Pedagogical Faculty

Information and Communication Technology in Education

Proceedings

4th-6th September 2017

Ostrava

Czech Republic

Edited by: Kateřina Kostolányová

ISSN 2464-4919 (online)

ISSN 2570-7019 (CD-ROM)

Programme Committee

Kateřina Kostolányová, University of Ostrava, Czech Republic - *Chairperson*
Romana Franková, University of Ostrava, Czech Republic - *Secretary*
Mario Barajas, University of Barecelona, Spain
Philip Barker, University of Teesside, United Kingdom
Matilda Drozdová, Department of InfoComm Networks, Žilina, Slovakia
Thomas Lee Hench, Delaware County Community College, USA
Ivan Kalaš, Comenius Univesity, Slovakia
Elżbieta Kawecka, Centre for Informatics and Technology in Education, Poland
P. A. M. Kommers, University of Twente, The Netherlands
Dana Kričfaluši, University of Ostrava, Czech Republic
Josef Malach, University of Ostrava, Czech Republic
Martin Malčík, University of Ostrava, Czech Republic
Jiří Mareš, Charles University, Faculty of Medicine, Czech Republic
Erika Mechlová, University of Ostrava, Czech Republic
Eva Milková, University of Hradec Králové, Czech Republic
Václav Nýdl, University of South Bohemia, Czech Republic
Tomáš Pitner, Masaryk University, Czech Republic
Petra Poulová, University of Hradec Králové, Czech Republic
Eugenia Smyrnova-Trybulska, University of Silesia, Poland
Ivana Šimonová, University of Hradec Králové, Czech Republic
Milan Turčáni, Constantine the Philosopher University, Slovakia
Jiří Vaníček, University of South Bohemia, Czech Republic
Václav Vrbík, University of West Bohemia, Czech Republic

Organizational committee

Kateřina Kostolányová – chairperson
Romana Franková

FLIPPED LEARNING: LEARNING BASED ON STUDENTS EXPERIENCE

Olena Kuzminska[1], Nataliia Morze[2], Eugenia Smyrnova-Trybulska[3]
[1]National University of Life and Environmental Sciences of Ukraine,
[2]Borys Grinchenko Kiyv University,
[3]University of Silesia in Katowice,
o.kuzminska@nubip.edu.ua, n.morze@kubg.edu.ua, esmyrnova@us.edu.pl

Abstract

The article devoted to the questions of implementing the technology of "flipped" learning into the practice of higher education in Ukraine and Poland: it is defined the principles of technology development and it is determined the need for information support; it is offered online platforms and resources; it is developed recommendations on resource selection based on analysis of the needs of modern students in the process of implementation of the proposed model. Problem of Research. The virtual learning environment of modern educational institution not always take accounts a learning needs of its students, content and technology that they use in creating and maintaining their own personal educational environments. Research question: Or the quality of the virtual learning environment of modern educational institution must be based on learning needs of its students, content and technology? During research has been identify the tools and technologies that students prefer during their preparation for classes and presenting results of their own activities.

Keywords

Information and educational environment, experience, flipped classroom, Personal Learning Environment, electronical resources.

INTRODUCTION

Analysis of the impact of macro, mezo and micro trends, design of educational environments and models are the subject of research scientists and educators.

TASKS OF MODERN HIGHER EDUCATION

Observations show (fig. 1) that the global context in which learning takes place varies in a systematic way, and it is influenced by many factors (Miller, Shapiro, Hilding-Hamann, 2008).

Higher education differs from primary and secondary education not only by the age and level of students' knowledge, but also by the fact that within its system new knowledge in the cultural, social and economic spheres of society are created and used.

In addition, increasing the role of learning in the global knowledge society is creating new economic opportunities, in particular for the provision of non-profit educational services, which, in turn, requires the provision of quality and efficiency (ISO Standard, 2010).

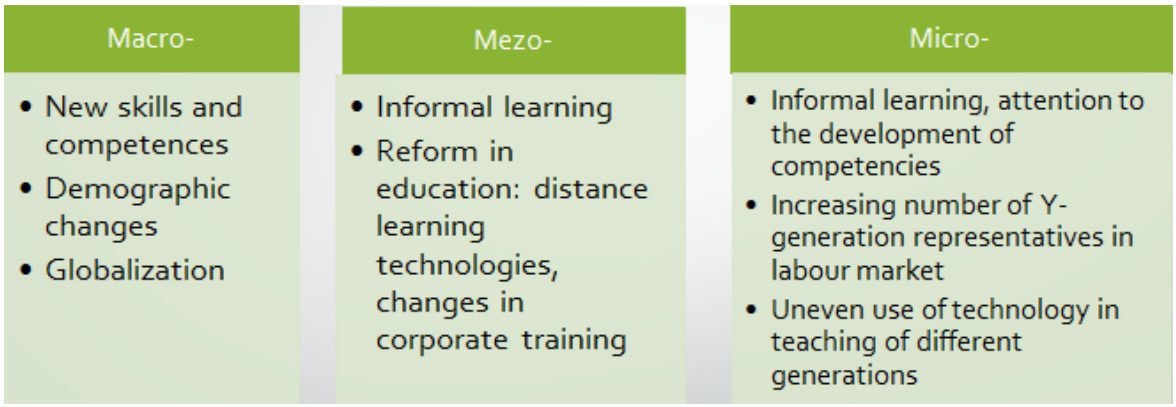

Figure 1. Trends in Education (Source: Own work based on Miller, Shapiro and Hilding-Hamann, 2008)

For learning of new information and communication technologies and their integration into the educational, economic and political processes, a high level of motivation and training of their members is required. Dynamic of described processes requires flexibility of modern universities to ensure the implementation of the demands of society (and sometimes - their prediction) through the introduction of innovative teaching and IC-technologies in the educational process and scientific activities.

FLIPPED LEARNING: AN ANALYSIS OF THE EXPERIENCE

There are different ways to implement flipped learning, but they all are based on one basic principle: the direct study of the theoretical material takes place in a distant way, and the critical discussion of the learned material, practice and applying takes place in the audience (Marshall, 2013). Thus, students perform tasks that require more complex cognitive activity in an audience under the direction of a teacher. At the same time, the role of the teacher is also changing - he becomes a facilitator, coach, and consultant.

The "flipped" learning model (Figure 1) refers to the blended learning technology (El-Mowafy, Kuhn & Snow, 2013), which can be used both for distance learning and for the full-time studying support, and involves usage of distributed information and educational resources with the use of elements of asynchronous and synchronous learning in combination with active learning methods.

The analysis of publications concerning the implementation of the model of "flipped" learning is the basis for formulating the following assumptions:

- Proactivity of the students is one of the factors of learning effectiveness. The probability of personal activity of the students is increased in the case of involving students in empirical activities, based on their experience, taking into account educational needs and social requests.
- Personalized learning involves combining formal and non-formal education. Informal education is based on certain principles, the most important of which are: learning by doing, collaboration and ability and willingness to self-education and self-improvement. The main method of non-formal education is research. At the same time, students must have similar experience in formal education for the active perception of the model of "flipped" learning. That is, they should be prepared for the implementation of the model.
- Today, in the Internet it is possible to find content that "provides" the study of many disciplines. Moreover, the forms of content representation are often more modern and diverse than the presentation by the teacher in the educational audience. Thus, having an Internet connection is the only obstacle to obtaining relevant data in accordance with the student's

learning style and with the ability to critically evaluate and analyze content from various sources.

- Lectures in any form: face-to-face, videos, podcasts, should support learning, but do not form the basis (to be the core) of studying a particular discipline. So, the effectiveness of the lecture depends on the context of the presentation, for example, after the students conducted some experiments or research (empirical, with the help of laboratory equipment or simulation means) and developed their own questions, hypotheses, ideas.
- During their studies, students should build practical confirmation of the learning results and reflection system of their own activities, as well as be able to obtain expert assessment or counseling, networking, and communication.
- The "flipping" of the learning can be done only by a teacher-facilitator, manager, expert.

The flipped learning model can be used for holding almost any lesson, but involves a thorough training of teachers and students (Bergmann, Sams, Aaron, 2014).

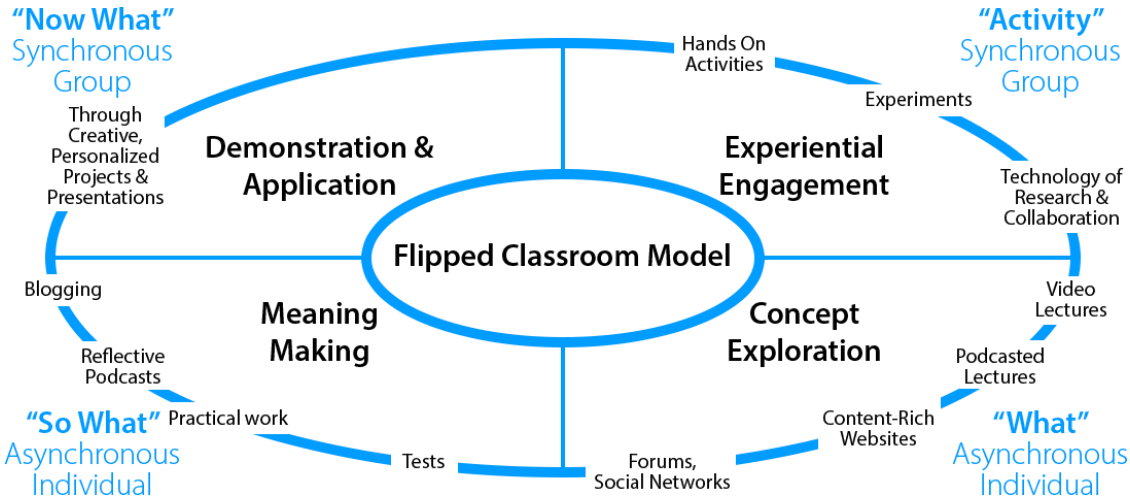

Figure 2: Flipped learning model (Source: Own work based on https://usergeneratededucation.wordpress.com/2011/06/13/the-flipped-classroom-model-a-full-picture/)

3. Preparation of the materials according to the students experience

Problem of Research. The virtual learning environment of modern educational institution not always take accounts a learning needs of its students, content and technology that they use in creating and maintaining their own personal educational environments (Morze, Spivak, Smyrnova-Trybulska, 2015).

Research question: Or the quality of the virtual learning environment of modern educational institution must be based on learning needs of its students, content and technology?

Hypotheses: The quality of the virtual learning environment of modern educational institution must be based on learning needs of its students, content and technology that they use in creating and maintaining their own personal educational environments, and depends on the level of ICT competence. Independent variables own personal educational environments of students dependent variables the level of ICT competence.

Study participants and procedure. According to the scenario of the pedagogical experiment, at the first phase the students from Ukraint and Poland were presented with more than 40 positions of various contemporary Web services and applications, on which individual electronic educational platforms of content management and electronic communication, cooperation and solution of educational and scientific problems that enable students to set learning goals and manage their personal process of academic progress monitoring were based and, on the basis of a portfolio to form their personal e-learning space, conduct and publish educational and scientific project activities, etc. From this list respondents had to choose forms of learning, frequency of use and type of activity among which they distributed the proposed web services and applications.

Results of Research. Among the results of this article (reference to the article (Morze, Spivak, Smyrnova-Trybulska, 2015), which is the subject of this article, it is identify the tools and technologies that students prefer during their preparation for classes and presenting results of their own activities (Table 1)

Table 1: Percentage distribution of answers of students from Poland and Ukraine in the group of questions reflecting students' educational strategies.

Question	Poland	Ukraine
If you have access to the Internet, with what aim do you use it most frequently?		
To search for course materials, to advance your own knowledge	79,5%	87,2%
To participate in the e-learning course(s)	41,9%	27,4%
To contact friends (e-mail, social network, messenger)	72,4%	90,3%
For file sharing (P2P)	15,2%	42,1%
To develop your interests, hobbies	42,9%	72,2%
Looking for interesting materials on the Internet, do you use most frequently:		
Search systems, for example, Google	84,8%	85,1%
Video, for example, YouTube	53,3%	81,5%
Electronic catalogues (bibliographical references and data bases)	21,9%	37,3%
Social networks	21,9%	31,3%
Reliable and well-tested portals	33,3%	37,2%
Blogs	6,8%	7,1%
What methods of submitting final work for checking to the instructor do you consider the most effective?		
By means of the distance learning platform, for example the Moodle system or similar ones (Forum, Tasks, etc.)	31,4%	18%
Social networks	83,8%	19%
Traditional paper forms (press, photo-copying)	27,6%	35%
Orally during the classes	5,7%	47%

Source: own research

Thus, for the implementation of the flipped learning model, a list of tools that the teacher should use to prepare materials and support the "flipping" was compiled.

Table 2: Implementation of the flipped learning model by implementing learning teamwork and creating of students PLE

Tasks	PLE resources examples
Experiential engagement	
Organization of group work	Google Apps, Microsoft Office 365
Communication of participants	Facebook, G+
Selection of resources and tools	MS Office, Prezi, Google Apps, ThinkLink …
Creating resources and their integration	Google Sites, Blog, YouTube, Mind Mapping
Concept exploration	
Theoretical materials and embodiments	Moodle, Google Classroom, Wiki
Learning videos	YouTube
Instructions for the organization of work, use of services and present the results of work	Wiki, Google Docx, Padlet
Forms of assessment	http://www.intel.com/content/www/us/en/education/k12/assessing-projects/strategies.html
Meaning marking	
Tests	Kahoot, Survey, Quizizz, Typeform
Questionnaires and check-lists	Google Apps
Project blog	Google Sites, Blog
Demonstration and application	
Project presentation	Prezi, Slideshark, Powtoon, Keynote
Video Essays	YouTube
Electronic assessment	Google Apps, Forums

CONCLUSIONS

On the basis of these results we can draw the following conclusions:

1. Development of XXI century skills and information literacy of students in the implementation of the flipped learning model is provided in the implementation of the following pedagogical conditions:

- involvement of students in independent cognitive and practical activities;
- creation of the students objective at mastering complex skills of self-education, experimental and scientific creativity
- the use of modern information technology and services
- monitoring the needs of the students of a specific group and flexible responsiveness by the teachers (courses design);
- freedom of choice, that is, the implementation of the student's subject position.

2. Pedagogical design is the basis for designing courses with the usage of flipped learning technologies:

- Script development
- Selection of evaluation tools
- Implementation of quality control

3. Further research perspectives are an analysis of the potential of using the model of flipped learning in the system of qualification upgrading teachers training.

ACKNOWLEDGMENTS:

The research leading to these results has received, within the framework of the IRNet project, funding from the People Programme (Marie Curie Actions) of the European Union's Seventh

Framework Programme FP7/2007-2013/ under REA grant agreement No: PIRSES-GA-2013-612536

REFERENCES

El-Mowafy Ahmed, Kuhn Michael and Snow Tony (2013). Blended learning in higher education: Current and future challenges in surveying education. In Special issue: Teaching and learning in higher education: Western Australia's TL Forum. Issues In Educational Research, 23(2), 132-150. Available from: http://www.iier.org.au/iier23/el-mowafy.html (June 22 2017).

Bergmann, Jon Sams, Aaron (2014). *Flipped learning: Maximizing Face Time*. In: T+D. Feb 2014, Vol. 68 Issue 2, p28-31. 4p., ISSN: 1535-7740. Available from: http://search.ebscohost.com/login.aspx?direct=true&db=f5h&AN=94004879&site=ehost-live. (June 22, 2017)

Marshall H. *Three reasons to flip your classroom* // Bilingual Basics. August, 2013. Available from: http://newsmanager.commpartners.com/tesolbeis/issues/2013-08-28/6.html (June 23 2017).

Morze N., Spivak S., Smyrnova-Trybulska E. (2015). *Designing a Modern Cloud-Oriented Virtual Personalized Educational Environmen*t, New Educational Review 2015, Vol. 40. No. 2, pp.140-154. ISSN 1732-6729

New ISO standard aims to improve quality of learning services and facilitate comparison on worldwide basis (2010). Available from: http://www.iso.org/iso/home/news_index/news_archive/news.htm?refid=Ref1384 (June 23 2017)

Miller R., Shapiro H., Hilding-Hamann K.E. (2008). *School's Over: Learning Spaces in Europe in 2020: An Imagining Exercise on the Future of Learning* // Office for Official Publications of the European Communities. – 2008. – 94 p. Available from: http://ftp.jrc.es/EURdoc/JRC47412.pdf (June 23 2017)