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E-LEARNING IN HIGHER EDUCATION – PROS AND CONS

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Abstract

The pandemic has led to the generalization of e-learning in higher education and its transformation into a long-term process. For most students (and teaching staff), this transformation has been unexpected, difficult, challenging, and stressful. The study takes as its starting point this context, our observations during classes, and some informally collected student testimonies. This paper presents the results of a questionnaire-based study conducted at the "Vasile Alecsandri" University of Bacău, Romania. The aim of the study is to identify students' perceptions of the impact of e-learning on some important dimensions of the professional and personal training process. The objectives of the study are: O1. to identify students' perceptions regarding the correlation between some aspects of the online didactic activity (access to a device; type of device; time spent learning; degree of stress generated; interactive methods used) and its efficiency; O2. To identify students' perceptions regarding the impact of e-learning on their training and motivation; O3. On this basis, to systematize the main arguments pros and cons the use of e-learning in higher education. The data were collected by means of a questionnaire consisting of 11 closed items answered by 201 students. The obtained results made it possible to determine both the students' perception of the impact of e-learning on their professional and personal education and to formulate proposals for the use of e-learning at a higher level in higher education.

Keywords: COVID-19 pandemic, e-learning, higher education, learning motivation

1. Introduction

Today's society is characterized by the ubiquity of information technology. Information is managed, processed, stored, protected, transmitted and retrieved with the help of computers and software. Technological progress has provided solutions to certain problems facing humanity (e.g., life-saving medical procedures, long-distance communication, education for disadvantaged groups, etc.), but not to all problems. As technology advances, so does humanity and its problems. The information technology revolution has impacted personal, social and professional life worldwide. Electronic learning or e-learning is "an online learning platform that originates in a formal context and uses a variety of multimedia technologies" (Al Rawashdeh et al., 2021, p. 107) "to offer instructional programs to distant learners" (Arkorful & Abaidoo, 2015, as cited in Al Rawashdeh et al., 2021, p. 107). E-learning can be understood as online learning in most cases. However, a distinction should be made between a number of terms: virtual learning: instruction that is delivered online rather than on-site; it takes the form of an Internet-based platform, videos of learning content, online manuals, etc.; it may be taught in real time, with the teacher leading a class on a virtual conferencing platform, or it may take the form of a self-paced course, with certain aspects of communication taking place between student and teacher (via email or chat); online learning/web-based learning: any type of learning that takes place over the Internet; it can be virtual, blended, or eLearning; blended learning: a traditional classroom instruction is combined with online instruction (e.g., instruction takes place in a classroom where the lecture is also broadcast online; or certain aspects of a course take place online while others take place in one location); distance learning/education: any learning that does not take place in a classroom and in the presence of an instructor (web-based courses, television courses, distance learning); e-learning: courses delivered electronically; learners attend classes from home (distance learning), and although all courses are led by instructors, those instructors do not meet face-to-face with students; instructors and learners communicate via messaging platforms or email, and even the degree is earned via online methods. Unlike virtual learning, e-learning rarely occurs in real time and there are no live video conferences; e-learning is based on the student's schedule. The electronic hardware and software used in e-learning can support learning both offline and online. E-learning relies on technology to improve classroom engagement by providing learners with a positive environment and online tutorials to complete an assignment. The most common technologies used in e-learning are a personal computer or computer-assisted learning, tutorials, learning support systems, and online lectures (Kattoua et al., 2016; Samsuri et al., 2014). In recent decades, information technology has increased its influence on educational activities and has become irrevocably associated with teaching, learning, and research. In the current COVID -19 context, information technology has impacted all levels of education, from preschool to academic education. The use of information technology in the COVID -19 context has revealed two main truths: first, that learning as a communication-based social process cannot be completely replaced by technology, and second, that technology ensures improved communication and collaboration, problem solving, research, transfer and presentation of learning content, creativity, and novelty in the teaching-learning evaluation process.

The main problem of e-learning is how to integrate information technology into education to achieve the best results in terms of teacher and learner performance and effectiveness (Anderson, 2011).

2. Problem Statement

The COVID -19 pandemic has forced all educators to resort to online learning, with e-learning being a part of it for those students who are not able to participate in online classes in real time. The advantages and disadvantages of online and e-learning have been the subject of much research. At the academic level, online learning is learning that takes place wholly or partially over the Internet. It is more widely used in elementary, secondary, and higher education and appeals to learners because of its flexibility, time efficiency, and cost effectiveness. E-learning increases learner engagement through the use of text, videos, sounds, collaborative sharing, and interactive graphics. It also improves the quality of teaching and learning, either as a direct or secondary consequence of the need for higher education institutions to maintain a competitive edge by providing students with access to education in a globalized marketplace. Other benefits of e-learning include lower educational costs for students, flexibility, time efficiency, and the variety of learning approaches enabled by interactive online content (Aparicio et al., 2016; Islam et al., 2015; Songkram, 2015; Songkram et al., 2015). E-learning is beneficial because it allows students to access learning across the boundaries of place and time.

In summary, the advantages of implementing e-learning in education in general and in higher education in particular are that e-learning provides the necessary educational context to effectively address the needs of individual learners, it is student-centered, learning objectives can be achieved regardless of the location, age, ethnicity, race, etc. of the learners, e-learning promotes learner autonomy as the role of the instructor has changed from a source of knowledge and information to that of advisor, guide, and facilitator (Huang & Chiu, 2015; Joshua et al., 2016; Raspopovic et al., 2017). From the students' perspective, e-learning is highly valued because it is flexible and significantly reduces the need for travel and associated costs; e-learning helps build digital literacy; e-learning enables learners from disadvantaged groups (learners with disabilities, learners who need to relocate for various reasons, learners with poor economic status, etc.) to participate in and complete study programs. E-learning also supports better collaboration between learners and the educational institution, as learners take charge of the learning process; e-learning platforms help students keep track of their course materials, assignments, deadlines, and exam dates, and also enable easier communication between instructors and students (Al-Handhali et al., 2020; Chang, 2016; Gautam & Tiwari, 2016; Muruthy & Yamin, 2017; Martínez-Caro et al., 2015). Two decades ago, the Moodle platform had recorded a growing number of users because it is user-friendly, easy to install, and offers a variety of options (Aydin & Tirkes, 2010).

Despite the advantages of e-learning, studies have shown some disadvantages of online teaching: lack of interaction with students, which may lead to lower learner motivation and engagement and thus lower learner efficiency; lower learner motivation and engagement may also be due to the fact that e-learning assessments and evaluations cannot control illegitimate practices such as cheating, plagiarism, etc. (Arkorful & Abaidoo, 2015). The lack of face-to-face interactions among learners and between learners and instructors is one of the major drawbacks of e-learning (Islam et al., 2015). Student engagement is significantly lower and students prefer to work individually in online classes than in traditional classrooms because working in teams negatively affects their daily routine (Gilbert, 2015). Cultural barriers, namely individualism and collectivism, also impact e-learning. The financial resources required to access the benefits of information technology are another challenge: e-learning requires high-

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quality electronic devices and data connections (Talebian et al., 2014). Maintaining learner engagement and motivation in an online course is another major challenge for e-learning. Highly self-motivated, independent learners with higher self-responsibility, self-organization, and technological skills have performed much better in academic performance in online education than low self-motivated students (Sarkar, 2012; Sarrab et al., 2013); instead, learners with poor self-regulation have submitted poor quality work or late assignments. Therefore, learner motivation, which ensures learner engagement and performance, is a major challenge in e-learning and online learning in general.

3.   Research Questions

In the context of the advantages and disadvantages of e-learning outlined above and in the context of the COVID -19 pandemic, we conducted a questionnaire-based study to shed light on the effectiveness of e-learning from the learners' perspective. Our research questions: 1. How do students rate the effectiveness of e-learning as a function of factors such as access to an electronic device, type of device, time spent learning, level of stress caused by e-learning, and interactive methods used by instructors? 2. How do students rate the impact of e-learning on their academic performance and motivation to learn? 3. What are the main arguments for and against the use of e-learning in higher education?

4.   Purpose of the Study

The purpose of our study is to determine students' perceptions of the impact of e-learning on some important dimensions of the professional and personal education process. The objectives:

O1. to identify students' perceptions regarding the correlation between some aspects of the online didactic activity (access to a device; type of device; time spent learning; degree of stress generated; interactive methods used) and its efficiency; O2. to identify students' perceptions regarding the impact of e-learning on their training and motivation; O3. to systematize the main arguments for and against the use of e-learning in higher education.

5.   Research Methods

This article is based on a questionnaire-based survey conducted by the authors between February and July 2021 at the "Vasile Alecsandri" University of Bacău, Romania. The questionnaire was created in Microsoft Forms and distributed online to students of different majors at the five faculties (Engineering, Letters, Natural Sciences, Economics, Exercise Sciences, Sports and Health). The students were informed about the purpose of the study and the use of the data and gave their consent to participate in the study. The responses to the questionnaire came from 201 respondents aged between 18 and 65 years, with the highest percentages reported for the age groups 18-23 years (22.4%) and 36-41 years (21.9%), followed by the age group 30-35 years (18.4%) and 24-29 years (15.4%); the gender distribution of the respondents is 16.4% male and 83.6% female. The data collected were analyzed using Jamovi 1.6 data analysis software.

6. Findings

With respect to O1. - in order to determine students' perceptions of the correlation between some aspects of the online didactic activity (access to a device; type of device; time spent learning; degree of stress generated; interactive methods used) and its efficiency, we present our results based on respondents' answers to the questionnaire items elaborated for this purpose. Based on the responses to the questionnaire item 1. Do you have access to a device for online learning? we can conclude that most of the respondents have access to a well-functioning electronic device that supports them in conducting their online learning: 90.5% - yes; only a small percentage of respondents have access to a device that does not work well or share their device with someone else (4.5% - yes, but it does not work well; 5.0% - yes, but I share it with someone else). Regarding item 2. What device do you use for online learning?, respondents gave the following answers: laptop 79.6%; computer 10.4%; smartphone 8.5%; tablet 1.5%. The percentages for responses to question 3. How much time do you spend on average per day learning online? are: 1-3 hours - 31.3%; 3-5 hours - 39.8%; 5-7 hours - 17.9%; 7-10 hours - 8.5%; more than 10 hours - 2.5%. The correlation of the answers to the 3 questions reveals several important aspects for our study. Based on the correlation of the results of item 1 and item 3, we were able to determine, as expected, that the number of hours devoted to online learning depends significantly on whether the device is shared with someone. 63.63% of respondents who answered that they share a device spend 1-3 hours per day learning, 27.27% spend 3-5 hours per day learning, and only 1 student (9%) spends 5-7 hours per day learning, compared to 50% of those who have a device that does not work well who spend 3-5 hours learning, 37.5% spend 5-7 hours per day learning, and 1.2% (1 student) spend 7-10 hours per day learning. There are no responses for the 7-10 hours and more than 10 hours from those who share their device with someone; there are no responses for 1-3 hours and more than 10 hours for those with a device that does not work well. For those who have a device that works well, the percentages look dramatically different: 39.66% - 3-5 hours; 30% - 1-3 hours; 17.87% - 5-7 hours; 8.9% - 7-10 hours; 2.7% - more than 10 hours. We also correlated the results of item 2 and item 3, which revealed that those who spend the most hours in online learning use a laptop, as opposed to those who use a smartphone or tablet (Table 1).

Table 1. Correlation of time spent on online learning with the age of respondents

	On average, how much time do you spend learning online per day? (number of hours)				
Age	1-3	3-5	5-7	7-10	more than 10
18 - 23 yrs	22.22%	22.88%	26.66%	17.77%	4.4%
24 – 29 yrs	35.48%	38.7%	19.35%	3.2%	3.2%
30 – 35 yrs	21.62%	56.75%	13.51%	5.4%	2.7%
36 – 41 yrs	34%	43.18%	13.63%	9%	0
42 – 47 yrs	48.27%	31%	13.79%	3.4%	3.4%
48 – 53 yrs	33.33%	33.33%	25%	8.3%	0

We correlated the age of the participants and the number of hours spent in online education and found that for each age group, the highest percentages were for the option of 3-5 hours per day spent on online learning. The values for the highest percentages for a number of options are very close for some

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age groups, for example: for the 18-23 age group there are 22.22% options for the 1-3 hours, 26.66% for the 5-7 hours, and 22.88% for the 3-5 hours; for the 24-29 age group there are 35.48% options for the 1-3 hours and 38.7% for the 3-5 hours; for the 36-41 age group there are 34% options for the 1-3 hours and 43.18% options for the 3-5 hours per day. From the data in the table above, we can draw certain conclusions. Most respondents from the age group 30-35 spend 3-5 hours per day on online learning, while most respondents from the age group 42-47 spend 1-3 hours, compared to the greater variety of options for the 18-23 and 48-53 age groups.

The results for item 4: Which of the teaching methods used by instructors in online courses and seminars did you find most attractive, showed that the students' interest in the debate and conversation methods is higher (57.2%). The didactic games, methods with game elements, are of lower interest (55.7%), while the exercise method is in third place, with a greater difference in attractiveness than the first two (38.3%). The answers to question 5. Online learning is stressful for you show that online learning causes some level of stress, or an average level of stress, as the high and very high options account for only 13.4% and the very low and low options account for 49.8%, or half of the options, plus the some level option accounts for 36.8%. The correlation between item 5 and the age of the respondents shows that the highest stress levels due to online learning are observed in two age categories: 18-23 (youngest students who do not cope adequately with this type of learning despite the digital literacy they claim to have acquired) and 42-47 (mature students with high self-expectations due to their professional, personal, and social status). Data collected for item 6. Do you think gamification of education through the use of learning games, teaching methods with game elements (scoring, competition, problem solving with rewards, etc.) is a way to reduce the stress associated with online learning? has revealed that for almost half of the respondents gamification of education can reduce the stress of online learning to a high and very high degree. Only 15.5% of respondents do not believe in the value of gamification to reduce learner stress.

Regarding O2. - to determine students' perceptions of the impact of e-learning on their education and motivation, we present our findings based on respondents' answers to the questionnaire items prepared for this purpose. The comparative approach to the effectiveness of e-learning and face-to-face learning in building competencies can be understood from the results on item 7. Do you consider online learning to be more effective than face-to-face learning in building the skills targeted by the degree program in which you are enrolled? The results show that the efficiency of skills training through face-to-face learning is higher than through online learning (less effective - 36.8% and with a much lower efficiency -10.0% compared to more effective - 15.8% and a much higher efficiency 10.0%). However, it is worth noting that 27.4% (more than ¼ of the responses) of the respondents believe that both forms of learning contribute to the same degree of increase in competence. The comparative impact of online learning and face-to-face learning on student motivation can be determined by analyzing the data collected through item 8. Do you agree that online learning motivates students more or less than on-site (classroom) learning? Students believe that online education (online learning, e-learning as a part of it) demotivates learners. 38.8% of the respondents chose the option in lower extent for the question whether online learning increases or decreases the motivation to learn; another significant percentage was recorded for the option in the same extent - 22.9%. If we add up the percentages for online learning as a

demotivating factor (48.3%%), we find that they are higher than the percentages for online learning as a motivating factor (28.8%).

Item 9 aimed to determine the impact of the use of educational games and gamified teaching and learning activities on building a range of 21st century competencies and skills: Regarding games of any kind, didactic teaching methods with game elements, please rate the effectiveness of the use of teaching methods with game elements in online teaching in the formation and development of the following competencies and skills on a scale from 1 to 5, where 1 - to a very small extent, 2 - to a small extent, 3 - to some extent, 4 - to a large extent, 5 - to a very large extent). The majority of the respondents' answers indicate that games of any kind and didactic teaching methods with game elements help learners to acquire all the competences and skills listed in the questionnaire, to a very high and high extent. The competences and skills included in the questionnaire have been selected based on the COUNCIL RECOMMENDATION of 22 May 2017 on the European Qualifications Framework for lifelong learning and the Recommendation of the European Parliament and of the Council of 23 April 2008 on the establishment of the European Qualifications Framework for lifelong learning (2017/C 189/03)1 and the COUNCIL RECOMMENDATION of 22 May 2018 on key competences for lifelong learning (2018/C 189/01).2 From the list of competences and skills that students had to evaluate in terms of how effective didactic games and methods with game elements are to build them, the following received the highest score for option 5 - to a very high degree: IT competences (47.3%); creativity and innovative thinking (44.8%); teamwork (36.8%); flexibility and prioritization (36.3%); working with deadlines (35.3%); creative thinking (34.8%); stress management (31.8%). For these competencies and skills, the next highest score is for option 4 - to a high degree, which means that students believe that didactic games and teaching methods that include game elements are very effective in building and practicing these skills. The highest score for option 4 - to a high degree was calculated for a number of competencies and skills; option 5 also represents the second highest score for these competencies: analytical and research skills (41.8%); autonomy and decision making (39.3%); communication (oral and written) (38.8%); critical thinking (38.3%); foreign languages (36.8%); negotiation skills (35.3%); human resource management (34.8%); domain specific competences and skills (33.3%); problem solving (33.3%); self-regulation (33.3%); entrepreneurship (31.3%); leadership (29.9%). For some competencies and skills, the difference between the score for option 5 and 4 is very small: stress management, leadership, self-regulation, domain-specific competencies and skills. The competence with the lowest score for options 5 (18.4%) and 4 (20.9%) is physical stress management: e-learning does not promote the building of competencies and skills that require physical strength or effort.

In item 10, respondents were asked to rate the effectiveness of the use of educational games and didactic methods with game elements in online teaching in the formation and development of a number of cognitive, skill and attitude dimensions of the educational act on a scale from 1 to 5, where 1 - to a very small extent, 2 - to a small extent, 3 - to some extent, 4 - to a large extent, 5 - to a very large extent). The responses show that the highest percentage for option 5 - to a great extent was obtained from the

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[1] https://eur-lex.europa.eu/legal-content/EN/TXT/HTML/?uri=CELEX:32017H0615(01)&from=EN , Web April 27th 2022.
[2] https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32018H0604(01)&rid=7 , Web April 27th, 2022.

effectiveness of learning games and gamified teaching-learning methods in increasing student engagement in the learning process (41.8%), followed by their effectiveness in helping learners acquire new domain-specific processes and procedures (40.3%), understanding and acquiring domain-specific knowledge (39.3%), promoting collaboration and cooperation (38.3%), promoting the communication of a large amount of information (35.3%); for all these items, the second highest percentages, quite close to the first, are the percentages for option 4 - to a large extent. The highest percentages for option 4 - to a great extent were obtained for the effectiveness of learning games and gamified teaching-learning methods to efficiently convey domain-specific knowledge (37.3%), to increase learners' motivation (34.3%) and to increase learners' self-esteem (33.3); for all these items, the second highest percentages, quite close to the first ones, are the percentages for option 5 - to a very great extent. Therefore, according to the respondents, learning games and game-based teaching methods are very effective in building all the cognitive skills and attitudes mentioned above. Respondents' answers to item 10 also reveal their assessment of the potential of learning games and gamified teaching methods to reduce or eliminate feelings of alienation. According to the data collected, the highest percentages in this regard are for the fairly neutral option 3 - to some extent - with corresponding percentages for the other options as well. We may conclude that respondents do not think that games and gamified methods are very effective in reducing or eliminating feelings of alienation. The data collected for item 11. Do you consider gamification of education through the use of didactic games, didactic methods with game elements (scoring, competitive spirit, problem solving with rewards, etc.) a must in the context of online education? support us in stating that even though 47% of respondents think that gamification is a necessity in online education, we cannot judge whether this opinion reflects the view of the research group. This is because the 36% of students who do not think gamification is a necessity in online education are joined by the 17% who do not know how to deal with this issue. Therefore, the data on this aspect of our research is not sufficient to form a definitive opinion.

Regarding O3 – systematization of pros and cons for e-learning in higher education, we may highlight the following arguments for the use of e-learning in higher education: a significant proportion of students (90.5%) have their own well-functioning device, mainly laptops (79.6%) and computers (10.4%), so they have both the necessary e-learning infrastructure and the digital literacy to use it for their learning (as these are high school graduates who graduate with a mandatory test in the national examination - the baccalaureate - that assesses digital literacy); students are able to engage in online learning for an extended period of time, with most working between 3-5 hours (39.8%); some classical teaching methods (debate/conversation, didactic game, and exercise) are considered by students to be very attractive for online learning, both in lectures and seminars; the stress level caused by online learning is average, so students' engagement in online learning can be supported at an appropriate level. In addition, gamification of education (rated by more than half of the students as one of the most attractive methods in the online learning environment) becomes a lever that can reduce the stress associated with online learning to a high and very high degree for almost half of the respondents; the use of didactic games and any form of gamification in online learning contributes to a higher level in building the following competencies: IT competencies; creativity and innovative thinking; teamwork; flexibility and prioritization; working with deadlines; creative thinking; stress management and building the following cognitive, domain-specific

and attitudinal dimensions: student engagement in the learning process, acquisition of new domain-specific processes and procedures, understanding and acquiring domain-specific knowledge, fostering collaboration and cooperation, promoting the transfer of a large amount of information.

Based on the analysis of the collected data, we identified two main arguments against the use of e-learning in higher education: the process of skill building is more effective when learning is face-to-face rather than online; online learning is more demotivating than motivating for students.

7.   Conclusions

The results obtained through our investigation confirm both a set of general data from the study of this topic and the systematization of the advantages and disadvantages of e-learning in the first part of this study. The results of our investigation allow us to highlight a number of aspects related to the challenges of e-learning from the students' point of view. The insights gained from the questionnaire item data are useful in forming a picture of how students perceive e-learning and online education in general in relation to personal and professional challenges. One of the most interesting findings was the students' view of the potential of learning games and gamified teaching-learning activities to reduce and/or eliminate feelings of alienation, which other studies have shown are exacerbated by online education (Sazmandasfaranjan et al., 2013). From the respondents' answers, we can conclude that e-learning and online education pose a serious, real threat to learners' emotional well-being by increasing feelings of loneliness, isolation, and alienation. Although the distance in online education is physical, it seems that virtual interaction can never replace real face-to-face interaction in the physical classroom between teachers and students and among students. Our findings are relevant to academia as well as to higher education managers and higher education funding institutions. Respondents' answers indicated that educational games and gamified learning are effective in promoting the acquisition of 21st century competencies, i.e., technical, domain-specific, and personal knowledge, skills, and attitudes that support successful social and professional integration into the labor market. It has also been found that e-learning is a rather demotivating factor when it comes to learner engagement. Therefore, funding opportunities should be geared towards ensuring that all students have access to a well-functioning electronic device that is suitable for e-learning and allows them to access, edit, and elaborate on digital information and content in various formats both online and offline. From the students' responses, the most commonly used electronic device for e-learning is a laptop. We may conclude that since this device is chosen by so many, it is also the most appropriate electronic device for e-learning and online teaching, since it is portable and provides the learner with a connection anytime, anywhere.

For these reasons, we advocate adapting the teaching-learning-evaluation process to learner needs. A hybrid educational format, where face-to-face interaction and an online learning platform run simultaneously, may be the best recipe for education in the future, to ensure learner motivation and engagement both for students who can attend lectures and seminars in person and for those who cannot.

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