

TOWARDS VIRTUAL UNIVERSITIES

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Abstract:

The article is a brief summary of the authors' experience with using e-learning technology in courses held by the universities in the Slovak republic and abroad. Both of them teach courses at Slovak universities and on universities abroad. Their students come from different countries, different cultures, and different learning groups. How is e-learning technology practical, comfortable or hazardous for working in such different conditions? Working with different LMS, virtual rooms and authoring tools brought to us a lot of experience. It shows to us that technical progress is remarkably fast and the technology is much more reliable than before. At the same time, there persists problems on the users' (both teachers' and students') side. The course content and context as well as teachers' activity are still crucial and remain the decisive factors of success.

Keywords: e-learning, virtual class, online course, LMS, virtual university

1. INTRODUCTION

Computer technology is now hitting perhaps all areas of our lives. Developments in education and learning in recent years progress increasingly towards a fully interactive online environment allowing introducing 100% online learning. Current applications allow direct communication in real-time transmission and recording of various forms of educational activities. We see a shift in methodology. While initial approaches seen in the use of Internet focused mainly on rapid spread and replication of materials existing in paper form, the situation today has changed quite significantly. Technological level and reliability of online applications in education opened unprecedented opportunities for educators and students.

The authors have experience from the countries with very high intensity and quality of online education (UK and USA), but also from Slovakia, which occupies the past position of the EU ranking as the Eurostat statistical evaluation [1] implies.

Table 1 shows the percentage of people who responded positively to the question whether they visited online course at least once in the past month. Please note that we shortened the table, so that it does not show all European countries, only the best European average and worst.

Country \ Year	2007	2008	2009	2010	2011
Finland	13	14	13	14	14
Island	9	13	10	9	10
Lithuania	5	4	8	8	10
Spain	5	6	7	8	9
Latvia	6	8	7	5	5
Estonia	7	5	6	6	6
United Kingdom	5	5	7	7	6
European Union (average of 28 countries)	3	3	4	4	5
Czech Republic	1	2	1	1	3
Bulgaria	1	1	1	2	2
Croatia	1	1	2	1	2
Poland	:	2	1	2	2
Austria	1	:	1	2	3
Cyprus	1	1	1	1	2
Slovakia	1	1	1	1	1

The table shows that while in other underdeveloped countries gradually comes to a slight improvement similar developments was not recorded in Slovakia. Because we recognize the ways and forms of online learning in countries with developed e-learning (the USA is the world leader), the article deals with the causes of this condition and proposes solutions.

2. E-LEARNING TOOLS AND TEACHING METHODS

There are both free and paid e-learning systems with a similar repertoire. The most of them provide more sophisticated educational tools than 'traditional' on-site teaching. They are known as "learning management systems" (LMS) and are able to form the environment capable of replacing the face - to-face school class. Nevertheless, the online environment has different specifications. Therefore, its appropriate application requires different educational methods and procedures respecting its specifics.

However, there persists a common misunderstanding. E-learning is usually referred to as the new *technology* of teaching. As our experience from the lagging country shows, much less frequently it is

considered as a new *philosophy* and *methodology* of teaching. When one talks about online teaching and its methods, in the first place he/she needs to define its place in the system of teaching and the structure of known approaches to teaching. To gain this aim, the authors seek the ways of utilizing resources in particular with regard to the range of courses we execute in our university courses. The overall framework for identifying claims, strengths and weaknesses will help us to design models of learning.

So what is the place of online teaching and its weaponry in the contemporary models of learning?

3. MODELS OF TEACHING

In the lagging countries, that most educators are "too old" - measuring not their age but not their conservatism. Online learning is a new approach with a lack of experience or information about how it is received by students. Their lack of experience and the absence of readiness to search for positive examples lead them to one of two extremes:

- The teachers may become creative content designers. The novelty of the environment can act as a challenge and evoke innovative inspiration. Effective use of rapid communication based on dialogue with the students, along with the appropriate application of audio and video interaction may be an important contribution to quality education and accelerate the learning of the course content.
- The teachers may become stupid content designers. Admittedly, the direct transmission of traditional training methods into the Internet environment is a bad move. What works in a traditional classroom will likely fail on the Net. Online teachers should be more "moderators" than "lecturers" and should learn from the experiences of their predecessors.

Table 2: Models of teaching

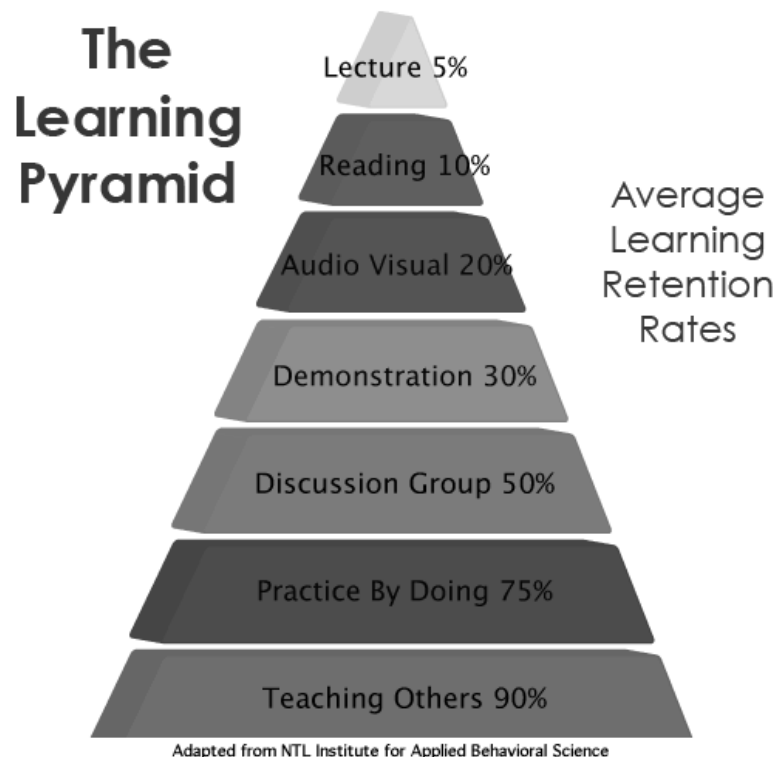
Model	The basic premise	Objectives	The main assumptions	Implications for instruction
Objectivism	Learning is uncritical absorption of objective knowledge	Transfer of knowledge from the instructor to students; Exacerbated knowledge	The instructor has all the necessary knowledge	The instructor controls the pace and material; The instructor provides incentives
Constructivism	Learning is an individual process of constructing knowledge.	Forming an abstract concept for the presentation of reality. Meaning is coming through information and events.	Individuals learn better when they discover things by themselves; when they control their pace of learning.	Active learning focused on the student; The instructor pays more attention to support than to management.
Collaborativism	Learning occurs through shared knowledge of more than one student.	Encouraging group skills: communication, listening, participation Promotes socialization.	Involvement is critical for learning, requires students with previous knowledge.	Focusing on communication. The training is based on questions and leads to discussion.
Cognitive information processing	Learning is the processing and transfer of new knowledge into long-term memory.	It develops cognitive processing abilities; improves recall by and hold knowledge.	Bounded selective attention. Prior knowledge affects the level of necessary instructions.	Properties of the stimulus can affect attention. Instructor needs feedback from the student's.

Table 2 shows basic models of education. The above success or failure of the teacher depends on his/her ability to take his preferred model and benefits from the opportunities offered by on-line environment.

No model can be excluded. For example, MOOC's are based on objectivism. For long, the "pure lecturing" has been considered as the least appropriate of all the above models. Now we see that properly executed lectures are visited by thousands of students.

On the other hand, the most recommended approach for creating and improving e-learning using LMS is methodologically based on constructivist learning principles because the prerequisites for active learning are embedded directly in the system. It depends only on the teacher and his strategies how to use these options. Learning management system (LMS), as well as a host of other applications used for teaching provides the prerequisites for the learning process as conducted on the basis of further learning model - collaborativism. It allows and develops quantity of interactions, provides an opportunity for individual activities and group cooperation. How can the use of these methods project into the efficiency of the teaching process is shown in Chart 1 - Pyramid of learning.

Figure 1: Pyramid of Learning: The average proportion of content remembered



4. TRADITIONAL TRAINING VERSUS ONLINE TRAINING

The fact that the variability of teaching methods affects student's motivation and overall effectiveness of teaching has been known for some time. Based on our experience we can say that the online training also offers the variation in an unprecedented way. While applied in traditional classrooms, some of successful approaches are often time consuming and expensive. Online training significantly reduces these drawbacks. On the other hand, it has to pass a series of tests by the institutions and individuals. Basic questions are whether the online training is able to demonstrate results comparable to conventional instruction. Neumann and Shachar observed the development during twenty-year period. Their conclusions are encouraging:

"We should not be surprised if the difference in educational attainment between online and traditional learning will only intensify in the next decade. The findings of the study reaffirmed the initial results and extended them for a period of twenty years. It is evident that the experimental probability of achieving better results is greater in the online environment than in a face-to-face learning. This probability

increases steadily over time. The future will require different treatment of online teaching from policy makers and regulatory authorities - on the one hand, and future research on distance learning by academic, asynchronous / synchronous / combined methods, etc. - on the other side. "(Neumann, Shachar, 2010, p. 327).

The results of more than 100 comparative studies were analysed by the U.S. Department of Education, Office of Planning, Evaluation, and Policy Development. Extensive exploration of the issue sought to answer four research questions (U.S. Department of Education, p. xi):

- 1 What is the effectiveness of online learning compared to face-to-face instruction?
- 2 Does the face-to face learning improve and supplement online instructions?
- 3 What procedures are associated with a higher efficiency of online learning?
- 4 What conditions influence the effectiveness of online learning?

Students working in online conditions have on average slightly better performance than those who are learning the same material traditional face to face instruction. Academic performance of students participating in online learning exceeded the performance of students studying in the traditional face-to-face environment in the average range of +20 in favor of online learning. The average difference between online and face-to-face learning is statistically significant at the $p < 0.001$ within 50 studied cases (page xiv).

The effectiveness of online learning solutions was proven in a wide variety of content and types of studies. Online teaching has proved to be a good choice for both categories of students in a significant number of academic and professional studies, first, bachelors (mean effect of +0.30, $p < 0.001$), and master students together with professionals (+0.10, $p < 0.05$) – page xv.

Therefore, based on the presented findings and researches of online programs offered by universities abroad, we can say that online education is gaining a stronger position in the system of higher education in both number of students and their learning outcomes.

5. BASIS OF ONLINE TEACHING

Even with respect to the previously mentioned models of online learning the course content assumes thorough preparation in clearly defined time frame. In the online learning environment, student motivation is an alpha and omega of the success of the teaching process. Content and context of teaching significantly affect student motivation. Making and design of online course is a process that could be divided into several parts.

5.1. Course concept and syllabus

The syllabus includes assumptions, objectives and expected results in relation to the target group. Goals must match multiple criteria. One of the most important objectives considered is measurability of learning outcomes. The objectives as identified by EWAOP must be specified at following levels:

- The level of the learning (general orientation, knowledge of theories and models),
- The level of skills acquisition (diagnostic skills, skills intervention),
- The level of acquisition of competencies for professional activities (professional skills),
- The level of acquisition of competencies for Scientific Research (EWAOP, 2007, p 6)

5.2. Creating the structure of the course

In creating the course structure, the authors have successfully exploited mental maps. They visualize where we are, where we are going and what we need to achieve our goals. They allow decomposing the teaching process and building links between the portions of learning content. There are many mental mapping applications such as Freemind, MindMeister, Brain, MindNode, XMind. The significant increase in the number demonstrates their wide applications in planning processes and problem solving. Mental maps offer clear guidance for both teachers and students. At present, there can also be found specialized applications aimed squarely at creating mental maps for on-line learning (Compendium LD - Learning Design).

An important element in the development of online courses is instructional equivalence. Systems of accreditation of university courses based on the classical teaching prescribe the scope and methods of teaching. Instructional equivalents serve to assess the extent and complexity of online rate tables. They allow the comparison of the content and methods of the online course with courses taught in the traditional way.

5.3. Activities and their evaluation

Evaluation of the course uses a variety of tools. Learning management system enables continuous monitoring of learners activities. Part of the final assessment is an analysis of access to course materials, activity in discussions, group work on projects and the like. The rating also uses other tools like sections.

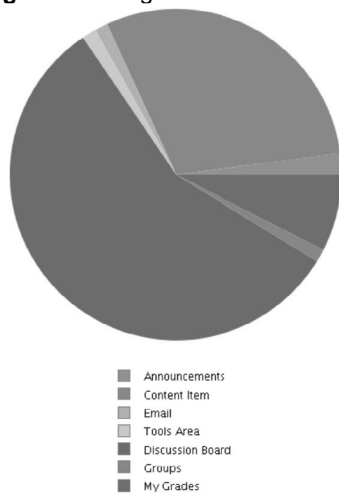
Headings or sections are a mechanism that defines the advanced benchmarks. Each criterion consists of various measuring levels of a particular numerical value (Fikar, 2013).

Section is a scoring tool that describes the criteria for certain parts of the work which has some value and articulates gradations of quality for each criterion, from excellent to inadequate.

6. OVERALL RATING OF THE COURSE

There are many activities the course consists of. The course statistics allow the teacher to see them from a longer perspective and take measures towards their change. Figure 2 shows an example.

Figure 2: Categories of student activities



As the communication between the teacher and students in the discussion board is assumed the principal benefit of virtual classrooms, its prevalence is a positive fact. Also, the students spend a lot of their time by visiting the course content. Thus, the overall evaluation of the classroom can be positive. However, the LMS allow even more details inspections. The educator can watch the number of minutes spent by each individual student. Figure 3 shows an (anonymized) example. As one can see, the student activity does not offer a regular pattern and his/her activities vary substantially. The teacher should remind him/her to stabilize this/her presence.

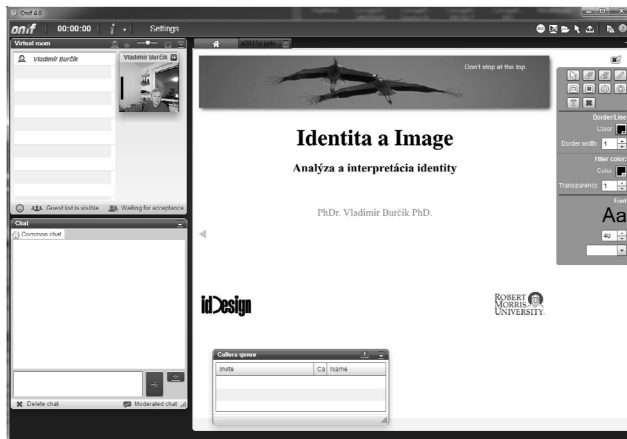
8. WORKING WITH A VIRTUAL CLASSROOM

Online learning takes place in synchronous or asynchronous mode. In synchronous mode we use teaching in real time. It uses applications integrated into the management of teaching, but it is also possible to use specialized applications. The best known include Wimba, Blackboard Connect (Blackboard LMS), Big Blue Button (Moodle). A very powerful systems include WiZiQ with sophisticated transmission technology that gives access to virtual classrooms from the tablet. Czech product ONIF 4.0 uses the online web browser for workshops and requires no specialized installation of software.

Teaching in a virtual room is controlled by the teacher assisted by virtual whiteboard and presentation materials, including audio and video recordings. Feedback is performed by a webcam, microphone, text chat as well as direct entry by participants through a virtual whiteboard and uploaded materials of various kinds.

Virtual Classroom provides a wide range of methods and teaching resources. Tool for teacher applications are enabling the modeling of the entire course of instruction such as. Elluminate Plan. that ensures continuity and momentum during the entire course. System records all the activities on material students can study for students to go back and repeat the most important passages.

Figure 4: Virtual Classroom ONIF



9. MOBILE LEARNING - MICRO-LEARNING (MICROLEARNING).

In our practice we use the particular type of learning using mobile devices (smartphones, tablets), but is also open to the desktop PC. We call it microlearning, and uses KnowledgePulse software. Teaching is led through teaching cards with specific content. Student controls the pace of the course itself and works with educational content at regular intervals. Server sends student questions and information pertaining to the subjects studied. The number of repetitions depends on the chosen teaching strategies. The student also assesses the instrumental value of teaching cards to the overall learning process. Depending on the assignment, students can also add their own teaching cards. Experience to date as well as feedback from the students point to very favorable acceptance of this method.

Here are a few observations from the students of the third year of the Bachelor degree Psychology:

- interesting and innovative way of verifying knowledge,
- positive is that we can find answers, thus we were really forced to study materials that we would be in other circumstances too lazy,
- very positive is also plenty of time given to fill all the questions.

10. CONCLUSIONS

Online learning paradigm.

Online teaching is not new technology, it is a new philosophy. Teacher becomes instructional designer.

Teacher has the opportunity to be highly creative content designer.
Content is still critical but context is the facilitator of the content.
In teaching history teacher never had such a wide variety of possibilities to create course content.

If we return to the overview of models of teaching, both implicitly and explicitly, we can choose those that adequately dominate online learning, i.e. constructivism and collaborativism. The learning curve gets a new dimension.

"Jonassen (1994, p 35). Derived eight principles inherent in constructivism. These are:

- 1 provides multiple representations of reality;
- 2 represents real complexity of the natural world;
- 3 focuses on the construction of knowledge, not its reproduction;
- 4 presents authentic tasks - contextualizes instructions more than abstracts;
- 5 provides a real world learning environment based on actual cases rather than predetermined instructional sequences;
- 6 strengthens the practical reflection;
- 7 allows content and contextually dependent construction of knowledge, and
- 8 supports the collaborative construction of knowledge through joint dialogue. "(Jonassen, 1994, p 35).

Online training so redefines the role of teachers, the requirements for their skills and qualifications and puts them into new and sometimes unusual roles:

Teachers are designers & information re-designers of course content

Teachers are knowledge managers

Teachers are designers of learning context

Teachers are???

Experience has shown many benefits and advantages of online learning. Although some subjects, which could be effectively taught only by training online, the most optimal model shows combined training. Combined use of the advantages of both classical as well as technology-supported learning allows achieve synergy.

Mission of the university is not only to educate, but also to develop personality, values and relationships. This would be limited process without direct contact . Talking about the learning process, training, depending on the subject, might become highly virtual and thus allow more time to develop a personality, values, relationships through direct contact.

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