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FORCED INNOVATION IN A LEARNING ENVIRONMENT: STUDENTS' EXPERIENCE OF DISTANCE LEARNING DURING THE PANDEMIC

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ABSTRACT

Yesterday's situation in the universities of the world is distance teaching and learning during the COVID-19 coronavirus pandemic. Mass distance teaching and learning practices were uncommon before the pandemic. Therefore, it can be argued that the scientific sources that analyze distance teaching and learning were intended to discuss the experiences and attitudes of technology enthusiasts and visionaries. The article aims at discussing the students' distance learning experience during the pandemic, treating this experience as a kind of forced innovation. The participants of the research are the first-year English-speaking students at the X University of Lithuania (N = 110). The study revealed the diversity of the pandemic distance learning experience, the positive and negative aspects of this extreme situation, from which lessons can be learned, and the perspective of further distance teaching and learning for university teachers, IT professionals, and students.

KEYWORDS

Distance Teaching and Learning, Pandemic, Students' Learning Experience.

1. INTRODUCTION

In the spring of 2020, universities paid special attention to the transfer of teaching and learning activities to the distance teaching and learning (further, the terms *remote, virtual, online, e-teaching and learning, etc*., are used synonymously in this article), i.e., "emergency remote teaching and learning" (Hodges et al, 2020). Under such conditions, it was impossible to perform a complex analysis of what tools to choose and how to organize the study process in the most rational way. Therefore, the experience gained needs to be analyzed in order to identify the most rational solutions during the emergency distance teaching and learning and employ them in the future. With the start of the new 2020/2021 academic year, universities have already been able to organize their activities in the light of the 2019/2020 academic year spring semester experience. Therefore, some of the results may generate interesting and productive insights for higher education didactics for online studies, because, we believe, even after the quarantine is over nationally and globally, universities will transfer a larger proportion of activities online as continuing practice. The 2020 may have prompted a major transformation in higher education (Butrime and Zuzeviciute, 2021).

The pandemic has radically changed peoples' lives and activities. It is a temporary emergency, but experts in various fields of science are already predicting significant changes in various areas. Mass distance teaching and learning practices were uncommon before the pandemic. Three years ago, most teachers knew how to teach and understood how their students think and learn. Now teachers have to change the nature of their work and learn new skills themselves. And most importantly, you have to answer the questions yourself when faced with the challenge of teaching without eye contact and body language.

The aim of this article is to discuss the students' distance learning experience during the pandemic, treating this experience as a kind of forced innovation.

The research question addressed in the study is as follows: What is the attitude of university health sciences students, who have studied in a virtual learning environment (VLE) in extreme conditions, to distance learning?

The study involved 110 students who shared study experience in the fall semester of 2019 and the spring semester of 2020 (i.e., when they had to study in the conditions of forced innovation).

In this article e-learning is analyzed as a socio-cultural system (Mamardasvili, 1958; Kvedaravicius, 2006; Butrime, Zuzeviciute, 2014). Such an approach towards e-learning enabled the presentation of 'a multi-dimensionality' in the concept. The analysis of e-learning as a socio-cultural system enabled the formulation of an interdisciplinary problem, for the solutions of which it is necessary to invoke theories and outcomes of computer science, culture, and education. The analysis allowed the enumeration of the forms and contents related to educational support for the participants (lecturers) of the system.

2. THEORETICAL BACKGROUND OF THE RESEARCH

University studies, under the influence of contemporary information and communication technologies (ICT), are changing from the educational paradigm to the learning paradigm. What are the characteristics of e-learning (and teaching) in university academic community, and what comprises the phenomenon of e-learning as socio-cultural system?

Socio-cultural system of e-learning is a system where for the increase of efficiency in teaching and learning ICT are applied; ICT have been artificially designed by a human being; however, ICT, consequently, now influence the development and structure of this system (Butrime, Zuzeviciute, 2014). Key elements of each e-learning episode are the following: participants (teachers, students, IT profesionals); technologies (ICT); processes; relationship/connections/interaction; material/contents (information).

Modern ICT are identified as one of the factors in this system. An individual is identified as a key element of socio-cultural system, i.e., he or she is the creator of knowledge seeking to respond to the needs of knowledge society. The socio-cultural system of e-learning is disclosed as a contemporary phenomenon, as earlier classic pedagogical systems (Jovaisa, 1993; Lipinskienė, 2002; Butrime, Zuzeviciute, 2014) did not identify ICT as the element of the system.

Basilaia, Kvavadze (2020) argues that the research on the work of educational institutions during the COVID-19 pandemic is an important moment in the post-pandemic period. During a pandemic, case studies are being conducted that are "urgent". Subsequently, an in-depth research will be needed to assess the experiences of different countries, and to improve distance education. It is necessary to analyze the applied methods and improve them in further daily study practice.

The history of distance learning has been going on for two centuries (Spector et al., 2008). In the last two decades, distance learning applied in higher education has significantly improved under the influence of modern information and communication technologies (Moore et al., 2011; Butrime, Zuzeviciute, 2014). This can make higher education more attractive, personalized, practical, and flexible so that it can respond to the challenges faced by universities and colleges. Distance learning includes a variety of learning formats, such as blended learning, flipped classroom, social and collaborative learning, simulations, and game-based learning, synchronous and asynchronous video lectures, polling software or collaboration authoring tools (Casanova, Paguia, 2022; Kusel, Martin, Markic, 2020; Butrime, 2020; Petrauskienė, 2018). The development of different types of learning environments may depend on the learning objective, the target audience, the learning environment (physical, virtual and/or both), and the type of content. It is important to know how learning environments are used, and the impact of tools and methods that differentiate differences in learning outcomes/ products as technology evolves (Moore et al., 2011).

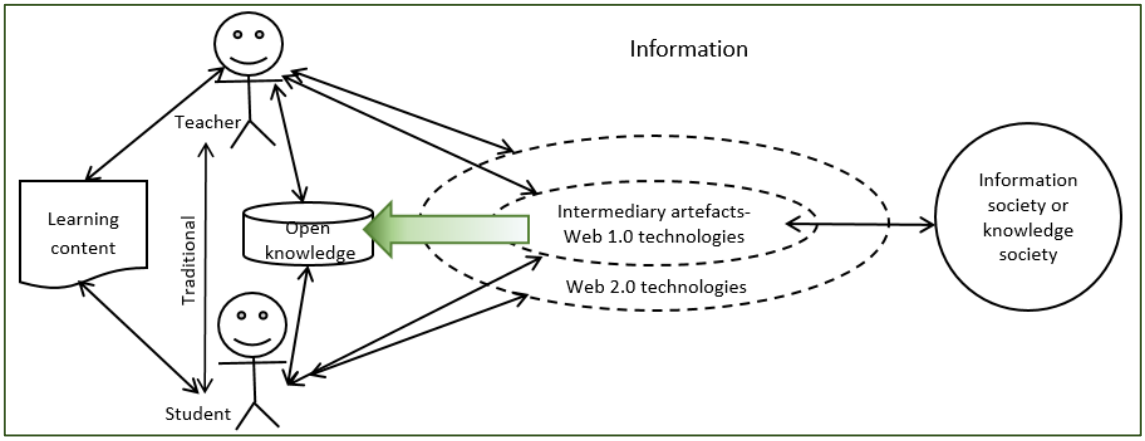

Figure 1. Teacher and student interaction. E-learning as a socio-cultural system. Blended learning as a form of e-learning (Butrime and Zuzeviciute, 2014)

According to L. Vygotsky (1978) a human and the environment cannot interact directly. People interact with the environment by the means of intermediary artifacts, i.e., the meanings, tools, or symbols formed by culture. Analyzing the interaction of teachers and students with the information and knowledge societies the intermediary artifacts are ICTs (Fig. 1.). The analysis suggests that continuous improvement of ICT determines the change in the ICT knowledge of a teacher who is an element of the e-learning (teaching) socio-cultural system. (Moore, 1998; Baltrusaitis, 2007; Hernández-Serrano, Jones, 2010; Butrime, Zuzeviciute, 2014). First, any medium is simply a way to deliver information, and one medium is not inherently better or worse than any other medium. Second, we need to better understand different media and the way people learn with different media to design effective studies. And, third, there are too many confounding variables in even the best media comparison study for the results to be valid and meaningful.

During the pandemic, all the institutions organizing studies had to change the usual way of working with students. According to G. A. Moore's (2014) law of innovation diffusion, mass application of innovation can be identified. In Moore's diffusion model, distance learners can be divided into five categories: 1) technology enthusiasts; 2) early adopters; 3) early majority; 4) late majority; 5) laggards. However, the process was forced. Hodges et al. (2020) state that in 2020 distance learning deserves the status of a special event, and proposes to call it emergency remote teaching. The authors state that the teachers had to cope with the greatest workload, as it was very important to ensure the process and access to both synchronous and asynchronous studies in a very short time. E. M. Rogers (2003) emphasizes that when designing a change, it is necessary to know how many members of the population are already using the innovation. In the case of a pandemic, there was no time to draft a change and explain how many teachers are already using distance learning. During the pandemic, the so-called "tornado" effect (according to G. A. Moore (2014)) was created by extreme conditions, i.e., forced retirement. Higher education institutions have met the challenge of 2020 in the spring, but this was done urgently and without a choice of measures. Some of the teachers worked remotely for the first time. And what about students? Some students have also tried distance learning for the first time. It is, therefore, necessary to analyze the experience of this population in distance learning.

There are many new challenges to distance learning during the Covid-19 pandemic, thus, new factors influencing student satisfaction need to be considered in the study (Chen, 2020; Kusel, et al, 2020; Butrime, 2020). Despite the proliferation of e-learning initiatives, knowledge of this experience from the point of view of students is still insufficient, although these are the main elements of the educational process (Lemos and Pedro, 2012). It should be emphasized that during the pandemic, distance learning was tried by those students and teachers who had not tried it before (according to G. A. Moore (2014) pragmatists and conservatives) or did so with great caution. Therefore, it is relevant to study the impact of distance learning planning, teacher quality, feedback, and student expectations on student satisfaction with distance learning during the Covid-19 pandemic (Butrime, 2020; Gopal, et al, 2021; Casanova and Paguia, 2022).

In higher education, the needs and expectations of the society and the individual student as a service user in terms of improving the quality of studies acquire special significance in the treatment of studies as a service and its improvement (Vilkonis et al., 2012; Bailie, 2015; Garrison, et al, 2000). According to Casanova, Paguia

(2022) higher education institutions that offer distance learning must take into account students' expectations and experiences so that all distance learning activities and resources are directed to the highest levels of student satisfaction. Distance learning is based on the theory of G. M. Moore (Moore, 1998), which explains the interaction between students and teachers, and the structure of the course, and how it affects the learning environment. Distance learning is characterized by a transaction that occurs when a student and a teacher communicate in a virtual learning environment, and that communication may not occur at the same time. This results in unique patterns of student and teacher behaviour (Nwanko, 2015). G. M. Moore's theory (Moore, 1998) distinguishes 3 types of interaction: student - teacher, student - learning content, and student - student. Casanova and Paguia (2022) distinguish the following levels of expectations of students' participating in distance learning: infrastructure (technology), teacher, learning methods, course design, and evaluation system. Many studies conducted before the pandemic sought to find out how to better adapt e-learning environment, pedagogy, objectives, content, and assessment according to the individual needs of the learners so that their learning experience is pleasant for the desired learning outcome. It should be emphasized that in the event of the pandemic distance learning involved all the students (not just those who chose this type of study themselves); those technologies were used that ensured the smooth operation of a large number of students and the institution was able to use them; there was no time and opportunity to prepare teachers for distance learning in advance; there was no time to properly prepare the content for the study subjects that were traditionally taught before the pandemic.

The paper presents a pilot study that will help describe the various aspects of distance learning that need to be considered. It is important to know which factors influence students' expectations and satisfaction with distance learning, as they can be used as normative indicators of the suitability of a course design and the suitability of a virtual learning environment. They can also help identify effective strategies and services needed for students learning in a virtual learning environment (Casanova and Paguia, 2022).

The distance learning during a pandemic can be described as a case that is different from the distance learning that has been investigated for the past 20 years. Therefore, when researching students' attitudes to distance learning during a pandemic, it is appropriate to start with a qualitative case study. The aim of this study is to describe the phenomenon under the study, i.e., distance learning during a pandemic.

3. THE ORGANISATION OF THE RESEARCH

The study was conducted in April 2021. The research sample is targeted. A convenient sample was used to invite volunteer students who had studied the basics of medical Latin to participate in the investigation. English-speaking students (N = 110, women - 50, men - 60) studying in Medical (MSP), Dental (DSP) and Veterinary (VSP) study programs were invited to participate in the study. It was assumed that English-speaking / international students have a better distance learning experience than Lithuanians, as distance learning was not popular in Lithuania before the pandemic. It was thought that these students could express more diverse opinions.

During the study, students were asked to rate their performance during the first (Spring 2020) and second (Autumn 2020) pandemic waves. Students were asked the following 3 closed questions:

1. Evaluate previous experience (before the COVID-19 pandemic) of learning in a VLE according to the Likert scale: 1- I have no experience at all, 2- I have almost no experience, 3- I can't answer, 4- I have enough experience, 5- I am a virtual learning expert.

2. Evaluate the experience of learning in the VLE in the autumn semester of 2020 (during COVID-19 quarantine) according to the Likert scale.

3. Evaluate the experience of learning in the VLE in the spring semester of 2021 (during COVID-19 quarantine) according to the Likert scale.

Students were also asked an open-ended question to write 3 statements as to why they rated it that way.

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3.1 The Results of the Study: Students' Attitudes Towards Distance Learning in the Conditions of a Pandemic

The students rated their distance learning experience: the average in 2019 was 2.38; the average in 2020 was 3.6; the average in 2021 was 3.66. 39.1 percent of the students said they had no distance learning experience before the pandemic. During the pandemic, a quarter of the students said, "I am a virtual learning expert". 40 percent the students rated their ability to learn remotely sufficiently (Figure 2)

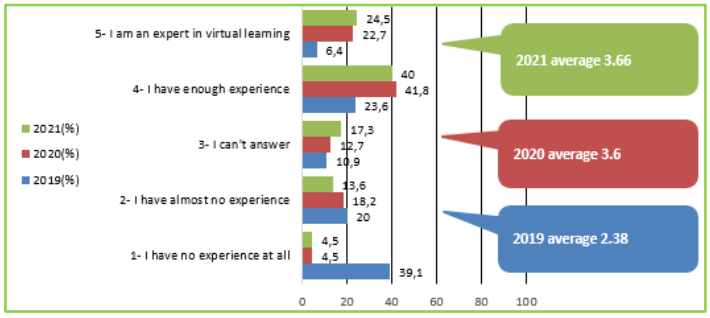

Figure 2. Students' distance learning experience before the pandemic (2019) and during the pandemic (autumn semester 2020, and spring semester 2021)

It can be said that students gained experience in distance learning during the pandemic and rated their abilities positively. About 40 percent of the study participants stated that they did not have such learning experience before the pandemic. This shows that this part of the students were not distance learning enthusiasts and chose learning methods and techniques that required contact communication. In the event of the pandemic, these students had to change their normal learning environment and learn to learn differently. This shows that the introduction of a forced innovation has led to the improvement of students' learning skills.

A total of 108 students answered the open-ended question (44 MSP; 52 DSP; 12 VSP). Some students assessed distance learning ambivalently, some - only positively, and some - only negatively.

Assessing the totality of the answers, it can be stated that most students rated their distance learning experience as causing "mixed feelings about the whole process of online learning", because "online learning has its advantages and disadvantages". Among them, only a few students stated that they "could not properly assess" their distance learning experience because they "did not experience real traditional studies" and "cannot compare ... with the normal learning process". Only a few students stated that they had a distance learning experience before Covid-19, and most respondents noticed that this way of studying was new to them.

All students' responses were examined in two sections: in terms of understanding the situation and accepting it personally. Illustrative examples of informants' responses are not edited and are provided in the original language.

Table 1. The analysis of students' distance learning experiences

Statements	Subcategory 2	Subcategory 1	Category
'enough resources and help are provided from the university's side'		The learning resources were sufficient	**Type of Interaction: Student-Learning Content**
'studies are nice but not excellent but nice',		Students saw a possibility to improve learning content	
'(online) might make the studying cheaper in the future as less resources used for everyone :)'		Studies could be cheaper	
'a great advantage', 'the best thing happened to me', 'I can see more than one time or stop to make note', 'it was great to go and look back to them again', 'you have the possibility to watch lectures as often as you want to understand the content'		Good recorded lectures	
'assignments … were very structured'		Good learning content	

Statements	Subcategory 2	Subcategory 1	Category
‘decide at what time I want to learn’, ‘create my own tempo of learning’, ‘it saves time I spend studying’, ‘giving me more time practicing what is more important to me’		Better time management	
‘stress levels have been a lot lower with online studies’, ‘convenient to stay at home’, ‘I am at home in my environment, and it lets me feel more comfortable’, ‘I am more involved in the lesson and I feel less scared to make a mistake’	Distance learning is less stressful, is closer	Their own sense of security and concentration increased because of	
‘I can actually see the material when in class it is hard for me to see the board’	Distance learning is more convenient physically		
‘I learnt to study better on my own’, ‘I have more responsibility for my own schedule’, ‘learned study discipline in a new, more demanding way’, ‘optimized my study technic’, ‘check for myself what needs most attention’	Distance learning improves learning skills and increases personal responsibility		
'define abbreviations and acronyms the first time they are used in the text, even after they have been defined in the abstract'; 'do not use abbreviations in the title or heads unless they are unavoidable'	More difficult to understand some parts of the learning material	Negative aspects	
‘easier to concentrate when only the lecturer speaks and others are muted’, ‘no students interfere during class’, ‘the lectures in remote are more clear’, ‘easy to follow with the teacher’,	Distance synchronic lectures are less stressful, is closer	Their own sense of security and concentration increased because of	**Type of Interaction: Learner-Instructor Interaction**
‘there is no problem of see or hear and it is easy to ask question because you can also wire them on chat and the professor answer when he can’, ‘it is easy to join the lectures’, even straitly: ‘more sleep’	Distance synchronic lectures are more convenient physically		
‘good organization, clear instructions’, ‘great flexibility with classes’, ‘it was good, convenient, comfortable, flexible’, ‘in total a pleasant experience’, ‘an interesting experience’, ‘I feel it is more effective’, ‘easier transformation into university’, ‘great flexibility with classes’		Good organisation	
‘the teachers were great and very patient’, they ‘looked right at home with the entire process’, ‘good that the professors are almost always available if you have questions’		Teachers worked perfectly	
‘...most teachers were able to use Moodle and Teams in a way that made learning online manageable’; ‘the teachers did the best they could with the tools they had’; ‘I hope we will have some digital tests in the future’		Respondents emphasized the positive attitude towards teachers' efforts to use technical tools and the diversity of the latter	
‘I felt the amount of work was not well planned, practical learning was really uninspiring online’; ‘feeling kind of fake, which makes it so much harder to keep up the motivation’; ‘still hard to study in this way’	Assessing distance learning in the spring semester of 2021, students' feedback reflects a more	Critical approach to distance synchronic lectures	

Statements	Subcategory 2	Subcategory 1	Category
	critical approach to learning process planning		
'learning physically face to face with professor is much different than learning online; you can ask more questions, and get more visuals than online', 'it's harder than to go to the lessons in person', 'weak knowledge gaining', 'the things stay unclear', 'makes it harder to focus on the lectures', 'hard to keep focus during a long period of time', 'harder to focus on what to do school wise', 'difficult to study'	Do not like distance synchronic lectures		
'depends on the lecturer, some of them had connection problems or miss understanding with technology', 'the classes were … not adapted correctly to an online mode, 'NOT enough understanding of the situation from some teachers', '… (subject name) teachers were the worst. They just left us hard to understand pre-recorded videos, gave touch tasks and gave bad grades', 'sitting in front of a computer for an interval for 90 minutes is also not the best experience'	The lack of teachers' distance teaching experience		
'I focused more on the given material than the lectures because I often found it difficult to listen due to personal reasons as I get distracted easily', 'no real evaluation for hard worker due to some cheating', 'the teacher is good, but it is hard to have a good class when nobody is talking', 'shy to ask questions'	The students blame the situation even when in reality only they can change it themselves		
'had to attend classes well into midnight, and also attend examination well into midnight', '8 of 10 professors have good understanding of the situation, the different time zones, but some of them didn't'	The problem because of the time zones		
'you cannot really connect to others', 'you don't get to know new people', 'lack of socialising', 'no interaction, no friends', and even: 'no contact = no studies'		The students felt discomfort because of the isolation	**Type of Interaction: Learner-Learner Interaction**
'not live', 'the atmosphere in the classroom is radically different from the atmosphere in a remote audience', 'cameras opening should be mandatory', 'hiding behind the screens, cause you do other things instead of learning'		Difficulty in performing group tasks	
'…Overall it was decent, but labworks, Latin and Lithuanian lessons are better in face-to-face mode'	Studying Lithuanian and Latin as negative aspects	The students pointed to the lack of practical knowledge during the laboratory work	

The student responses indicate that distance learning is still a more positive than negative experience that has demonstrated the ability of both teachers and students to work in an emergency. Given the responses from the students and the observations made in some individual reviews, it is worth thinking about blended learning to meet the needs of many students.

This study reflects a small fraction of the world's concerns about the transformation of traditional studies into distance learning during the COVID-19 pandemic. Problems with students' preparation for distance learning are a concern in many countries. Such research is important and necessary as it will contribute to the improvement of teaching practices in the future. It is already clear today that the studies will have to transform after evaluating the experience of this global experiment.

We believe that in our case it would be appropriate to conduct further research based on the types of interaction identified by Moore (1989) (student-student; student-learning content; student-teacher) and the levels of student expectations set by Casanova and Paguia (2022) (infrastructure; teacher; learning methods, course design, assessment system). In this pilot study, we can see some aspects of these types and levels that are worth exploring further.

4. CONCLUSION

The findings of the study reveal a wide range of the following pandemic distance learning experiences:

• The anxiety that accompanied all of us at the beginning of the process, followed by a quick breakthrough and reorientation, allowed students to understand that they will not only need to study, but also to improve, i.e., distance learning requires different learning skills. After the first stress and confusion due to the inability to act, technical disruptions or other organizational problems, it was clear that the communication between teachers and students did not break down, gained new positive nuances, became more flexible, inclusive, and motivating, providing more opportunities to learn and innovate, i.e., create new or adapt usual methods to new conditions, plan and save time more successfully, avoid traffic congestion and rest by connecting at a convenient time.

• As for the negative, we can divide the negative aspects into two groups, i.e., technical and non-technical. As non-technical negative aspects we can name the need for live communication, faster forgetting of acquired knowledge, the desire to be in the "live" atmosphere of the university; health problems due to constant sitting and looking at the computer screen. The participants of the research also noticed the aspects of distance learning that need to be corrected at the technical level: disproportionate workload, incomplete use of software functions offered by university platforms, and lack of interactive tasks.

• And what is next? Once a certain level of unavoidable use of technologies is reached, their further mastery and use in the study process will no longer be so rapid. There will be reassurance, a certain plateau phase, i.e., the changed teacher-student relationship in the context of the pandemic will stabilize and a new impetus will be needed to re-launch the process. Could it be computer technology courses being implemented at universities, their availability, a network of consultants always available, new requirements for the qualification of university teachers?

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