E-Learning in Hungarian Higher Education: Experience at University of Sopron

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Abstract The study focuses primarily on the extent to which the spread of e-learning systems, their importance in development strategies, and the constructivist pedagogy, which has become more prominent in literature on pedagogy, have transformed the methodology of education. In answering this question, the authors, in addition to reading the literature, focused primarily on their own e-learning experiences gained in recent years through various development projects and the operation of their university e-learning portal. The results are mixed. While showing smaller results, a major transformation has not yet occurred. For the time being, e-learning does not provide a general solution to anomalies in the education system by any methodology. The result can be traced back to institutional, regulatory, pedagogical and financial reasons. Of course, the authors' conclusions can only be generalized to a limited extent, but the literature suggests that they may be more widely applicable.

Introduction

It seems like a cliché, but technology really permeates all aspects of life. Higher education is also part of this phenomenon. Technology not only provides a background, but also transforms traditional processes. Knowledge sharing system through university lectures and seminars is complemented by an electronic platform that can be customized in a small group or per student instead of uniformity. Virtual Learning Environment (VLE) allows the renewal of educational materials and methods.

Educational strategies in many countries identify the orientation towards the contact hours of instructors as a typical problem of methodological practice in higher education (Kavitha, 2019). The main problem is that the relatively high number of instructor hours induces low number of independent student work, and it leads to learning-effectivity problems (Breakah, 2019).

This methodological 'scantiness' is a real problem, because of the following (Erdős & Koloszár, 2016):

– The student stagnates in the 'knows/remembers' and 'understands/interprets' knowledge levels of Bloom's taxonomy (Krathwohl, 2002; Huitt, 2011), while the 'apply/use' knowledge level provides knowledge recognized by the labour market, which can be acquired by learning by doing.
– The knowledge behind the marks earned by last-minute learning is not related to other knowledge or is rapidly devalued. 'Analysis', 'evaluation', and 'creation' levels in Bloom's taxonomy, which would link the long-term internalisation of knowledge and the actor with other blocks of knowledge, are missing or not sufficiently emphasized.
– Students' learning process is hectic and requires high levels of energy.

The acquisition of practical skills through task-oriented and project-centred learning offers a greater learning experience while it also approaches the expectations of labour market. However, this also requires a review of 'subject-oriented' and 'course-centred' education management.

As far as teaching methodology and teaching technology are concerned, explosive development has taken place in the world over the past two decades and especially in the past few years. Location has become less important in the process of learning. This does not relate to expanding digital or online content only. Online training forms and courses (MOOCs) are becoming more widespread; they enable the acquisition of knowledge blocks or specialized knowledge and skills. Virtual collaborative platforms are also replacing the local nature of training and research, where online practice and research can be done by sharing virtual space and real infrastructure.

Integrated developments are needed for higher education to have a credible and leading role in the new type of social knowledge sharing. Training structures, educational methods and content need to be modernized. In addition, providing skill and practice orientation, considering economic needs and developing digital skills are also important development goals.

Hierarchical offline knowledge sharing is complemented by electronic platforms. These e-learning (more accurately blended learning) solutions can be customized in smaller groups or per student instead of being uniform for all students. The tools that create a virtual learning environment include not only the renewal of educational materials but also the possibility of renewing teaching methodology. Therefore, the need for pedagogical and technological renewal cannot be separated. This also means that the introduction of e-learning solutions in higher education is a complex economic issue. One needs to invest not only in software but also in human resources and related organizational development for real success.

Our objective is to give a brief summary of the related literature and of our experiences.

The article focuses primarily on whether the changes in the learning environment and the pedagogical theory have led to changes in pedagogical practice. Of course, our conclusions are not necessarily general as they are based mainly on our own practical experience which is determined by many local factors. However, the problems raised by the literature are confirmed in practice.

Based on the learning environment and the studied literature, one might think that pedagogical transformation is almost inevitable. However, due to the contradictory experience in the literature and due to various institutional, regulatory, pedagogical and funding factors, this is questionable. These issues are briefly discussed among other dichotomies later in paper, in the section 'Experiment'.

Background

We first need to clarify the meaning of e-learning. There are several overlapping concepts that have emerged in time and space. Virtual Learning Environment (VLE) is mainly used in Europe and Asia, whereas the Learning Content Management System (LCMS) is mainly used in North America. The concept of Learning Management System (LMS) has also been distinguished in the past, but today these limits are mostly blurred. A unified system provides the framework, the user-friendly management and the development of content and personal learning environment (Personal Learning Environment – PLE). Instead of formerly existing delicate differences, these concepts can now be treated as synonyms. Managed Learning Environment (MLE), Managed Virtual Learning Environment (MVLE), Electronic Educational Technology and Learning Platform (LP) are roughly the same. Tóth & Bessenyei (2008) give a concise historical summary of the development of virtual learning environment.

The concept of e-learning used in the study refers to the form of the education and learning process assisted by info-communication tools, which is methodologically and structurally renewed and does not lack but transforms traditional classroom work. Therefore, we do not focus on resolving geographical and temporal constraints. In addition to distance learning, the blended learning form that can be used in daytime and correspondence type training is also part of e-learning; here, we focus mainly on the need for blended learning device, content and methodological development. The term 'e-learning' used in the title of the study was more pronounced because of its embeddedness.

According to their year of appearance, Learning Content Management Systems (LCMS) in higher education are the following: Blackboard (1997), Ilias (1998), OLAT (1999), Itslearning (1999), Claroline (2000), Moodle (2002), D2L (2004), Sakai (2005), eFront (2005), Canvas (2011), Uzity (2016), etc.

Online training forms are becoming increasingly widespread, which allows the acquisition of different knowledge blocks or special knowledge and skills. Massive Open Online Courses (MOOCs) provide open and massive access to knowledge blocks with short videos and interactive forums (Veress, 2016). The technology background is well suited for e-learning trainings. However, 'open' and 'bulk' as buzzwords work only partially. Indeed, the owner of knowledge material loses its primacy with open disclosure, which is contrary to the above principles.

At the same time, modern educational materials of a similar nature have a market. If higher education institutions are not at the forefront of the process, the business sector will take these steps. The involvement of teachers in higher education institutions is possible and this process has already started.

Moodle

One of the most common educational frameworks is the open source platform Moodle (i.e. Modular Object-Oriented Dynamic Learning Environment). Moodle runs approximately 109,000 registered portals in over 230 countries with over 18 million courses; it had around 156 million users and 1,615 million test questions on 1st May 2019 (Moodle, 2019).

There are several philosophical and rational arguments behind the widespread use of open source systems. The argument is often based on a cost-centred economic approach that focuses only on the costs that appear as expenditure. Such an approach does not consider other costs that are difficult to quantify (e.g. employee efforts that could otherwise be spent on other activities). Considering the constraints, free-access systems have a significant cost advantage, but their use can only be successful in a smaller circle due to the lack of wide support and a less user-friendly nature. There are always exceptions, and based on the impressive data, it seems that Moodle is truly exceptional.

Moodle as a learning (or primarily course) management system was elaborated to help teachers manage online courses and curricula with opportunities for rich interaction. Its open source and free software license and modular construction facilitate the development of additional functionality. The development of new plug-ins, modules, themes, etc., is undertaken by a globally diffused network of

commercial users as well as enthusiastic, non-commercial users. Instead of a knit system, the goal was to create a modular, communication-based system that could be used flexibly and creatively along different educational goals (Dougiamas & Taylor, 2003).

The declared philosophy of Moodle embraces a constructivist, social constructivist/constructionist approach to education. It underlines that learners and teachers can contribute to the educational experience in many ways. The essence of this method is that the job of a 'teacher' can transform from being the source of knowledge to being an influencer, connecting with participants in a more individual way which addresses their own learning needs. Also, the teacher can moderate debates and work in a way which collectively leads a group of learners towards its learning goals. Despite these aims, numerous social, pedagogical, organizational, technical, etc., factors related to knowledge management issues impede the predominance of social constructionist pedagogy. Moodle excellently works by conforming to traditional pedagogical principles and does not force the social constructionist style of learning and teaching, but it is the best at supporting and further improving it. Because of the ascending crisis of the 'traditional' style of teaching, social constructionist design becomes more and more exciting by seeking alternatives.

Pedagogical background

New educational-technological opportunities can lead to significant progress only with didactic and methodological renewal (Ollé, 2012). Pedagogical changes can be the basis for e-learning systems to become real e-learning platforms from mere 'curriculum repository' of traditional teaching materials (e.g. notes, books, lessons). Thus, e-learning systems can become platforms based on communicative fundaments, supporting individual and group work, forming a creative community, and supporting new teacher roles.

Many pedagogical methods can be used in the process.

Constructivist pedagogy has already been mentioned. According to constructivist pedagogy, learning is an internal construction process, so the student has a key role in the design, and activities based on existing knowledge can give the learning process a success (Richardson, 2003). The essence of a *flipped classroom* learning solution is that students learn the theory of the curriculum before the class, outside the classroom; they look at additional materials and videos, do smaller tasks, and focus on understanding and solving complex problems in the classroom (in line with the higher levels of Bloom's taxonomy) (Tóth, 2014). After the release of web 2.0, the research on *connectivism and network learning* has gained momentum (Bessenyei, 2007; Tóth & Bessenyei, 2008).

Creating *virtual classrooms* helps to teach you by creating surfaces that are independent of time and location (Frank-Voutsas, 2012). This can be done with well-known popular social networks (e.g. Facebook) (Kárpáti, Szálas, & Kuttner, 2012). Thus, it is not necessary to become acquainted with a new system, and the existing positive attitude to the system can also underpin the success of the learning process. Technological developments have also made it possible to develop *personal information manager*s (PIMs). Well-known *gamification* (Sandusky, 2015), which has become popular in recent years, is a good way to build education on the game play which makes hated learning fun. The online environment provides several tools for designing and managing it. *Learning by teaching* and *learning by doing* is aimed at developing higher levels cognition in accordance with Bloom's taxonomy, which can help develop *critical thinking* and *entrepreneurship*. E-learning frameworks can provide broader support for *project work* (Hülber, 2012) and *teamwork*, which is also highly desirable on the labour market. A computer background supports the execution, solving and mentoring of *simulation tasks* and *case studies* (Felder, Woods, Stice, & Rugarcia, 2000).

The changed characteristics of the age group to be taught should also be considered. 'Digital native' students are already getting information from multimedia sources, and they are happy to work with image, audio and video information. They like multitasking, networking, interactions, jumping randomly, using hyperlinks between information crumbs, and demanding instant confirmation, rewards, and content entertainment. This also means a significant cultural difference for mostly 'digital immigrant' teachers (Bessenyei, 2007).

Does social constructivism really work?

Moodle is designed on constructivist, social constructivist, social constructionist learning theories, but most courses created by Moodle are based on 'traditional' learning and pedagogical methods (Finnegan & Ginty, 2019). What is the reason for it? Is it comfort, laziness, conservatism, incomprehension, socialization patterns, institutional barriers, or maybe the insufficiencies of these theories? It is hard to answer this question in short.

Successful adaptation of learning methods with the assistance of Moodle in some institutions shows that social constructivist learning with Moodle is more than a fancy – it is a real alternative. However, it would be a mistake to avoid theoretical critics and to suggest that problems are attributable exclusively to the enumerated subjective factors. Constructivism is criticized on various grounds (Alanazi, 2016):

- Constructivism and other reformist educational theories have been most successful among children from privileged social backgrounds who have excellent teachers, committed parents, and wealthy home environments. The disadvantaged children, i.e. those lacking such backgrounds, benefit more from more explicit, more traditional instruction.
- Collaborative aspects of constructivist courses tend to produce autocracy of the majority, in which a few students' voices or interpretations dominate the group's conclusions, and dissenting students are forced to conform to the consensus.
- There are few hard evidences that constructivist methods really work. Constructivists, by rejecting the evaluation by testing and other external criteria, have made themselves unaccountable for their students' progress. Critics also say that studies of various kinds of instruction have found that students in constructivist classrooms have less basic skills than students in more traditional classrooms.

The assertions above are refuted by many theoretical and practical examinations, and there are numerous arguments on both sides.

Moodle tools

Following the methodological renewal described above, a typical development path for using Moodle devices can be as follows:

1. In the first step, the instructor provides online access to the traditional curriculum. The page functions as a 'learning repository'.
2. Second, he/she sets up a *forum* or *chat*, which is a passive role in its own, but it can induce student communication.
3. External activities, e.g. related videos, games, etc., are installed next.
4. *Tests* and *tasks* will be posted to provide self-control and to monitor progress.
5. Interactivity appears – *wiki*, *glossary*, and *database* tools can provide students with a knowledge base and a structured implementation of common tasks.
6. The instructor starts a special *forum* within the course, asks questions, his/her facilitator role is strengthened.
7. *Questionnaires* and *choices* increase interactivity, so students can provide feedback on developing curriculum and tasks.
8. The teacher analyses in-system predefined *surveys* and *feedbacks* to explore the composition of the group and refine the applied methods based on the results.
9. Using the *Workshop*, the instructor gives students the opportunity to evaluate each other's work (peer-review).

The experiment

According to our survey, Moodle is the number one e-learning framework for at least 15 Hungarian universities, but it is used at almost every Hungarian higher education institution.

Our Faculty started developing its e-learning system in 2002. Our system was built on Moodle already in the first, experimental phase. It was the first university-based Moodle-based system in Hungary. Since then, Moodle has become very popular around the world. For us, it was important that Moodle also offers a variety of pedagogical approaches. In recent years, we have studied a reform of pedagogical approaches in e-learning literature and the possibilities of their general introduction

in many international projects. We have never experienced the success of experimental constructivist methods. This has been mostly due to institutional and regulatory problems, but teacher resistance has also been felt.

Based on our experience, we have found that, for example, the introduction of education based on constructivist or connectivist pedagogy is not realistic and may not be appropriate. Therefore, we have encouraged the development of blended learning courses that complement and support traditional frontal education. After the pilot phase, the e-learning portal, which provides support for our entire training structure, has been in place since 2007. We nominated faculty and institute administrators and then we organized internal trainings in several waves. The collaborative e-learning portal has been operating as a framework ever since. The course instructors decide on the pedagogical method they follow, the curriculum they fill, the extent to which the communication and administrative modules are used, along with the expectations of the different levels. In case of problems, the administrators of the institute will be the first to help with solving the problems; the administrators of the faculty will follow in the second round. Based on our experience so far, the system facilitates the delivery of study materials to students and the communication within courses.

There is a serious theoretical debate about the need for a renewal of higher education pedagogy, unfortunately with little practical results. Of course, pedagogical reform has not been abandoned, but there are several obstacles to higher education. We run the e-learning portal from our own resources without any regular extra funding. Our resources are necessarily scarce, but we strive to keep the framework up to date, to maintain it, and to solve the problems that arise.

The system is currently (as of April 2019) used by 3,362 registered users (instructors, active and former students). It has 150 courses and the average of 1200-1800 daily user activities (LKK e-learning, 2019).

We have not achieved radical changes in pedagogical practice with Moodle. We do not see a clear relationship between the extent of system usage, the introduction of new pedagogical methods and the age of teachers as younger teachers do not use these tools to significantly higher degree. The 'significant cultural difference'

between young teachers and digital immigrant teachers as mentioned earlier was not experienced.

Interestingly, the pedagogical renewal has diverged from the usage of the system many times. Colleagues have introduced a number of cooperative student work activities in their courses in recent years, but the content of the classwork has been renewed in such a way that it has not generated work outside the contact lesson time for the instructors (and frequently not enough for the students, too). The pedagogically renewed usage of e-learning generates tasks not only in the development of course materials but also in the follow-up, feedback, and continuous evaluation of students' exercises related to lessons. Meanwhile, the salary of a postdoctoral assistant professor, for example, is lower than that of a cashier today. That is why some teachers choose the least time-consuming methods for the compulsory tasks and take a second job for a better livelihood. However, the disadvantage of this solution is that the problem mentioned at the beginning of the study, i.e. the higher number of instructor hours induces lower independent student work, is not solved.

However, to a limited extent, we have improved the efficiency of education. In addition, we have avoided frustration due to excessive expectations, and we (and the created structure) have allowed our colleagues to develop at their own pace. Participating in development – just uploading a pdf file – improves the colleagues' self-confidence and reduces their resistance to technology. The latter has also been supported with e-mail newsletters, some presentations with teachers' examples of good practice. Based on their feedback, students are also satisfied with the system.

Summary

Pedagogical transformation cannot take place without the transformation of the wider environment. In our experience, the transformation of learning environments' technical capabilities and the transformation of pedagogical theory do not break other barriers. This is especially the case when there is a great deal of uncertainty and contradiction in the means and purposes of pedagogical renewal.

The microenvironmental experience may be less specific from a scientific point of view. However, we feel that theoretical findings may be overshadowed by 'field' experiences.

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