

STUDENTS' PERCEPTION OF ONLINE CLASSES IN HIGHER EDUCATION INSTITUTIONS BEFORE AND AFTER THE EMERGENCE OF COVID-19 IN BOSNIA AND HERZEGOVINA

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Abstract

The year 2020, apart from the Covid-19 pandemic, was also marked by a way of learning in higher education institutions that had not been applied to a large extent until then - online learning. At the beginning of 2020, due to the circumstances caused by the aforementioned pandemic, universities in Bosnia and Herzegovina were forced to switch to an online form of teaching in order to maintain continuity in work and learning. Such a way of learning required students' computer literacy, which has become one of the basic conditions in modern education. High-quality participation of students in classes meant, in addition to communication with professors and each other, the use of available sources of information necessary for the learning process. This research deals with students' perception of online classes before and after the outbreak of the Covid-19 pandemic as one of the key components of the process of identifying online classes' success. The survey was created in the 1KA survey platform and carried out between November 15, 2021 and January 15, 2022 in Bosnia and Herzegovina.

Keywords: *e-learning; higher education institution; Covid-19; crisis; Bosnia and Herzegovina.*

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Introduction

The Covid-19 pandemic unexpectedly affected the transformation in the education system, more precisely the necessity of using and applying digital tools in teaching. In a very short period of time, the higher education system had to adapt to online teaching with the help of digital tools. Online classes allow the learning and teaching process to take place in a virtual environment, without the physical presence of students and teachers, using digital technologies, which is a big advantage in organizing classes during the Covid-19 pandemic. The most common definition of distance learning is that it is an approach to learning for those who are physically distant (Volery and Lord, 2000; King et al. 2001; Guilar and Loring, 2008).

Various terms such as online education, e-learning, distance learning, distance education, and online teaching are used to denote learning models supported by information technologies. Online teaching is a form of education in which the entire curriculum or course program is offered and carried out with the help of information technology. It is a method of learning and teaching in which students and teachers are physically separated spatially, temporally, or both (Tadić, 2021).

Today, online teaching is based on the use of the Internet and is defined by certain elements:

- time and space distance between professor and student during the educational process
- use of media (most often the Internet) for the purpose of connecting professors and students
- ensuring communication between a professor and a student
- enabling the adoption of new teaching content (Budić and Hak, 2014).

Quality online teaching is not possible without constant education of participants in the teaching process, primarily professors and students, more precisely without a certain degree of information literacy. The term information literacy first appeared in the 70s of the 20th century, and the term was first used by Paul Zurkowski in 1974. Zurkowski defines information literacy as the effective use of information for the purpose of solving certain problems (Jokić et al. 2016). Computer literacy is determined by the level of success in using and operating computer systems, programs and networks. It is also

called computer or ICT literacy. The modern importance of computer literacy is determined by the fact that with a higher level of computer knowledge and abilities that a person has developed, one's social status also increases (Vrkić Dimić, 2008). The basic IT knowledge and skills that an IT literate person must have are constantly updated and perfected in order to be able to follow the rapid development of information and communication technology (Tomičić, Cvrtić and Pavetić, 2012). Literacy can be divided into two important periods, i.e. the period before the appearance of electronic computers and literacy after the appearance of electronic computers. The mentioned second period is called computer literacy. In the beginning, the term computer literacy meant only knowledge of the basics of working with the operating system of a personal computer and knowledge of a particular word processing program. At the end of the 20th century, there was a characteristic expansion of the Internet use, so since then computer literacy, in addition to the knowledge of using the operating system and the corresponding word processor, also implies knowledge of the Internet use. In the last decade, in which computers represent an almost indispensable part of life, computer literacy is no longer seen as an advantage, but becomes an imperative for a successful businessman (Hajduković, 2017).

The Covid-19 pandemic, in the whole world and in Bosnia and Herzegovina, affected the increased use of the Internet and various applications primarily in the education system. Pandemic times have brought numerous challenges and changes, including the use of the Internet and modern technologies. After the World Health Organization (WHO, 2020) declared the Covid-19 pandemic on March 11, 2020, most educational institutions both in the world and in Bosnia and Herzegovina switched to distance learning. In mid-March 2020, the educational authorities closed all higher education institutions, both private and public. Shortly after suspending classes throughout the country, online lectures and consultations of students with teachers via the Internet were launched in all higher education institutions (UNICEF, UNESCO Bosnia and Herzegovina, 2020).

Online learning has its advantages and disadvantages. Some of the advantages of e-teaching are a greater degree of creativity among students, independent creation of studying time, flexibility, and acquisition of new IT skills. Many authors often emphasize lack of socialization, poor technical equipment, lack of self-discipline, and lack of motivation as disadvantages

(Tonković, Pongračić and Vrsalović, 2020). Also, it is very important to point out the problem of learning flexibility, where it will be difficult to set aside time for learning if students are not interested in the teaching material (Dhawan, 2020). According to previous research, the level of computer literacy is not the same for all students, it primarily depends on the educational system in particular countries and higher education institutions (Ezabadi et al., 2021). An interesting study was carried out by the authors Wallace and Clariana (2005), who found that the average results of computer literacy among students were significantly lower than their predicted estimates. Dhawan analyses the state and application of e-learning in India in 2020. The author emphasizes that the majority of institutions use a combined learning model due to the Covid-19 pandemic, however there are also institutions for which it is very difficult to completely switch to online learning due to the lack of IT resources and their application. Research conducted by Parkes and colleagues in 2014 showed that it is difficult for students to balance their family and social life with online learning, given that online learning requires space and IT tools that not all students have at their disposal (Parkes, Stein and Reading, 2014).

Many authors also highlighted the huge problem of class attendance due to not having appropriate technology and/or internet access (Sahu, 2020; Sun et al., 2020; Demuyakor, 2020; Moralista and Oducado, 2020; Gyimah, 2020; Al Lily et al., 2020; Karagul et al., 2021), which had a particularly negative impact in less developed countries. Also one of the important problems is computer (il)literacy (Bao, 2020; Moralista and Oducado, 2020; Mascolo, 2020; Al Lily et al., 2020). Professors also pointed out the problems of using digital tools during the Covid-19 pandemic. They state that it was not easy to prepare for online classes in such a short time (Mascolo, 2020).

However, it is a big challenge for all participants in the teaching process to create a quality e-learning curriculum. Numerous authors in their research suggest revising the curriculum and including computer literacy through an increasing number of courses even after the Covid-19 pandemic. It should also be emphasized that online programs should be designed to be creative, interactive, relevant and focused on students and teamwork (Partlow and Gibbs, 2003).

1. Research Methodology

In this research, we used the scientific methodology developed by Raspor (Raspor, 2021). By using this methodology, a comparison can be made between concrete findings and conclusions.

The paper examines students' perception of online classes in higher education institutions in Bosnia and Herzegovina before and after the Covid-19 pandemic. The survey was created in the 1KA survey platform and carried out between November 12, 2021, and February 12, 2022, in Bosnia and Herzegovina. The questionnaire was sent to 192 addresses, 101 public and 91 private faculties in Bosnia and Herzegovina, and included 202 students.

Research data were collected through an online questionnaire based on a seven-point Likert scale. Participants were asked to express their agreement with the statements where "1" is used for "I do not agree at all" and "7" means "I completely agree". So all items were positively worded. Data were statistically processed and tested using SPSS.

Respondents were asked to share some personal information such as gender, work experience, and age to answer questions related to the use of digital tools in classes before and after the Covid-19 pandemic.

For the purposes of our research, we formulated two research questions:

"1 RQ: Did the transition to online learning during the Covid-19 pandemic among students make an influence on the increased use of digital tools?"

"2 RQ: Does the use of digital tools have a positive effect on the creativity of the teaching process?"

2. Results and discussion

Two hundred and two students participated in the research, 46 men (22.8%) and 156 women (77.2%). The largest number of respondents (86%) are under 25 years old, and the largest percentage are undergraduate students (114).¹

¹ Some respondents did not answer some of the demographic questions.

Table 1. Demographic data for students

| | <i>Frequency</i> | <i>Percentage</i> |
|--|------------------|-------------------|
| Participants' age groups | | |
| <i>< 25 years old</i> | 175 | 86,6 |
| <i>26–40 years old</i> | 21 | 10,4 |
| <i>41–60 years old</i> | 5 | 2,5 |
| <i>> 61 years old</i> | 1 | 0,5 |
| <i>Sum</i> | 202 | 100 |
| Enrolled in the academic year 2020–2021 | | |
| <i>Freshman year 2020–2021</i> | 48 | 24,5 |
| <i>Sophomore/Junior/Senior year 2020–2021</i> | 139 | 70,9 |
| <i>Graduate</i> | 9 | 4,6 |
| <i>Sum</i> | 196 | 100 |
| Study programme: | | |
| <i>Higher education programme</i> | 50 | 25,4 |
| <i>Associate's degree programme</i> | 16 | 8,1 |
| <i>Bachelor's degree programme</i> | 114 | 57,9 |
| <i>Master's degree programme</i> | 10 | 5,1 |
| <i>Integrated Master's degree programme (Long-cycle Master's degree programme)</i> | 6 | 3,0 |
| <i>Doctoral degree programme</i> | 1 | 0,5 |
| <i>Sum</i> | 197 | 100 |

Source: Author's research

The analysis of students' attitudes toward e-learning before the Covid-19 pandemic indicated a high level of students' satisfaction with internet knowledge (5.44), computer literacy (5.62), and a high level of public speaking, i.e. experience with presenting work tasks and obligations (5.29). Before the Covid-19 pandemic, students had a lower level of experience with video production (3.12), which is understandable considering that the majority of classes in educational institutions in Bosnia and Herzegovina, as well as in other parts of the world, took place inside classrooms in a classic way. Before Covid-19, students did not have enviable knowledge and experience even with video conferences (3.12), which can again be explained by the increase in the number of online conferences during and after the Covid-19 pandemic (Table 2).

Table 2. Students' attitudes towards the e-learning experience before the emergence of Covid-19

The results are presented on a scale of 1-7 (1 means they had no previous experience; 7 means they had previous experience).

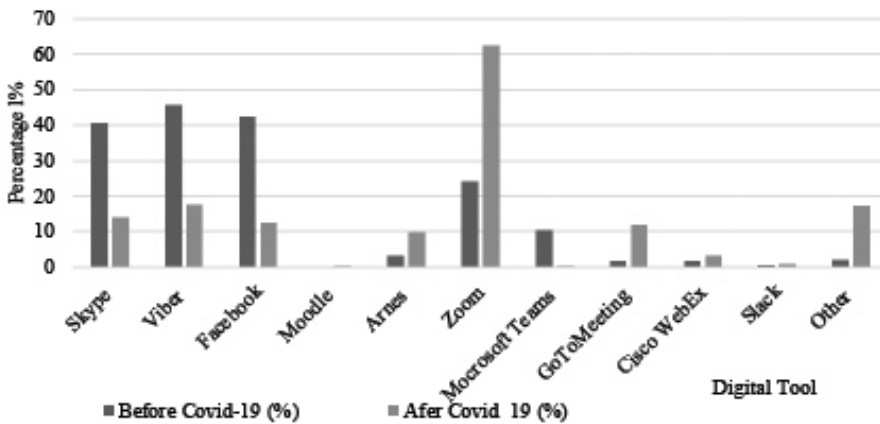
| | <i>N</i> | <i>Mini- mum</i> | <i>Maxi- mum</i> | <i>Mean</i> | <i>Std. Devia- tion</i> |
|---|----------|----------------------|----------------------|-------------|-----------------------------|
| <i>How would you describe your experience using the Internet?</i> | 335 | 1 | 7 | 5,44 | 2,101 |
| <i>How would you describe your experience with e-learning (adapted to e-learning technology, e-lectures coordination and administration)?</i> | 335 | 1 | 7 | 3,38 | 2,361 |
| <i>How would you describe your experience: Computer literacy (Office tools: Word, Excel, Power Point)?</i> | 335 | 1 | 7 | 5,62 | 1,583 |
| <i>How would you describe your Virtual presentation and speaking experience?</i> | 335 | 1 | 7 | 5,29 | 1,833 |
| <i>How would you describe your Video presentations experience?</i> | 335 | 1 | 7 | 4,50 | 2,082 |
| <i>How would you describe your Video conference experience?</i> | 335 | 1 | 7 | 3,12 | 2,193 |
| <i>How would you describe your Remote access experience?</i> | 335 | 1 | 7 | 3,76 | 2,318 |
| <i>Your e-learning software experience: No prior experience?</i> | 335 | 0 | 1 | ,32 | ,467 |

Source: Author's research

Due to the necessary introduction of online classes, during the Covid pandemic, students had the opportunity to use software applications, which they were familiar with before the Covid pandemic as well as some new ones. The most frequently used applications before the Covid-19 pandemic were: Viber (45.7%), Skype (40.6), and Facebook (42.4). During the Covid pandemic, the most used application is Zoom (62.4), followed by applications that were used in a large percentage even before the pandemic, such as; Viber (17.5), Facebook (12.5), and Skype (11.2). Research by the author Đurak 2022 also showed that Zoom was one of the most frequently used platforms during the Covid-19 pandemic. It is an easy-to-use application that enables selection into individual smaller groups called Breakout rooms, within which students can complete tasks and after exiting the Breakout rooms, they can submit, and present their tasks (Đurak, 2022). Also, GoTo Meeting (11.2) and Arnes (9.9) should be singled out among applications whose use increased during

the Covid-19 pandemic. Tools that students used very little (<5%) or not at all before and during the Covid-19 pandemic in Bosnia and Herzegovina: Cisco Webex, Slack and Moodle.

It is important to emphasize that during the Covid-19 pandemic, there was an increase in the number of used software applications, thus confirming “1 RQ: Did the transition to online learning during the Covid-19 pandemic among students make influence on the increased use of digital tools?”



Graph 1: Students' attitudes on the use of software platforms before and during Covid-19

The paper also analyses the competencies and skills of students acquired before and after the Covid-19 pandemic. The results show that there was an increase in certain competencies, but not to a significant extent (Table 3). For example, the best-acquired skills among students relate to making PowerPoint presentations (before Covid-19 Mean = 5.2; after Covid-19 Mean = 5.46). Given that PowerPoint was very often used even before the Covid pandemic, during the pandemic, students perfected it and very often used it to create projects and other tasks. In addition to making presentations in PowerPoint, the results of the research also showed an enviable improvement (before the Covid-19 pandemic Mean = 5.09; after Covid-19 Mean = 5.25) in the presentation's key elements such as: clear task presentation, self-confidence when presenting, clear and a firm stance during the presentation.

Table 3. Students' attitudes towards the students' acquisition of competencies (Before Covid-19) and after (After Covid-19). The results are presented on a scale of 1-7 (1 means I do not agree at all; 7 means I completely agree).

| Before COVID-19 (before March 15, 2020) | N | Min. | Max. | Mean | Std. Deviation | After COVID-19 (before March 15, 2020) | N | Min. | Max. | Mean | Std. Deviation |
|---|-----|------|------|------|----------------|---|-----|------|------|------|----------------|
| <i>I make good PowerPoint presentations (concise, comprehensive, without too much text, visually attractive, with animations).</i> | 221 | 1 | 7 | 5,2 | 1,688 | <i>I make good PowerPoint presentations (concise, comprehensive, without too much text, visually attractive, with animations).</i> | 222 | 1 | 7 | 5,46 | 1,593 |
| <i>I use key elements of a good presentation (sound and clear speech, self-confidence, concise expression, no shutter or buzzwords, body language).</i> | 221 | 1 | 7 | 5,09 | 1,63 | <i>I use key elements of a good presentation (sound and clear speech, self-confidence, concise expression, no shutter or buzzwords, body language).</i> | 222 | 1 | 7 | 5,25 | 1,582 |
| <i>I finish the presentation on time.</i> | 219 | 1 | 7 | 5,6 | 1,668 | <i>I finish the presentation on time.</i> | 221 | 1 | 7 | 5,65 | 1,654 |
| <i>I encourage discussion after my presentation.</i> | 219 | 1 | 7 | 4,59 | 1,832 | <i>I encourage discussion after my presentation.</i> | 222 | 1 | 7 | 4,55 | 1,858 |
| <i>I am confident presenting online.</i> | 217 | 1 | 7 | 5 | 1,752 | <i>I am confident presenting online.</i> | 222 | 1 | 7 | 5,23 | 1,769 |
| <i>I identify possible students' questions and prepare answers.</i> | 219 | 1 | 7 | 3,97 | 2,025 | <i>I identify possible students' questions and prepare answers.</i> | 222 | 1 | 7 | 4,19 | 2,039 |
| <i>I perceive negative feedback as encouragement for improvement.</i> | 220 | 1 | 7 | 5,31 | 1,67 | <i>I perceive negative feedback as encouragement for improvement.</i> | 221 | 1 | 7 | 5,3 | 1,741 |
| <i>I encourage every single student to participate in the discussions.</i> | 220 | 1 | 7 | 4,32 | 1,963 | <i>I encourage every single student to participate in the discussions.</i> | 220 | 1 | 7 | 4,34 | 2,043 |
| <i>I provide feedback to students with the sole intention of helping them to improve.</i> | 220 | 1 | 7 | 5,35 | 1,718 | <i>I provide feedback to students with the sole intention of helping them to improve.</i> | 221 | 1 | 7 | 5,41 | 1,741 |
| <i>I provide positive feedback and encouragement to my students.</i> | 220 | 1 | 7 | 5,1 | 1,68 | <i>I provide positive feedback and encouragement to my students.</i> | 221 | 1 | 7 | 5,1 | 1,736 |
| <i>I can evaluate the presentations of my students.</i> | 220 | 1 | 7 | 4,75 | 1,907 | <i>I can evaluate the presentations of my students.</i> | 222 | 1 | 7 | 4,77 | 1,927 |

Source: Author's research

It is important to point out that according to the results, students both before and after the Covid pandemic had a high level of fulfilling their obligations, and presentations on time (5.6). At a lower level of value (Mean = 4.32), students rated encouraging participation in other students' discussions. We must emphasize that constructive discussions contribute to finding solutions, so we should certainly strive for greater involvement of students in discussions during each presentation. This is also the answer to "2 RQ: Does the use of digital tools have a positive effect on the creativity of the teaching process?"

Conclusion

The emergence of the pandemic had a great impact on the education system, but in a very short period of time all countries, including Bosnia and Herzegovina, introduced an online education system. Online teaching represents education in which the entire curriculum or course program is offered and carried out with the help of digital technology. This teaching method requires spatial and temporal separation of students and professors. The emergence of Covid-19 led to the introduction of this form of teaching in higher education institutions, which at one point was the only form of teaching. Online teaching was conceived on the basis of classical teaching and adapted to the online environment. The goals and objectives were clearly set for each teaching unit, and the materials were available online for further use. The use of digital tools played an important role in creating this way of teaching.

222 respondents participated in the examination of students' perception of online classes before and after the outbreak of the Covid-19 pandemic. The participants of the research were students studying at the faculties of public and private universities in Bosnia and Herzegovina. The results of the research showed an increased level of the Internet and software applications used during and after online classes. The research showed that during Covid-19, the majority of respondents had the opportunity to use some software applications for which they did not have such a need before, which ultimately turned out to be positive and led to their use even after the pandemic. Also, the pandemic has encouraged the use of applications that were little or not used at all before the pandemic (Moodle, Slack). Statistically, Viber (45.7%) was the

most used before the pandemic, and Zoom (62.4%) during the pandemic. So, we got the answer to “1 RQ: Did the transition to online learning during the Covid-19 pandemic among students make influence on the increased use of digital tools?”

Analyzing the areas of students’ competence and skills showed improvement after Covid-19, which is best seen in the use of PowerPoint presentations. Making the presentation itself in the mentioned program was used to a similar extent as before the onset of the pandemic (only 0.44 more after the pandemic), but presentation skills that included confidence, clarity, and accuracy increased with the number of presentations during the pandemic. This is also the answer to “2 RQ: Does the use of digital tools have a positive effect on the creativity of the teaching process?”

The conducted empirical research showed a significant impact of Covid-19 on the greater use of digital tools, which resulted in the successful conduct of classes and the satisfaction of students with online classes in the circumstances of the Covid-19 pandemic that they attended. The results of the research show satisfactory results on Internet knowledge, computer literacy, and public presentation of tasks, and if you take into account the fact that due to the circumstances of the pandemic, online classes were introduced almost overnight without prior preparation and testing, the grade achieved gives room for improvement and work on raising the performance of online classes. The achieved satisfaction of students with online classes certainly had a positive effect on the learning outcomes of online classes. In the end, we can conclude that the results of students’ satisfaction research are a useful tool for faculties to get feedback on the current state and quality of the services they provide. The above information is a starting point and a guideline for improvement.

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PERCEPCIJA STUDENATA O ONLINE NASTAVI U VISOKOOBRAZOVNIM INSTITUCIJAMA U BOSNI I HERCEGOVINI PRIJE I POSLIJE POJAVE COVIDA-19

Sažetak

Godinu 2020., osim pandemije Covid-19, obilježio je i način učenja u visokoobrazovnim institucijama koji se do tada nije primjenjivao u znatnoj mjeri, a to je – online učenje. Početkom 2020. godine, zbog okolnosti prouzrokovanih spomenutom pandemijom, sveučilišta u Bosni i Hercegovini bila su prisiljena prebaciti se na online nastavu kako bi održala kontinuirani rad i učenje. Takav je način učenja zahtijevao računalnu pismenost studenata, što je postalo jednim od osnovnih uvjeta u modernome obrazovanju. Kako bi studenti mogli kvalitetno sudjelovati u nastavi, osim komunikacije s profesorima i međusobne komunikacije, morali su rabiti dostupne izvore informacija nužne za proces učenja. Ovo se istraživanje bavi percepcijom studenata o online nastavi prije i poslije izbijanja pandemije Covid-19. Riječ je o jednoj od ključnih komponenti u procesu utvrđivanja uspješnosti online nastave. Istraživanje je kreirano na IKA platformi i provedeno u razdoblju između 15. studenoga 2021. i 15. siječnja 2022. u Bosni i Hercegovini.

Ključne riječi: *e-učenje; visokoobrazovna institucija; Covid-19; kriza; Bosna i Hercegovina.*