials associated with Polish language in high school in Poland (both school types allow for sitting to maturation examination). Investigation on content of the *Board of Studies NSW* was supplemented with interviews of teachers, students, parents, viewing of didactic materials and observing lessons, working of library and watching school performance in the *Homebush Boys High School* in Sydney. Teaching of Polish language in Polish high school became known to me during my twenty five years employment as a teacher and examiner of Polish language as well as during observing delivery of lessons in high schools on Cracow. In order to find types of educational materials for teaching English language in NSW and Polish language in Poland between 16th and 23rd of July 2010 documents posted on the *Board of Studies NSW* and two portals managed by *MEN*: main portal and educational portal *Scholaris*, sites of *CKE* and *OKE* in Cracow were analysed. Due to the material being differentiated and dispersed, method of quality analysis has been utilized.

1. AUSTRALIA: CONTROLLED EDUCATIONAL RESOURCES

1.1. Structure of materials

Organisation of materials on the *Board of Studies NSW* reflects not only aims and methods of teaching English language in NSW but also the way of creating and using online materials in everyday practice by teachers, students, their parents and employers in democratic and multicultural society. However, the *Statistic Archive* contains data since 1955 and presents history of Australian education and increasing role of English language in economical and social life of Australia, in recent years the only compulsory subject needed for earning a Higher School Certificate. Contains of the *Board*

of *Studies NSW* are example of good practice of electronic support in teaching native language.

Materials are created mainly by teachers and examiners but posted with the consent of the NSW Government joined with all other states and the Australian Government. *Board of Studies NSW* contains information for all types of schools in region of New South Wales. It also satisfies the need of students and teachers of all subjects. Educational materials are associated with teaching (connected with marking), examining and increasing needs of honesty, independent work and supportive role of parents. Internal search engine assists with finding required material. Multitude of other portals is also recommended. Thanks to them the *Board of Studies NSW* covers all problems associated with contemporary teaching. On the right there are names of twenty associated portals listed as well as connections to five educational sites. Other portals and sites are complementary and sources not included into the *Board of Studies NSW* because of that lose their credibility. That is why use of Internet gives the possibility of controlling the educational materials, inclusion of materials which may be updated and also archiving still valid high quality documents. Portal is very popular and serves approximately one hundred thousand teachers and approximately one million students every day. The *Higher School Certificate Advice Line* (available each year in November) offers to five thousand students (after typing PIN) assess to personalized additional materials, for example personal diary of exams. The user may check their knowledge by attempting quiz, get advice of the experienced teacher and find out the result of their exam over the telephone.

Educational materials of the *Board of Studies NSW* for students preparing for *Higher School Certificate (HSC)* were divided into four categories:

- 1.1.1. *How your HSC works* – instructions for students on how to work with the *Board of Studies NSW*. Content is divided into nine parts associated with Syllabus, previous years exams, marking and standards. Every title contains link, because links make using of the materials easier. Every part contains links to new sites: on the first titled *Getting ready* there are eighteen links, on *We're ready for you* – 4, on *The people, the papers, the process* – 11, on *You school assessment marks* – 6, on *The exams* – 13, on *Marking* – 5, on *Moderating assessment marks* – 3, on *Judges apply the standards* – 7, on *Finally: your results* – 12. In this way the information is complete and detailed. Some of the materials – including exam results – are available after the password is introduced.

Hence, first bookmark is a student handbook, second is dedicated to exam topics, third to marking and only one to teaching. On every site there are links to examining. Such construction underlines the importance of even marking and of internal exams.

1.1.2. *HSC Exam Papers* – contains *HSC Exam Papers* and *Notes from the Marking Centre* 1995-2009. Every marked examination question gives the student a possibility of choosing text from among those discussed during classes at school. Many parallel versions of examination questions (up to 8) and inclusion of some question from previous years (1995-2009) let the student to familiarize with examination expectations. That assist with studying: directs the studying, points weaknesses, develops knowledge, skills and courage needed for being successful at exam.

1.1.3. *HSC Assessment* covers first section *Honesty in HSC Assessment – the Standard* treating about breakings rules and consequences of such. Next section – *HSC Assessments and Submitted Works – Advice to students* teaches students honesty by acting accordingly to listed rules and practices. It contains link to the text about program *HSC: All My Own Work*, assisting in following the rules and a brochure in which roles and procedures of 2010 HSC examination has been discussed.

HSC Assessments and Submitted Works – Advice to Parents contains brochure covering topic of assisting students in honest preparation examination answers: *HSC Assessment and Submitted Works – Advice to Parents*. Because lots of immigrants live in Australia, this brochure is available in Arabic, Chinese, Hindu, Spanish and Vietnamese. It clearly shows that authorities are genuinely interested in cooperation with parents and connecting teaching with moral education. This section contains links to: declaration of authenticity, program *HSC: All My Own Work*, form for confirmation of entry and brochures *Rules and Procedures for 2010 HSC Candidates*.

In the section *HSC Assessments and Submitted Works – Advice to Teachers* there are information about good practices in preventing and managing inappropriate behaviours (e.g. pamphlet), marking, preventing cheating and helping students with preparation for examination, students rights and responsibilities in terms of marking, roles and procedures in HSC (brochure).

Section *HSC Examinations: Projects, Submitted Works and Performances – Information for Students* contains advices on how independently prepare for examination: project, sent works or performance. Student is obligated

to maintaining a diary of discussions with teacher. External help is allowed if student discussed it with the teacher prior commencing work on preparation to exam. Teacher must see progress in preparation of examination tasks. Otherwise, may not certify the project.

Last session *HSC examinations: projects, submitted works and performances – Information for Teachers* contains advices on how to supervise work of student and the form *Practical Project: Record of Students' Progress* assisting with it. There are situations listed here when students work cannot be certified. It helps teachers to make a difficult and controversial decision because they can justify their decision basing on clearly formulated roles. In difficult cases teacher can contact the Office of the *Board of Studies NSW* calling the provided telephone number.

It can be concluded that in Australia great importance is given to honesty. Students, teachers and parents are well informed about expectations in this regard and penalties for non-compliance are also listed. Information on marking treat about honesty.

HSC Syllabuses is the most comprehensive part. As the first one was placed here syllabus *English. Stage 6. Syllabus. English (Standard. English (Advanced). English as a Second Language (ESL). English (Extension). Fundamentals of English* published on the second October 2009 (first version dated November/December 1999). It accompanied by *Assessment and examination materials: Assessment and Reporting in English (Standard) Stage 6, Assessment and reporting in English (Advanced) Stage 6*. These documents inform e.g. that common texts comprise 40% of examination, chosen – 60% (that is why teachers and students are obliged to choosing majority of themes and texts); results of HSC in English language (Advanced) contain: notes of marking consisting of marks sent by schools, marking of external examinations and marking of HSC (average of both), as well as the assessment of school performance determining marking of HSC; ways of marking point the equal importance of listening, speaking and watching/presenting (each makes 15% of final mark).

HSC assessment grids for English (Standard) and HSC assessment grids for English (Advanced) contains examples percentage weigh of points during class test. *NSW Higher School Certificate (HSC) Examinations Papers 2009* comprises of examination papers, notes of examiners, presentations, for example *HSC Notes from the Marking Centre – English Standard and Advanced* (equal to Polish models of answering, containing characteristics of work connected with its content, language and composition).

On bookmark *HSC Syllabuses* curricula are placed *HSC English Extension 1*, *HSC English Extension 2*, *English as a Second Language*, *Fundamentals of English* with similar materials regarding marking. That is why each curriculum contains links to marking criteria which connects teaching with evaluation.

2009-2012 HSC Prescribed Area of Study, Electives and Texts contains subjects and reading texts for beginning and advanced students. Additionally, document *English. Stage 6. Prescriptions. Area of Study. Electives and Texts* was placed here. *Higher School Certificate 2009-2010* addressed to immigrants hence containing multitude of texts about Australia: Vivienne Cleven *et al.* *Contemporary Indigenous Plays*, Peter Skrzynecki *Immigrant Chronicle*, Multicultural Programs Unit, NSW Department of Education and Training *Making Multicultural Australia*. In section *Australian Voices*: J.C. Burke *The Story of Tom Brennan*, Katherine Thomson *Diving for Pearls*, Joanne Burns *On a Clear Day*, Komninos *Komninos by the Kupful*, Carmel Bird (ed.)/*Commission of Human Rights The Stolen Children – Their Stories* and finally in section *Australian Visions*: Peter Goldsworthy *Maestro*, John Misto *The Shoe-Horn Sonata*, Douglas Stewart *Selected Poems*, Baz Luhrmann *Strictly Ballroom*, Deb Cox *Seachange* (TV ABC, Series 2). In sections *Living and Working in the Community* and *Academic English* examples of texts were placed, in section *Life Writing: The Orchard* by Drusilla Modjeska, in *Textual Dynamics Night Letters* by Robert Dessaix, in *Language and Gender – The floor of Heaven* by John Tranter. It can be concluded that teaching English language in case of immigrants is connected with familiarizing them with Australian culture.

Document *2009-2012 HSC Prescribed Area of Study, Electives and Texts* is supplemented with *Annotations of texts prescribed for the first time – HSC 2009-2012* directed to teachers. *Common Content* covers thirty two reading text. In every case *Type of Text, Title, Author, Course, Module, Description, Merit and Cultural Significance, Needs and Interests of Students, Opportunities for Challenging Teaching and Learning* are provided. Additionally, *English Stage 6 Prescriptions 2009-2012. Advice to Teachers* contains:

- a. Materials associated with texts being nominated as reading texts for the first time, such as poetry of Douglas Stewart in module *Experience Through Language*.
- b. Advices regarding development of student's interests and encouraging them as well as titles of modules.

- c. Table with reading texts available to choose from during years 2004-2008 and 2009-2012.

In this way Australian teacher by reading these documents familiarizes themselves with requirements of curriculum and at the same time receives methodical support.

Document *English Stage 6. Prescriptions: Area of Study. Electives and Texts. Higher School Certificate 2006-2008* contains descriptions of random sets of texts, put together accordingly to the *Area of Study*, themes and kinds. Document lists novels, short stories, poems, dramas, films and multimedia – with links.

In document *Academic English. English Stage 6. Support Document 2009-2012 for English (ESL) Module B: Text and Society* analysis, synthesis, evaluation and presentation of texts were presented helping students in development of understanding of English language and using information in academic context. This document covers different kinds of texts with examples from Internet: *Locating resources and reading for information gathering: Researching online: locating and evaluating websites, Checklist for reading the Internet* (pages 17-18). Document *English Stage 6. Annotated Professional Readings. Support Document 1999* introduces didactic tools in form of following links: <http://interact.uoregon.edu/MediaLit/HomePage> (access to *The Media Literacy Online Project*), <http://www.aber.ac.uk/~dgc/sem13.html> (author: Daniel Chandler, lecturer of the theory of media in the *Department of Education University of Wales*), <http://www.filmaust.com.au/> (site *Film Australia*), <http://www.ipl.org/ref/litcrit> (*Internet Public Library Online Literary Criticism Collection*), <http://english-server.hss.cmu.edu> (*E-Server Carnegie Mellon University*), <http://www.eastgate.com> (site about linked text), <http://www.curriculum.edu.au/accessasia/network> (*Asia literacy: An Australian curriculum for the C21st*). In this way very well prepared document were presented and recommended books on the contemporary cultural knowledge, e.g. on cultural studies, cyberspace, deconstruction, film as a social practice, gender, hypertext, kinds of popular culture, media culture, picture reading, post-modernism, rhetoric of new media, semiotics media, television culture according to John Fiske. At the same time *HSC English (Advanced) Course. Module B: Critical Study of Texts. Support Document* suggests sequence of work with the text: *Personal engagement, Development of knowledge and understanding of the prescribed text, Development of an informed response, Articulation of an informed personal response and understanding* (page 3). In this way contemporary

methodologies of text studying appear to be useful in meeting needs of Australian students. Members of the *Board of Studies NSW* are: fulltime President, 3 designated members and 19 other members responsible for development and supporting ways of studying and examining, giving advices, writing rapports and archiving students' achievements, signing contracts. Individual members are nominated by different environments as e.g. *Association of Independent Schools*, *Catholic Education Comission of NSW*, *Council of Catholic School Parents and NSW Parents' Council*, *NSW Council of Secondary School Principals*, *New South Wales Primary Principals' Association*, *NSW Teachers' Federation*. As a result portal is created jointly by members of different educational circles who possess qualifications or experience in teaching such as teachers, parents, principals of government and non-government schools (primary and secondary) as well as an expert on early education and member of Aboriginal community.

Materials put on the portal *Board of Studies NSW* are updated in a current school year 2010 (school year in Australia for *Year 12* starts in January and finishes in November). The user is made aware that he should not rely on earlier versions which were copied and archived.

1.2. Types of educational material on *Board of Studies NSW*:

Board of Studies NSW for 2010 released different types of educational material.

- 1st Printed pages.
- 2nd Posters presenting the list of reading texts.
- 3rd Links to other internet sites.
- 4th Brochures in Word and PDF, in black and white or in color.
- 5th Power Point Presentations containing movement, color, sound.
- 6th Fragments of paintings created by students.
- 7th For gifted students information on online course in Philosophy.

There is a comprehensive and personalized section of *eBOS Online Services* – which in category eGovernment in 2003 received the NSW Premier's Public Sector Awards. *eBOS Online Services* covers subsites: *Schools Online*, *Students Online*, *eBOS VCS Online*, *eBOS Markers Online*, *eBos RTOs Online* (*Registered Training Organisations*), *eBOS Authorities Online*, *Shop Online* (approximately six hundred products), *RANGS* (*Registration and Accreditation of Non-government Schools*).

2. POLAND: DISPERSED EDUCATIONAL RESOURCES

In Poland curriculum can be found on sites of *Ministerstwo Edukacji Narodowej* (Ministry of National Education) under *Reforma Programowa* (Curriculum Reform). However, didactic materials are posted on government portal *Scholaris* and tens of others such as *Interkl@sa*, *edunews*, *sciaga.pl*. Information on evaluation are presented on sites of *Centralna Komisja Egzaminacyjna* (Central Examination Commission) and eight portals of regional commissions. It creates difficulties in finding required material because authors of portals applied different approaches in classification of content. Teaching has been separated from marking, examination and evaluation. It even happens that contents of different sites are contradictory. There is no one reliable portal which could be helpful in every situation such as *Board of Studies NSW* is.

2.1. Portal of *Ministerstwo Edukacji Narodowej* (Ministry of National Education)

Portal of *Ministerstwo Edukacji Narodowej* (Ministry of National Education) contains information about competences and activity of this office including legal acts. On main page on the left side thirteen links has been placed: *Aktualności* (Current Information), *Kalendarz roku szkolnego* (School Year Diary), *Uczniowie i rodzice* (Students and Parents), *Nauczyciele i dyrektorzy* (Teachers and Principals), *Organy prowadzące* (Leading Authorities), *Partnerzy społeczni* (Social Partners), *Współpraca międzynarodowa* (International Cooperation), *Prawo oświatowe* (Educational Law), *EFS dla oświaty* (EFS for Education), *System Informacji Oświatowej* (System of Educational Information), *MEN informuje* (Information from MEN), *Newsletter*. On the right hand side: *Konferencje regionalne* (Regional Conferences), *Podstawa programowa* (Core Curriculum), *Radosna szkoła* (Happy School), *Rok Historii Najnowszej* (Year of Modern History), *Oświata polska za granicą* (Polish Education Abroad). Additionally, a few links to the current topics has been added e.g. *Nowe podręczniki* (New Textbooks), *Wypoczynek dzieci i młodzieży* (Childrens and Adolescents Leisure), *Powódź* (Flood), *Status zawodowy nauczycieli* (Professional Status of the Teachers). Under link *Reforma programowa* (Educational Program Reform) information on changes to core curriculum being introduced. Legal acts, information on textbooks, letter of Minister Katarzyna Hall and document PDF titled *Co warto wiedzieć o reformie programowej?* (What is Worth Knowing on Educational Program Reform) all can be found here. New core curriculum of Polish language is placed in section *Dla nauczycieli* (For Teachers) as a volume two: *Język polski w szkole podstawowej, gimnazjum i*

liceum (Polish Language in Gymnasium and High School). This site last time was updated on third of July 2009. Link placed on the bottom of this site *Materiały edukacyjne – język polski (Educational Materials – Polish Language)* redirects, however, not to the ministerial portal *Scholaris* but to *Biblioteka Cyfrowa Ośrodka Rozwoju Edukacji (Cyberlibrary of the Centre of Education Development)*. Bookmark *Język polski (Polish Language)* is placed on the second last place and opens titles of five documents on teaching of Polish language addressed to teachers. Documents are arranged alphabetically, but in title order.

However, functioning in higher secondary schools between 2002 and 2012 core curriculum [*Rozporządzenie Ministra Edukacji Narodowej i Sportu z dnia 26 lutego 2002 r...*] [*Decree of Minister of National Education and Sport from Day 26 February 2002...*] was cited from parliament site in the bookmark *Akty prawne / Inne rozporządzenia (Legal Acts / Other Decrees)* with annotation about its annulation on the 30 January 2009 together with links to older core curriculum, six valid decrees, one annulled and one to annul with the given dates.

Ministerial portal was concentrated then on legal acts. It does not contain didactic materials because these were placed on portal *Scholaris* created as a consequence of Poland joining the European Union. Such portals were created in all member countries. The uppermost, *European Schoolnet. The gateway to education in Europe* is supported by the European Commission.

2.2. *Scholaris. Internetowe Centrum Zasobów Edukacyjnych MEN (Scholaris. Internet Centre of the Educational Resources MEN)*

The aim of establishing the portal was increasing efficiency of education by application of the electronic resources and utilization of Information and Communication Technologies. Not only the transfer of information was taken into consideration but also *Forum, e-szkoła (Forum, e-school)* – possibility of creating personalized e-course and *Zadania (Tasks)* – possibility of creating personalized account. However, portal three years has been under reconstruction. Recently it has been handed over to Centralny Ośrodek Doskonalenia Nauczycieli (*Centre for Teachers Training*).

The content of portal publicly available are characterized by bookmarks: on the left hand side *Przedmioty (Subjects)*, *Sprawy szkoły (School Matters)*, *Regiony (Regions)*, *Wyniki gimnazjów (Gymnasiums Results)*, on the bottom: *Placówki edukacyjne (Educational Places)*, *Instytucje (Institutions)*, *Materiały dydaktyczne (Didactic materials)* with subsites: *Podręczniki*

(*Textbooks*), *Środki dydaktyczne* (*Didactic Tools*), *Programy nauczania* (*Curricula*), *Czasopisma* (*Periodicals*), *Recenzenci ministerialni*, (*Ministerial Referers*), *Autorzy* (*Authors*), and on the right hand side: *Wiadomości* (*News*), *Periodyki Scholaris* (*Scholaris Periodicals*), *Inicjatywy Scholaris* (*Scholars Initiatives*), *Komunikator* (*Communicator*), *Biuletyn* (*Bulletin*), *Kalendarz szkolny* (*School Calendar*), *Nasi Partnerzy i Patroni* (*Our Partners and Patrons*).

First bookmark *Subjects* (*Przedmioty*) covers subsites *Język polski* (*Polish language*), next after *Kształcenie zintegrowane* (*Integrated Education*). Bookmark *Język polski* (*Polish Language*) opens next bookmarks: *Etap edukacyjny* (*Educational Stage*), *Zasoby edukacyjne* (*Educational Contents*), *Ścieżki edukacyjne* (*Educational Paths*), *Tematy* (*Subjects*) – e.g. *Podstawa programowa* (*Core curriculum*), *Porady metodyczne* (*Methodical Advice*), *Konkursy i olimpiady* (*Regional and Nationwide Competitions*).

Core curriculum from 2002 for basic and advanced teaching were copied from *Rozporządzenie Ministra Edukacji Narodowej i Sportu z dnia 26 lutego 2002 r....* (*Decree of Minister of National Education and Sport from Day 26 February 2002...*), but source was not given and do not include later changes what consist unreliable information. Group of bookmarks *Etap edukacyjny* (*Educational Stage*) contains *Liceum profilowane* (*Profiled High School*) however, this name is not in use any longer. Educational path *Edukacja czytelnicza i medialna* (*Reading and Medial Education*) covers only one document for high school – *Analiza i interpretacja wiersza Adama Mickiewicza „Bakczysaraj”* (*Analysis and Interpretation of Poem by Adam Mickiewicz “Bakczysaraj”*), but paths no longer function. Bookmarks on competitions were created on the third March 2006 and has not been updated since then. Hence, available information is outdated; similarly as outline of maturation examination in 2007.

Educational content covers, between others, eleven e-lessons. Seven refers to Bible, four to third part of *Dziady* (*Forefather's Eve*) by Adam Mickiewicz and romantic drama. Ten of those were placed on portal on the 23rd August 2006, and one on the 14th September 2006.

In didactic tools domination of structural method is visible. Out of 28 Power Point presentations five are on poetics and fragments of cited poems play illustrative role. Easiness in including graphic material caused that the next seventeen presentations are connected with painting. Hence, with literature are associated only presentations treating about e.g. painters' inspirations in *Boska Komedia* (*Divine Comedy*), knight motif and utopia. However, there is no presentation about personal original interpretation of piece of literature.

Two interpretations of the same piece of art were not presented, either. The lack of modern literature was noted, too. In time of education of semiotic power of users, passing the knowledge, which in a few years may be outdated, is dominating, not teaching of its creation. Additionally, presentation *Kategorie słowotwórcze rzeczowników odczasownikowych* (*Wordbuilding Categories of Nouns Derived Form Verbs*) is addressed to students of gymnasium. Hence, inconsequent is putting those in content intended for high school.

Topics of *Ćwiczenia interaktywne* (*Interactive Exercises*) are similar: *Bible* (64%) and third part of *Dziady* (*Forefather's Eve*) (34%) by Adam Mickiewicz dominate. Only one site is dedicated to novel by Bolesław Prus titled *Lalka* (*The Doll*). Similar proportion are in section *Filmy i animacje* (*Movies and Animations*): 55% is dedicated to *Bible*, 36% treats about works of Adam Mickiewicz (mainly about the third part of *Dziady*), 3% about *Antygona* by Sophokles (which for a few years now is a reading in gymnasium), 4% about middle ages, one about works of Jan Kochanowski and one about love lyrics. Contrary to the name it does not contain any movies but seventy seven Power Point shows and three animations. In section *Zdjęcia i ilustracje* (*Photos and Illustrations*) photocopies of one thousand six hundred and seven pages of *Zielnik Syreniusza* (*Syrenius Herbarium*) from 1613 (88%) and of *Kronika polska* (*Polish chronicle*) by Marcin Bielski from 1597 (6%), as well as photos of Polish mansions (3%) which have weak connection with the core curriculum were placed. Graphics associated with Polish language, theory of literature, Romanticism writers, *Bible* and other make only 3% of the entire content. Set of fifteen *Tablice i schematy* (*Tables and Schemes*) makes up 46% of *Kronika polska* (*Polish Chronicle*) by Marcin Bielski, 46% stylistic and one scheme about distribution of phraseological units.

Thus, the portal covers a small part of teaching material only. In consequence it is rarely used by high school teachers of Polish language. Posting the informational materials on maturation examination e.g. *Nowa matura a zadania testowe – ich rola i sposób punktowania* (*New Matura and Testing Tasks – Their Role and Method of Scoring*) onto this site is pointless, as this purpose serve other portals such as Centralna Komisja Egzaminacyjna and Okręgowa Komisja Egzaminacyjna. Posting lesson synopsis is also controversial as these ought to be created by teacher accordingly to the needs of their students. Apart from that, imposing of unilateral interpretations e.g. *Izabela Łęcka – kobieta bez serca* (*Izabela Lecka – a Heartless Woman*) on interactive screen is also inappropriate. File with the extension .swf titled *Podróże Adama Mickiewicza – mapa* (*Travels of Adam Mickiewicz –*

the Map) is technically difficult to be useful in the classroom, this material could have been presented in the form of a Power Point presentation for example.

These materials were prepared in collaboration with the commercial enterprise Young Digital Poland SA, hence its high technical standards make their use impossible by the utilize of a computer without the latest software (most of the *Board of Studies NSW* resources contain PDF files only), but there is no reference to the latest methodology on literature. Portal adopted social model of authorship of the content that is why consistent methodology is not presented. The internal search engine is not well designed; it finds only one material on *Polish Chronicle* by Marcin Bielski. Some resources have not been updated since were created in 2006, then posting ministerial messages from 2009 – e.g. *Radosna szkoła – wsparcie finansowe na rok 2010* (*Happy school – financial support for 2010*) is confusing. This portal does not serve its purpose.

2.3. The CKE (*Centralna Komisja Egzaminacyjna, Central Examination Commission*) portal

This portal covers all items. Section *Egzamin maturalny* (*The Matriculation Examination*) contains materials on all examined subject in tabs: *Standardy egzaminacyjne* (*Examination Standards*), *Informatory i aneksy* (*Information and Annexes*), *Procedury* (*Procedures*), *Arkusze z egzaminów maturalnych* (*Sheets of Matriculation Examinations*), *Biuletyny maturalne* (*Matriculation Bulletins*) and *Informacje o wynikach* (*Information on the Results*). These are provided as PDF files. Some of them are addressed to students, other to teachers; there is the lack of information for parents. Not all documents have been updated. *Biuletyn maturalny. Egzamin ustny z języka polskiego* (*Bulletin of Matriculation examination. Oral Exam in Polish Language*) by Katarzyna Bocheńska, for example, presents not entirely legal status as on the today, because after 2005 the change on the structure of the examination commission has been introduced. In consequence the graphics on the front page is misleading. Addressed to the students *Biuletyn maturalny. Czytanie ze zrozumieniem* (*Bulletin of the Matriculation Examination. Reading Comprehension*) by Katarzyna Bocheńska et al. presents the legal status as on the 1st December 2006. Therefore, this document does not include information about this test in sheets for extended level in 2007-2009. *Board of Studies NSW* also contains bulletins targeted teachers, but due to systematically introduced changes these are issued several times a year.

In the section *Informacje o wynikach* (*Information on the Results*) as on the 23 July 2010 *Wstępne informacje o wynikach egzaminu maturalnego – maj*

2010 (*Preliminary Information on the Matriculation Examination Results - May 2010*) are made available. In the written exam in Polish Language 368 463 candidates obtained the average score of 57.24% with standard deviation 17.42 and 95% passed the exams. All that means that the portal was not used sufficiently for presenting concept of examination and procedures of which are met with misunderstanding and lack of social support.

2.4. Portal of OKE (*Okręgowa Komisja Egzaminacyjna, Regional Examination Commission*) in Kraków

Detailed information has been targetted because eight regional bodies of OKE publish these on their own sites. This site contains bookmarks:

- *Wykłady internetowe (Online Lectures)* by *VirtualAcademy.eu* – lectures and Power Point presentations prepared by employees of OKE; mainly by the Chief Examiner of Polish language, loaded on the 11th November 2009.
- *Kursy MOODLE (MOODLE Courses)* used for the training of current examiners.
- *Organizacja (Organization)* – information for students, school principals, conducting and supervising bodies, containing organizational and legal information on Examination (also personalized and confidential, available only to the authorized persons).
- *Egzaminy (Examinations)* – Division *Matriculation Examination* includes communications, organizational information and PowerPoint presentations prepared by OKE employees and related to the procedures, organizational information on 2010 and 2011 exams. Archive goes back to 2005 when for the first time external exam was extended to all candidates.
- *Prace badawcze (Research)* – on the results of 2010 examinations in the region: the success at different levels, in various districts and schools.
- *Szkolenia (Training)* – materials for candidates for the examiners.
- *Zamówienia publiczne (Public order)* – refers to the activities of OKE.

The sites of OKE in Krakow successfully present the activities in region, develop understanding of assessment techniques and serves schooling environment well. Technical advancement (MOODLE courses, video lectures) is tailored to the needs of users. Direct contacts OKE employees with the examiners, teachers, school principals, students, alumni and parents result in better understanding of their information needs. Regular updating

stimulates more convincing presentation of the concept of the matriculation examination as compared with the sites of *CKE*.

2.4. Types of resources for teaching of Polish language.

Designed for teachers and students types of resources related to the teaching and learning of Polish language in upper secondary school are:

1. Text files containing legal documents, guides, charts, tables, diagrams, lesson plans, tests, student worksheets and source texts.
2. Photos and illustrations.
3. Multimedia presentations.
4. Videos and animations.
5. SWF files.
6. e-lessons.
7. Interactive exercises.
8. MOODLE courses.

Resources available on sites of *MEN* and of *CKE* are traditional in majority, written text dominate. But the users of portal *Scholaris* needs to meet very high technical standards in order to be able to access its content. As a result, overrepresentation of e-lessons, interactive exercises and animations leads to partial viewing of teaching material, the lack of consistent methodology and technical problems.

CONCLUSION

The above analyzed educational portals represent different models of communication. On the sites of *MEN*, *CKE* and *OKE* model of communication as a signal transmission, described by Harold Laswell in 1948 [Goban-Klas 2005:57] was adopted. *Scholaris*, on the other side, combines community portal techniques and conflicting with those commercial motives which results in dysfunction of portal. Only content of sites of *OKE* is personalized. *Board of Studies NSW* creates content according to Kurt Lewin's model from 1947, taking into account gate-keepers in process of passing information [Goban-Klas 2005:59].

Resources for teaching the native tongue in secondary school which are in 2010 made available on line are created and structured differently in Poland and Australia. The table 1 below summarizes the differences.

Table 1.**Government portals resources in Australia and Poland.**

Australia	Poland
Updated e-resources	Some materials out of date. Paper handbooks
State government run portal	Portals run by: <i>MEN, CKE, OKE, CODN...</i>
Authors by choice	Authors commercial, accidental
Curriculum separate from reading list	Curriculum covers reading list
Multitude of interpretations	Searching for the most adequate interpretation
Modern methodologies	Structuralism
Teaching connected with examination	Separation teaching from examination
School mark equal to examination mark	Separation school mark from examination mark
Technical simplicity	Technical advancement
Wholeness of the teaching material	Accidentally chosen texts
Controlled changes in social consciousness	Changes uncontrolled – commercial education

After analyzing above presented portals the following conclusions may be drawn:

1. In XXI century educational materials ought to be directed and personalised.
2. If portal is to promote educational reform, educational materials should be created by authors nominated by different environments, not by communal or commercial bodies.
3. Technical advancement of educational materials should increase their efficiency.
4. Teaching ought to be connected with marking and examining.

5. Educational materials must to be updated.
6. Lack of centralization leads to collisions of competence, unplanned and commercialised teaching, informal education and blockage of reforms.

The portal *European Schoolnet* conducted by the *European Commission* can be assumed then similarly as in Poland problems exist also in other countries.

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FROM THE E-LEARNING EXPERIENCES ON THE REMOTE TEACHING PLATFORM OF THE HIGHER SCHOOL OF LABOUR PROTECTION MANAGEMENT

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Abstract: *E-learning enables the class tutor to prepare materials that reach students very quickly. Dispelling the limitations associated with the place and time of studying is an asset of this form of teaching for it enables the study both at home and in a college. It also allows for effective, objective and fast assessment of a significant number of students. In this paper, the experiences of the Higher School of Labour Protection Management in Katowice in the scope of educating students on the Moodle platform. Also, the survey research carried out so far has been presented, addressed to students and connected with the school's remote education platform.*

Keywords: e-learning, Moodle platform, Moodle components, e-learning course, remote education platform

INTRODUCTION

The Higher School of Labour Protection Management in Katowice has been operating on the educational market since 2002 and offers engineering, bachelor's and master's complementary daily and extramural studies in 20 specialisations within the framework of five labour market customised departments: Management, Management and Production Engineering, Cultural Studies, English Philology and Internal Safety. The school has been gaining experiences in e-learning since 2007.

1. STATUS QUO OF THE REMOTE EDUCATION PLATFORM

It is the Moodle platform, belonging to the most renowned solutions in this field in Poland, which is the practical e-learning support at the Higher School of Labour Protection Management in Katowice.

At the Higher School of Labour Protection Management (WSZOP) in Katowice, the e-learning classes have been led since the academic year of 2007/2008. In June 2009, 3,500 accounts were active on the WSZOP remote education platform, including c.a. 50 accounts for lecturers. In accordance with the regulations binding (act as of 27/07/2005 on Higher Education as well as the Decree of the Minister of Higher Education as of 25/09/2007) WSZOP has assumed that the number of classes led online may not exceed 40% of the general number of didactic classes. The remote classes are led in over ten subjects, chiefly for the students of Management and Production Engineering as well as Management and they comprise from 150 to 400 hours (depending on a semester) classes led through blended learning.

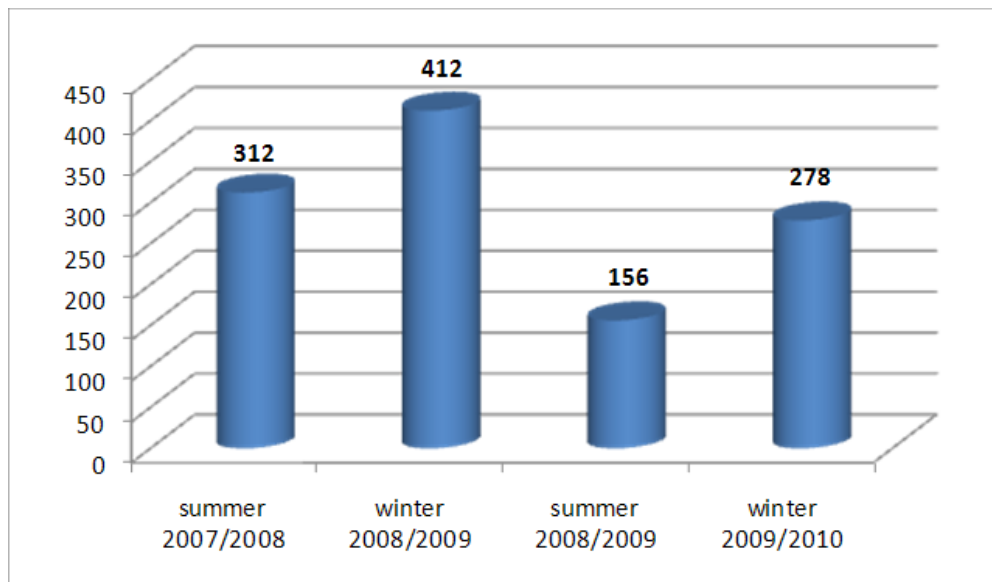


Figure 1. Number of e-learning didactic classes

So far, over 100 courses have been commenced on the platform, including among others:

- 26 test courses for lecturers undergoing training
- 3 courses for the needs of diploma theses:

- 2 courses used in the platform management and monitoring and IT subjects didactics
- 2 librarian courses (including one test course)
- 2 courses for the needs of students' clubs:
 - SKI – Students' IT Club
 - WSZOP Scientific Club of Culture Scientists
- 1 course for the execution of a diploma seminar
- 2 training courses on e-learning (for students and lecturers)
- 65 subject courses in which the following classes were organised or are being organised:
 - English, German
 - History of Media
 - Macroeconomics
 - Financial Accountancy
 - Post-accidental proceedings and others.

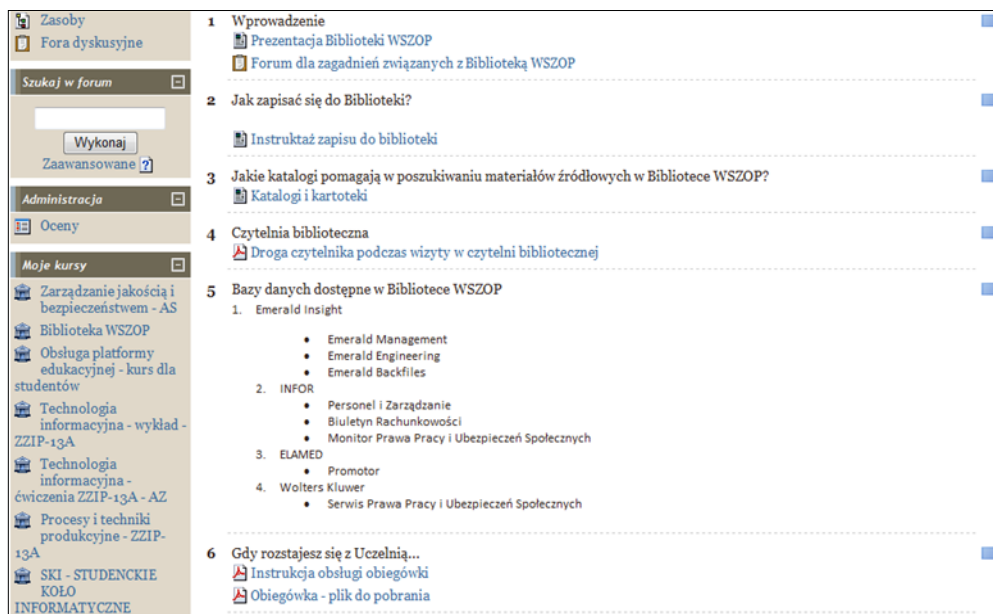


Figure 2. Fragment of the course existing on the WSZOP remote education platform

Every day, about 150 individuals log on the remote education platform. It is the E-learning Study Centre (SEL WSZOP) (Tkacz, 2009) that deals with the organisation of classes, administration of the remote educational platform, training courses and the widely-comprehended development of e-learning.

The figures below present the number of the WSZOP students and lecturers trained in the e-learning methods:

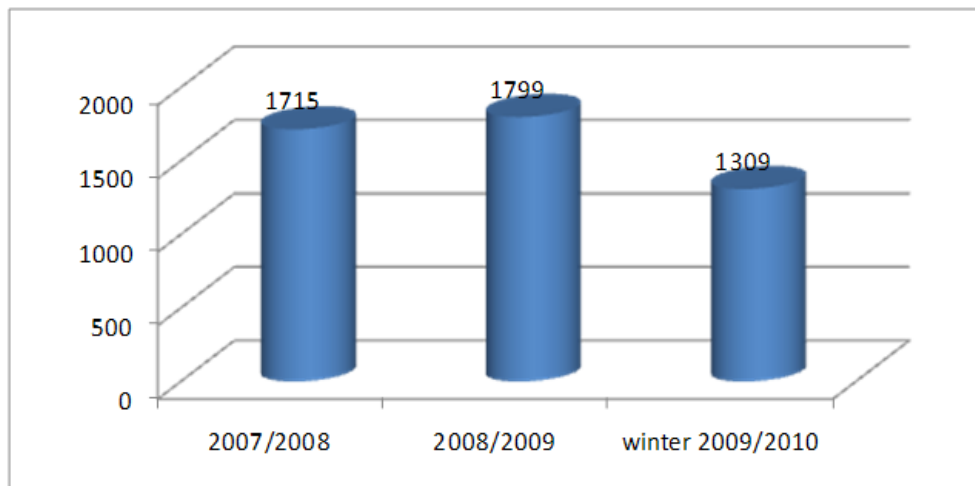


Figure 3. Number of the WSZOP students trained in the e-learning methods

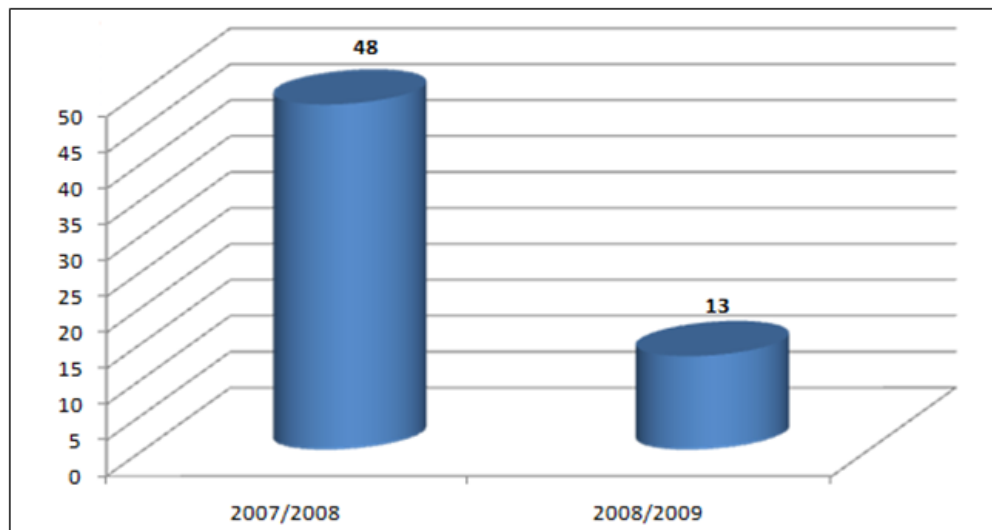


Figure 4. Number of the WSZOP lecturers trained in the e-learning methods

The WSZOP remote education platform has also been used for training teachers in the scope of e-learning at one of the secondary schools in Katowice with which the college co-operates. 20 teachers of various subjects took part in the training course. In the preliminary discussions held prior to the commencement of the training course, it appeared that none of the teachers knew how to operate the Moodle platform, five of them participated in the training courses, organised via the Moodle platform of the District Examination Commission in Jaworzno, for the examiners of the secondary school final examinations. During the training course, such Moodle resources and components were discussed as the lesson, dictionary of terms, task, quiz, voting, questionnaire, chat, discussion forum. Based on a short survey carried out after the training course, it was determined that the majority of the teachers would like to gain further knowledge in the scope of e-learning. They considered the quiz as the most interesting component for it would make it possible to create tests that they would use while preparing the pupils for doing the secondary school final exam closed tasks.

2. RESEARCH CARRIED OUT SO FAR, ADDRESSED TO THE COLLEGE STUDENTS, ASSOCIATED WITH THE MOODLE PLATFORM (Tkacz, 2009)

Apart from the training courses for the lecturers, SEL WSZOP organises and leads the courses for the students. The training course structure comprises: lecture – presentation, course on the platform as well as the individual consultation. The essential training materials in the form of traditional (printed) instructions are also available in the college library.

The training course system starts with a lecture – presentation during which the students receive the basic information on e-learning. Among others, the following subjects concerning the following are discussed:

- e-learning characteristics and specific nature (the differences in the comparison with the traditional education along with indicating the assets and disadvantages)
- configuration conditions essential for using LMS (concerning the browser, safety issues)
- rules for using LMS – graphic interface characteristics
- rules for using the didactic materials, chat, discussion forum, tests, platform internal communication and e-mail

- discussing other services associated or independent, among others, the Virtual Dean's Office
- handing over the data for authorisations.

After the end of the presentation lecture, the training course is continued: through the existence of a special training course on the remote education platform as well as via consultation duties held by the SEL WSZOP employees. The course existing on the platform contains the training material in the electronic format (in most cases in the flash or pdf format), the forum where the students may raise any technical problems or provide other comments. Also, additional materials are included in the course, useful for IT education, e.g. auxiliary materials for the preparation for obtaining the ECDL certificate.

The students were subject to a probing survey the aim of which was to determine the rate of approval for the materials placed on the remote education platform as well as for the printed materials. The survey was carried out among 583 students. The average age of those surveyed was 28.

The question – “Which of the forms presented below was the most useful for you while using the e-learning?” was answered as follows:

Table 1.
Training Materials Form

Form	Number of Students	Percentage Index
Printed Version	212	36.5%
Electronic Version	190	32.5%
Lecture Form	181	31.0%

Source: Probing Survey

The question: “*In the situation in which only one instruction version would be available, as the best form, I would choose the instruction*”: was answered as follows:

Table 2.
Training Materials Form

Form	Number of Students	Percentage Index
Printed Version	256	44%
Electronic Version	327	56%

Source: Probing Survey

Further surveys among the students referred to the optimisation of the platform contents and services (Ballion, Tkacz, 2008)

In order to get acquainted with the students' opinion concerning the creation of the didactic contents and the organisation of the remote classes, two student groups were surveyed: the students that initiate their studies with the use of e-learning and the ones that have studied remotely for at least two semesters. The first group had already undergone the training courses aimed at getting familiar with the remote educational techniques and operating the educational platform. They replied to the following questions concerning the:

- moment of the didactic materials publication
- time of the didactic materials publications
- student's expected time for the response to one's own activity at the discussion forum or e-mail
- assessment of records on the discussion forums
- effective forms of communication
- need for attaching links to other web pages in the materials
- need for unifying the didactic materials visualisation
- preferred forms of the didactic materials forms
- frequency of holding chats

When analysing the results, the following conclusions were reached:

- gradual placement of the didactic materials may ensure more frequent students' visits on the platform and, at the same time, the greater participation in the discussion forums or other services;
- placing all the materials needed for education may result in the student's downloading them in the complete set at the beginning of a semester and in their losing motivation to further using the educational platform;
- the materials that appear on the platform ought to be available until the end of the classes duration in the relevant semester. It is mainly due to the individuals that (for various reasons) may have failed to log onto the platform;

- the majority of students chose 3 days as the maximum time for expecting the reply from the tutor to their own post at the discussion forum or e-mail;
- it is not required by the students to introduce the assessments of the records on the discussion forums;
- the most effective form of communication according to the students that already study remotely are: e-mail, chat, Internet (external) communicators and according to the other group of beginners in e-learning: e-mail, Internet (external) communicators, discussion forums;
- the preferred forms of the didactic materials are text files in case of the students that is starting study remotely. The students having experience in e-learning indicated additionally the sound files;
- as for the frequency of holding chats, one may assume that the monthly frequency may be the optimum for this activity.

3. USING THE MOODLE PLATFORM IN EDUCATION AS PER THE EXAMPLE OF THE INFORMATION TECHNOLOGY SUBJECT

The syllabus of the information technology e-learning subject comprises the following issues:

- organisational matters:
 - lecturers' duties and contact
 - subject syllabus and literature
 - academic year organisation
 - conditions for getting credit for the lecture

2 Wykład 1 - Historia rozwoju technik obliczeniowych i komputeryzacji, hardware i architektura współczesnych komputerów

UWAGA: wszyscy którzy chcą (szczególnie chodzi o osoby niezaawansowane w tematyce) mogą korzystać z zasobów Studenckiego Koła Informatycznego WSZOP. Publikuje się w tych zasobach materiały pomocnicze do uzyskania certyfikatu ECDL E-Obywatel. Jak się zapisać do zasobów koła - patrz. opis poniżej.

- Wyszukiwanie i zapisywanie do Studenckiego Koła Informatycznego
- w cz. 1 należy obejrzeć prezentację interaktywną - wykonać notatki które trzeba porównać z materiałem cz. 1 podanym w pliku pdf. W prezentacji interaktywnej proszę klikać w przyciski nawigacyjne, regulujące skalę czasową (suwak u góry) lub w poszczególne wydarzenia (ikony z plusami)
- cz. 1 prezentacja interaktywna na temat historii
- cz. 1 - plik pdf
- w cz. 2 należy obejrzeć prezentację - jest ona uzupełnieniem do pliku pdf, którego zawartość merytoryczna będzie stanowiła podstawę do pytań kolokwium, przeprowadzanego dla wszystkich grup na ćwiczeniach.
- cz. 2 - prezentacja - hardware i architektura komputerów
- wersja dźwiękowa wykładu
- cz. 2 - plik pdf
- forum aktywności studentów
- Komputer - jak to jest zrobione?
- Ekran LED - jak to jest zrobione?
- Karta graficzna - jak to jest zrobione?
- Mikroprocesor - jak to jest zrobione?

a)

4 Wykład 3 - Wstęp do pakietu MS Office - podstawy arkusza kalkulacyjnego MS Excel

- wykład poprzez e-learning w planie podany na 9.04.2010

- podstawy pakietu MS Office
- MS Excel cz. 1
- MS Excel cz. 2
- szkolenie pt. Poznaj doskonale program Excel 2007 - czas 30 - 40 min
- jak przestawić się z MS Office 2003 i starszych na MS Office 2007
- forum problemowe nt. Excela
- opis dla dodatków Slox i Slox2
- dodatek Slox - zamiana liczby na kwotę tekstową
- dodatek Slox2 - zamiana liczby na tekst

b)

Figure 5. Content for the lecture No 3 on the Information Technology

- history of the calculation and computerisation technologies development, hardware and architecture of the contemporary computers
- operational systems – basic and advanced activities in MS Windows
- introduction to the MS Office package – bases for the MS Excel calculation sheet
- creating charts in the MS Excel calculation sheet
- MS Word programme

Students may gain more knowledge and skills by using optionally the resources of the other course of the WSZOP Students' IT Club which comprises:

- WSZOPEZIN – ezine published by the Club
- e-Citizen Certificate – auxiliary materials associated with ECDL e-Citizen certifier



Figure 6. Contents of the course published by the Students' IT Club

- ECDL Certificate – auxiliary materials associated with the ECDL-Core certifier

- Information Technology – interesting pages

Each subject in the course, in the scope of the information technology, contains:

- PDF files
- Students' activity forum
- Presentation of the lecture contents in the sound or interactive form
- Links to the selected web pages



Figure 7. View of the discussion forum of one the lectures

Additionally, during the exercises on the subject the module *task* is used.

In February 2010, short survey research was carried out concerning the lecture on the Information Technology. The survey was completed by 242 students of 2nd daily course studies. The tables below presents the results collected during the research.

Table 3.

Please, indicate whether you used the e-learning lectures on Information Technology?

Answer	Number of Students	Percentage Index
yes	199	82.1%
no	43	17.9%

Table 4.**I assess the lecture in the form of e-learning as:**

Answer	Number of Students	Percentage Index
very useful	114	47.4%
useful, but should be improved	89	36.8%
average	35	14.7%
of no use at all	4	1.1%

Table 5.**I did not use the e-learning lecture because:**

Answer	Number of Students	Percentage Index
I could not be bothered	25	10.4%
I am not interested in it	25	10.4%
lack of access to the Internet/computer	47	19.5%
due to the impossibility of logging on	7	3,0%
I prefer a traditional lecture	97	40,3%
other reasons	41	16,4%

Table 6.**A better form for the lecture on Informational Technology is:**

Answer	Number of Students	Percentage Index
e-learning lecture	22	9.5%
blended learning	168	69.2%

4. CONCLUSION

Between 2007-2010, the Moodle platform was used in the e-learning education executed in the Higher School of Labour Protection Management in Katowice. Throughout the entire period concerned, the following facts are note-worthy:

- e-learning educational platform ought to serve not only for the purpose of leading the courses associated with the class schedule, but it is also perfectly fit for additional activities, such as: seminars, academic circles, training courses, diploma theses execution, activities resulting from the co-operation with other centres;
- it is necessary to carry out interim probing surveys which allow for the collection of the information on the expectations on the part of the users, both those concerning the method for leading classes, level of satisfaction concerning the contents provided for and also the factors for motivation to study with the use of e-learning;
- training courses preparing for e-learning are an essential element of the entire remote education system. During courses, it is worth paying attention to such problems as: failure to understand the e-learning asynchronous nature, specifications for using such services as chat or forum, different didactic resources used as well as the information sources (both as far as students are concerned and tutors);
- it is necessary to perform the works over the IT systems unification in order to improve the communication and information exchange; most frequently, apart from the e-learning platform, also other IT system is operated in the form of the so-called virtual dean's office or additional contents management system. Proper integration enables the unnecessary duplication of the same information and the lack of the necessity to authorise the user in each system on separate basis.

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VISUAL COMMUNICATION IN THE WORKSHOP OF CONTEMPORARY TEACHER

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Abstract: *This study was devoted to broad issues of visual culture in the context of pedagogical activities. Visibility, which now plays a crucial role in human life, it also serves an important didactic functions. An example of the younger generation, often described as a screen generation, points to changes taking place in morality, communication and education. Today's generation of children and young people brought up on the visual media enforces adaptation of the educational environment to changing information needs. The text presents the results of studies on the use of audio-visual materials. It presents data on the reception of messages developed in the visual form. It also discusses the commonly used rules for creating visual educational materials prepared, among others, for e-learning.*

Keywords: visual culture, visual educational materials, visual literacy, visual perception, visual competence.

1. E-GENERATION AND THE IMAGE CULTURE

The visual culture - the main point of this article, which concerns human relations, visual representation and education – is presented thanks to the artifacts, as well as mental and visual objects, with connection to their

technical production. In the sphere of social awareness a couple of different activity spheres can be distinguished:

1. It is whole, seen by men visual area, where the image is defined as everything that we can see without its supposed symbolic meaning.
2. What is more, the iconic symbols, related through their similarity to the reality, constitute the perception sphere as the rage of the interactions.
3. Finally, the area where the proper and institutional discourse between the creator of the visual message and receivers, experts and scientists are situated.

From the educational point of view, connected to both human action and the visual representation, the term 'artifact' should be understood not only as the exterior recording but as intellectual justification as well. It is helpful to use the 'artifacts' in the teaching action. In the conceptual range of the image and or even – the visual culture - we could distinguish interpretation on the intellectual justification level, gathering in iconographical, iconological, psychological and philosophical frames. The visual objects are extensions of our imagination, the text of the culture, the effect of the intellectual skirmish, physical form of the inside life, which we bring into real existence or leave in our imagination. On account of that, the visual objects give the opportunity to use them in the educational process which is focused on building the cognition draft and producing generalizations. The social sphere is filled with visual creations, which consist of the past and modern visual forms of transmissions and above it: the art masterpieces, contemporary transmissions of the images and others visual – productive methods. The historic changing of perception of the visual transmission, interpreted in the context of history, art, esthetics, philosophy and psychology of the reception regulates the common relation to the representation forms. It is characterized as changeability and relativity in comparison to the fragile features of humans (personality, psyche, intellect and awareness) and the image. It is also surrounded by the symbolic and axiological tendencies which are obligatory in place and time, where the visual activity is seen as belonging to metaphoric group of goods. Because of its own universalism, the visual transmission come into the spatial relation where it interacts and transfers the formal features (form, style, manner, the level of the technical advancement) and what is more, it also transfers human's cultural essence in the individual or instructional way (business branch, community, schools and university environments).

One decade ago, text dominated in Internet transmissions. Illustrations, pictures, photos played supportive role. It was connected with a few

restrictions for users to prepare their own graphic elements, drafts, pictures, animations, video recordings, photos or computer graphics.

Nowadays, as a result of general accessibility to the graphic editors and film and recording processing programs, the preparing and publishing of the visual materials in the network do not demand having any specialist software or any specific qualifications in this area. It causes the opposite phenomenon which is noticeable on websites - graphic elements and multimedia are starting to dominate.

Those occurrences are also connected with the enormous popularity of the screen media. The younger generations, children and teenagers, were brought up in this surroundings since childhood (where visual forms dominate in the transmission). All this experience leads them to the preference and expectations of the recipients to the educational content.

Nowadays, it is said a lot about the dissimilarity of the young generation, especially in the educational contexts and calling them: e-generation, screen generation, net generation or Google generation. Teachers and scientists in their research show changes which are processing in young people because of the digital media (Oblinger D., Oblinger J., 2005). The polisensorial transmission with the use of multimedia is being offered by new media leaders to change the attitude of the media and modeling the habits in reception and information processing.

We are nowadays the witnesses of modeling of the visual culture, which is beside the tendency to create more esthetical environment, including the fascination of the digital tools.

The theorists of contemporary culture claim that the perception of the visual reception is conditional on the elements that are forced by new technologies. It is, for instance: the lack of prostaginess (repeal of the distance between the work of creation and the recipient. It creates the possibility to go inside), polisensorial (influence on many senses, multimedia, interactivity) and different to the traditional transmissions, luminous, punctual structure of the electronic image).

In practice, such endowment of the visual culture is covered due to the immediateness, ubiquity, elusiveness, directness, simulation and virtuality (Kita, 2003). It is also defined as audiovisual, connected to the form, motion, time and change. The new media are like the old ones, print, photography and television, they just became digital, therefore it allows easy access to the information and its interactive perception.

The educational and communicational function of the image, defined by E.Hall as the superior values of the representation, serves to transmit the information. In Hall's opinion, culture is the message and it also has the ability to communicate through a set of spatial relations (Hall, 2003). In addition to this, new communicational media create the area, in which the change of the information takes place.

The question appears: whether the visual message is a dominate medium

Communiqué “medium” – content – creator – receiver

or just the reproductive, playing the role of the message transmitter

Content – creator – communiqué “medium” – receiver?

In the educational situation the advantage of those interaction forms depends on the interpretation supported by the teacher – mentor and guide. The educational practice shows that visual messages are appearing as the didactic materials in the media form (picture, sculpture, architecture, photography, film, video recording, and digital recording). In this case, message is carried the content. Its structure determines the origin and impose the strategy of created statement.

The modern communication through images, like in the past in Bible Pauperum, concerns the sphere of symbolic communication; although the traditional signs are changing their forms and they are losing the stereotypical communicational meaning. For young people it stops describing its traditional content and for older people - those which just came into being - are misunderstood. Education could fill in this generation gap (“the Human Gap”) (Botkin, 1982), which emerged from technological acceleration. It is possible both in the skills area (information technology – IT) and interpretation (media education). It helps to improve reading of the visual message in correct way. The aim of the modern-understanding media education is to teach about media, through media and for media (Dylak, 1997) and in direction of media (Morbiter, 2003).

2. THE VISUAL ACTIVITY IN TEACHING PROCESS

Images appear at the beginning of human civilization. They were probably the result of an inner need to express emotions, the need for displaying symbols of magic, or method of communication. Only later, human thought has created an axiological system, which gave them certain values such as beauty, form and artistic experience. Today, in changed conditions of the

digital recording, forms of visual communication, have evolved and adapted to the needs of customers.

The visual messages in contemporary education use like any others *communiqués*, the code, which must be understandable for both the creator and receiver in order to transfer the content. This code which is identified with the medium (transferors) generates the virtual refection as on the model of the traditional picturesque, sculptural, or architectonical and art masterpieces. Contemporary virtual world of the media which is registered and strengthened by vision and sound, remain in the mind of the receivers as messages identified with surrounding reality. In educational action information plays the main role, because their visual materials are worlds, images and music, which make sure that the statements get the right sense.

We could differentiate three kinds of the *communiqués* (as a result of focusing on the meaning and kind of using words): iconic, index and symbolic (Eco, 1999). The semiotic analyses of the sign transmit the educational act on the sphere of reading meanings. The area of the sign-images creates a commensurate through the shape and features. Icon is the reflection regarding the whole represented reality. It is the draft of images, which concerns group of meanings, for instance: someone's photo or portrait. Index (indicator) has got the direct physical connection with the object. The index of fire is smoke, the index of cold is sneeze and the index of smell of coffee – the pleasure and relaxation. Symbols mean some object as a result of agreed convention, for example: all the words and Arabic numbers are symbols.

As a result of those features, the visual messages mean a lot, however, not because of its readability (it is conditioned by mentality and cultural factors) but because of suggesting definite and interpreting reality. The images call ideas which are functioning inside the iconosphere, producing the unbounded area of affecting people.

The aim of visual message in the educational process is to show the mental – like content. Topics are the part of the cultural work, they are part of the society's experience, they become their artifact. They turn out to be the fundamentals of interpretation which are transmitted through the image – medium too. The visual message is the description of a reality (sign, the group of signs connected with their own logic), which exists besides this reality. The idea of this reality appears in the creator's mind and it is functioning after faced up with the receiver in one on another decode and interpreted shape. Mainly, it influences on the receiver's psyche, changing it. Formally, contently and esthetically it is connected with the processing time

norms. In this form, it starts to interfere with the receiver. During this process, it transports the content, cultural expression and artifact, which are connected with their own developed logic and forming. The mental condition of the participating person is changing because of visual information. The knowledge is widened, as the creator presupposes (Wieczorek-Tomaszewska, 2007).

At the beginning of twenty first century in Poland, B. Fiołek-Lubczyńska suggested the systematic schooling program, which is preparing students to participate in visual culture since the school years. The program relies on teaching how to read the visual images and at the same time teaching how to write and read literature (Fiołek-Lubczyńska, 2004). Fiołek-Lubczyńska stressed (after M. Hopfinger) that she is worried about the poor number of education programs, which are focused on people's participation in audiovisuality (Hopfinger, 1997). In this context, it is even more necessary to use those suggested educational methods of obtaining the media competence among the young school people. For them, computer and Internet are the symbols of the present days, participating and creating individuality in this reality. The awareness of the critical teaching and selective reception of the visual messages must find the justification in effective education, which considers the cultural connection between each of the media statements and makes the receivers more sensitive when they are dealing with the axiological content.

3. YOUTH'S MEDIA ACTION IN THE SPHERE OF THE IMAGE CULTURE

The contemporary visual culture consists of media behaviors of young people in Internet sphere. Among the network users the dominate group are youth. Preferable forms of transmission of information show the huge popularity of visual materials. It is confirmed by the great research centers for instance Gemius (*Internauts – video and audio in network*, 2009) and the surveys, which were undertaken in February 2010 and were carried out by the authors. 148 people at the age of 14-25 answered to the Internet survey. The dominate sex was female (84%) and the average age was 19. All respondents were University or High School students. The researches related to media action, which is made by young people in the network, where in three differed groups: information, visual and technological (IT) (Pulak, Wieczorek-Tomaszewska, 2009).

The visual behaviors constitute large per cent of registered actions of Internet users. According to the researches, respondents are willing to use the visual forms of presenting information. It concerns information services as well as materials, which were uploaded by others users. Those behaviors are most often exposed as watching the visual materials which are being published on the network and also the independent publishing and creating visual materials.

Table 1.

The respondents' activity connected to the reception and creation of visual materials.

Activity	Often	Seldom	Never
I watch films and photos, which are made available by others users	85%	14%	1%
I watch films, which are made available by others users but on the educational purpose	59%	31%	10%
I upload my photos on the Internet (online photos albums on profiles and on the social networking websites)	46%	43%	11%
I watch video clips (audio-visual reception)	79%	16%	5%
I create and upload my own recording on the network	5%	17%	78%

The perception of the visual message works in this way: it transforms the vision impression into clear information and also it interprets concentration on the cognitive and social experience. We can register everything we can come into contact with, as well as see, and next we interpret it in a wider contest. The visual message helps to assimilate new information and encloses them to knowledge, to shaping the posture and ideas. The respondents' opinions were focused on the cognitive function of educational visual media. It also plays a huge role in values consolidation.

Table 2.**Educational function of the visual message in the respondents' opinions.**

Educational function of the visual message	Respondents' opinions
Presenting content in a shape of images, the aim is cognitive	78%
Transferring and consolidating the ideas and values	59%
Forming the opinions and attitudes	47%
Other	1%

Qualitative analyses of the respondents' actions in the Internet shows that the interest of the information contents in visual messages is very high and about 70 per cent respondents watch visual material concentrating on that. It also ranges from artistic and educational to teaching content. It should be bear in mind that the form of the message increases the attractiveness and perception of the communiqués.

Table 3.**The hierarchy of popularity of the watching in the visual messages' content.**

Subject matter	Respondents' opinions
Artistic (films, music and art)	78%
informational	66%
Educational and teaching	53%
psychological	45%
drastic	9%
social	8%
sexual	8%
other	2%

Creativity. Respondents use willingly the visual materials [pictures, photos, drafts, charts (80%), and multimedia elements (50%)], when they are preparing individual speeches or papers and multimedia presentations. It illustrates the great value of the graphic and visual presentations in understanding the world. Additionally, it improves the quality of educational messages.

The interpretation of these behaviors leads us to the contemporary pictures' culture of the image receive theory. The easiness of the transmission and reception of the mental contents do not need the high level of perception. In the network, the visual culture replaces the language culture (Leszkowicz, 2009). Nowadays, the primary layer of the visual interpretation decodes without any problems like in a cultic commix, graffiti or multiplexes, which are building the mass culture. This culture is a complex and varied source of inspiration and expression. Certainly, there is a high culture as well, where the possibility of transmission educational contents guarantee the effectiveness and correctness of their reading. The visual messages, on account of direct association of their choosed elitism, induces to those perception, which links to the knowledge of decoded rules and notices of the stylistic structure and convince the ways of creation which determine decoding of the transmissions and meaning interpretation. All of those behaviors can be called the symbolization skills and the educational actions on this field can be called the visual alphabetation which could be possible to manage on every level of teaching.

4. CONSTRUCTING THE EDUCATIONAL VISUAL MATERIALS

The main point of preparing visual educational materials (in the form of images, photos and drafts) is to simplify the decoding of the material . The visual form helps students to receive the information. It also helps to observe it in holistic and ideal way, see the connection and relations between different elements of transmission.

Infographica is a very popular term, which relates to the graphic desing of educational materials. It is one of the forms of visual communication. The infographica term is very capacious, but sometimes it could be understood just as illustrations (drafts, charts, maps) (The Polish Dictionary, 2010). However, usually, the definition that is used says: "graphic visual representations of information, date or knowledge, these graphics present complex information quickly and clearly" (Newsom, Haynes, 2004).

The famous designer, John Cassert, suggests to definite infographic as “explanatory graphic”, because its aim is not only to inform the receiver, but also graphically explain presenting information (Burns, Bitner, 2003). The complex terms, dependence and statistic information could be replaced with the pictures and graphic. It would centrally help the receiver to understand more.

The information architecture is a study field which concentrates on designing the right multimedia communication (especially portals and websites) which is well prepared with regard to the agronomy and usability. This is the discipline both cognitive and practice, which is focused on the design rules and creating the construction in the virtual landscape. This discipline is situated between graphic design, interaction system design, usability engineering, content and knowledge managing (Rosenfeld, Morville, 2002).

The virtual mass media joins text, picture, film and sound to simulate reception in many ways at the same time. It also increases the experience and intensifies the interactions of the didactic content.

The graphic theorist – B. Bergstrom – mentions basic visual transmission’s goals: informing, illustrating, presenting, explaining, teaching, frightening and amusing. He also separates four categories of visual transmissions, which are similar to the categories used in art history: to inform, to explain, to direct and to express. The information transmission is the process of giving a visual order to the content of the communiqué and setting the elements in appropriate hierarchy. For ages the basic visual transmission’s elements have stayed the same: image (illustration, photography, picture, symbol) and text (words)(Leszkowicz, 2009). The ability to find the structure is essential to make sure that the transmitting content is clear. The hierarchy gives elements the possibility to go from the details to the whole. In the communication process we can find the chain of interpretation and in the visual transmission we can find the sequences, which consist of: the moment of visual realization with the outdoor world of culture, the sensorial perception, confrontation with the outdoor world of culture and the production of the indoor projections, which can join the collective world of knowledge.

The contemporary tools used to create didactic materials (for instance: e-learning) Focus on the advanced technological mechanism – new media. We could get a cyclic draft of perception the environment when we analyze the educational meaning of the virtual sphere of the new media which is connected with the epoch, civilization, and race. In Antic, the representation was presented as individual objects which showed the complex and discontinuous world. Renaissance gave the systematic skills and limited

perception to the art history (perspective, open and close form) and the cycle of representations connected with each others in the notional continuum (Panofsky, 1971; Wolfen, 2006). The present – day of the virtual new media is the endlessness of space, where there are the structures objects which are situated in the perspective net by the designer (as on the coordinate system in renaissance). This sphere will be filled with activate objects in graphics as a result of defining polygons as setting their edges. In the computer graphics, the three – dimensional virtual world appears by the rules of the linear perspective and they compose the groups of separate objects (like in the Antics) in different time and place sequences (Wieczorek-Tomaszewska, 2007). The unlimited technical possibilities of the new media in the sphere of the cognitive registration and constructing the virtual creation of new areas gives the possibility to reposit the computer software action, the structure and settings to the educational realization.

Formal system decides on the right transmission construction. When we are producing the visual communicate we should bear in mind three rules concerning the design: symmetry, asymmetry and contrast rule. The symmetry rule is a typical approach in many visual projects. Elegant and harmonious balance is given when the images and text are situated around the vertical axis. On the other hand, the asymmetrical distributions of the elements (on the right or on the left side) gives the dynamic. Specialists advice to use moderation. The receivers are most often attracted by the contrast graphic system. We can get it thanks to the size contrast (the variety of the objects) and strength contrast (stressing the most important elements of the transmission), the shape contrast (set of elements) and the color contrast (the variety of colors). The important stage is to validate the direction, focus the receiver's attention on the most vital elements. In the information graphics, content structuralizing through creating the clear hierarchy of elements is the intention of the creator. It can be achieved thanks to size, shape and color. The effective visual transmission can be assisted by the right colors. The bright paintings and expressive accents improve the reading clearness when they are empathized on the picture, they build the structure. The color application into the transmission is connected with the improvement of its physic and communication attributes. Using functional colors plays the most crucial role in the functioning of the visual communication in comparison to colours which are only the esthetic supplement. The function of color using is not only to inform and to order, but also to interest and to create a good atmosphere. Colors give the information about variant of meaning contents. Using the homogeneous layout orders the structure and makes reception easier. Colorful elements

attract the receivers' attention. What is more, colors can effect the receiver's psyche, making him calm or stimulate, influence the mood. They play the symbolic role as well (Bergstrom, 2009).

5. TEACHER TOWARDS THE CHALLENGE OF THE IMAGE CULTURE

The teacher's task is to operate the visual content and achieve the cognitive, educational and esthetic aims (on account of the persuasion possibilities). The media intellect is demanded, which consists not only of the eloquence and easiness of using media language in communication, but the ability of reflection, motives and goals recognition as well (Gardner, 2002). The biggest activity concentrated in this field is seen among the young generation, because for them those behaviors are intuitive, determined by the mass culture attendance and accessibility to new media.

For teachers, working with the new media means controlling technical skills. It implies using specific tools to achieve perfect statements according to established standards and formulas. The medium is the message (McLuhan, 2004) and because of that, we should bear in mind the necessity of defining the character of medium (the structural elements and the compositional and expressive composition).

The contemporary teachers are the specialists, who design the didactic objects in the language of new media. They replace the letters, words, sentences and thoughts of the cultural text and they produce the digital record. The computer is not only the calculator, the control mechanism, communication device, but a media center too (Manovich, 2006). As a result of that the computer is predestined to be the medium of the teacher's exemplar. Nowadays, the possibilities of the digital media in generating the new visual forms are significant.

The variety of presenting methods sensitizes the perception of the formal language innovation in the visual messages. Since the times of the first recording and illustration forms in the Lascaux and Altamiry Caves, through the Ancient Egypt convention, Christian static, loftiness of the Giotto's presentation or the renaissance discovers and formal Leonardo da Vinci's experiments on the work of art construction, color and perspective and also the Rubens's motion and dynamic, Caravaggio's artistic illusion and avant-garde creation tests as the reflection of the impressions and creator's visions. Multiplicity of artistic solutions surprises and ennobles individual ways of argumentation. These days we can observe ennoblement of digital forms of

world recording and its digital realization as educational objects – the result of new media.

The contemporary teacher can act in the digital world of information; can deal with preparing the visual materials. Teachers, who represent the young generation, have enough technical skills to use the graphic programs. They can also publish prepared materials in the Internet. Unfortunately, the competence in technical sphere seldom goes with the knowledge of the rules in the visual communication sphere (Leszkowicz, 2009). And because of that the most crucial element of the teachers' professional preparation is to equip with the individual preparation of the educational materials used for the didactic process.

A well prepared teacher, who has the knowledge of the culture context and media material producing skills, can realize the educational function in his own program. The central image's task is to interact. This action changes the psyche status of the perceived person. This is the creator's intention and it should be connected with his or her ideas (Wieczorek- Tomaszewska, 2006). At the time of the omnipresent image culture, describing the function of the visual message plays the most important role. The content message with the visual medium should be carefully and thoughtfully prepared, so as not to be too simple. What is more, it is also vital, because the value of e-learning is increasing. The blended learning method is very popular and because of that the demand for the educational materials which are uploaded to the Internet is developing. Internet gives a plurality of ways of presenting information. Photos, pictures, drafts, animations and video recordings can be the supplement of the educational contents which are presented in the text form. They illustrate the ideas and due to that make easy to understand the theory, vision and thoughts.

The layout of the e-learning courses is conducive with the information architecture rules which improves the cognitive processes. It also helps out with identification and categorization of the presented contents, ordering them and making systemized. Even in popular virtual teaching environments which are based on text messages the color and font make the presentation of the teaching material clearer. The graphic elements, icons and symbols can be very valuable when we would like to design the system navigation in the educational portals, e-learning's platforms and others interactive materials (in Flash – technique) (Istrate, 2009).

The teacher, who uses the visual messages, especially via the Internet – related teaching case, must bear in mind the limitation which is connected with the accessibility to those educational materials for wide range of

receivers. Disabled students – blind, deaf or who have color distinguish disorders – could have problems with that message reception. It is worth making use of available solutions connected with designing and implementing websites. Among the directives concerning convenient access to the network (Web Content Accessibility Guidelines - WCAG) it is advised to provide equivalent alternatives to auditory and visual content. Realization of this rule is connected with putting text communiqués as an alternative for all untextual communiqués. Therefore there are those presented in a multimedia form: pictures, audio or video recording. Through those designers' procedures, people who are blind can use special web browsers or special software (for instance – Web Reader). They can also obtain the information about the presented content in the audiovisual materials. For deaf people it is possible to set the subtitles under the images. Additionally, it should be kept in mind that not all screen reading devices that can understand colors and font bolding of the text. In addition to this, such markings should be appropriately indicated (Pulak, 2008).

CONCLUSION

Undoubtedly, situating new visual media in the wide educational perspective allows to understand their specific role. Without doubt, this function is huge because of the large area where new visual media act – websites, virtual worlds, multimedia, computer games, interactive installations, computer animations, digital video, cinema, and human – computer interface (Manovich, 2006). Among those mentioned forms there are others which are created because of the culture computerization (computer games, virtual worlds) and those which existed before (photos, cinema, graphic) and gave up on the new ones and even adapted to their needs. The works of new media are: digital images, digital making film, 3D environment, computer game, and hypermedia website. All of them exist in the culture of the information society. They can also be analyzed in the visual language context, ways of organizing information, iconographic, iconology, or individual experience of the perceptive receivers. In the new media world, sometimes it is difficult to see the difference between art and the visual activity which set the educational processes. The information society which has developed the visual alphabetization (the visual alphabetization was formed through images culture and civilization progress) can generate messages deeply rooted in history and also link to them as the ideological and moral authority.

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PRACTICAL APPLICATIONS OF CLMS MOODLE IN UNIVERSITY FOREIGN LANGUAGE TEACHING

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Abstract: *This paper presents three practical uses of CLMS Moodle in the scope of foreign language teaching at the University of Silesia in Katowice, Poland. It is used for the purposes of providing foreign language classes to part-time students within the framework of a blended learning course, as an electronic workbook complementing the main foreign language course and as an online mock examination with practical information and self study content.*

Keywords: blended learning, e-workbook, online mock examination, Moodle, foreign language teaching

INTRODUCTION

Teaching foreign languages has been given a second life since CLMS Moodle was chosen as the University of Silesia's established e-learning platform. Along with innovative techniques teaching methods are gradually changing. This article presents three different ways of using this powerful educational vehicle.

1. BLENDED LEARNING FOREIGN LANGUAGE CLASSES

A typical university course in any field of study contains foreign language classes as part of the general education component. Since 2008 the Foreign Language Teaching Centre at the University of Silesia has offered their busy part time students of law and administration foreign language classes taught in the blended learning format. The term "blended learning" refers to different aspects of both teaching and learning, but it is commonly used to

describe an educational process which is a combination of traditional face to face forms and online activities using the internet. This combination can be understood in terms of technological means but can also be seen as a blend of different teaching methods and techniques (Whitelock, 2003).

The reasons for establishing this mode of teaching in the case of English, French, German and Russian language classes at the University of Silesia Faculty of Law and Administration were the following:

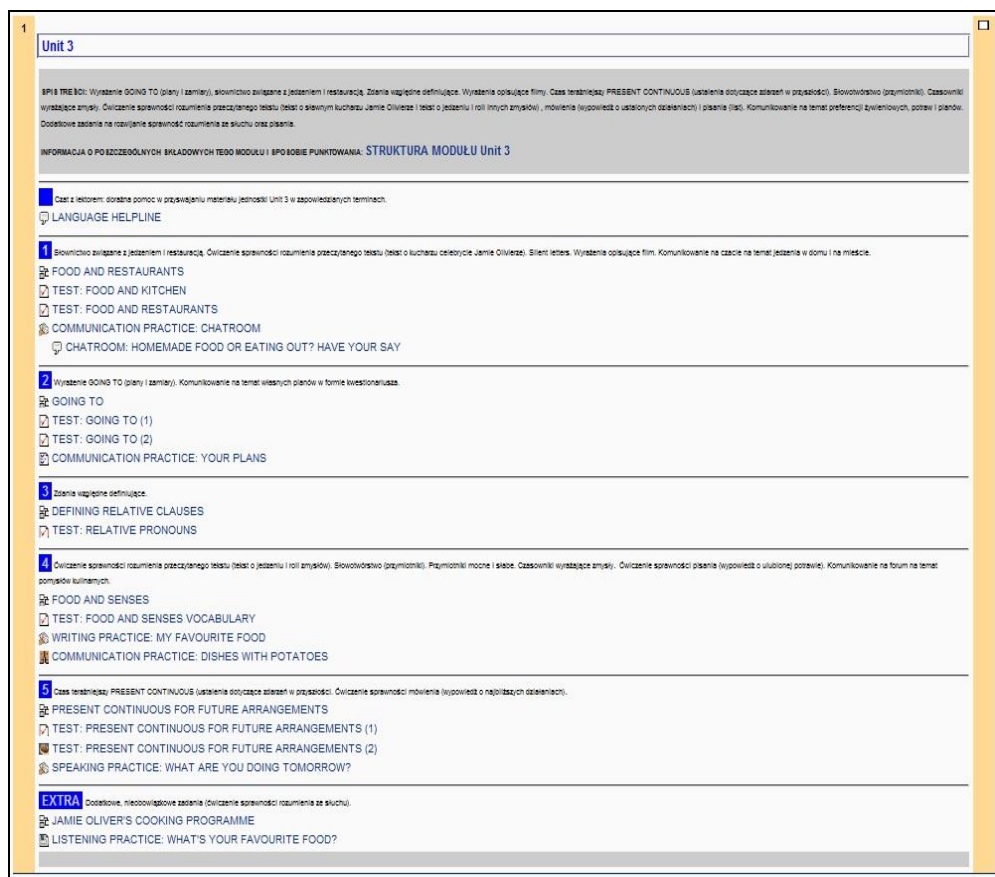
- educational goals can be achieved in a shorter time, with higher efficiency and effectiveness (Rossett, 2006; Mischke, Stanisławska, 2006);
- costs of education are lower (Rossett, 2006);
- the teaching material is understood better (Heinze, Procter, 2004);
- part time students are usually working students and they find this method particularly attractive and convenient (Heinze, Procter, 2004);
- inventive, challenging resources and tasks, teacher's guidance, support and feedback help the student get activated in the process of self study (Niemierko, 2002).

The teachers involved in the implementation of this innovative teaching solution prepared online courses based on a selected course book normally required in foreign language classes taught in classrooms. Each semester the student has to cover a portion of e-learning content on the Moodle platform and attend several classes. The final test, which is conducted under the supervision of the teacher, significantly adds to the overall grade the student gets for his credit. About 60 per cent of the total number of hours (75 hours) is to be pursued online. The student has to do some guided work on the Moodle platform in the form of such system instruments as resources, lessons, quizzes, assignments, and others. The student's effort is graded and monitored. The score as well as the online attendance represent the student's involvement which is treated as an essential credit requirement. The student is never left alone as the teacher supervises the student's progress, partly within prewritten feedback and within commentary attached to quizzes and assignments which are corrected and graded after they have been submitted, and partly in the form of chatrooms, forums and email communication.

The part of the course conducted in the classroom focuses on listening, speaking and communication while the part pursued outside the classroom concentrates on reading, writing as well as developing grammar and vocabulary.

The Moodle lesson proved to be one of the most convenient medium to activate students. This module is used to convey instruction, reference, guided practice (supported by feedback) and extra ideas in the form of successive HTML pages. Each step the student takes is monitored and each portion of knowledge he learns must be consolidated before he is admitted to another one. The system admits the student if he answers a checking quiz question correctly. This way the student must take an active part in getting the knowledge. As the teacher is absent this method works a lot better than just making the student read passively a certain amount of text information. To compensate this absence, the teachers involved in creating the e-learning content tried to follow the standards of a good online course (Smyrnova-Trybulska, 2007) and took pains to stimulate the student by all available means: colour, layout, images and graphic design, audio or video files. They used links and hypertext or hidden text features to instruct, reinforce, guide or support the student on his way to knowledge. Lessons are followed by quizzes, which give the student an opportunity to test their knowledge and to get necessary practice. The number of possible variations of Moodle quiz questions is enough to provide attractive and stimulating tasks. What raises students' motivation is also the grading system and the possibility to view their results and get feedback, especially in the case of assignments which are usually more demanding tasks.

It is critical students get informed about the nature of studying on the Moodle platform. Before each first semester of a foreign language course, students get some practical knowledge during a short training course in LMS Moodle run by an ITC specialist. It is also important to say that students should get clear information about the grading system, credit requirements and various ways of contacting the teacher before they start working online. This information is always included in the introductory notes in each online course on the platform. E-tutors say that getting grades is what seems to motivate students the most. E.Smyrnova-Trybulska emphasizes that "the grading system is based on a comprehensive aim at providing maximum objectivity when assessing the learner's achievements" (Smyrnova-Trybulska, 2007). The teacher gives online and offline grades and comments, assesses correctness and relevance and considers each learner's individual ability, creativity and involvement.



Unit 3

WPI & PRE-BCI: Wyrażenie GOING TO (plany i zamiary), słownictwo związane z jedzeniem i restauracją, Związki względne definiujące, Wyrażenia opisujące filmy, Czas teraźniejszy PRESENT CONTINUOUS (ustalenia dotyczące zdarzeń w przyszłości), Słownictwo (przymiotniki), Czasowniki występujące w trybie ciągłym, Ćwiczenie sprawdzające rozumienie przeznaczonego testu (test o słownym kucharku Jamie Oliverze i test o jedzeniu i roli innych zmyślonych), mówienia (wypowiedź o ustalonych obalenkach) i planów (plan), Dodatkowe zadanie na rozwijanie sprawności rozumienia ze słuchu oraz planów.

INFORMACJA O POZOSTAŁYCH WSKAZANYCH TEGO MODUŁU I SPOSOBIE PUNKTOWANIA: STRUKTURA MODUŁU Unit 3

1 Część z lekcji: dodatkowe pomoce w przypisywaniu materiału jednostki Unit 3 i zapowiadanych terminach.
LANGUAGE HELPLINE

1 Słownictwo związane z jedzeniem i restauracją, Ćwiczenie sprawdzające rozumienie przeznaczonego testu (test o kucharku celebrycie Jamie Oliverze), Silent letters, Wyrażenia opisujące filmy, Komunikowanie na czasie na temat jedzenia w domu i na mieście.
FOOD AND RESTAURANTS
TEST: FOOD AND KITCHEN
TEST: FOOD AND RESTAURANTS
COMMUNICATION PRACTICE: CHATROOM
CHATROOM: HOMEMADE FOOD OR EATING OUT? HAVE YOUR SAY

2 Wyrażenie GOING TO (plany i zamiary), Komunikowanie na temat własnych planów w formie kwestionariusza.
GOING TO
TEST: GOING TO (1)
TEST: GOING TO (2)
COMMUNICATION PRACTICE: YOUR PLANS

3 Związki względne definiujące.
DEFINING RELATIVE CLAUSES
TEST: RELATIVE PRONOUNS

4 Ćwiczenie sprawdzające rozumienie przeznaczonego testu (test o jedzeniu i roli zmyślonych), Słownictwo (przymiotniki), Przymiotniki moczne i słabe, Czasowniki występujące w trybie ciągłym, Ćwiczenie sprawdzające planowanie (wypowiedź o ulubionej potrawie), Komunikowanie na forum na temat potraw i kultury.
FOOD AND SENSES
TEST: FOOD AND SENSES VOCABULARY
WRITING PRACTICE: MY FAVOURITE FOOD
COMMUNICATION PRACTICE: DISHES WITH POTATOES

5 Czas teraźniejszy PRESENT CONTINUOUS (ustalenia dotyczące zdarzeń w przyszłości), Ćwiczenie sprawdzające mówienie (wypowiedź o najbliższych obalenkach).
PRESENT CONTINUOUS FOR FUTURE ARRANGEMENTS
TEST: PRESENT CONTINUOUS FOR FUTURE ARRANGEMENTS (1)
TEST: PRESENT CONTINUOUS FOR FUTURE ARRANGEMENTS (2)
SPEAKING PRACTICE: WHAT ARE YOU DOING TOMORROW?

EXTRA Dodatkowe, nieobowiązkowe zadania (ćwiczenie sprawdzające rozumienie ze słuchu).
JAMIE OLIVER'S COOKING PROGRAMME
LISTENING PRACTICE: WHAT'S YOUR FAVOURITE FOOD?

Figure 1. The structure of one unit of a course in English at A2 level on the Moodle platform (<http://el2.us.edu.pl/wpia>).

2. E-WORKBOOK

When seeking to maintain the student's interest outside the classroom, teachers often find such an opportunity in e-learning solutions. A. Rossett says that "blended learning encourages the organization to extend lessons and conversations beyond the classroom" (Rossett, 2006). LMS Moodle serves this purpose ideally. Teachers often use an e-learning platform in the form which can be termed as an "e-workbook" containing extra exercises, tests, written or oral tasks corresponding to the material taught in the classroom.

A successful example of this application is the "e-workbook" complementing one of the series of Academic English courses dedicated to lecturers of the University of Silesia as part of the project *University as a Partner of Knowledge Economy*. It is offered to the participants on the project e-learning

platform (<http://el.us.edu.pl/upgow>). What makes this online form more powerful than conventional workbooks is the human factor: the teacher supervises individual online work, comments on results, corrects mistakes, gives support where necessary. Besides, it makes it possible for students who missed a class to catch up. It also stimulates and motivates them to work regularly, which is commonly seen as a way to make a success in learning a foreign language.

3. ONLINE MOCK EXAMINATION

The other practical application of CLMS Moodle presented here is particularly interesting as it allows to combine effective online self-study and practice with the benefits of a website containing information and advice. On the University of Silesia e-learning platform there are four courses with such characteristics. Their aim is to provide preparation for a final foreign language examination. Students have an access to four online courses in English, French, German and Russian, depending on which foreign language examination they choose to take. For example, the course “Mock Examination B2” is dedicated to students who want to take a final exam in English at B2 level and get the University of Silesia Certificate in English. The candidate can study the relevant rules and regulations, find useful information on the exam, registration, certificate and target level requirements. Moodle resources (pdf files, web links, image links) proved very useful in this respect. Apart from that the student can follow exactly the same parts of the examination. The student gets scored for each part or task of the exam he does. The score represents the real examination score he would possibly get in the real examination situation. Each examination part takes the form of a Moodle quiz or assignment with meticulously prepared feedback notes. Each part is preceded by a lesson in which the student is led from one portion of practical knowledge to another with some checking questions in between. The student gets instruction and support concerning the nature of a particular examination part, some examination techniques and useful links for further study. Both written and oral parts are asynchronous and, especially in the case of the latter, handled with flexibility. One of the oral tasks which is about talking on a given topic was given the form of a NanoGong assignment, while the one which is supposed to be more conversational (a problem solving task), is a simulation of an exchange (NanoGong activity module). Dealing with the problem the student records two of his oral propositions using the Nanogong recorder. First, he records his own suggestion or solution. Next he listens to the audio file which

contains a proposition made by an imaginary exam partner and records his response. The student gets an offline grade and feedback. This way he can find out how well he can perform in the real examination situation. The course is supervised by teachers who run the chatroom, forum and provide corrections, hints or comments.

Egzamin certyfikujący z języka angielskiego na poziomie B2 MOCK EXAMINATION B2	
<p><i>Kurs MOCK EXAMINATION B2 ma za zadanie pomóc kandydatowi w zapoznaniu się ze specyfiką egzaminu certyfikującego B2 z języka angielskiego oraz pomóc w lepszym przygotowaniu do poszczególnych zadań.</i></p> <p><i>Zainteresowanym nauką języka angielskiego polecamy serię darmowych kursów języka angielskiego na poziomach A2, B1 i B2 na platformie programu UPGOW > http://el.us.edu.pl/upgow Zobacz koniecznie!</i></p> <p> <input type="checkbox"/> Forum aktualności <input type="checkbox"/> SŁOWNIK </p>	
1	<p>O egzaminie certyfikującym z języka obcego na poziomie B2</p> <p>CO TO JEST POZIOM B2?</p> <p><input type="checkbox"/> OPIS POZIOMU B2</p> <p>DLACZEGO WARTO ZDOBYĆ CERTYFIKAT UŚ?</p> <p><input type="checkbox"/> ATUTY</p> <p>PODSTAWOWE INFORMACJE NA TEMAT EGZAMINU CERTYFIKUJĄCEGO</p> <p> <input type="checkbox"/> EGZAMIN CERTYFIKUJĄCY B2 <input type="checkbox"/> REJESTRACJA NA EGZAMIN ONLINE </p> <p>JAK WYGLĄDA CERTYFIKAT B2?</p> <p><input type="checkbox"/> CERTYFIKAT</p>
2	<p>Szczegółowy opis egzaminu B2</p> <p>OPIS EGZAMINU</p> <p> <input type="checkbox"/> SCHEMAT EGZAMINU <input type="checkbox"/> ARKUSZ ODPOWIEDZI </p> <p>16 NAJCZĘŚCIEJ ZADAWANYCH PYTAŃ</p> <p><input type="checkbox"/> Q&A</p>
3	<p>A. Sprawność rozumienia ze słuchu</p> <p><input type="checkbox"/> NA CZYM POLEGA ZADANIE CZĘŚĆ A: ROZUMIENIE ZE SŁUCHU?</p> <p><input type="checkbox"/> PRZYKŁADOWE ZADANIE A.1: ROZUMIENIE CAŁOŚCIOWE</p> <p><input type="checkbox"/> PRZYKŁADOWE ZADANIE A.2: ROZUMIENIE SZCZEGÓŁOWE</p>
4	<p>B. Sprawność rozumienia tekstu czytanego</p> <p><input type="checkbox"/> NA CZYM POLEGA ZADANIE CZĘŚĆ B: ROZUMIENIE TEKSTU CZYTANEGO?</p> <p><input type="checkbox"/> PRZYKŁADOWE ZADANIE B.3: ROZUMIENIE CAŁOŚCIOWE</p> <p><input type="checkbox"/> PRZYKŁADOWE ZADANIE B.4: ROZUMIENIE SZCZEGÓŁOWE</p>
5	<p>C. Praktyczne użycie języka (sprawdzenie struktur gramatycznych i leksyki)</p> <p><input type="checkbox"/> NA CZYM POLEGA ZADANIE CZĘŚĆ C: PRAKTYCZNE UŻYCIJE JĘZYKA (SPRAWDZENIE STRUKTUR GRAMATYCZNYCH I LEKSYKI)?</p> <p><input type="checkbox"/> PRZYKŁADOWE ZADANIE C.5: SPRAWDZENIE STRUKTUR GRAMATYCZNYCH</p> <p><input type="checkbox"/> PRZYKŁADOWE ZADANIE C.6: SPRAWDZENIE LEKSYKI</p> <p><input type="checkbox"/> PRZYKŁADOWE ZADANIE C.7: SPRAWDZENIE PRAKTYCZNEGO UŻYCIA STRUKTUR GRAMATYCZNO-LEKSYKALNYCH</p>
6	<p>D. Sprawność pisania</p> <p><input type="checkbox"/> NA CZYM POLEGA ZADANIE CZĘŚĆ D: WYPOWIEDŹ PISEMNA?</p> <p><input type="checkbox"/> PRZYKŁADOWE ZADANIE D.8: WYPOWIEDŹ PISEMNA</p>
7	<p>E. Sprawność mówienia</p> <p><input type="checkbox"/> NA CZYM POLEGA ZADANIE CZĘŚĆ E: MÓWIENIE?</p> <p><input type="checkbox"/> PRZYKŁADOWE ZADANIE E.2: MÓWIENIE</p> <p><input type="checkbox"/> PRZYKŁADOWE ZADANIE E.3: MÓWIENIE</p>
8	<p>Chwila refleksji</p> <p> <input type="checkbox"/> DYŻUR LEKTORA ONLINE <input type="checkbox"/> MASZ PROBLEM? PRZEDSTAW GO NA FORUM! <input type="checkbox"/> KTÓRA CZĘŚĆ EGZAMINU JEST TWOJĄ MOCNĄ STRONĄ? <input type="checkbox"/> JAK OCENIASZ KURS MOCK EXAMINATION B2? </p>

Figure 2. The structure of the course “Mock Examination B2”
(<http://el2.us.edu.pl/mw>)

CONCLUSION

The presented three ways of using a Moodle platform for foreign language teaching purposes show that there is room for still more teaching ideas. The range of applications seems to be expanding in the near future as more foreign language teachers at the University of Silesia have learned the opportunities CLMS Moodle gives. This awareness, however, comes after a painful stage of initiation into the Moodle technicalities.

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III. PSYCHOLOGICAL, SOCIAL, ETHICAL AND LEGAL ASPECTS OF DISTANCE LEARNING

USE THE INTERNET IN SUPPORTING AND EDUCATING PERSONS WITH AUTISM AND ASPERGER SYNDROME

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Abstract: *New technologies, based on access to the Internet offer many proposals for anyone, but these advantages could be especially important for persons with overt and covert disabilities, for instance with autism or Asperger syndrome (AS). The paper discusses role of the Internet from perspectives of individuals with autism and AS, as well as their families and supporters, in context of Web-based support and on-line education accessibility and utility.*

Keywords: autism, Asperger' syndrome, the Internet usage, on-line support, distance learning,

INTRODUCTION

Autism as well as Asperger's Syndrome (AS) are the pervasive developmental disabilities (PDD) that are defined by impairments in social relationships, verbal and/or nonverbal communication and restrictive, repetitive patterns of behaviors, interests, and activities (Baron-Cohen, Bolton, 1993). Autism was identified the first time in 1943 by Leo Kanner, whereas AS was described in 1944 by Hans Asperger in similar manner and brought to the attention of the English-speaking world in 1980 by Dr. Lorna Wing. World Health Organization added AS to the ICD-10 in 1992 (DSM -

until 1994) (Frith, 1993). Both autism and Asperger syndrome are linked to biological or neurological differences in the brain and not are mental illnesses, nor are not caused by bad parenting as claimed older conceptions.

There is possible comorbidity of Asperger's syndrome and high functioning autism (HFA) with ADHD, Speech-Language disorder, or Tourette's disorder, but the most problematic and being affected are social skills involving interpersonal relations and social understanding (Attwood, 2001). Students with AS or HFA, usually experience serious difficulties with group contacts and emotional-social discourse. She or he may to show a marked delay in non-verbal behaviors and some kind peculiarities in her or his speech. Sometimes person with AS/HFA may look and behave somewhat eccentric and even odd, but that is not a general rule. HFA well as AS do not affect intellectual ability, often - on the contrary (Grandin, 1996, Treffert, 1986, Stefańska-Klar, 2005).

Cognitive profile of AS/HFA persons is characterized by: encyclopedic memory, computer-like mind, concentration on selected topic or area, often visual learning style, preference for routines. limited flexibility in thinking, instead strong need of systemizing, high mental independence and IQ range from normal to genius. For their social-emotional problems, which make them often to look for different kind of help and for peculiarities of their mind functioning, the Web-based forms of support and instruction may be very suitable.

1. NEW TECHNOLOGIES IN LIGHT OF INDIVIDUALS' WITH AUTISM AND THEIR FAMILIES' NEEDS AND PRIORITIES

Goodwin (Goodwin, 2008) discussed the role of several additional innovative technologies being developed for persons with autism that utilize the Internet and other kinds as audio and video recorders; electronic sensing technology; computer architecture, hardware, and software; virtual reality; and robotics. "These technologies, alone or in conjunction, can be used beneficially in a number of critical areas affecting individuals with autism, their families, and the professionals who support them" (op.cit. p. 125). According to Goodwin, the benefits of developing innovative technologies for autism are:

- a) Access to resources, as health information, advice and services of all kinds, and specifically to diagnostic and treatment materials. "Telecommunication technology that utilizes the Internet can support long distance clinical health care, patient and professional health-

related education, public health, and health administration” (op.cit.p.125)

- b) Assessment efforts - via the Internet “health professionals could review the video, archive the episode for future reference and research, and respond to the caregiver by phone, letter, or e-mail. Audio and video technologies are being developed that enable caregivers to record, annotate, and communicate behavioral data via the Internet from classroom, home, and clinical settings.” (op.cit. pp 126)
- c) Promote interventions – “Emerging technologies carry great potential for providing innovative, individualized interventions. For instance, many people with autism are highly interested and motivated by computers, and computer assisted learning can focus on numerous academic and support areas of need such as emotion recognition, social interaction, and communication” (op. cit. p.126).
- d) Skill generalizability - the innovative technology may provide a relatively low cost way for individuals with autism to practice rule learning and repetition of tasks across contexts. For instance virtual reality (VR) technologies “are being adapted to teach individuals with autism a variety of skills (e.g., making choices, conflict resolution, road safety) that may generalize to their everyday lives (e.g., d02Learn; <http://www.dotolearn.com/aboutus/research.htm>)” (op.cit. p.126)
- e) Reducing the cost of treatment – “Providing portable and in-home computerized educational and self-management tools may transfer skills to caregivers and persons with autism and reduce reliance on costly professional consultation” (op.cit. p126-127)
- f) Research recruitment and implementation – “Information systems technologies that utilize easy-to-use, secure, Web-based platforms can support data collection and transmission, information retrieval, and communication. An example of an information system technology for autism is the newly founded Interactive Autism Network (IAN; <http://www.IANproject.org>).” (op.cit. p.127)

2. INTERNET-MEDIATED SUPPORT FOR PEOPLE WITH HEALTH AND PSYCHOSOCIAL PROBLEMS

2.1. Motivations of people with health problem related to Internet use

Nowadays the Internet and other innovative technologies, has changed our social and personal lives, affecting in depth the domain of communication

(Musioł, 2009), Aouil and Kajdasz-Aouil (Aouil, Kajdasz-Aouil, 2007) discussed some characteristics which make communication with and via Internet in great extent different from real contacts with people and traditional sources of information. They took under consideration: 1. limited sensory experience, 2. identity flexibility and anonymity, 3. equalization of status, 4. transcending spatial boundaries, 5. time stretching and condensation 6. access to numerous relationships, 7. permanent records, 8. altered and dreams (op. cit. pp 74-75).

People, especially with serious health or/and psychosocial problems, being strong interested of gathering support and information, used to explore the Internet rather, than to head for out-door advisory institutions or libraries. According to researchers ((Wittenberg, 2004) for instance) there are some typical motives, that people with health problems are driven for Internet access for help and empowerment, so we can use them as items in research instrument construction: 1. To prevent disease by adopting a healthier lifestyle 2. To obtain different points of view from those offered by mainstream medicine 3. To better understand a health problem or disease 4. To find a specific solution to or treatment for a health problem 5. To find additional sources of information (addresses, references or links) 6. To participate in online discussions 7. To develop one's general knowledge or satisfy one's curiosity 8. To help a family member or friend who is ill.

Technological development hold great promise for people with disabilities and different health problems Without leaving their homes, ill or disabled people would have not only gather any necessary content, but also complete college degrees or vocational education programs, and competitively perform the essential functions of more challenging, better paying jobs (Lemire, Sicotte, Par'e, 2008). But most online educational environments are still not accessible to students with disabilities or those using assistive technologies.

2.1. Internet communities and online support groups

Internet communities provide a way for a group of peers to communicate with each other. They include discussion boards on websites, mailing lists, chat rooms, or newsgroups. One example was not existing for some time Web-portal Autism.pl (Stefańska-Klar, 2004), which provided a forum Autism.info for those seeking specialists and peer support and information, with an emphasis on information on autism diagnosis and treatment, education and domestic problems, other practical information (such as relevant online resources), personal experiences of autistics and families, therapists and educators as well as social and emotional support .

From counseling psychologists' point of view (Mallen, Vogel, Rochlen, Day, 2005) the Internet may be a good way to receive social and emotional support particularly for individuals who feel isolated, leading them to connect with others and to gain empathy, support and information (so finally to find new ways to handle). Braithwaite, Waldron, and Finn (Braithwaite, Waldron, Finn, 1999) analyzed 1,472 social-support postings from 42 unique members of a computer bulletin board for users with disabilities (any posting that offered caring, belonging, esteem, or assistance to the recipient). The results found that the most common (40%), form of support of the bulletin board offered by members was emotional support which was often in the form of understanding or empathy, encouragement, or physical affection.

2.2. On-line and computer-mediated counseling and intervention

Online-counseling services are currently being provided in a variety of formats and are expected to increase in the next 10 years (Aouil, 2005, Spek, Nyklíček, Cuijpers, Pop, 2008, Andersson, 2009). Clients are using videoconferencing, synchronous chat, and asynchronous e-mail with professional psychologists in place of or in addition to face-to-face (FtF) counseling. The innovations of computer technology led to several new forms of communication, all with implications and applicability for the counseling and psychotherapy practices. Yet the majority of counseling psychologists are not involved in the provision of these services. Guided Internet-delivered treatment is an approach which combines the advantages of structured self-help materials, presented in an accessible fashion via the Internet, with the important role played by an identified therapist who provide support, encouragement and occasionally direct therapeutic activities via e-mail.

3. SPECIFIC EDUCATIONAL NEEDS OF AS/HFA STUDENTS IN COLLEGE/UNIVERSITY ENVIRONMENT AND INTERNET-MEDIATED LEARNING

Recent research conducted by an author on experiences of people with a AS/HFA in college or university, (Andersson, 2009) showed some pattern of advantages and disadvantages of studying for them. Students with low autism or Asperger' Syndrome symptoms reported several themes in terms of advantages of studying, concerning cognitive, psychological and social areas:

A) Advantages of studying:

1. Concerning Knowledge, Competencies and Professionalism:

- can realize in depth own special interests;
- may to concentrate on the one interesting point;
- access to lot of data and informative contents;
- access to an advanced technology and apparatus;
- the broader application of realizing individual projects;
- opportunity to interact with scientists and experts in the areas of interest;
- sharing mutual interests and passions with scientists and artists.

2. Concerning Self and Life:

- self-fulfillment and dreams fulfillment;
- self-recognizing in area of additional strengths and interests, better self-awareness;
- opportunity to become a better and better in area of interest;
- appears a chance of meeting a life partner;
- completely new fascinating experiences.

3. Concerning Social Relations:

- meeting people with similar interests;
- developing social competence and social awareness ;
- to rise as a person attractive for others;
- widening social relationship (more schoolmates);
- developing friendships;
- falling in love;
- involving in charity and voluntarism.

Categories of students' with HFA/AS conditions disadvantages of studying were even more numeral, than those, concerning the positive aspects:

B) Disadvantages of Studying:

1. Concerning Adaptation and Health Problems:

- high emotional cost of transition;

- difficulties with living outside home;
- lack of effective skills and ways of coping;
- unexpected changes in schedules and plans, novelty;
- exhaustive style of college/university life;
- somatic or/and mental health problems;
- sensory problems with environmental stimulation;
- not effective coping with stress.

2. Concerning Organizational Issues:

- poor knowledge about rules, acts, school settings, majors, classes, study and faculty organization;
- problems with orientation in school setting;
- difficulties in cooperation with administrative sections and other department institutions, e.g. dean's office, library;
- difficulties in inclusion into "department traffic". Properly;
- impossibility to resign formally from subjects or courses which are too difficult for a person to complete or to participate.

3. Concerning Social and Interpersonal Issues:

- too many people and interactions, too much proximity;
- being rejected/mobbing by college/university workers: lecturers, instructors or administration stuff;
- being isolated/rejected by peer individual or group;
- loneliness or major problems with peer interactions (mobbing, bullying);
- poor interpersonal skills;
- lack of a quiet place when feel overloaded.

4. Concerning Educational Issues:

- poor understanding lectures and instructions;
- difficulties with understanding teacher intentions and behavior;
- problems with learning and completing tasks;

- problems with preparing materials and topics;
- problems with tests and exams ;
- problems with own traits and habits, as perfectionism, learning rituals, extremely unique learning needs and style.

C) Failures causality.

As 25% of HFA/AS participants dropped out of school without any final document, we should ask the question, what constituted causality so often failures? Analysis of facts and respondents' self-reflections let us to find four classes of possible causes of academic failures among "Auties" and "Aspies":

1. Study Skills Immaturity:

- poor coping with formal duties and obligations;
- weak self-organization;
- course uncompleted as too difficult or due to conflict with an academic teacher;
- getting credit was too much challenge.

2. Fragility, weak Self:

- exam failure and lost of motivation or exam phobia and giving up;
- high level of anxiety;
- giving up because of feeling of hopelessness and powerlessness;
- low resilience skills.

3. Nervous break down:

- too much stress connected with exam session effected break down, depression or the rise of schizophrenia;
- mental problems were growing accordingly to cascade difficulties and failure.

4. Staff untolerance - Student have been expelled from school rather for staff intolerance and lack of acceptance (due to her or his diversity) than for objective offence or any important reason.

The author of this paper widely examined situation of students with autism and Asperger' syndrome in the college or university in the article on factors of their succeed in higher education and conditions of effective supporting in place of studying (Stefańska-Klar, in press). Nevertheless, seems something

very promising to take under consideration possibility of including students from “autistic spectrum” in different forms of distance learning or to organize some kinds of individualized the Internet-based education, especially for them, as some kind of disabled group (Wall, Sarver, 2003), (Smyrnova-Trybulska, 2008).

Most of specified positive and attracting HFA and AS persons attributes of participation in higher education are connected to usage of computer and Internet-based teaching and learning applications, as well as educating via computer could to minimize stressful aspects of social and interpersonal side of playing student role in face-to-face conditions in virtual working group, libraries and offices (Smyrnova-Trybulska E., 2007, 2009, Bilek, 2009) for review a wide range of possibilities offered by software and utilities which has been made for supporting processes of on-line instruction and learning).

Special condition there is a fact, that “autistic spectrum” seems to especially predispose children and adults “touched by” into use innovative technologies and electronically amassed knowledge resources, because of special profile of their mind and cognitive processing – similar to computer work. In this situation, the real disadvantage of organize Internet-mediated high education may be not lack of proper disposals of student but low disposals of academic instructors, so as to be a skilled distance-learning tutor. There are the important problems which should be formulate and solve in educational context, concerning the teachers preparation to lead the Internet-based education naturally and competently (Smyrnova-Trybulska, 2007, Juszczuk, 2002, Musioł, 2007).

CONCLUSION

This article investigates the adoption and use of new Internet-based technologies among

people with autism and Asperger syndrome for increase their access to on-line social and emotional support and to give them a chance to successful realize high education programs While enrollment of people with HFA and AS, so as those with other different disabilities in colleges and universities has increased, few have been able to graduate, find successful employment, and move on to independent lifestyles, free of government assistance. Students with HFA/AS are often very sophisticated individuals with high IQ and computer-like minds, but also with adaptation problems connected to “mindblindness” and poor social and interpersonal skills. For that they often break down only because of social or personal, but not academic or cognitive

reasons. Inclusion in forms of education using Internet-based distance learning may increase a chance of successful graduating students with autism and Asperger's syndrome.

The growth of the Internet and the possibility of completing online college degrees and vocational programs would expand the promise of reaching social inclusion by eliminating inequities in educational opportunities due to limited physical access to buildings, transportation to campuses, or the inaccessibility of textbooks, videos, and other learning materials" (Lemire M., Sicotte, 2008, p.124).

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STATES OF CONSCIOUSNESS AND LEARNING

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Abstract: *The quantum theory is a theory that deals with what goes on at the subatomic level of matter. That is, the world of elementary particles such as electrons, protons, neutrons, leptons, etc. Let us call this world Reality, and the elementary quantum particles that inhabit this world--quoin. Now to the complementary-principle. The complementary principle states that at certain circumstances a quoin will behave like a particle and at other circumstances it will act like a wave. This phenomenon was first observed with light. When physicists started doing experiments with light they wanted to settle the issue of whether light was a wave or a particle. What they found out was, it was both. They started doing experiments with electrons, and found out electrons exhibited wave characteristics too, namely diffraction and interference. Soon they found out every quoin exhibited both behaviors. What I propose is, consciousness exhibits both of these characteristics*

Quantum Psychology is able to accept the thesis that consciousness in its process of operation may behave as a wave or a particle, and also include linear processes and nonlinear.

Author's research has shown that learning is conditioned by changes in the status consciousness. Ecstasy, satisfaction, sadness, depression, states of consciousness as the variables have an impact on the learning process.

Keywords: bioelektronic system, electromagnetic nature of consciousness, learning.

1. HOMO ELECTRONICUS UNDERLYING QUANTUM PSYCHOLOGY

In science, recently more and more growing discussion of the roles that quantum mechanics might or might not play in the theory of

consciousness/mind have become increasingly sharp. One side of this debate stand conventional neuroscientists who assert that brain science must look to the neuron for understanding, and on the other side are certain physicists, suggesting that the rules of quantum theory might influence the dynamics of consciousness/mind. However, conscio-usness and mind are not separate from matter. Submicroscopic world of the human brain give rise to consciousness, mind. We are never able to make a sharp separation between mind and matter. Thus ultimately there is no “mind” that can be separated from “matter” and no “matter” that can be separated from “mind”. The brain as a mixed physical system composed of the macroscopic neuron system and an additional microscopic system. The former consists of pathway conduction of neural impulses. The latter is assumed to be a quantum mechanical many-body system inter-acting with the macroscopic neuron system (Adamski A. 2006).

Attempts to understand brain and consciousness have been mostly based on restrictive new-tonian classical science and exclusively material realm. Although the powers of understanding of human senses and the scope of Newtonian science are limited to three spatial dimensions, the scope of our universe is not limited to three dimensions. Many of the natural phenomena happe-ning within our universe transcend the three dimension scene. Therefore it is not possible to as-sume that the mechanisms of operation of the brain and consciousness remain imprisoned within the confines of Isaac Newton's three dimensional material universe. Attempts to understand the brain-mind problem within Newton's universe over centuries have introduced divisions and con-concepts that have become detrimental to having a new look at it from the point of view of modern science, more specifically quantum mechanics. Intellectual acrobatics within the domain of cla-ssical science to find solutions to a problem that transcends the limits of classic science cannot yield any valid solution. In trying to interpret the mechanisms of operation of the human brain and developing a model for consciousness that explain all practical observations, it is necessary first of all to jettison traditional baggage and clean up the scene. It is also necessary to enlist all the observed properties of the brain and consciousness and ensure that the developed model explains all of them (Atmanspacher, 2004, s. 58).

Quantum mechanics rests upon two fundamental properties. First it is based on the super-position principle (superposition of vector states of an Hilbert space). Second it is based on a fundamental phenomenon called quantum entanglement. This phenomenon manifests itself by the fact that a system of two, or several, quantum entangled particles is "non-separable". In technical terms this means that the wave-function of the two-particle system does not

factorize into a product of a wave-function for each particle. The quantum system describing the two particle system is a global system, a non-local one. Moreover, in such a system, the particles are heavily correlated. Therefore, if we measure a certain property of one of the two particles, destroying in this way the "non-separability" of the system, we can predict with certainty the corresponding property of the other particle, even if this one is at the other extreme of the universe. However, there are caveats: the quantum specificity indicates that this property is not determined before-hand, i.e. before measurement. Quantum physics is a non-local and non-realistic theory. Quantum entanglement and the property of "non-separability" are properties that are fundamentally quantum, that do not exist in "classical physics" (Gribbin, 1998 b).

There is general agreement that the seat of consciousness is the brain. When a person is awake information about his/her surroundings is presented to his/her brain by his/her sense organs. The brain processes and computes millions of bits of information presented to it every second by the sensory organs and presents the processed information to consciousness. Through this process consciousness remains aware of the surroundings and we say that the person is conscious of his/her surroundings. When this link between consciousness and the surroundings is interrupted and consciousness is not able to be aware of events in its surroundings we say that the person is unconsciousness. (Baaquie, B.E., and Martin, F. 2005).

Beside traditional, well known chemical reactions, there arises a new reality pertaining to the bioelectronic model of life. In this model, it is assumed that the biological system exhibits physical properties of biological mass and functions as a quantum construction. Basic organic compounds, such as proteins, nucleic acids or melanin are semiconductors and possess the ability to activate charges without ion participation. Semiconductors are good converters of chemical, thermal and electromagnetic energy into electric energy, and the other way round. They also possess other features such as increased conduction accompanying an increase in temperature, a significant jump in conduction in the presence of minimal donor or acceptor admixtures, the photoelectric phenomenon, it is an increased conduction under the influence of photons and quantum emission of the electromagnetic wave. A semiconductor can be a quantum generator of electrons and photons (Gribbin, 1998 a, s. 127). In an alternating electric field proteins, amino acids, DNA, RNA, as well as plant and animal tissues are subjects of electrostriction and become quantum generators of phonons, that is the acoustic wave. This occurs because the structures in question are at the same time piezo- and pyroelectric, which means they possess the capacity of

thermal and mechanical polarization (Athenstaedt 1987, p. 462). Piezoelectrics convert mechanical energy into electric energy, while pyroelectrics convert thermal energy into electric energy (Chelkowski, 1979, p. 324). Acoustic effects may take place not only in piezoelectrics, but also in semiconductors. a semi-conductor can manage electrons in their induced state. In such cases, nonradiative recombination transmits the energy to the molecular network in the form of quantum acoustic vibration. The transition from the induced state to the basis state has got thus two possibilities: the generation of photon or generation of phonon. Biological mass is then continually shaken and “quantum-chatty” (Sedlak, 1988, p. 63).

The task of phonons is to condition the cyclicity of quantum effects. They also rise to the rank of an important factor in the creation of the action of life, as they bind optical, electrical, mechanical and magnetic phenomena with biological mass and directly combine all quantum processes with the movement of mass, the electromagnetic wave becomes again an information centre in cell transmission, and phonons play the role of a factor recording sensations in memory through an electromagnetic field (Sedlak W., 1988, p. 65).

Life is a result of all the chemical, electrical, magnetic, optical and acoustic events occurring in the living organism, in the system of organic semiconductors, piezo- and pyroelectrics (Sedlak W., 1988, p. 119). This means that biological tissues have ample capacity for activating electrons, generating fields and for constant or variable polarization independent of the chemical character and ion transportation. Biological mass can thus be electrically active in non-chemical manner. Therefore life take place not in a chemical or electronic system, but to some extent among these two processes. In a living organism, chemical and electronic reactions have been “sewn up”. In this way, “a quantum seam of life” has come into existence as the smallest functional unit in the biological system. The entire “quantum link of life” takes place in the molecular network shaken by acoustic quanta (Sedlak W., 2000, p. 71).

The idea of the coupling of bioelectronic and biochemical process in the human organism is alien to the classical research on the psychological life. This new approach postulates a holistic account of human being and his environment. The model in referring to psychology is very inspiring, because postulates the reception of information from the environment not only via sense receptors, but also through the entire biological organism mass understood as organic piezoelectrics, pyroelectrics and semiconductors. This means that the organism receives information from the environment not only

through receptors, but also beyond the sphere of sensory experience in the typical for semiconductors manner, that is with conversion to electric energy.

The biological mass has been utilized by nature to create an electronic device working analogically to technical electronic systems, but in on the basis of organic semiconductors, piezo- and pyroelectrics. The device is powered by chemical energy of a metabolic origin, by electromagnetic energy received among things by melanin, which combines with the photoelectric effects, as well as by thermal and mechanical energy converted by piezo- and pyroelectrics into electric energy (Sedlak, 2000, p. 82). Modern electronics uses biomo-olecules, such as DNA, RNA, proteins and pigments as electronic material. Additionally, certain biological structures treats as natural electronic device, for example cellular microtubules, cytoskeleton and neurons as biological microprocessors (Hameroff, Rasmussen, 1989, p. 245), whereas enzymes as natural diodes and transistors (Cardenas, 1991, p. 111). Apart from the attempts at using biomaterials, particularly enzymes in the so-called biocomputer biotechnology, they are broadly used in constructing biosensors (Bartlett, Pratt, 1993, p. 451), (Wnuk, 1996, p. 157). Interesting here is Liberman's conception of biomolecular quantum computers which views the nerve cell as a computer (Liberman, 1996, p. 175).

The basic energy source for this device is chemical energy understood as electrons bound and freed in the metabolizing process. Impoverishment of chemical metabolism in man causes a change of electromagnetic fields and waves in the particles of the human organism, as it is in the case of old age. In this period of life the organic semiconductors grow old and their exchange is no longer through – there is a disproportion between catabolism and anabolism in favour of the former and with deficiency of the latter. Along with that, the electronic action becomes less effective. Quantum efficiency decreases and the amount of the semiconductor which water is diminishes and can not be supplemented from the outside.

Dehydration of the organism increases with age and the reserves of melanin decrease as the organism grows older. Melanin has the capacity of binding protons and electrons in two independent stages (Matuszak, 2001, p. 80). Melanin deficiency disturbs that relation whereas an increase of melanin content in the biological system is accompanied by an increased circulation of electrons and hence an increased number of electron inductions, highly enhanced generation of photons by radioactive recombination's and generation of quantum-acoustic states, that is phonons, by non-radiative transitions. Delocalised electrons and protons, as well as proton semiconductions in biological membranes where active protons are

fundamental centres of energy and information transduction play an important role in the structure and functioning of biosystems (Morowitz, 1978, p. 99), (Conrad, 1990, p. 159).

J. Sławiński (2001) claims that life processes and light are inseparable and internally connected due to their electromagnetic nature. Light plays a significant energetic and regulatory role in living organisms and in the entire ecosystem, for instance in photosynthesis, in the process of seeing, in biological rhythms, etc. Changes in the intensity of photon emission are functionally connected with disturbances of homeostasis and their measurements specify the state of organism vitality and the capacity for environmental adaptation (Sławiński, 1990, p.190).

BIOLOGICAL SYSTEM

BIOCHEMICAL MODEL BIOELECTRONICAL MODEL

Biological mass as an electronic material

(proteins, melanins, DNA, RNA)

it

-- semiconductor

-- piezoelectric

-- pyroelectric

BIOCHEMICAL PROCESSES

BIOELECTRONICAL PROCESSES

(electrons)

(electrons, photons, phonons)

LIFE

Life is a team of chemical reactions coupled with the bioelectronic processes, death this disruption of these processes.

In this new paradigm bioelectronics starts to draw a cognitive psychology showing the quantum of human knowledge in terms of quantum processes. Electronic interpretation of the living system is proving to be very inspiring, it takes into account the fact that the organ recipients information from the environment are not only receptors inducing sensuous, perceptual and motor systems, but also a whole bunch of biological organism construed as biological piezoelectrics and semiconductors (Sedlak, 1979, s.500).

2. SYSTEM INTERACTION ORGANISM - ENVIRONMENT

In the electromagnetic theory of life Sedlak proves the unity of organism and environment. The organism penetrates into the environment with its biological field and vice versa: the environment penetrates into the organism. Man creates the sphere of thoughts- **noosphere** with his consciousness. In Sedlaks opinion the consciousness and the life on the quantum level make the psychobiotic unity of being. **Noosphere** is sunk in the biosphere and it is able to transgress it. This bioplasma model of life and a way of perceiving of man enables a new attitude towards cognitive processes. His noosphere widens together with his getting to know universe, its feactures and laws. Man ist not, a being that exists within the bounds of biosphere, he has become „ the citizen of a universe” and his existence has reached the outer space. The biosphere as a spfere of life and noosphere as a sphere of thoughts make to some extent a part of space-sphere (Sedlak, 1994, s. 142).

The theory of the organism-environment system (Jarvilehto, 1998, 2000) starts with the proposition that in any functional sense organism and environment are inseparable and form only one unitary system. The organism cannot exist without the environment and the environment has descriptive properties only if it is connected to the organism. Although for practical purposes we do separate organism and environment, this common-sense starting point leads in psychological theory to problems which cannot be solved. Therefore, separation of organism and environment cannot be the basis of any scientific explanation of human behavior. The theory leads to a reinterpretation of basic problems in many fields of inquiry and makes possible the definition of mental phenomena without their reduction either to neural or biological activity or to separate mental functions. According to the theory, mental activity is activity of the whole organism-environment system, and the traditional psychological concepts describe only different aspects of organization of this system. Therefore, mental activity cannot be separated from the nervous system, but the nervous system is only one part of the organism - environment system. Although for practical purposes we may separate organism and environment, this common sense idea leads to problems which cannot be solved and therefore cannot be the basis of any scientific explanation of human behavior. Therefore, in the theory of the organism - environment system we define living organisms as systems consisting of integrated cells and tissues and of specified parts of the environment, with which they form a system (Adamski, 2006, s. 19).

The development of psychological theories has from ancient times been based on the idea that man and environment form two different and even

opposed systems. Common sense psychology - as well as many scientific theories about human behavior starts from the assumption that the inner world of man, his thoughts, feelings, hopes, and needs form the basis for his outer behavior which, however, is something trivial as such and eventually aims back at inner satisfaction, fulfillment of hopes and feelings of happiness. The achievements of the human spirit may be seen, of course, in outer behavior or changes in the structure of the environment: as palaces, musical notes on paper, or colors on canvas. However, it is thought that what is essential is not behavior or these products as such, but the ability of the human spirit to reproduce and enjoy the ideas of science or the beauty of art in our own inner world. The environment may mediate such possibilities, but it is seen only as a passive set of elements in contrast to the active inner life of man. Such elements may, however, be filtered, processed and refined by the human life. The importance of the environment cannot be neglected, but it forms only some sort of necessary and trivial background for the achievements of the human life.

Thus, behavior is realized in the organism - environment system. Behavior does not mean movement or interaction of two systems, but action of only one system, reorganization of this system or change of the relations between its elements. All organism processes include processes both inside and outside the body, in the nervous system and in other necessary parts and in the environment. An organism exists as an organism only together with its environment and both are bound together in behavior. The key concept in the analysis of the organism-environment system is the result of behavior. To continue its life process every organism must achieve positive results. Thus, the general architecture of any organism-environment system corresponds to the result, and its systems dynamics may be understood only by taking a historical perspective and looking at the development of the necessary conditions for the achievement of the certain result. The structure of the organism-environment system can only be understood in terms of the result of behavior. The result is therefore the factor to which all the organization of the system is related. The result may be defined as such a reorganization of the system that makes a new act and development of the system possible. The result is reflected in concrete products like paintings or books, but the result as such means only transition from one act to another, and these concrete products are only indicators of the result. In the result, in this transition from one act to another culminates the preceding organization of the system and it also contains the elements for future behavior and future results (Anokhin, 1978).

From the one system point of view there is no asymmetry between the organism and environment. In relation to the achievement of the result all parts of the system are active. Therefore, environment is not something passively surrounding the organism, but an active part of the system leading to the results of behavior. Subject and object are also inseparable and represent only points of view into the organization of the organism-environment system.

From this follows a radical new conception of mental activity: as all parts of the system are active in relation to the result, mental activity is not something located in the organism, but extends into the environment. All concepts referring to mental activity - like perception, emotion, memory, etc. - describe only different aspects of the organization and dynamics of the whole organism-environment system. Therefore, mental activity cannot be localized in any parts of the organism; it is not an activity of the brain, for example, although it may not exist without the brain. Neither is it possible to divide mental activity into separate mental functions, because all such "functions" are only aspects of the same process of organization and reorganization of the organism-environment system. For neurophysiology the above considerations mean that the nervous system as such is not a "system", but it exists as such only when bound up with the environment. Neurons do not react to environmental stimuli, neither do they process any stimulus information, but they are organized so that the activity of the organism may produce useful results. Mental activity is not located in the nervous system; what is located there are the neurons which must take care of their metabolism. Such ideas were developed during this century by Anokhin (1978), for example, and nowadays by Edelman (1987) and Freeman (1995).

David Bohm in his theory had assumed that when a particle with zero spin decay

the two particles - for example an electron and a positron, then these particles run in the opposite direction and coming to the distance between points A and B. Observation of this action shows the effect of local events, however, in remote points A and B are linked together in very mysterious ways. This indicates a non-linear processes. Correlations between them are very subtle. David Bohm stated that this action made on the basis of morphogenetic fields, which are not based on any medium for the four-dimensional space-time, but they are real. Are a combination of waves and establish links between parts of the universe. Bohm waves are not related to electromagnetic waves. They represent phenomenon of consciousness, which arises in the relationship with consciousness superior. A similar way of perceiving consciousness is Finnish physicist Matti Pitkanen (2003, 2006), which

includ-links to reflection on the essence of consciousness of quantum field theory. According Pitkanena human brain is a system included in the interaction of magnetic fields around planetary and with people forming a community. In this perspective, the brain has the ability to receive electromagnetic waves but also within the scope of the theory of Bohm, who are responsible for the functioning of consciousness.

3. LEARNING AND STATES OF CONSCIOUSNESS

Biofeedback on coherence between, for example, the electrical fields of the heart and brain enables individuals to learn to achieve between mind and emotion, attaining more inner peace. Also, biofeedback between two or more individuals, to achieve coherence of heart rhythms, has been demonstrated to be possible and is experienced as increased connectedness. This could be a powerful instrument for social learning. We suspect it is possible to increase synchronization of brainwaves with the Schumann resonance using biofeedback. This could be a powerful instrument not only for (preventive) health care, but also for what could be described as “environmental learning”: as unity and interaction with nature on a deep level and being part of nature are experienced. These levels of biofeedback, played in the form of biofeedback games (software), may empower individuals and groups to take responsibility for their own health, for each other and for the environment (Schumann, 1952).

In his paper, Henk Kieft mentions the interesting case described by the Swiss anthropologist Jeremy Narby. In his fascinating book Narby describes the astonishing practical botanical knowledge that shamans in the Amazon jungle have and how they obtain it, communicating with the global network of DNA-based life under the influence of ayahuasca tea (Narby, 1998). Narby in fact suggests that this experience is not dependent on ayahuasca, but on a trance-like, altered state of consciousness, that shaman in other societies also reach through practices such as drumming and dancing. On the one hand, this amazing shamanic plant knowledge, obtained without laboratory tests, cannot be ignored by science. In fact it is taken so seriously that pharmaceutical industries approach the shaman for help in finding medicinal plants in the jungle. On the other hand, ayahuasca experience of the shaman and Jeremy Narby himself point to some kind of (possibly electromagnetic) emission by the DNA, which our brain may be able to make sense of. Communication with DNA may not be such a crazy idea. Gariaev and his team found out that when a DNA sample is calmly spoken to, changes occur in its spatial conformation and thus its gene expression (Gariaev et al., 2000). Glen Rein

et al. found the same effect even with loving intention, characterized by an internally coherent electrical field of the heart (Rein & McCraty, 1993). People trained in this internal coherence were better able to influence the conformation of a DNA sample than untrained participants. DNA emits various wavebands of electromagnetic radiation, at least in conjunction with proteins and water, as it is in the cell nucleus.

What Jeremy Nerby describes may again be an example of field phenomena, which may help bridge the gap between science and intuitive knowledge. This case should stimulate scientists to undertake a deeper study into how shamans (and people in general) obtain knowledge in an altered state of consciousness and also how living systems may transmit information to humans. The outcome could teach us about unsuspected possibilities of human consciousness and thereby expand the paradigm of science (Bosman, van Dijk, 2005).

One important aspect of the above-mentioned altered state of consciousness is that unity with nature is experienced. Recently some brain researchers have done studies on brain activity during such experiences of unity, or mystical experiences as these are also called. Andrew Newberg and Eugene D'Aquili at the University of Pennsylvania used imaging techniques to study brain activity in meditating Buddhists and praying Franciscan nuns. It was that their transcendent experience of deep unity was solid and tangibly real, involving a chain of neuro-biological events that could be measured, recorded and reproduced (Newberg, D'Aquili & Rause, 2001).

All studies mentioned above illustrate that electromagnetic fields and possibly also the underlying zero point energy field may be a bridge between consciousness and intuitive knowledge such as we find in anthroposophy, shamanism and intuitive agriculture and the "hard", materialist science of atoms, molecules and bigger material structures (Laszlo, 1993, 2004; McTaggart, 2001).

This requires of us readiness to change, not only as scientists, but also as human beings. I think this is a way for ourselves (and thus for science and technology) to escape from our present unsustainable spiral. It may offer a possibility for us as scientists to start a real dialogue with other cultures and with (other 'thought collectives' in) our own culture, learning from their knowledge. It may also offer us a possibility to discover the gems in the partly forgotten worldviews of our own. In this way we may be able to co-create a sustainable world.

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PROTECTION OF LEARNING MANAGEMENT SYSTEMS

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Abstract: *The article deals with the problem of the necessity of study privacy when using modern technologies in education. Two points of view are presented. The first one is focused on students' needs of study privacy, the second one is focused on contemporary possible tools that can be used for fulfilment of this goal.*

Keywords: distance learning, LMS, personal data, privacy, study process.

INTRODUCTION

The contemporary global information society is based on lifelong learning. Distance learning with support of modern technologies can play a key role in this context. Large possibilities of bad data management and their abuse are an unpleasant fact. Every society should permanently search for suitable approaches to digital data protection. Some problems with the personal data protection are typical examples of the selected topic. Legislation of the Czech Republic reflects this fact. The key principles in this area are stated by the law No. 101 from April 4, 2000 [<http://aplikace.mvcr.cz/archiv2008/sbirka/2000/sb032-00.pdf>].

The first part of the paper discusses some of the requirements of the Czech law No. 101/2000. Security of computer networks, communication and information systems play a key role in the global information society. This 'backbone' of information society should be fully protected. From the education point of view there is a necessity to focus attention generally on learning management systems (LMSs). The data in LMSs are impended by various types of attacks. It will be described what security precautions and mechanisms can be used for these purposes.

1. PERSONAL DATA AND THE CZECH LAW NO 101/2000

Some cases of misuse of personal data from recent years suggest that personal data security seems to be generally underestimated. The Czech society should meet the content of the law No. 101 from April 4, 2000 [<http://aplikace.mvcr.cz/archiv2008/sbirka/2000/sb032-00.pdf>] but some existing examples reveal the ignorance of the current law. This law covers all personal data processing (automatic, others). The exceptions are as follows:

- Personal data processing is done by a physical person and it is done only for his/her private needs.
- Random collection of personal data without their further processing.

The very important information is that the law No. 101 also contains the establishment of the ‘Personal data protection office’ (PDPO), based in Prague. It is the main authority for the protection of personal data in the Czech Republic. The next text brings some important facts oriented to the topic of personal data security in the Czech Republic.

Let’s define a few basic terms as follows:

Personal data are any information concerning an identified or identifiable (either directly or indirectly identifiable) data subject.

Sensitive personal data are personal data revealing personal information such as national, racial or ethnic origin, health status, genetic data of the data subject, etc.

The data subject is a physical person to whom personal data are related.

Processing of personal data is any operation or set of operations that the administrator or executor (performer) carries out with personal data - especially the collection of information, saving on the storage media, disclosure, modification or alteration, retrieval, use, transmission, distribution, exchange, sorting or combination, blocking and data removal.

The administrator is every subject who determines the purposes and means of personal data processing, takes part in processing it and is responsible for it.

The executor (performer) is every subject who, under the guidance of the administrator, is processing personal data.

The data subject's consent is a free and informed expression of the will of the data subject, which contains the data subject's consent to the processing of his/her personal data.

The data subject may ask the administrator for information on the processing of his/her personal data. The administrator must give such information without unnecessary delay. The content of this information is always communication on:

- The purposes of the personal data processing.
- Personal data which are processed, including all available information on its source.
- The type of automated processing in the context of its use for decision making process. (Only when: On the basis of that processing, such actions or decisions can be performed which can cause the interference with the rights and legitimate interests of the data subject.)
- Who is the beneficiary of the personal data.

The law No. 101 specifies that described obligations of the administrator can be also fulfilled by the executor (performer).

Processing of personal data of each data subject must not be inconsistent with the protection of private and personal life of data subject or contrary to law. In case of doubt, the data subject may request the administrator or executor (performer) for an explanation and require the removal of resulting state. The data subject may also contact the PDPO. The administrator and the executor (performer) are both responsible for violation of obligations imposed by law.

Penalties for violation of the law specified for physical and legal persons are different. They can be quite significant. Involved persons should know the content of individual sections of the law. It is in their own interest.

The law No. 101 determines three levels of fines for individuals who commit an offense against the existing law. To illustrate the penalties for physical persons, some examples are outlined below.

Fine of up to 100,000 CZK

- if it breaks the confidentiality.

Fine of up to 1,000,000 CZK

- if the purpose, the means, or the processing of personal data are not specified;

- if the personal data are collected and processed in the extent or way that is not in compliance with its originally intended purpose;
- if personal data are kept longer than necessary for the purpose of processing;
- if personal data are processed without the consent of the data subject;
- if the data subject does not receive information in the legally stated amount or legally stated way;
- if steps to ensure the security of processing of personal data has not been accepted or realized.

Fine of up to 5,000,000 CZK

- if the processing of personal data by one of the methods described in the preceding paragraph caused an increased number of threats to great number of people by any unauthorized intrusion into the private and personal life;
- if there is a duty violation in the processing of sensitive personal data.

2. LEARNING MANAGEMENT SYSTEMS - WHAT SHOULD BE PROTECTED AND WHY, POTENTIAL RISKS, POTENTIAL THREATS

LMSs often contain the students' personal data and the students' sensitive personal data. The same fact is valid for teachers and other persons who are also the LMSs' users.

People should know that every data subject's rights (e.g. student's rights) are protected by law. Personal data processing can be done only with the guarantee of protection of data subjects' private and personal life. If he/she finds out or means that his/her personal data processing is not in compliance with the law, he/she has the right to ask for explanation. The request of data subject can be aimed not only at the LMS's administrator but also at the PDPO in Prague.

It was said above that the law specifies the terms manager and executor. According to the law the LMS's administrator is a manager. The manager designates the purpose and personal data processing means, practises processing and is responsible for the processing. The manager can authorize the executor, who can do the personal data processing then.

One of the most important things is that both the manager and executor have to accept some precautions oriented on making a barrier against any unauthorized or random personal data access, their modification, transfer, unauthorized processing and other personal data abuse.

Finally, typical question in above context can be: Who can give professional (qualified) advice related to the problems of the law proper implementation? The most competent subject is the PDPO in Prague. It is an independent subject and its financial support is given by the Czech Republic. One of its important tasks is to give consultations in the field of personal data security.

Data thefts and their abuse are daily occurrences. Why do people attack systems and steal data? Attackers abuse stolen data for their benefit, they can pretend being someone else, the organization can be blackmailed. They can sell the data for a proper amount to a third party. The attack does not mean only theft or disruption of data integrity, but also inaccessible servers or harmful insertion of text and images on the website. The aim of such attacks is to enrich the attacker, damage of reputation and credibility of the organization and thus its possible liquidation. Therefore it is necessary not only to know about potential threats, but to prevent their execution.

Threats can be divided into two categories - internal and external. Internal threats include for example yielding up information by an inside intruder, malicious software uploading wilfully or unpremeditatedly, the user login disclosure to an unauthorized person. Uninformed user committing the damage from a lack of knowledge can cause more damage than the inside intruder, it is appropriate to inform users about the rules of using the system.

External threats include attacks focused on data theft. The most common known techniques are phishing, social engineering and breach into database. Another threat is a DoS (Denied of Service) - the server is overloaded with the requirements from the attacker and that is why the server is not able to manage users requests, which causes server downfall and unavailability of the system. Frequent attack is also an insertion of different objects on a Web page (images, text, faked links) which damage the organization and which can lead to data theft and system infection. Poor security policies and rules can allow access to the system to anyone.

3. HOW TO PROTECT LEARNING MANAGEMENT SYSTEMS

Information in the system can be protected against theft by the ACL (Access Control List). It should be obvious to use login and password to access the system. This precedes the registration of each user. When the future user is

registered he should provide the basic identification information (first name, surname, learning group, teacher identification number, etc.) and the user must consent to the conditions for using the system. In these conditions it is determined what the user is allowed to do and what he is forbidden. By agreeing to these terms, the user is familiar with the rules and the offence can be punished. Database of active users needs to be updated, aggrieved former student with a valid login can commit considerable damage.

More comprehensive network protection is provided by NAC (Network Access Control), security firm handles the entire security project. Company can customize a security solution to the environment, so that is the most effective.

Logging approaches and activities in the system is very appropriate. Thanks to the logs abnormalities unfair actions can be discovered. Also thanks to the logs we can trace the culprits with a proof in hand.

It is possible to prevent a successful attack by timely updates of operating systems and applications too. These updates fix the bugs, which attackers exploit in their activities. Security updates are usually issued periodically and for free.

Physical safety should not be underestimated too. Data repository should not be publicly available and should be protected by physical barriers (security doors, special locks, etc.)

Data backup is an essential part of any information system. The failure of the system is an unpleasant event, but do not have the data backup when system is damaged or data loss is fatal. Therefore, every system administrator should be well-thought-out of backup and data recovery processes.

Solutions:

- Web access – asking for login and password for web access is inside of the webpage code.
- Multilevel access to applications and documents in LMS – access control is a part of the system, administrator sets ACL restrictions for individual users and groups.
- Upgrading the operating system [<http://www.microsoft.com>] and applications can be set on an automatic mode or a manual mode. The choice depends on the manager - automatic mode requires minimum admin's intervention, manual updating allows the administrator to affect the installed patches.

- Backup system - doubling the servers (physically or virtually) to prevent disruptions of services in case of primary system failure.
- Backup data is performed at regular intervals; the backup data is stored separately from the primary system in case of a disaster [<http://www.ca.com>].

Not only the administration of accounts and databases, updating operating systems and applications, data backup, but other activities are necessary for the safe running of the LMS. Capable administrator, informed users and observance of the safety rules are the right steps to maintain data secure, which is not an easy task today.

CONCLUSION

The data security and privacy during the studies belong to important conditions for successful modern education. The successful modern education is a key to economic and social progress. Protection of LMSs and study activities data can support motivation of students to study.

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IV. METHODS, FORMS AND TECHNIQUES IN DISTANCE LEARNING

THE HELPFUL POTENTIAL OF E-LEARNING AND TRAINING NOT ONLY IN TIMES OF CRISIS

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Abstract: *Courses in the area of information technology are focused on the orientation of a given theme to obtain neatly arranged knowledge and necessary practical implementation methods of the given products. In our multicultural information society, uniqueness and interdisciplinary links are needed in every theme. Information technology education products require a similar concept with regard to the needs of young people – the “Net generation.” This generation needs variety and communication with the support of video simulations. Modern educational systems have different ways of encouraging diversity in educational materials. Better education results bring interconnection with analysis on base Petri Nets.*

Keywords: information, e-learning, interactive communication, operating system, Petri Nets analysis.

INTRODUCTION

E-learning and training with simulations is a standard part of education. Attractive education uses simulation products for the better explanation of news and optimal work procedures in various areas. Information technology is rapidly developing area. New products are created or existing products are updated. Many users, analysts, managers, and programmers are involved in the development and implementation of new products such as operating and database systems, Business Intelligence, or Customer Relationship

Management. There are many known open source products with a broad international community of developers. The changes are quickly implemented and users (students) of the given information technology must appropriately recognize accessible news and upgrades.

Aspects like time and skills during the use of implemented products have gained considerable interest. There is always only very little time to get knowledge and implement new methods. Users (students) have to know how they can use a given menu and how they can set needed processes. Useful tools are multimedia simulations of required methods. Students can then repeat all processes. These simulations are amicably accepted. The reason is social networks reality, easy views of offered video sequences such as films, spots, and easy repeating steps. This situation creates a problematic aspect such as poor understanding of realized methods and further multicultural dimensions of information technology products.

1. THE ROLE OF E-LEARNING IN TIMES OF CRISIS

A time of crisis obliges many firms, organizations, and individuals to search new possibilities for applying their own skills and offers. That is why users must be mobilized in adaptability and skills. Adaptability and skills are developed on the basis of new experiences and the practical use of selected products with useful information. The Internet offers a wide range of information, but information is not knowledge. Knowledge is the most important element for every solution. *Technology can help unlock knowledge.* (Know how, Managing knowledge for competitive advantage 2005) E-learning is an optimal form of education to gain knowledge; therefore, education brings new occasions to the market in our global society. Motivation is also an important factor of every education.

Motivation is useful and is needed for every activity; for education, it is indispensable. It is easy say that students have been diligent and obedient. The question is how to start education with many expectations and ambitions. The key is concentration and setting vision in the form of achieving goals. It is important to know what to do. The solution to this is to have a detailed activity plan without fear of failure or special situations. The courage to find a new solution, a new method, or a new product is an important part of education. The people (students) are curious and they can learn new abilities. They have the perseverance to achieve the given objectives. This determination to find something new is useful in education.

Education is always primarily a social issue. It takes place between people. Information technology is the background that allows substantial changes and conditions for education. This influence is given by the structure of the educational environment. *The educational environment is partitioned into the real layer (class, library), virtual layer (education applications of technologies), and creative layer (social, cultural, and political).* (Mannes, J., 2006) The educational environment uses the support of information technology on the basis of special education products, internet sources, and various forms of e-learning with support systems such as *Moodle* (Moodle, 2010). The results are actively involved in a spectrum of components and the Internet. Quantities of information and cognitive activities of young people are increasing with the support of the Internet. Some students have better knowledge of Internet use skills and know how to use accessible tools such as e-mail, Web, or open source products. We define this as the Net generation. *The Net Generation has grown up with information technology. The aptitudes, attitudes, expectations, and learning styles of Net Gen students reflect the environment in which they were raised—one that is decidedly different from that which existed when faculty and administrators were growing up.* (Oblinger, D. G., Oblinger, J. L., 2005) Tangible differences exist between people and generations according to the use of computers, information technology, and the Internet. The main differences are in the area of work, access to problem resolution, and information perception. The following list gives interesting *characteristics of the older versus the Net generation* (Brdička, B., 2006):

Older generation

standard pace
mono-tasking
linear access
simultaneous information processing
information processing
perceptions of reading
independence
ambition
passive
education and game separated
playing

Net generation

discrete pace
multi-tasking
nonlinear access
intermittent
iconic image
connectedness
cooperation
active
education by

peace	always on guard
reality	fantasy
technology as enemy	technology as
friend	

The Net generation has impressive skills in the area of communications and information sharing. Students use blog, community discussion, or free download to share new methods, skills, and knowledge. The idea is involvement to create something new with upgraded and new attributes. They make up an open community of developers. The Net generation's increasing interest about education requires a variety of educational materials with interactive elements and videos.

2. WIDE RANGE SUPPORT FOR INTERACTIVE COMMUNICATION

E-learning courses have an arranged structure. Users and students must have optimally distributed and allocated study materials. Study materials are not only endless lines of text.

E-learning courses are not manual documents with thousands of pages. The course content envelops an interpretation of a given theme, simple and complex examples, a solution guide, lists and databases of terms and definitions, and of course, interactive components such as video simulations for the presentation of needed methods and technology. Standard structure of actual courses creates information about:

- Name of the course,
- Course tutors,
- Communication possibilities,
- Course (goal, syllabus, literature),
- Important notifications (accreditation, place of delivery seminar paper),
- Own teaching materials divided into chapters.

Teaching materials are offered available in various formats. For adding teaching materials in Moodle system, the teacher has the menu "Add teaching materials". This menu disposal with items:

- Create legend,

- Create text page,
- Create web pages,
- Link to file or web.

The useful menu is Create legend for the creation of titles, and Link to file or web for the creation of link labels to study materials. It is useful to add links to external sources, research outputs from the Internet, expert opinions on a given theme, and links to international cooperation opportunities. These options create static facilities for downloading needed teaching materials without interaction between tutor and student. This interaction is important for the correct understanding of new information and the transfer of this information into skills and knowledge. Optimal communication between the tutor and students is background for useful educational aspects like respect, authenticity, integrity, empathy, sincerity, and importunateness.

E-learning supports some new abilities over full-time education; it especially supports the communication option, namely synchronous communication (chat, ICQ, Skype), or asynchronous (e-mail, panel discussion, blog). (Dlouhá, J., Zahradník, M., Hattanová, A., Dlouhý, J., 2006) There is great potential for open cooperation based on team building between student and tutor, tutor and student, student and student, tutor and tutor. The Moodle system offers learning activities to support interactive communication. These abilities are offered for teachers via the “Add an activity” menu with items like:

- Public inquiry,
- Database,
- List of questions,
- Forum, Chat,
- Test,
- Wiki,
- Lesson,
- SCORM,
- Glossary.

Conversational activities are supported by live chat and an asynchronous discussion forum. Wiki enables students to work together on a given theme. Online tests offer options for automatic and manual rating of defined

questions. Lesson and SCORM activities transmit content and serve for individualizing presentations based upon a student's selections. A glossary of keywords can be created by the teacher for further editing by students. The Database activity allows the teacher and students to create a collection of records about a given theme. Format and structure entries are unlimited. Records can include images, files, URLs, or numbers and text.

3. PRACTICAL APPLICATION IN THE AREA OF OPERATING SYSTEMS

Operating systems build environments for optimal and effective management of computer hardware sources. It is an important comprehensive approach, analyzing via critical deliberation of advantages and disadvantages, an environment for the creation of ideas and suggestions. Knowledge about operating system leads to an independent view, dialogue, and participation in education with optimal tests as feedback. Searching for well-balanced methods for optimal education requires a wide view on education with all useful aspects. Offered courses and study plans are adapted for various students with different goals, preferences, and possibilities. One must resolve the process of backing up an operating system; next, he or she must realize the balance of files, and others seek active expansion of the operating system in the area of security. Mentioned examples are cases from theme diversity. The time limit needed for understanding a given theme is another aspect. Some students periodically attend the course, some students use distance education or e-learning with a few tutorials. Both wish to optimally master a selected course and given theme. Both need to communicate about the course theme and need to share and verify acquired experiences.

The concept of operating systems includes a broad topic of interest areas. Basic operating system components are a series of programs and drivers that are necessary for the operation of computers. Specifically, a multitude of applications and specialized accessories, such as graphical systems for communicating with users, are also considered a part of operating system software. The processor, memory, and I/O processors (channels) are based on the computer; they mediate communication with peripherals and other devices that are connected to the computer. Various computer programs use these sources to function. The time when a single program ran on a computer and sources were allocated to one computer program according to its needs without limits is long gone. The standard is that the computer runs multiple programs simultaneously. In this case, procedures should be activated for effective allocation or source sharing offered by the computer.

In order to run computer systems, an administrator is required, who has privileges to allocate, collect, and manage resources entrusted to the computer. The computer's operating system represents a manager that offers complex sources with preferred features such as multi-user, multi-tasking, and multithread. Modern computer operating systems need to perform multiple tasks simultaneously without continuously needing to switch between them, and intermittently to process given information. Information summa causes simplistic perception and often lacks a true understanding of context base. Analyses with Petri Nets, support of multimedia simulations, and further useful items like "Glossary" from the Moodle system help to eliminate these drawbacks.

Optimal analysis is realized by Petri Nets. Petri Nets are relevant tools for simulating realized activities with model systems such as network, operating, or database systems. *Simulation requires an executable and hence a formal model of the software. It should be a mathematical model in order to allow mathematical proof techniques.* (Gold, R., 2004) Created models use basic objects of Petri Nets. These objects create places and transitions. Places are displayed in the form of circles and transitions are depicted as rectangle. Places and transitions are linked with oriented arcs. Benefit is easily demonstrated by offered activities and their confrontation. Realized own models are created in simulating program of Petri Nets.

The following rows show a practical application analysis with Petri Nets for creating a glossary as one of the available activities of the Moodle system for the course "Operating Systems." The given model describes the given reality with objects of Petri Nets; it is displayed in Figure 1. The start point is place P1_List_Courses. This place displays the screen with registered courses of tutor. The next route leads through the transition T1_Select_Course to place P2_Identification_Course. The transition rests in the selection of a course by the mouse and the scroll-bar. Place P2_Identification_Course displays on the screen a visually marked record of the course. Next steps are intuitive. Model build follows defined places:

- P1_List_Courses – displays a list of registered courses.
- P2_Identification_Course – displays a visually marked name of the specified course.
- P3_Information_Course – displays specified groups of information, materials, and activities for editing.
- P4_Study_Activities – accesses offered activities.

- P5_Glossary – accesses needed information about glossary.
- P5-1_Name, ..., P5-16_CommonSetting – accesses items for creation of glossary.
- P6_DisplayContent_Course – displays actual information about the course.

Needed transitions of the defined model are:

- T1_Select_Course – searches specified course (specified via scroll bar).
- T2_Display_Content_Course – selects needed information about selected course (selects course by mouse).
- T3_Editing_Course – specifies the edit mode of needed information, materials, and activities of a course (button Activate edit mode).
- T4_Add_Study_Activity – specifies the menu for the creation of a public inquiry, list of questions, database, chats, forums, glossaries, tests, Wikis, SCORM, and lessons (menu Add an activity).
- T5_EditListItems-Glossary – accessible registered items for glossary creation.
- T6_SaveAndReturnToCourse – confirms registered information created by edit process (button Save and Return to Course).
- T7_Return_ListCourses – displays all registered courses of teacher for next course select (button Deactivate edit mode to end the editing, select next course via mouse and scroll bar).

The validity of the defined model is verified by starting the given simulation. A route cycle is built from place P1 via specified transitions and places. Places P5-1, P5-2, to P5-16 illustrate items for glossary editing. If the teacher ends the edit mode, it is important to confirm the “Deactivate edit mode” button. This activity is represented by transition T7. The next route returns to place P1.

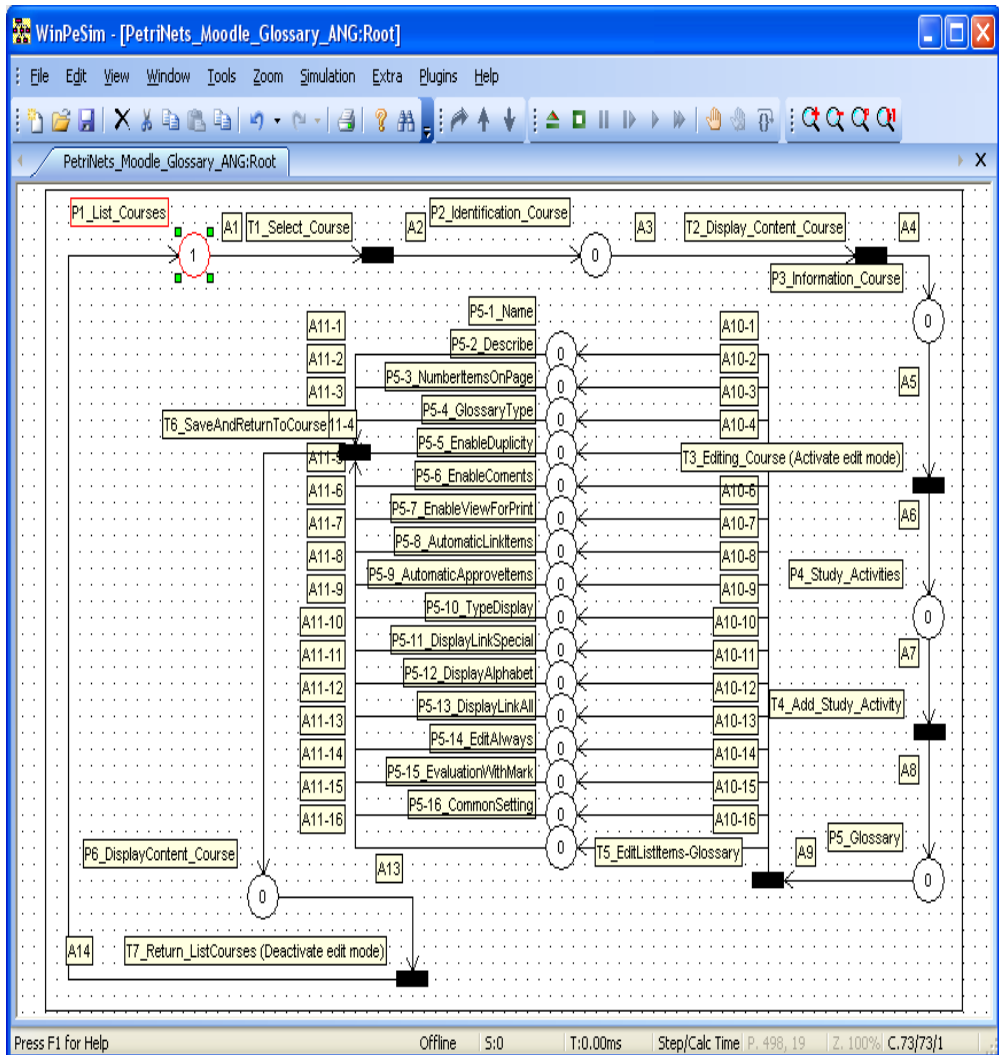


Figure 1. Method simulation for creating a glossary in the Moodle system.

CONCLUSION

A wide range of information is available on the Internet. The problem is that information is not knowledge. Knowledge is needed to implement a correct solution. E-learning helps with the education process and students obtain optimal knowledge. Modern education must reflect the needs of the young “Net Generation.” Students of this generation prefer multi-tasking, nonlinear access, an iconic image, cooperation, fantasy, and technology as a friend. In

practice they use Internet products such as blogs, community discussions, and free downloads with video sequences. An e-learning course should use the Net generation's positive preference, and to offer study materials in diverse forms with communication support and simulation to increase students' interest. The Moodle system allows tutors to use learning activities such as public inquiries, databases, forums, chats, Wiki, lessons, SCORM, and glossaries. Multimedia simulation and analysis are also appropriate to include into an education material list. The useful aspects of these simulations are to clarify the use of information technology products and the option of strategic answers to repeating questions of students in the form of video sequences. The analysis is a good help for optimal view describing the given reality by models with the support of Petri Nets. Multimedia simulations and Petri Net analyses connect to bring optimal synergy.

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LESSONS WITH THE USE OF ARTIFICIAL INTELLIGENCE

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***Abstract:** the thesis presents the schemes of well known and innovatory types of lessons used to build e-Learning courses. While organizing new types of lessons the elements of artificial intelligence was used: the expert system and one-direction, one-layer neuron net. The influence of some types of lessons on the users results was tested.*

Key words: lesson, MOODLE, artificial intelligence, expert system, neuron net

INTRODUCTION

Since the very beginning of the education, the teachers try to improve the teaching process. New technologies which were impossible to even think about some decades before, help in this. Technical possibilities allowed to personalize and the improve the teaching. The article presents one of the methods allowing to adjust the way of presenting (structualization) contents to the perception abilities and other student's predispositions. It is a part of works aiming in building improved curriculum for computer science technicians and preparing the courses for better quality of teaching. On this level of works, the courses are prepared on the basis of known teaching theories with new original elements of e-Learning courses and the teaching methodology with the lecturer's comments (Smyrnova-Trybulska, Grudzień, 2009).

Apart from the scientific aim, it is also concentrated on the implementation aspects. This technology and methodology has to be easy adapted in the Polish schools reality. It forces the choice of cheap and free teaching platform which is accessible, flexible and known among teachers. That is

why the courses use e-Learning platform MOODLE of the module, hierarchic construction, using one of the most important elements which is a lesson. They can be used in regular, blended and distant teaching.

1. EXPERIMENTAL CONCEPTIONS OF THE LESSONS SCHEME DURING THE DISTANT COURSE

1.1 The course structure

The school curriculum was divided into courses dealing with the programs issues of the syllabus. The course (digital circuits) was divided into sections with their basic element –lesson. The matter of lessons consists the elements presenting new conceptions called in the text slides or screens (realized by branch table MOODLE) and decisive elements (cluster or site with a question). Apart from the lessons, in the section there are supportive (a book, slide show, links to outer sites, etc), extending material, communicative (forum, chat), controlling (quiz, task, etc) and allowing for the evaluation of the section (voting, poll, questionnaire) modules. The fragment of an exemplary course is shown at figure 1.

The lessons' modules decide how the course works. The aim of comparisons in the field of the experimental research conceptions was to divide the lesson into generations:

- zero generation lessons, containing only material for self-study;
- the first generation lessons of linear character;
- the second generation lessons of branch character;
- the third generation lessons of branch character and controlled by the expert system implemented by educator
- the fourth generation of branch character, controlled by the system which is easy to modify the presentation process by educator (new module elaborated by the thesis' author, unavailable in standard MOODLE);
- the fifth generation lessons of branch character, adapting individually presented content to the student (another, new lesson module elaborated by the thesis' author, unavailable in standard MOODLE).

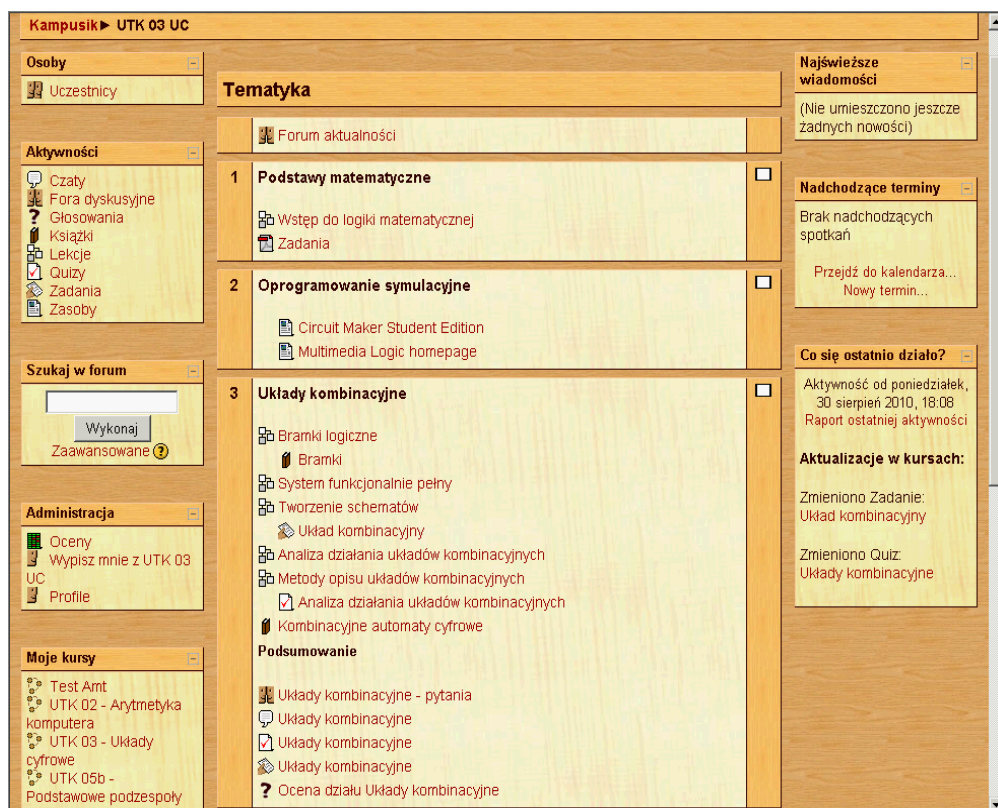


Figure 1. The scheme of the course.

The research over the effectiveness of teaching should be provided with six courses dealing with the same problem of identical structure and content but with lessons of different generations.

1.2 Construction and rules of functioning for lessons of different generations

The construction and functioning of different generation lessons should be widely discussed. The basic assumption of the zero generation lessons is the possibility of gaining extensive accessibility to all course resources. The user decides on the subjects and order of study them. At the end of the lesson, there are no rules evaluating the progress. In practice this means using HTML or text site instead of element of the lesson.

Lessons of the first generation have linear structure where the user is led by the slide after slide with the test of knowledge in the end. Optionally, in the

case of the wrong answer, the user is being led to the same slide once more to revise acquired material.

In the branch lessons of the second generation, the user decides himself about the way of learning by the tables of branch. At the end of the learning path, there is an evaluation test of knowledge. Optionally, in case of failure the user is directed to slide explaining the difficult topic at the easier path than the user had chosen before (when it exists – if the current path is the easiest, the slide from the current path is chosen).

The third generation of lessons limit the possibility of choosing the paths by the user. Another slides or small groups of slides are divided by the decisive elements – the sites with questions. The sites consist of questions regarding previous slides. If the user answers the questions correctly, the system tends to the end of the lesson using the easiest way. If the user answers incorrectly, the program directs him to support paths using the easiest way. After presenting the support paths, the user is given another test. Its positive result makes the user to come back to main paths of science. Incorrect answers direct to another supportive paths or in case of lack of the answer, exiting from the lesson module and alarming the teacher about the necessity of completing the material. Considering the presents of the decisive elements, this generation lessons can be perceived as the one using a simple expert system.

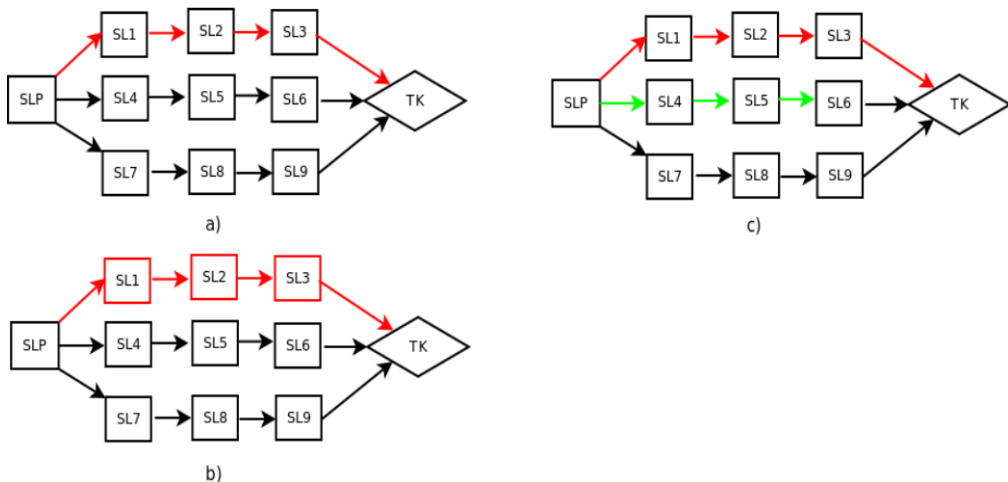


Figure 2. Phases of change on the path for the fourth generation lessons during the adaptation process: a) the initial path of learning b) memorization and understanding of matter c) the choice of new path leading to credit a final test.

The fourth generation lesson can work properly only with specialist data from psychological tests (e.g. Amthauer tests) estimating the type of intelligence of the user. On the basis of parameters used with this test, the user is directed to the path of learning fitting his/her type of intelligence. The first slide decides about that associated with one-layer neuron net responsible for controlling the paths. Each neuron is matched with one learning path. The initial values of neuron weights are set by the author arbitrarily. Neuron which is the most disrupted (the winner) directs the stream of learning into the correct path. At the end of which, there is a test which evaluates the understanding of the presented material. In case of passing the test, the psychological parameters of the test, the success marker and identifier activated by neurons are recorded to the database of excitations used to the neuron training.

In the case of failure, the lesson switches into the mode of adaptation and algorithm is launched aiming in fitting the right learning path to the learner's profile. To reach this goal, the user is directed to the beginning (the second slide) of the initially proposed path. After each slide, the ability to remember the content of the slide is being tested. After the supporting tests, the user approaches to the test of understanding the material once more. The success causes the recording of adequate data to the database of excitations, similarly to the regular work procedure and exiting for the acceptance procedure. The failure causes the recording of the parameters of psychological tests, failure marker and identifier of the activated neuron. Additionally, the marker of the necessity of learning the neuron net is settled while the user is directed to another path of learning pointed by another neuron of a greater excitation. This procedure is repeating iteratively until the success during the test taken by the user or expiring the number of paths to follow (in this case, the author of the lesson is informed in order to modify the material); next the exit from the adaptation procedure. In the same time, the parallel process of neuron learning is being launched.

The fifth generation lessons use also the same data of psychological tests with extended structure. During the lessons, each slide has its own, one-layer neuron net leading the user to the next slide adequately to the psychological data (each neuron of current slide matches the next slide). Additionally, it contains so called register of markers with a supportive role of building the learning path characteristic for a particular type of intelligence. At the beginning, the lesson scheme seems to be similar to the lesson of the previous generation. The author puts the links between slides in order to create different paths of learning for types of intelligence. The first slide contains

the same number of neurons as the author of lesson proposes. Each slide has one neuron.

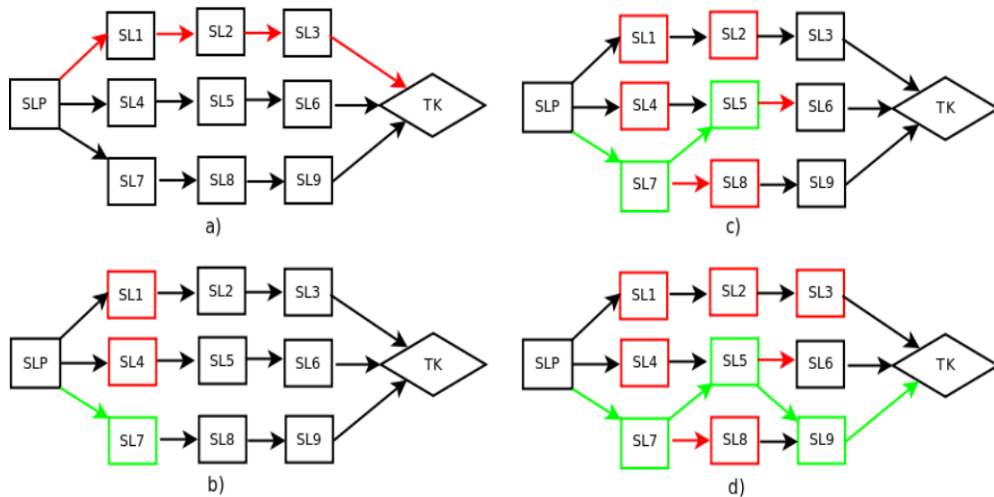


Figure 3. Phases of change on the path for the fifth generation lessons during the adaptation process: c) the initial way settled by the author d) brand new path. Slides in red are ambiguous for the user, slides in black were not tested, slides in green – leading to success in the final test.

In regular work process, the lesson leads the user to the given path by the neurons up till the final test. If the test succeed, the databases of excitations, the success marker and identifiers of activated neurons are recorded to the psychological tests. If the test failures, the lesson starts working in adaptation procedure. The user is directed to the slide which is placed behind the title slide of the path, which was taken before. After browsing this slide, two supportive test examining the proper remembering and understanding of the matter of slide can be taken. If the slide is not understood, it is modify through markers of understanding the slide into the value of false and true. The next thing is to search the slide which can be understood by the user and held the same marker. If this slide is not found, the lessons stops working and the lack resources feedback is send to the author.

The searching begins from the previous slide and existing links. If needed, new connections between slides are built by adding controlling neuron. After finding proper slide, the user passes to another with different content and the process repeats all over up till reaching the final test. The result is to create new, suitable for the user path of learning.

2. RESEARCH METHODOLOGY

The sampling was divided into 5 groups taught in different ways: traditionally assisted with Moodle with underdeveloped – skeleton version of distant course with lessons of third generation (group and course named 1TA), traditionally assisted platform LMS containing the lessons of the first generation (2TA, 3 TA) and zero generation (4TB). The last group (4TA) was a control group. Group consisted of, respectively: 29 students (1TA), 28 students (2TA), 32 students (3TA), 30 students (4TA) and 26 students (4TB).

The research was to test the digital circuit on the subject Computer Technology Course Equipment (UTK). In traditional process, the realization of two units was arranged up to 17h. The tested aspects were dealing with differentiation between logical gates and understanding of its functioning. Tests include different types of questions: multiple answers, a one-answer, short answer and computing; made and carried on the platform Moodle. Students could receive maximum 20 points. The control of knowledge accounted for after 6 - 7 months after the end of chapter. The purpose of such a procedure was an in-depth assessment of consolidating messages turned into courses.

The test results were treated statistically using the software package R. The tested hypotheses H_0 regarding to result diagrams of the control test between groups taught with different generation lessons and the control group do not differentiate. It was proceed to answer the question if the usage of new tools can affect learning results. The statistical tests were carried out using Kolgomorov – Smirnov method, and the results are presented in box-and-whisker diagrams.

3. ACHIEVED RESULTS AND DISCUSSION

At the beginning, the plan was to test the effectiveness of courses which contained all lesson types starting from the zero generation up till the fifth. A scheme of the course was prepared together with a complete section consisted of 5 lessons, supportive and communicative modules and one final quiz testing knowledge.

While building the six draft courses containing different generations of lessons, it become clear that the technical obligations for the fourth and fifth generation lessons demand more time for preparing and foresee results of particular computer problems. In this case, is was settled to lead the described

research (in the second paragraph of the article) aiming to estimate if the learning via different generations of lessons influence the results of teaching or not. If this was true, this had to be directed into another field. If yes, the chosen way is the correct one, where the optimal solution can be possible to proceed in every school. Lessons of zero, first and second generations were chosen, consequently the three different tests were provided. Next the competence test was given to students using the Moodle quiz tool. The test was to examine the recognition types of logical gates and the knowledge the truth tables. The students results are shown in figure 4.

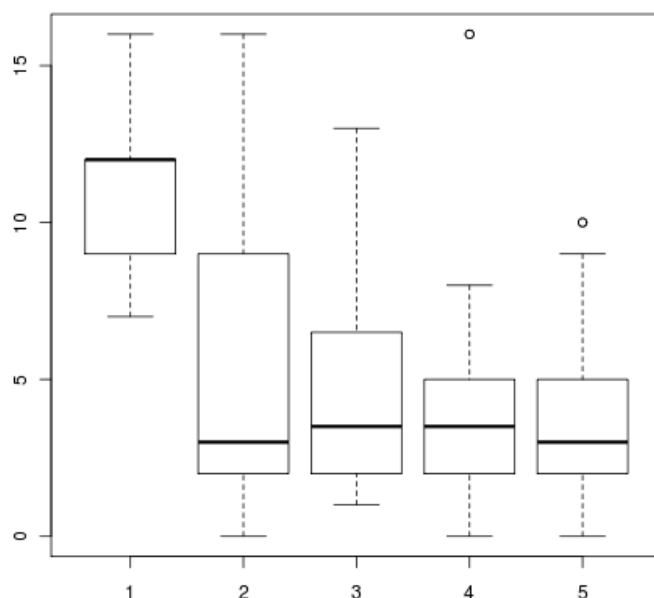


Figure 4. The test results obtained by the learners after completing an DC course. The diagrams match groups 1TA(1), 2TA(2), 3TA(3), 4TA(4), 4TB(5)

The groups 2TA, 3TA, 4TA, 4TB have similar median chains with a excellent results of group 1TA which proves the accuracy of taken strategy. Is worth to notice that among e-Learning groups the result tables from groups 2TA and 3TA have positive skewness while 1TA has negative skewness. Probably the individualization teaching influences students' abilities to memorizing didactic matters in a different way. This needs further research.

Regarding the statistic test results, on the basis of the statistic test criteria, the hypothesis H_0 cannot be denied comparing groups 2TA, 3TA, 4TB and 4TA. Comparing groups 1TA and 4TA the hypothesis H_0 is declined and that leads to gaining an alternative hypothesis H_1 where the diagrams of results differentiate. This leads to conclusion that the knowledge level among students taught by varied methods can be different, especially the group 1TA. The noticeable statement can be placed at this point – the individualization of teaching (the third generation of lessons) influences positively on the didactic process. This conclusion needs further research regarding the contradictory references about different influence of the individualized teaching on students' results (Bangert, Kulik J., Kulik Chen-Lin C., 1983), (Grudzień, 2009). Probably the dissimilarities gained by different researchers can be explained by another factor.

Another important issue influencing the students' results is an adequate quality of slides presented during lessons. Low quality slides will not influence methods of teaching but high quality slides need to be prepared properly. Lesson material should be prepared in groups where some people are responsible for slides of high quality preparation and other people for the correct lesson structure.

The students were observed by the author in order to notice the way students work using modules of different lessons' generations. The students work faster with lessons of previous generations (greater part of students wanted to reach the final test). Some students taking part in the course of zero generation lessons, did not want to read the source texts. A probable conclusion is lack of motivation for learning among young generation. One of the crucial aspects which can influence positively students' motivation is T1 and e-Learning 3.0 to create a friendly atmosphere for learning – flexible teaching structure, attractiveness of presenting didactic matters via multimedia, interactivity and permanent contact with a teacher and friends during the learning process, etc. The adequate didactic, methodological, computer competence and good preparation with parallelly overcoming problems of different origin (organizational and technical) in distant teaching are decisive regarding innovative technology usage.

Unofficial interviews were also being held among students aiming in describing advantages for them besides the project realization. Another important question was about the necessity of holding courses like this. The answers were of a different kind but surprisingly the students pointed at great effort while working with lessons of the third generation.

The crucial problem to solve after the research and the interviews is the proper motivation given to students and the abilities of paying attention on given task, not only the way of presentation or methodology.

CONCLUSIONS

The research lead to some interesting conclusions:

1. Different types of lessons' generations can influence teaching results and that is proved by statistic parameters of the series of the results in every group;
2. The research over previous lessons' generations should be continued – they potentially should give better results of teaching;
3. The factor that limits using previous lessons' generations are technological obstacles – with the developing of science and mastering computer problems they will vanish;
4. The given solutions are not difficult to implement in secondary school – especially courses of the third lessons' generation with satisfying results along with low costs can be used widely in teaching computer subjects and many more.

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COMPUTER ANALYSIS OF LEARNING CHARACTERISTICS

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***Abstract:** The paper presents actual research focused on the area of educational data mining. The paper deals with analysis of the data coming from a questionnaire survey focused on learning characteristics of students. Especially, characteristics supposed to be important for individualized e-learning have been evaluated during the research. Results of such kind of analysis could contribute to development of an adaptive Learning Management System. In the concrete, cluster analysis and decision tree induction have been used as data mining tools used for the computer analysis focused on identification and description of significant groups of students.*

Keywords: data mining, education, e-learning, personalized instructions.

INTRODUCTION

The individualized e-learning can be understood as an automatic method of education adapting to various characteristics of students which properly define their typical learning styles. Learning styles stand for delicate manifestations of human individuality in different learning situations (Mareš, 1998).

Several research studies dealing with learning styles of students have been published in the last decades. They have been mainly focused either on characterization and classification of various learning styles or on enhancement of learning process using analysis of learning styles (Hawk and Smith, 2007), (Felder and Silverman, 1988).

Department of information and communication technologies (University of Ostrava) focuses its research activities on development of adaptive Learning Management System (LMS) considering learning styles of students as well as on application of data mining technologies in the education. Theoretical background of the research focused on individualized e-learning was for example published in (Kostolányová et al., 2009). There, analysis of learning characteristics already published has been presented. The article aimed to evaluate learning characteristics potentially important for individualized e-learning.

Then, in (Takács et al., 2009), initial results achieved during analysis of data coming from a questionnaire survey focused on learning characteristics were published. The database analyzed contained information about 200 students – secondary school and university students together.

The actual paper mainly follows on from the analysis of the real data obtained using the questionnaires. The objective is to present and apply data mining techniques to the set of educational data. It is necessary to mention that the article does not primarily aim to provide detailed interpretation of the results obtained. This kind of analysis should be a special task for specialists.

The outline of the paper is the following. First section introduces students' learning characteristics analyzed in the research. The origin and structure of the database used in the research is presented in the second section. Third section describes the techniques used to analyze the data. The results obtained from the database are presented and discussed in section four. Last section gives some conclusions of the research presented.

1. LEARNING CHARACTERISTICS AND E-LEARNING

In (Kostolányová et al., 2009), several groups of learning characteristics were identified to be potentially significant and important for the e-learning. In the concrete, three groups of characteristics have been determined – social aspects, affective aspects and learning tactics.

1.1 Learning characteristics

In this paper, characteristics evaluating social aspects, affective aspects and learning tactics have been analyzed.

- *Social aspects* indicate whether the student prefers to learn alone or with schoolmates. LSI questionnaire (Mareš and Skalská, 1983), (Dunn et al., 1989) has been used for evaluation.

- *Affective aspects* characterize especially motivation of the student. Again, LSI questionnaire (Mareš and Skalská, 1983), (Dunn et al., 1989) has been used.
- Group of learning tactics includes five individual characteristics:

Systematic approach with poles sequential and global learners. Sequential learners prefer to learn in linear steps, with each step following logically from the previous one. Contrariwise, global learners prefer to learn in large jumps, absorbing material almost randomly without seeing connections, and then suddenly understand. ILS questionnaire (Felder and Soloman, 2009) has been used for evaluation.

Way of learning with poles active and reflective learners. Active learners tend to retain and understand information best by doing something active (discuss, apply it or explain it to others). On the contrary, reflective learners prefer to think about it quietly first. Again, ILS questionnaire (Felder and Soloman, 2009) has been used.

Sequence of learning with two typical types: detailistic – focuses on small pieces of information and composes them together; holistic – focuses on big pieces of abstract information from which decomposes to details. TSI questionnaire (Sternberg, 1999) has been used for evaluation.

Approach of learning with three typical types: deep – fully understand the topic under study; strategic – results and effectiveness are important; surface – meet basic requirements only. ASSIST questionnaire (Entwistle and Tait, 1996) has been used for evaluation.

Self-regulation: with poles exact instructions and independent way of learning. LSI questionnaire (Mareš and Skalská, 1983), (Dunn et al., 1989) has been used for evaluation.

The characteristics presented above have been selected as potentially important and have been thus analyzed using data mining methods.

2. DATABASE

The research has been realized using a database representing learning characteristics of students. The database has been created from the data collected during questionnaire survey. A set of questionnaires has been prepared and then put to the students engaged in the research. To form the set

of questionnaires, several commonly used questionnaires or their parts related to characteristics of our interest have been translated into Czech language and then used. It is necessary to mention, that translation has not been validated.

Majority of the questionnaires consists of statements combined with a scale that represents how much students agree with the statement. This scale usually ranges from 1 (disagree) to 5 (agree). In TSI questionnaire the scales range from 1 (disagree) to 7 (agree). Since each characteristic analyzed in the research corresponds to a concrete set of original questions, special evaluation keys have been used to evaluate the learning characteristics. So, in the final database, each characteristic is represented by a real number (corresponding to the original range) indicating its level. To avoid inconsistency caused by different ranges defined for individual characteristics, min-max normalization has been used on the original attributes of real type. Then, values of all attributes to be tested (learning characteristics) fall into the range [0 - 1].

The final set of questionnaires has been then filled up by 326 students. 314 students (103 males and 211 females) filled correctly all questionnaires required for evaluation of learning characteristics analyzed in the research. Thus, only the data provided by the 314 students have been analyzed. The set of students contained both secondary school (77 students) and university students (37 – informatics, 180 – pedagogy, 5 – humanities, 15 - economics).

The final database thus consists of 314 recordings characterized by 10 attributes. The attributes and corresponding abbreviations are as follows: social aspects (*SOC*), motivation (*MOT*), systematic approach (*SYS*), way of learning (*WAY*), detailistic type (*SQd*), holistic type (*SQh*), deep approach (*Ade*), strategic approach (*Ast*), surface approach (*Asu*), self-regulation (*SEL*).

3. METHOD

The data analysis aims to identify dominant groups of students and to characterize them using significant attributes (learning characteristics). Moreover, the aim of the paper is to provide also a lucid strategy for processing and classification of information about new students. To do so, two-step process of analysis is proposed and presented in this paper. The practical realization of the analysis has been realized using MATLAB software (Matlab, 2009), which is a suitable tool for data analysis and classifications.

The data analysis starts with cluster analysis which is used to identify dominant groups of students within the data characterizing learning

characteristics of students. This phase is crucial for the whole analysis performed, because it is used as a starting point for the subsequent process of description. At the end of this phase, recordings in the database will be scored into several groups, and classification attribute will be added to each recording. Then, in the next step, dominant groups of students determined during clustering will be described using significant attributes characterizing learning characteristics of students. Decision tree technique will be used since it provides comprehensible interpretation of the relations derived from the analyzed data.

3.1 Cluster analysis

Cluster analysis consists in searching for clusters within a set of objects described by attributes. Clusters determined during the search thus represent objects with similar attribute values. Then, on the basis of such analysis, classification attribute can be added to the database so as to represent the clusters created. In the concrete, hierarchical cluster analysis based on Euclidean distance measure using Ward's method of clustering has been implemented to process the database.

3.2 Decision trees

The decision tree technique is one of the most widely used methods for presentation of rules hidden in a data set. Decision trees are used to describe the groups of students by the means of interesting rules which can be simply visualized in a form of hierarchical tree structure. Decision tree is a structure consisting of no one or at least one non-leaf node and one or more leaf nodes. Non-leaf nodes represent data partitioning defined by a test on one of the attributes that are used to characterize objects. Leaf nodes represent concrete classification of the object (objects). The first node on the top of the tree structure is called root node. One of the main parameters affecting final structure of the decision tree is the minimal number of objects belonging to a non-leaf node to be split - *SPLITMIN*. If the value is too low, the decision tree can overfit the learning data which is characterized by wide structure of the tree and high classification accuracy on learning data. To avoid this, *SPLITMIN* parameter should be increased so as to create more general decision tree. For the practical realization, decision algorithm implemented in the MATLAB software has been used (Matlab, 2009).

4. RESULTS

This section presents results obtained when the two-step process presented above has been used to analyze the database of learning characteristics.

4.1 Cluster analysis

In the first step of the data analysis, cluster analysis has been performed, so as to separate the data into several dominant groups. Figure1 shows dendrogram obtained as a result of the clustering process. Three dominant clusters can be seen in the dendrogram. The clusters determined during clustering are then labelled *Class1*, *Class2* and *Class3*. The corresponding class identifier will be added to each recording of the database as a classification attribute.

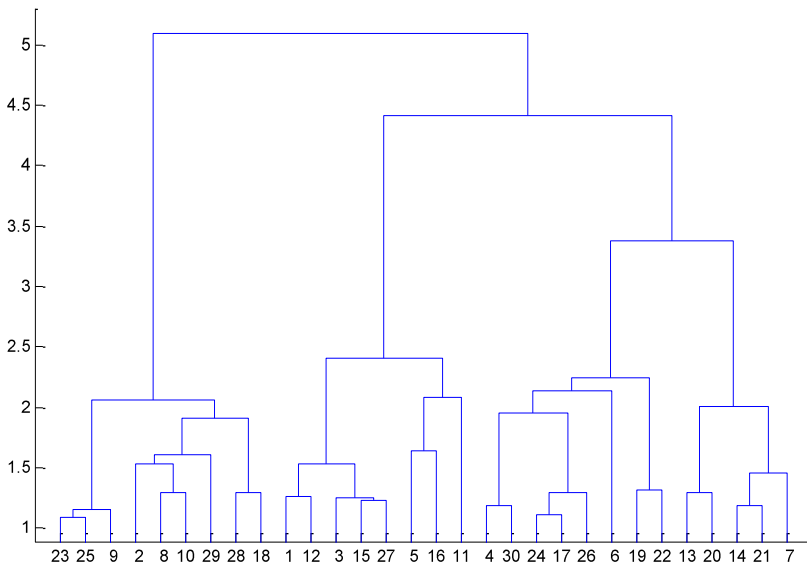


Figure 1. Dendrogram characterizing clustering of data.

Analysis of the distribution of the objects into the three clusters shows, that the objects are unevenly distributed into the three classes determined. *Class1* contains 98 objects, *Class2* contains 146 objects and *Class3* contains 70 objects.

4.1 Decision trees analysis

Using a default setting of the decision tree algorithm (SPLITMIN = 10), too complex decision tree has been generated. The tree structure contained about 30 decision nodes what made it useless for extraction of general rules. Then, the SPLITMIN parameter has been set to higher value so as to generate more general tree. The final decision tree generated from the data is presented in Figure2.

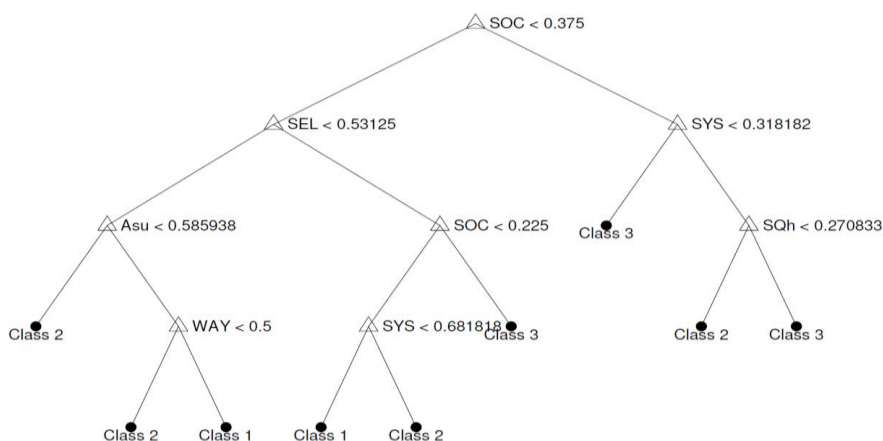


Figure 2. Full decision tree.

The decision tree structure can be reformulated into set of decision rules. Table1 shows decision rules extracted from the full decision tree. Information in the last column of the table indicates number of objects correctly and incorrectly covered by the rule. For example the information corresponding to the rule 6 indicates that the leaf node in the tree structure covers 0 objects classified as *Class1*, 1 object classified as *Class2* and 0 objects classified as *Class3*.

Table 1.
Set of rules corresponding to the full decision tree.

Class 1	$Asu > 0.585938$ and $WAY > 0.5$	7/3/0
	$SOC < 0.375$ and $SEL > 0.53125$ and $SOC < 0.225$ and $SYS < 0.681818$	78/10/0
	$SOC < 0.375$ and $SEL < 0.53125$ and $Asu < 0.585938$	1/81/2
Class 2	$SOC < 0.375$ and $SEL < 0.53125$ and $Asu > 0.585938$ and $WAY < 0.5$	4/33/0
	$SOC < 0.375$ and $SEL > 0.53125$ and $SOC > 0.225$ and $SYS > 0.681818$	2/6/0
	$SOC > 0.375$ and $SYS > 0.318182$ and $SQh < 0.270833$	0/1/0
	$SOC > 0.375$ and $SYS < 0.318182$	0/6/7
Class 3	$SOC > 0.375$ and $SYS > 0.318182$ and $SQh > 0.270833$	0/2/53
	$SOC < 0.375$ and $SEL > 0.53125$ and $SOC < 0.225$ and $SYS < 0.681818$	6/4/8

As could be seen in Table 1, several rules represent only few objects. Such rules markedly complicate and divaricate the structure of the decision tree with low effect for classification or description. Rule 6 representing only one object can be mentioned as an example. To simplify the structure of the decision tree and to avoid overfitting characterized by branches (rules) increasing complexity of the decision structure pruning algorithm should be used. The rules corresponding to the pruned tree are presented in Table 2.

Table 2.

Set of rules corresponding to the pruned decision tree.

Class 1	$SOC < 0.375$ and $SEL > 0.53125$	86/20/8
Class 2	$SOC < 0.375$ and $SEL < 0.53125$	12/117/2
Class 3	$SOC > 0.375$	0/9/60

Class1 contains students who like to learn alone or in a very small group and prefer to be independent to instructions during learning. Students from the second dominant group, *Class2*, also prefer to learn alone or in a very small group, but prefer to have exact and detailed instructions. Students in the last group, *Class3*, prefer to learn in a group or with at least few schoolmates.

CONCLUSION

This paper contributes to development of adaptive e-learning system. A lucid strategy used to analyze data representing learning characteristics of students is proposed and evaluated. The proposed approach is based on application of data mining techniques.

Database containing information about preferred learning characteristics of more than 300 students has been analysed in order to identify typical groups of students depending on their preferred learning characteristics. Two learning characteristics (social aspects *SOC* and self-regulation *SEL*) have been determined as significant out of a set of ten learning characteristics analysed.

Effectiveness of the proposed strategy depends also on quality and reliability of the data analyzed. The initial research has been realized using a relatively small set of data (314 students). Moreover, to obtain relevant results of the analysis, questionnaire survey has to provide high quality data. So, in the future, the proposed strategy will be evaluated on a new set of data which will be collected using improved version of questionnaire.

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REMOTE CONTROL SOFTWARE AS A SUPPORT FOR E-LEARNING

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Abstract: *The article presents the most popular software for the remote control and a different possibility of its utilization. There are three types of these programs: freeware (VNC), shareware (Radmin) and commercial (PCAnywhere). The programs in parentheses are the most popular in the mentioned categories. These programs can support the administrators of computer network and are also very useful in education, including e-learning. The article shows a brief description of some programs, their installation and utilization in e-learning. This software is still being improved by many computer companies.*

Keywords: remote control software, e-learning, Virtual Network Computing (VNC), Radmin.

INTRODUCTION

Remote control software is a special type of software that makes it possible to control another computer over a network connection. Its typical use is to control distant computers which can be located for example in computer labs, offices or home.

The possibility of using the remote computer is useful not only for computer network administrators who install for example new patches or software but also for users who want to solve problems with their distant colleagues' computers. In education we can imagine a situation when a teacher helps student via the Internet to do practise exercise or student can watch the lectures from their home computer. This situation is typical for e-learning but the solution with remote control software is more flexible than used in e-learning platforms. With utilisation of the most powerful remote control

software we can see each other (student and teacher), chat or talk like using popular communicator Skype. This functionality has for example Radmin which has been used in a computer lab for many years by the author of this article (Jedynak, 2008). Many remote control programs offer service where we can copy files between two computers for example teacher and student.

When we want to use this kind of software we have to configure the operating system or install a special application.

Remote control software uses mostly TCP/IP protocol. Both transmission and user authentication are encrypted in more remote control software and that is why these programs are safe. These programs can work well with poor Internet connections because they use appropriate algorithms to compress data transfer over the Internet.

Remote control software is being extensively developed so at present there is no shortage of offers for individual users, schools and large companies. Everyone can find a suitable version of the software, both paid and 100% free. There are many solutions for businesses and education, and not just for those small, but also for large corporations. These programs are very safe and are supported by software developers.

The article shortly describes different types of remote control software and shows possibilities of its utilization in education, including e-learning (Rosenberg, 2000).

1. DIFFERENT KINDS OF PROGRAMS ENABLING THE REMOTE WORK

1.1 Free software - the VNC family of remote control applications

1.1.1 VNC

VNC stands for Virtual Network Computing. It was originally created at the Olivetti & Oracle Research Laboratory (ORL) in Cambridge, United Kingdom and next in 1999 the company AT&T bought the laboratory. Laboratory was closed in 2002. The same year a few members of the programmer group formed RealVNC in order to continue working on open source and commercial VNC software. This software was called RealVNC the same as the name of software team. More than 20 million copies of the software have been downloaded since the beginning of the VNC project.

The full free version can be downloaded from the website:

http://www.hep.phy.cam.ac.uk/vnc_docs/download.html

VNC and its family programs are the most popular free remote control software which allows users to share their computer desktops with others. We can view and interact with another computer anywhere on the Internet (Figure 1). VNC software is cross-platform, allowing remote control between different types of computer. These computers do not have to have the same operating system for example we can use VNC to view teacher computer, with installed Windows on our Linux PC at home. This software is in active use by millions of people in industry, commerce, education and at home. VNC has a wide range of applications including system administration, IT support and helpdesks. It can also be used to support the mobile user, both for hot desking within the enterprise and also to provide remote access at home, or on the road. The system allows several connections to the same desktop, providing an invaluable tool for collaborative or shared working in the workplace or classroom. Computer support within the geographically spread family is growing in popularity.

A VNC system consists of a client, a server, and a communication protocol. The VNC server is the program on the machine that shares its screen. The server passively allows the client to take control of it. The VNC client (or viewer) is the program that watches, controls, and interacts with the server. The client controls the server. The VNC protocol (RFB) is very simple, based on one graphic primitive from server to client ("Put a rectangle of pixel data at the specified X,Y position") and event messages from client to server.

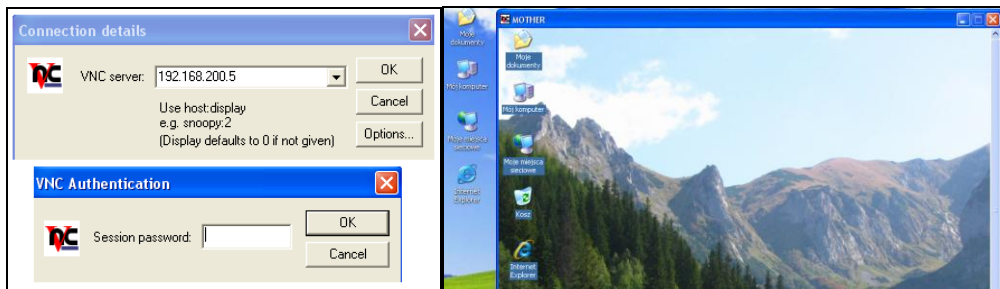


Figure 1. The example of connection VNC client with server a) the logon window, b) the remote session

Many different variations of the family of VNC applications have been created with their own features. The most popular VNC variants and some associated applications are described in the next sections.

1.1.2 RealVNC

RealVNC is a client and server application for the Virtual Network Computing (VNC) protocol to control another computer's screen remotely. It is developed by the same people who created the original VNC project in AT&T company. RealVNC runs on Windows, Mac OS X and many Linux operating systems (Figure 2). A RealVNC client also runs on the Java platform and on some mobile phones operating systems (Janus, 2005).

The full free version can be downloaded from the website:

<http://www.realvnc.com/products/free/4.1/index.html>



Figure 2. RealVNC provides remote control of another computer desktop on different operating systems

RealVNC comes in one of three editions: Free Edition – free, open source version distributed under the GNU General Public License; Personal Edition – commercial version home or small-business users oriented and Enterprise Edition – commercial version enterprises oriented. In contrast to free editions the commercial distributions have authentication, encryption and they offer some extra function like file transfer or chat.

1.1.3 TeamViewer

TeamViewer is based on VNC application for remote control of the other computer system. It is free for noncorporate use. It does not need to install on other computers. This possibility is its biggest advantage. In contrast to

TeamViewer the other applications which are based on VNC protocol need to be installed before use. TeamViewer is prepared for making ad-hoc remote connections between PCs. The application is easy to use and it works even without local administrative rights, which makes it unique compared to other programs which are based on VNC. If we want to use this software we have to run it on both machines which we want to connect (Olechowicz, 2010).

The full free version can be downloaded from the website:

<http://www.teamviewer.com/download/index.aspx>

When Teamviewer is started on a computer, it generates a partner ID (access code) and password. To establish a connection from a local client to a remote host machine, the local user must communicate with the remote operator to give him an access code and a password (Figure 3). Then partner enters these data into the local TeamViewer. The server user controls the level of using his computer: remote support, presentation, file transfer or VPN.

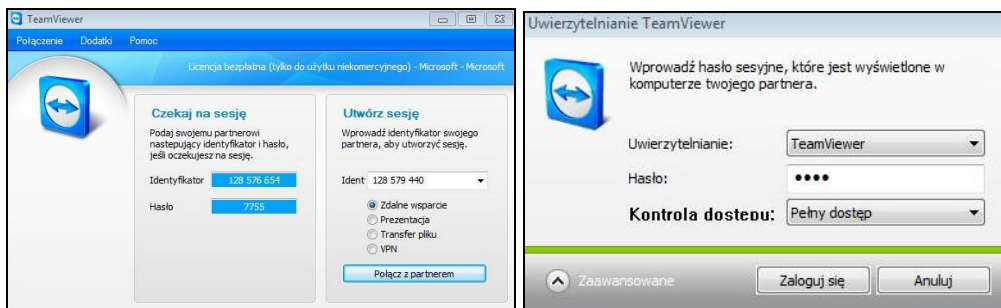


Figure 3. The example of connection between TeamViewer client and server a) the first window, b) the login window

TeamViewer is very safe because it uses RSA private/public key exchange and AES (256 Bit) session encoding. It can control multiple-monitor displays. It is a very interesting function because more and more video cards can support displaying two or more computer monitors.

TeamViewer also has a Web-based version, for remote connecting to home from public computer.

With this software we can also transfer files between connected computers (Figure 4). It can be used to facilitate education or business collaborations, remotely access a second computer, or help colleague diagnose and cure computer problems.



TightVNC is a free remote control software package derived from VNC. TightVNC is a project maintained by Constantin Kaplinsky. It is offered with GPL licensing.

<http://www.tightvnc.com/download.php>

It possesses new features, improvements, and patches in comparison with standard VNC version. It works well with low bandwidth connections such as modem connections, provides more configuration options in the server, includes improved Java viewer, and more. The modified servers and viewers are fully compatible with the original VNC software.

TightVNC has significantly improved compression algorithms and added file transfer support. Files can be uploaded from our local machine to the TightVNC Server, and can be downloaded from the server to our computer.

It is cross-platform software and compatible with the standard VNC. TightVNC can be used to perform remote control and administration tasks in Windows, Unix and mixed network environments. It can be very helpful in e-

learning and remote customer support. The developers have also produced a portable version of this software but this version is not free.

1.1.5 UltraVNC

UltraVNC is another kind of open source application which is based on VNC protocol to control another computer's desktop remotely. In contrast to RealVNC Free Edition this version of software adds various features, such as an encryption plugin to secure the client/server connection. It also supports file transfers, chat functionality and various authentication methods. The software is free and distributed under the terms of the GNU General Public License.

The full free version can be downloaded from the website:

<http://www.uvnc.com/download/index.html>

UltraVNC can be used as helpdesk remote control software. With it, we can access our PC from anywhere and remotely help people and customers. Both Host and Remote components can be installed together on the same computer, or they can be installed separately on different computers.

On the program producer Website we can find UltraVNC SC (Single Click) implementation of UltraVNC application. It is a mini UltraVNC Server that can be customized and preconfigured for download by a Customer. UltraVNC SC does not require installation. The customer only has to download the little executable and Click to make a connection. The connection is initiated by the server, to allow easy access through customers firewall.

1.2 Shareware - Radmin

Radmin is one of the fastest and most powerful remote control software produced by Famatech company. It offers in standard the secure access to remote computer via Internet or LAN. It can work in a few modes: view remote desktop, control remote PC's keyboard and mouse, file transfer, telnet, remote turn on/off, BIOS remote control, text and voice chat (Figure 5).

The trial version can be downloaded from Famatech website:

<http://www.radmin.com/download/>

Thanks to this software we can control and view a remote PC and conduct other operations like: sending or receiving files, text talking or voice chatting.

Compared with other such programs (results of tests are shown on producer website) it is amazingly small and fast.

With this program we can view the remote computer's desktop on our own monitor either in a window or full screen. All our mouse movements and keyboard signals are transferred directly to the remote computer.

Radmin is very easy to learn and use. The interface is intuitive and the program is very easy to use. According to the opinion of Radmin users the major advantage of it is its simplicity. Radmin is extremely secure because of using 256-bit AES encryption for all data streams.

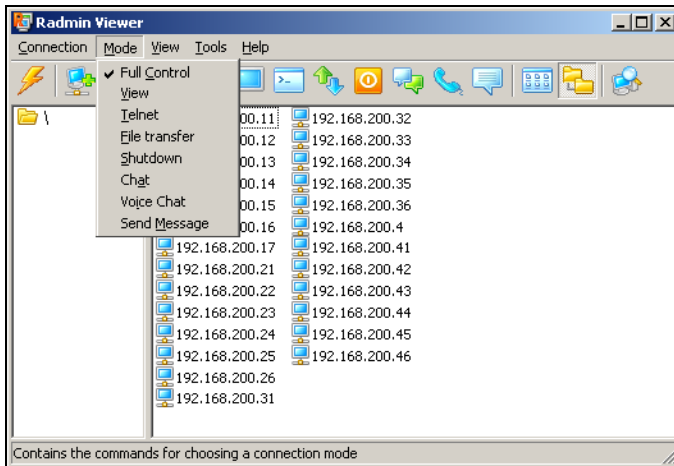


Figure 5. The window of the program Radmin with the possibilities of the choice of various modes of the remote connection

The newest version of Radmin (Remote Administrator) can work with multiple monitor support. Radmin Viewer supports Intel AMT (Active Management Technology for PCs based on Intel vPro platform) and allows the manipulating of a remote computer even if it is turned off or you cannot start its operating system. Using Radmin Viewer we can turn on, restart and shut down the remote computer, access the BIOS settings of the remote computer, and boot it from a specified local CD or disk image file.

1.3 Commercial software - Symantec pcAnywhere

The program pcAnywhere is one of the most well known and highly valued software for remote control (Figure 6). It is produced by Symantec. The history of the program dates back several years and its position in the market for remote control software is stable. The trial version can be downloaded from Symantec website: https://www4.symantec.com/Vrt/offer?a_id=20332

The latest version of pcAnywhere is 12.5, which can be purchased at a around 100 euro. This is a rather expensive software but the Symantec product has already gained a reputation and has been present in the market for a long time. It also offers many facilities and thereby its value is high for administrators and other computer users.

The main advantage of this program is its strong security. It has 256 bits AES encryption which cannot be broken by typical hackers. The program works with both Linux and Windows. A server version of this software occurs only in Windows. It works with Java, so we can use it in any Web browser that supports this particular language.

With the appropriate version of the pcAnywhere computer access is also possible using the Microsoft Windows Mobile Pocket PC via any TCP / IP connection. This connection can be wired or wireless. Symantec software can adapt itself to the Internet connection performance.

Another advantage of this program refers to its function when some remote computers can be connected to a single host at the same time. It can be used, for example, during the conference. This function can be useful when students watch a teacher's presentations on their computer screens. They can be together with the teacher or for example stay at home. With pcAnywhere we can easily transfer files between the PC host and client. This operation can be done also between different operating systems (Figure 7).

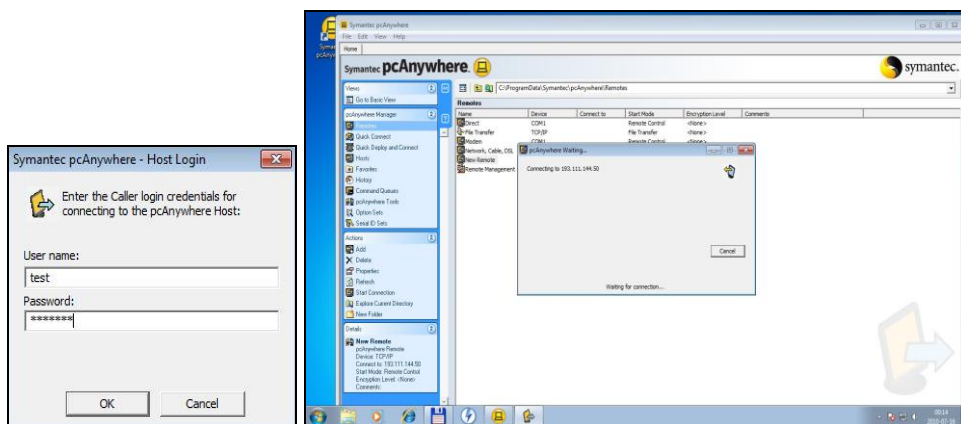


Figure 6. The example of a) logging in pcAnywhere and b) remote connecting

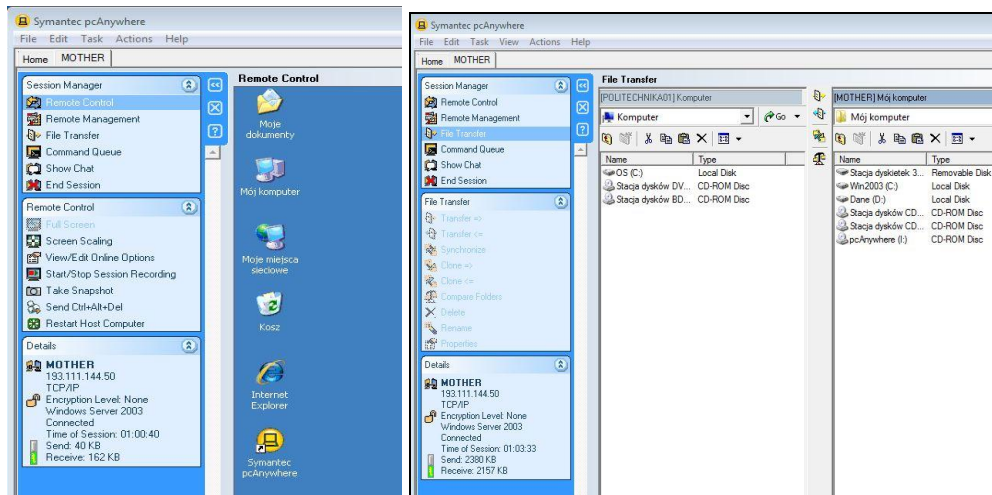


Figure 7. The example of a) remote session in pcAnywhere and b) file transferring

The program was completely polonized which is also its great advantage. In addition, in order to facilitate the work many intuitive graphical wizards have been added to help configure the features we need easily.

Symantec has also added features such as the exchange of information in text mode (chat), recording sessions, making screenshots. All this functions may serve to create a kind of presentations, tutorials. All of these undoubted advantages, new functions are unfortunately connected with a high price which can limit utilisation in education (schools, universities, etc.)

2. THE TYPICAL USE OF REMOTE CONTROL SOFTWARE

Typically this software is installed for giving the help from the distance. Many computer companies support their computer products via the Internet. A customer has to install a part of remote control software on his computer and then company assistant removes any problems very easily without the necessity of moving from the company place.

Also many administrators use this software for the remote administration of computer nets. The administrators can install suitable software on the distant computer in case of need.

The typical usage of this software is associated with business and education market. This program is ideal for people working in the terrain who have to transfer some computer data from or into their computers which are distantly

located. Such users do not need to have all information and files on them. In this way the data are safer.

A more interesting example refers to implementation of a new program in a big company which has for example several departments in distant cities. Typically several administrators have to go to the departments and install or implement new software. Now with using remote control software we can arrange teleconference for local administrators which shows how to implement new software. Another possibility is installation of the software via the Internet. One person can conduct training for all people working in the local departments.

Another way of using this software is related to typical education sphere. A teacher can share his computer desktop with student computers. When the student has a problem with solving any tasks the teacher can remotely show how to do it. The student can stay in the same room as the teacher or at home.

This article mainly presents the didactical aspect of using this type of software.

3. THE TYPICAL PROCEDURE OF INSTALLATION OF THE REMOTE CONTROL SOFTWARE

Typical remote control software packet consists of two parts: server and client. The first component is installed on the computer whose desktop is shared with other computers. The others have to have installed client version software. If we want to use computer as a client and a server we have to install both of these components (Figure 8, 9).

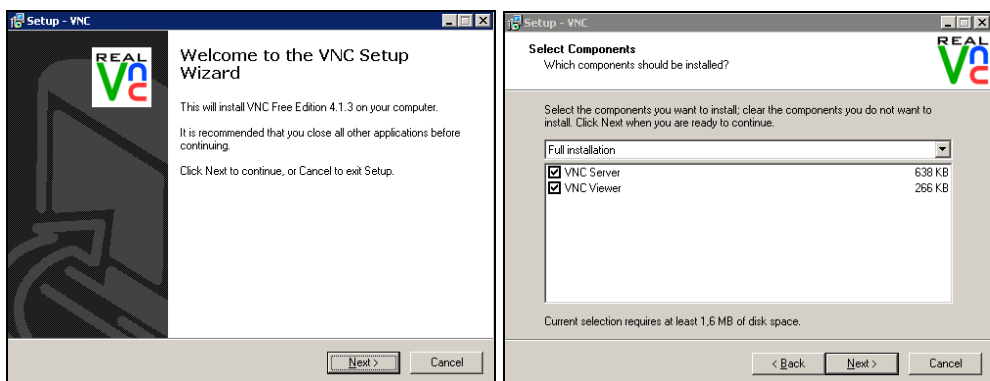


Figure 8. The example installation of the program RealVNC on the server a) the first window, b) window with selecting components for installation

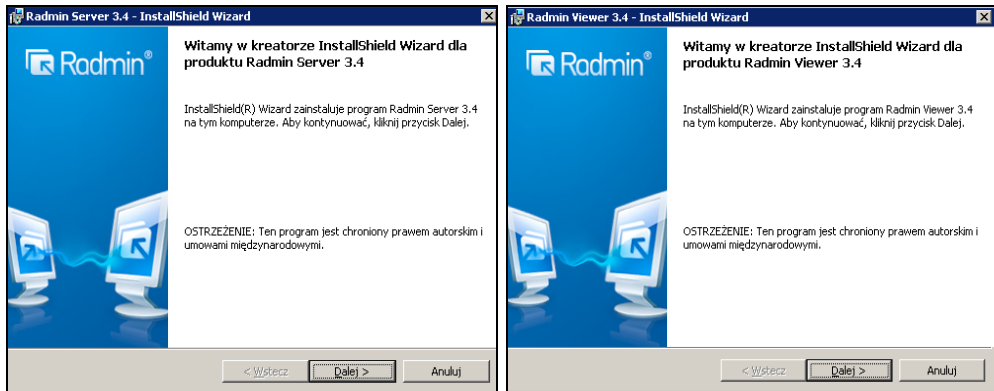


Figure 9. The example installation of the program Radmin a) Radmin Server b) Radmin Viewer

When the server version of remote control software is being installed we have to give a password (Figure 10). In some cases we have to give also a user name (Figure 11).

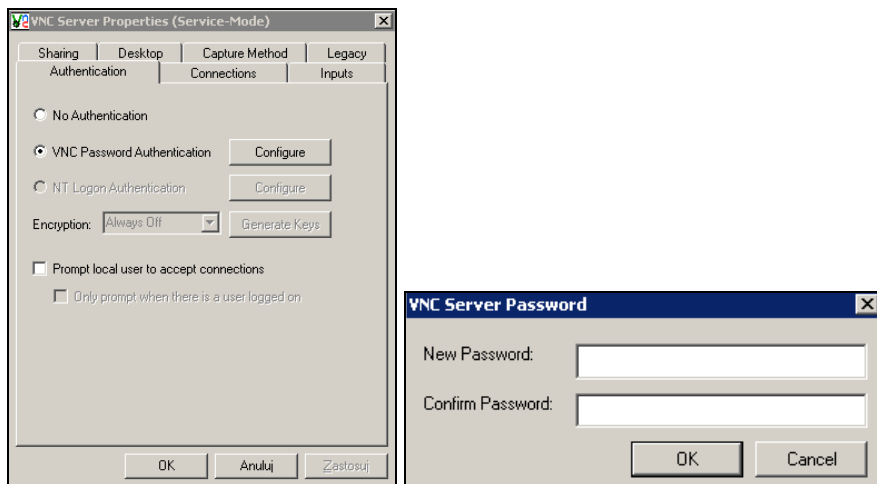


Figure 10. The example of configuration of password in RealVNC

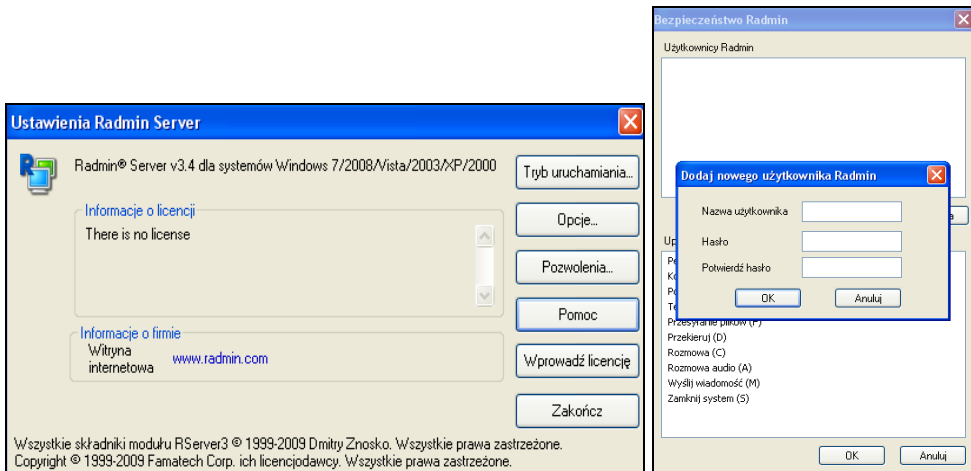


Figure 11. The example of configuration of password in Radmin

When the installation is finished we can configure other options. They depend on the possibility of the given software and its complexity (Figure 12). You can enable or disable the transfer of files, remove desktop wallpaper. You can decide if the whole desktop will be displayed or only its part. You can change default setting of the ports for the service of the remote control.

Sometimes you can switch on or off encryption of the connection.

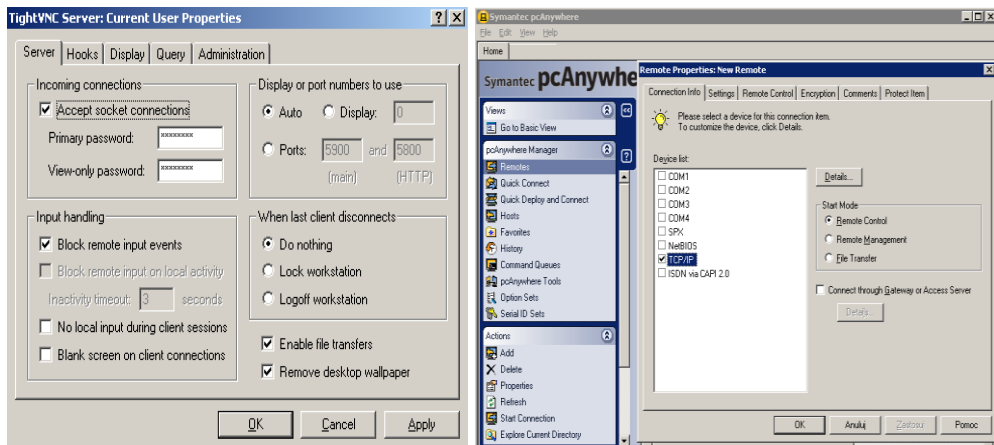


Figure 12. The example of configuration of other options in a) TightVNC, b) pcAnywhere

In some cases we do not have to install client program to connect with server. This option is very useful if we do not want to install software on a computer on which we are actually working and we do not have the administrator privileges. In this situation we can open the remote session using the Internet browser (Figure 13a). We have to write in the field of the address `http://`, and then address IP, colon and the number of the port 5800. The applet of Java will appear on the screen. We will see the special dialog window where we have to input a password to connect with the server. Sometimes we can choose the Options button to give other parameters of the connection. If we want to connect with pcAnywhere server we have to have special Java version of this software (Figure 13b).

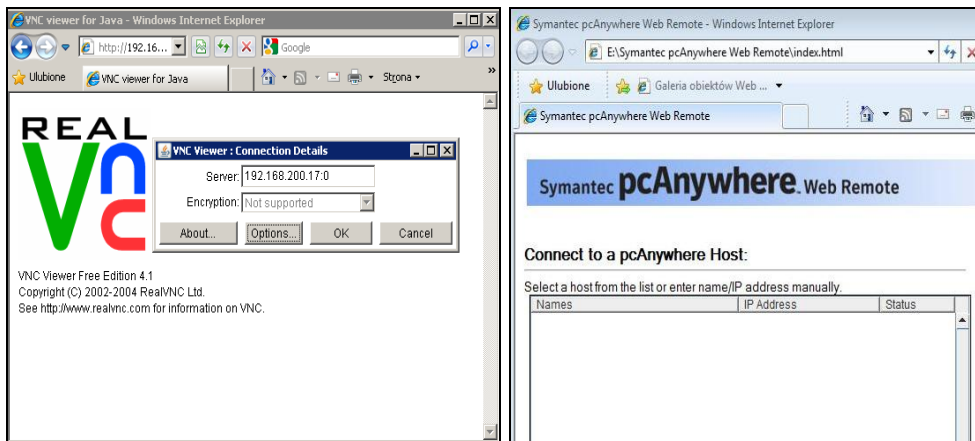


Figure 13. The Internet browser with opening the remote session with computer whose address IP is 192.168.200.17 in a) RealVNC, b) pcAnywhere

4. UTILIZATION OF THE REMOTE CONTROL SOFTWARE IN THE PROCESS OF THE EDUCATION

The remote control software is designed for management of computers at schools and training centres. All applications of this kind allow remote control of all computers which are situated one place in the classroom for example the teacher computer. After the installation of this software in the computer laboratory, the teacher can control the course of the lesson from his computer position. He can share his desktop with all students or different student group computers. He can support the student who needs help at any given moment of time. He can show how to solve the given task. It is a

comfortable way both for students and teachers. With this kind of software the teacher can control what programs or websites students visit.

The teacher and students can work in groups. They can together write computer programs or various procedures in a chosen programming language, build complex spreadsheets or data bases. Then they together start, test and improve the joint projects.

The remote control software can be used with success not only in the lessons of computer science, but also in different subjects, e.g. foreign languages. Other possibility of using this kind of software is when the school has only one copy of the didactic program which starts on one computer and can be made accessible for all students.

If a school does not possess multimedia projector the remote control software and computer monitor can replace it. In this case the teacher presentation can be shown on students computer without displaying via multimedia projector on a table.

To sum up these considerations we can say that the remote control software can fulfil many useful functions in school and particularly in the school laboratory. The main role of this kind of software is helping the students with their computer work and showing the actions executed by the teacher in the preview mode.

5. UTILIZATION OF THE REMOTE CONTROL SOFTWARE IN E-LEARNING

In the last years much attention has been concentrated on distant education technologies. The progress of these technologies is bound with the development of computer science and technology.

One of the most perspective directions of distant education technologies is making use of remote control technologies (Figure 14). On one hand, this technology is dangerous because of the possibility of taking control over our computer by an intruder. On the other hand, these technologies are an ideal solution in teaching computer subjects either traditionally or with the use of distant education technologies.

We can show a few possibilities of utilization of remote control software in e-learning. The main possibility of this software is that any student can observe the teacher's screen from their home or other place. In this case he can actively participate in practical lectures or exercises. The teacher can view a student's PC desktop, and provide feedback or assistance on what the

student is doing. The student can demonstrate their project to the teacher while staying at home.

If the remote control software enables transferring files (like TightVNC, Radmin, pcAnywhere) the student can exchange files with the teacher.

A few remote control programs possess extra functions like chat or video conferencing (Figure 15). These function are very useful in some cases if the teacher needs voice or text contact with their students to explain special subjects.

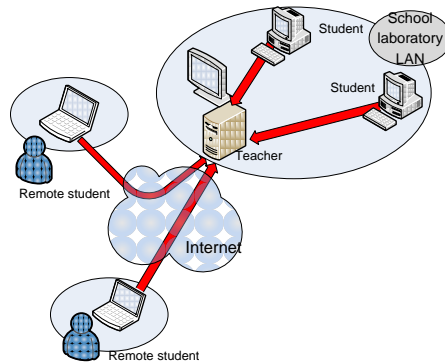


Figure 14. The uses of remote control software in e-learning

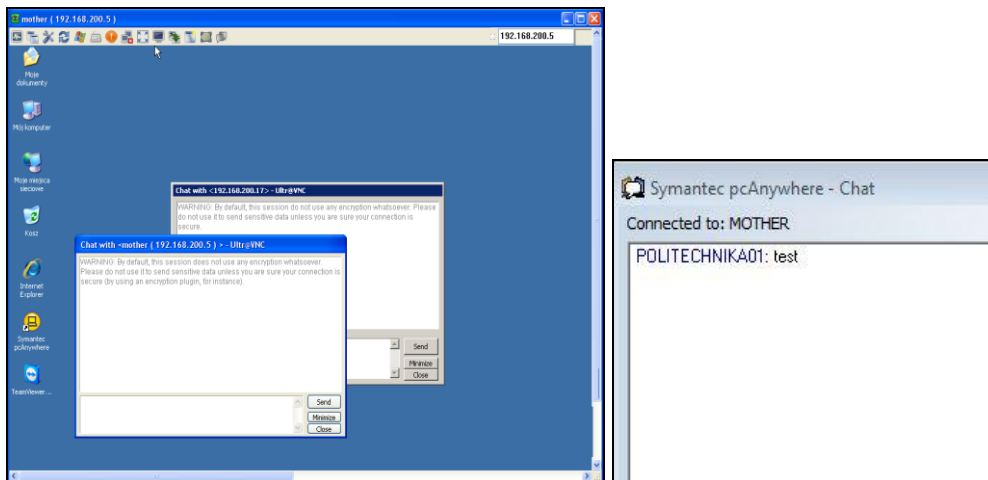


Figure 15. The example of chat connection in a) UltraVNC and b)pcAnywhere

CONCLUSION

Remote control software is a very useful software for business and education markets. Typically this application is connected with computer network administrators. When an administrator uses this kind of software he can install new software or reinstall old on computers which are distant located for example in computer labs, offices or home.

The article shows mainly the possibility of utilization of the remote control software in education. These programs can be used locally in the school laboratory or by students who have appropriate permissions in their houses. In the second case we have typical e-learning.

Some of the programs mentioned in the article have extra functions like transferring files, chatting or video connection. These possibilities are valuable in some cases of e-learning.

When we have to decide what software to use for e-learning we have to consider what facilities it has to have. When we want to choose the free software with maximum functions we can take UltraVNC or TeamViewer. In the group of inexpensive remote control software we can recommend Radmin which has all the functions we can imagine to connect with a remote computer.

A few of the described programs have mobile clients. This function is very useful for students who want to use palmtops or smartphones to connect with a teacher's server. In this case we have to be aware that typical screen resolution of PDA is 240x320 but PC screen resolution is 1024x768 pixels.

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SIMULATION MODELS USED IN DISTANCE EDUCATION

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Abstract: *This work deals with general problems of modeling and simulation of real devices and simulation of their activities on the computer. Developed simulation models are used in teaching both in presentation form of the study, especially, in the distance form. The practical part of the paper shows how to create a computer model of the tray rectification column. The created model allows to simulate experiments that would in real life was very demanding both time wise and financially. The distance form of education then created model can replace experimental work in the laboratory.*

Keywords: modelling, simulation, distance education.

INTRODUCTION

Distance forms of the education are mainly used in those cases where direct contact teaching can be without significant problems replaced by contactless teaching. Hence, it is primarily lecture. Certain complications arise when seminar is converting to the distance learning forms. In these cases, the teacher's role is irreplaceable. Deal with the situation lies mostly in the consultations carried out over computer networks.

But how to convert laboratory teaching to non-contact forms? We are located in the insoluble problem. The laboratory instruction, students should acquire manual dexterity, they should learn to work with real laboratory instruments, they should learn to plan, implement and evaluate the real experiments, etc. It is obvious that the education of students in laboratories cannot be completely replaced. However, it is possible to deal with the simulations of laboratory experiments on the computer. In any case, there is no equivalent, laboratory

instruction, but the possibility of a partial transfer of laboratory teaching in distance education. Students can safely introduce the theoretical foundations of the laboratory tasks. On a simulation model of a real laboratory task can then try some of the operations to be carried out in the laboratory. This may reduce the direct instruction in the laboratory only for the time necessary to own experimental measurements. Alternatively, the teaching can be realized only on the simulation models. In this case, it should be noted that students are deprived of contact with the real device, so in any case will not get the full picture of the implementation of the experimental measurements.

The teachers of the University of Hradec Kralove have long engaged in development of simulation models of real devices. It is not only the work of students in resolving their theses (Hyxová, 2005, Ort, 2005, Rosa, 2003), but also for research, whose results were published in professional journals (Hubálovský, 2010). In collaboration with the University of Pardubice was established computer model of the tray rectification column, which is used for distribution of a binary mixture of two liquids with different boiling point. The model allows to simulate experimental measurements of static and dynamic properties of the column. Based on the results of simulations the single-and two-dimensional control column can be designed and simulated.

1. PILOT BUNK RECTIFICATION COLUMN

Experimental device that is simulated in this paper is a pilot seven-storey fractionating column placed in a laboratory at the University of Pardubice. Serves the educational and scientific experiments especially with binary mixtures of methanol - water. General view of a column is on the Figure 1.

Figure 2 is a chart showing the experimental pilot plant. Fractionating column (1) is stainless with nominal diameter = 150 mm, with 7 floors. On each floor there is a needle (Q1) to (Q7) for sampling. In the cooker and in the all floors are installed platinum thermometer PT100 (TR0) to (TR7) in the "glass beads". Signals from these thermometers are converters through resistance / voltage via a computer. In addition, usually one of the measured signals is input to the recorder, which is used to record the orientation of the measurement, see Figure 3.

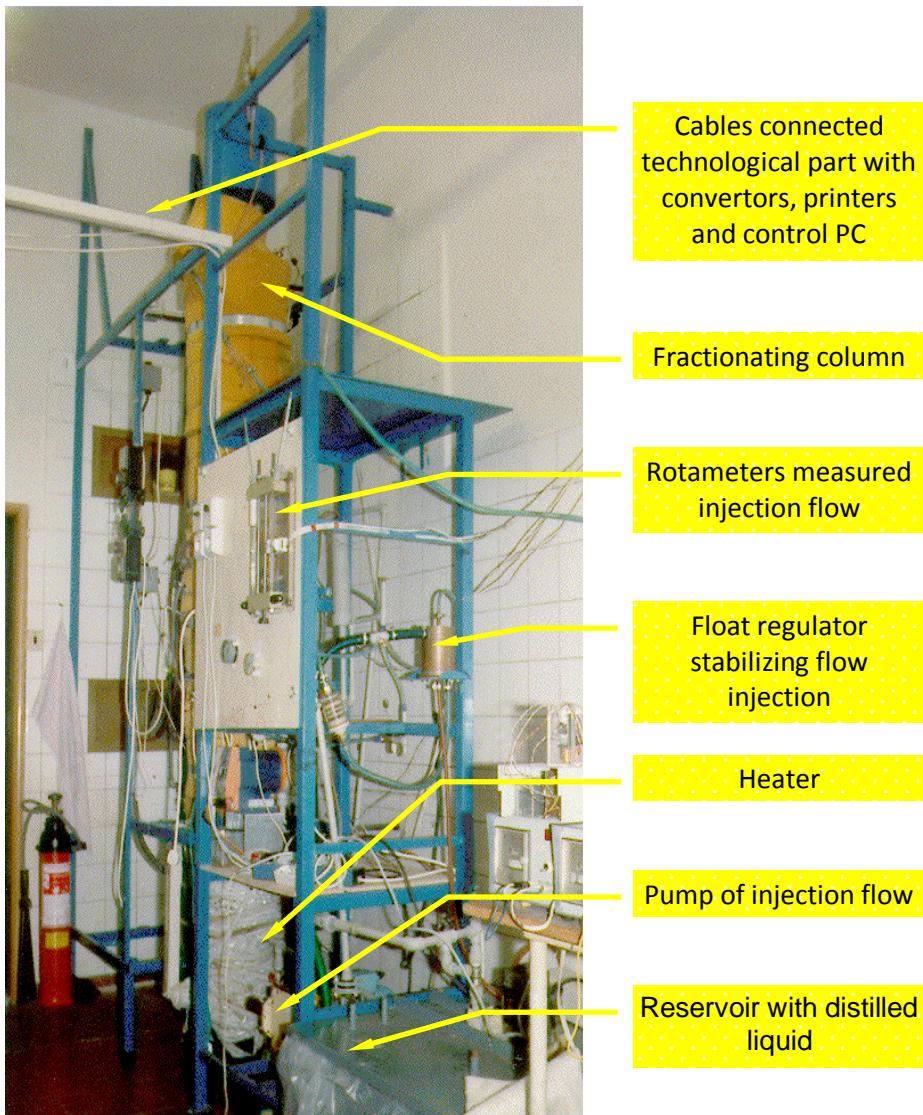


Figure 1. Pilot bunk fractionating column

Time constants transmissions installed thermometers and transmitters are negligible due to the time constants measured transfers form rectification column. This is an important assumption of the proper measurement of the dynamic characteristics.

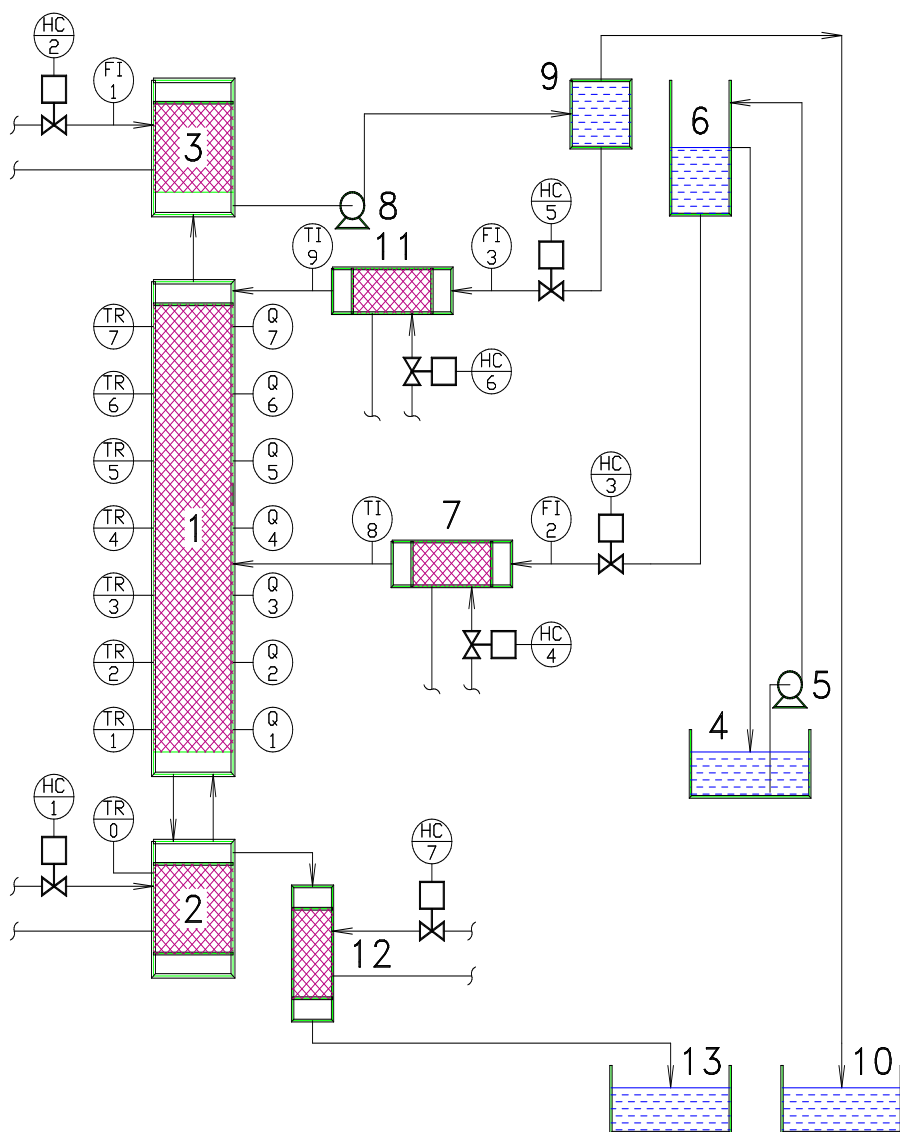


Figure 2. Diagram of the pilot plant

Cooker (2) is stainless steel, heated by the heating coils, whose power is continuously adjustable from $0 \div 12$ kW (HC1).

Capacitor (3) is made of steel with copper cooling coils, cooling water flow rate is manually configured at the valve (HC2) and can be controlled with rotameters (FI1).

Injected content of the reservoir (4) is pumped by pump (5) bellows with the piston in the cache container (6). Excess returns overflow back into the hopper (4). Injection flow is regulated by a valve (HC3) by rotameters (FI2). The injected flow is pre-heated (7) to a temperature close to boiling point and fed to the third floor of a rectifying column. Power input heating coils in the heater is set by thyristor regulator (HC4). Injection temperature is measured by a mercury thermometer (TI8).

The upper product is liquefied in the condenser (3), pump (8) is pumped into the splitter (9), which is divided into reflux and distillate, which is conveyed to the overflow storage tank (10). Quantity of reverse flow is regulated by valve (HC5) based on rotameters (FI3). The flow heater (11) is heated to reflux boiling point and fed to the 7th floor rectification column. Power input heating coils in the heater is configured by thyristor regulator (HC6). Temperature of the reverse flow is measured by mercury thermometer (TI9).

Bottom product is evacuated from an overflow cooker (2) through the condenser (12) into a storage container (13). Cooling water flow rate is manually configured at the valve (HC7).

Flow rates of distillate and the distillation residue are determined by weighing the balance calculations, spray flow and reverse flow are measured by rotameters. Concentration of samples is determined by chromatography.

2. MATHEMATICAL MODEL OF MULTI-STOREY RECTIFICATION COLUMN

Mathematical and physical analyze of the rectification column can be obtained from various complex mathematical models. Design of each model depends primarily on its subsequent use. Given that the operation of a rectifying column is usually restricted to work in close vicinity operating point, it is not necessary that the mathematical models describes exactly all the nonlinearities that occur within the working range in modeled the column. Therefore, the design model, always start from a number of simplifying assumptions and the basis of the material and then heat or only the material balance. Often these simplified models in the vicinity of operating point are linearized.

Modeled system is schematically illustrated in Figure 3, where the meaning of symbols used is as follows:

F	injection flow	$[\text{mol min}^{-1}]$
R	flow of reverse flow	$[\text{mol min}^{-1}]$
D	distillate flow	$[\text{mol min}^{-1}]$
V	vapor flow through the column	$[\text{mol min}^{-1}]$
W	flow distillation residue	$[\text{mol min}^{-1}]$
Q	amount of heat is introduced into cooker	$[\text{J}]$
x_D	concentration of the distillate residue	$[\text{mol. zl.}]$
x_F	concentration of injection flow	$[\text{mol. zl.}]$
x_i	concentration of the liquid on the i^{th} floor	$[\text{mol. zl.}]$
x_W	concentration distillate residue	$[\text{mol. zl.}]$
y_i	concentration of the vapor on the i^{th} floor	$[\text{mol. zl.}]$
m	injection floor	$[1]$
n	the highest floor of the column	$[1]$

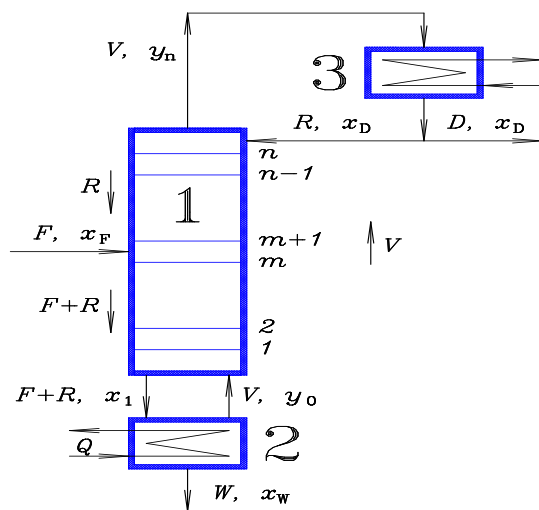


Figure 3. Chart of the rectification column (1) the digesters (2) and condenser (3).

Static and subsequently the dynamic mathematical model of the tray rectification column was derived for a number of simplifying assumptions (odkaz na habilitaci).

2.1 Static model of the column

Bunk rectification column in steady state can be described as a system of equations, which are based on material balance more volatile components:

heater:

$$(r_2 - 1)x_w = r_2 x_1 - y_0$$

floors under injection floor:

$$r_2 x_i = y_{i-1} + r_2 x_{i+1} - y_i$$

injection floor:

$$r_2 x_m = y_{m-1} + r_1 x_{m+1} + (r_2 - r_1)x_F - y_m$$

floors above injection floor:

$$r_1 x_j = y_{j-1} + r_1 x_{j+1} - y_j$$

condenser:

$$x_D = y_n,$$

where directive r_1 (resp. r_2) of working line of enrichment (resp. poor) part of the column can be calculated from the relation

$$r_1 = \frac{R}{V},$$

$$r_2 = \frac{F + R}{V}.$$

During construction of the nonlinear mathematical model of the column should be respected non-linear concentration dependence of y_i steam phase on the concentrations x_i liquid phase to the floor. To describe the dependence of y_i on x_i it is appropriate to describe the floors efficiency and approximated dependence of the equilibrium concentrations of y_r on x_r steady state equation liquid - steam distilled for the mixture (Jehlička, 1997).

2.2 Dynamic model of the column

The dynamic model of double-rectification column can be described by a set of differential equations, which are based on material balance of more volatile components in an intermediate state. It is therefore a complement of the static model of the members expressing momentum going.

heater>

$$(r_2 - 1)x_w + \tau_0 \frac{dx_w}{dt} = r_2 x_1 - y_0$$

floors under injection floor:

$$r_2 x_i + \tau_i \frac{dx_i}{dt} = y_{i-1} + r_2 x_{i+1} - y_i$$

injection floor:

$$r_2 x_m + \tau_m \frac{dx_m}{dt} = y_{m-1} + r_1 x_{m+1} + (r_2 - r_1)x_F - y_m$$

floors above injection floor:

$$r_1 x_j + \tau_j \frac{dx_j}{dt} = y_{j-1} + r_1 x_{j+1} - y_j$$

condenser:

$$x_D + \tau_{n+1} \frac{dx_D}{dt} = y_n$$

where t is time [min] and τ_i are time constant [min], which can be calculated from the equation:

$$\tau_i = \frac{G_i M_b}{V[(M_a - M_b)x_i + M_b]^2},$$

where

G_i	trap mass of liquid in the i-th floor	[g]
M_a	molecular weight of the substance a	[g mol ⁻¹]
M_b	molecular weight of the substance b	[g mol ⁻¹].

Nonlinear dynamic model of double-rectification column is composed of systems of linear differential equations and other nonlinear equations. The detailed derivation of the model is shown at work (Jehlička, 1997).

3. SIMULATION MODEL OF MULTI-STOREY RECTIFICATION COLUMN

Based on the derived static and dynamic model of seven pilot tray rectification column the simulation program in Delphi was created that allows to simulate experimental measurements on tray rectification column in the division of the binary mixture of methanol-water. Control software is very intuitive, and through various dialog boxes.

The program was designed to simulate actual experimental device, but allows you to simulate the behavior of columns with different numbers of floors, with other locations of injection floors. It can also change the size of the trap liquid in the cooker, the floors and columns capacitor. It can also change the efficiency levels, see Figure 4.

The dialog box is titled "Nastavení parametrů rektifikační kolony". It contains the following parameters and their values:

Parameter	Value
Počet pater celkem	7
nástříkové patro	3
Účinnost v obohacovací části	0,63
Účinnost v ochuzovací části	0,57
Hmotnostní zádrž v kondenzátoru	2200
na patře	340
ve vařáku	13100
Interval výpočtu diferenciálních rovnic	10
Zpomalení simulačního času	10
Úroveň šumu v průtoku nástříku	0,1

At the bottom, there are three buttons: "OK" (with a green checkmark icon), "Storno" (with a red X icon), and "Nápověda" (with a blue question mark icon).

Figure 4. Setting of the parameters of a rectifying column.

During the simulation of steady-state columns can be defined concentration value x_F , the injector flow rate F , the flow reverse flow R and vapor flow in the column V , see Figure 5.

Statický výpočet rektifikační kolony

Vstupní data

xF - koncentrace nástříku 0,2500 mol. zl.

F - průtok nástříku 19,30 mol/min

R - průtok zpětného toku 6,50 mol/min

V - průtok par kolonou 11,60 mol/min

Výpočet

OK Storno Nápověda

Figure 5. Setting the values of input parameters for the calculation of static rectification column.

Clicking to command button *Výpočet* the calculated values of concentrations x_i of all floors of the columns displays, even in distillate x_D and in distillation residue x_W . Additionally, the distillate flow rate D and the distillation residue W are displayed, see Figure 6.

Statický výpočet rektifikační kolony

Vstupní data

xF - koncentrace nástříku 0,2500 mol. zl.

F - průtok nástříku 19,30 mol/min

R - průtok zpětného toku 6,50 mol/min

V - průtok par kolonou 11,60 mol/min

Výstupní údaje

Destilát xD = 0,8467 mol. zl.
D = 5,10 mol/min

Dest. zbytek xW = 0,0357 mol. zl.
W = 14,20 mol/min

Koncentrace na patrech

x(7) = 0,7355 mol. zl.
x(6) = 0,6025 mol. zl.
x(5) = 0,4514 mol. zl.
x(4) = 0,3057 mol. zl.
x(3) = 0,2267 mol. zl.
x(2) = 0,1751 mol. zl.
x(1) = 0,1144 mol. zl.

OK Storno Nápověda

Figure 6. The results of the calculation of static rectification column.

The simulation model allows the measurement of static characteristics of the system, i.e. changes in the concentrations and flow rates depending on the

change of values of some input values (concentration of feed, flow injection, reverse flow or flow of vapor by column). Figure 7 shows a dialog box that allows you to specify input values, i.e., lower limit, upper limit and an increase in the measurements of static characteristics, depending on the concentration of the injection flow.

The dialog box is titled "Statická charakteristika - závislost na xF". It contains the following elements:

- A group box labeled "Koncentrace nástřiku xF" containing three input fields:
 - "dolní mez" (lower limit) with value 0,2000 mol. zl.
 - "horní mez" (upper limit) with value 0,3000 mol. zl.
 - "přírůstek" (increase) with value 0,005 mol. zl.
- A "Výpočet" (Calculation) button with a calculator icon.
- Three input fields for flow rates:
 - "F - průtok nástřiku" (Injection flow) with value 19,30 mol/min
 - "R - průtok zpětného toku" (Reverse flow) with value 6,50 mol/min
 - "V - průtok par kolonou" (Vapor flow) with value 11,60 mol/min
- Three buttons at the bottom: "OK" (with a green checkmark icon), "Storno" (with a red X icon), and "Nápověda" (with a question mark icon).

Figure 7. Dialog box for the simulation of static characteristics.

The measurements of dynamic characteristics of the simulated column can be shown and simulated on the dialog box shown in figure 8. Here you can specify the starting and ending values of the four input values (concentration of feed, flow injection, reverse flow or flow of vapor column). Collected data can be saved to disk and then use for drawing the graphs of transient characteristics.

Přechodové charakteristiky

Parametry charakteristiky | Ukládání na disk

xF - koncentrace nástříku	výchozí	0,2500	koncová	0,2500	mol. zl.
F - průtok nástříku	výchozí	19,30	koncový	19,30	mol/min
R - průtok zpětného toku	výchozí	6,50	koncový	6,50	mol/min
V - průtok par kolonou	výchozí	11,60	koncový	11,60	mol/min

OK Storno Nápověda

Figure 8. Dialog box to set the values of input variables in the simulation of transient characteristics.

The process of simulation measurements of transient characteristics can be shown in the display window on Figure 9. Clicking to the Start button the simulated experiment will start. It can be stopped at any time using the Stop button then resume by the Start button again. The window is displayed not only simulated time, but also all the important values of flow and concentration. Simulated time passes much faster than real time, so the simulated experiments takes considerably less time than experiments on real equipment

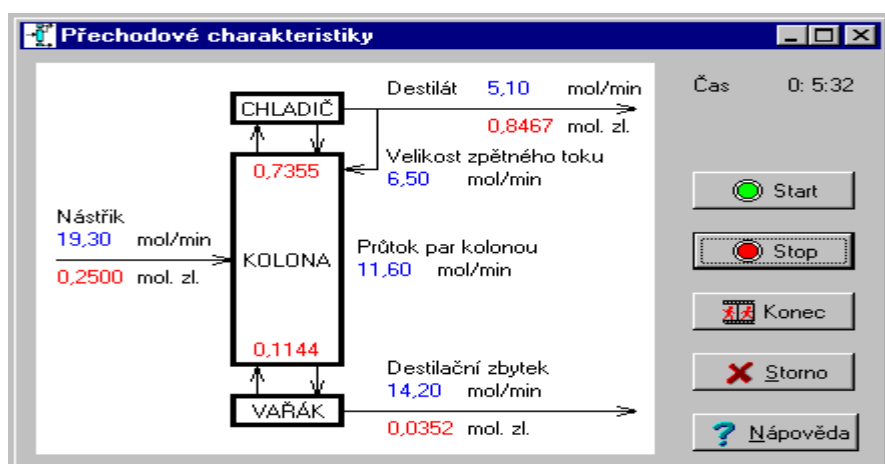


Figure 9. Dialog box for the simulation of transient characteristics.

The simulation program also allows you to simulate the experimental identification of the column as a regulated system. On Figure 10 is shown an example of manual control when using the mouse and the arrows in the dialog box it can be changed the flow, the reverse flow and vapor flow through the column. The concentration of distillates and distillation residue can be manually regulated.

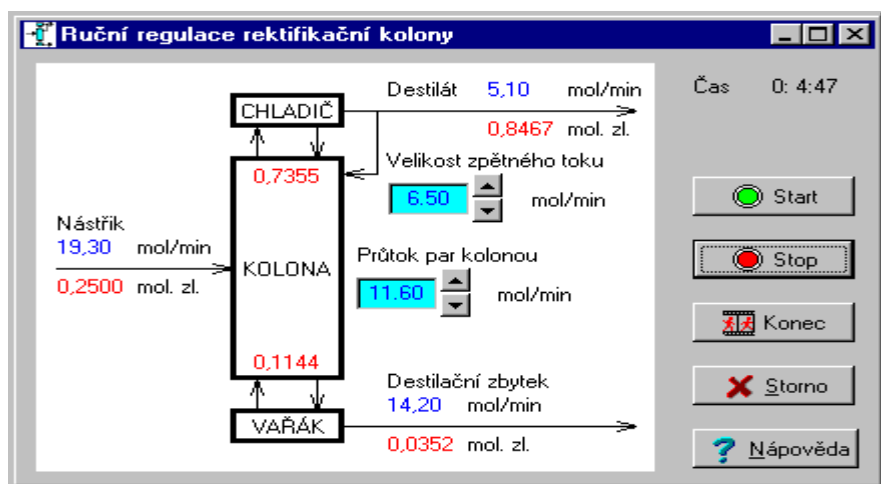


Figure 10. Dialog box for the simulation of manual control column.

Figure 11 shows the sample auto-dimensional control of the column, again by using of the mouse and the arrows in the dialog box the desired concentrations of liquid on the first floor and the last column can be entered.

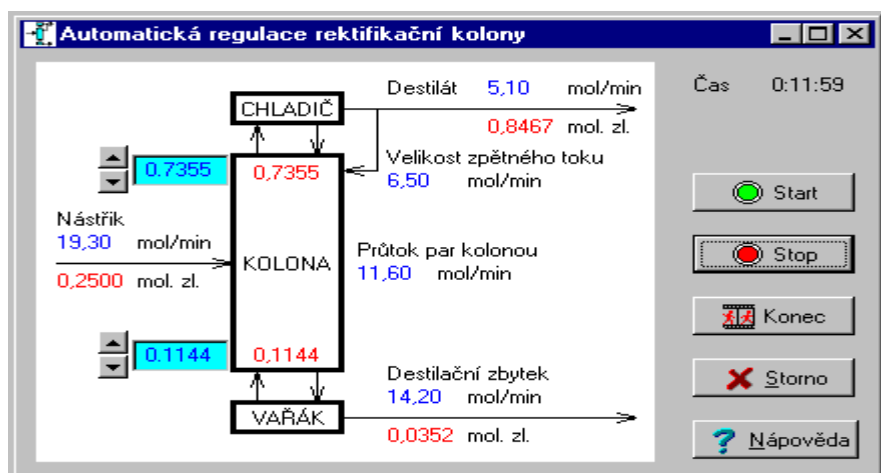


Figure 11. Dialog box for the simulation of automatic control column.

CONCLUSION

Created simulation model enables students to remotely familiar with the problems of management of multi-storey rectification column, without having to make realistic long and expensive experiments. Specifically, such a step response measurement on a real pilot plant takes 3-4 hours. In the computer simulation is only a few seconds. The importance of simulation models, especially for the needs of distance learning is obvious.

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