

ONLINE TEACHING AND LEARNING AMIDST THE COVID-19 PANDEMIC: INSIGHTS FROM TEACHERS

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ABSTRACT

Online learning has changed the way of teaching by teachers and learning by students, through the realization of classes and other activities. The intended purpose of this paper is to identify the problems that existed in online learning during the COVID-19 pandemic, by teachers, and how existing resources of educational institutions can effectively transform formal education into online education with the help of online tools, to improve the learning process. The research included 100 respondents from a random sample, including teachers of higher education institutions in the Republic of Serbia). The survey questionnaire was distributed online, via email to the potential respondents. The results of the research showed advantages and disadvantages from the point of view of teachers. Furthermore, factors that would be relevant for improving the implementation of the teaching process were identified. The results mentioned above may be of importance to educational policy and its creators.

Keywords: Online learning, COVID-19, teachers, experience, analysis, improvement.

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INTRODUCTION

The COVID-19 pandemic had a great impact on physical health, social functioning, and the economy [1][2] this public health emergency has a significant impact on changing the paradigm of education [3]. It has forced educational institutions around the world to adapt to the new reality - online classes quickly. The pandemic has had devastating effects on almost every sector of the global economy, sparing none [4]. The education sector was also among them. The consequences of the lockdown measures led to long-term closures of schools and universities, which required a rapid transition from traditional teaching to online teaching [5][6][7]. Under these circumstances, researchers were forced to investigate and identify the experiences of students and teachers in the field of online education [6]. Considering these circumstances, this research study is of great importance as it seeks to delve into teachers' perspectives on online teaching and the enormous challenges they face as they navigate this educational landscape during the pandemic. The COVID-19 pandemic has indeed posed a significant and critical challenge to the higher education sector and has led to many changes in higher education. Further, digital transformation has had a lasting impact on the way companies operate [8].

This transition was not only a change in pedagogical methods but also a profound change in the daily life of teachers. This research aims to provide a deeper insight into the experiences of teachers during this transition, revealing the diverse challenges they faced, and identifying the advantages and disadvantages of online teaching in higher education. All this entails the generation of creative solutions that have spawned in virtual classrooms around the world. Encouraging the integration of both 'distance learning' and 'class' modes of delivery for most educational courses is suggested by the authors Pham & Ho[9]. The COVID-19 pandemic has greatly affected higher education systems, globally, and spurred a broad initiative to transform the curriculum into an online format. All this represents a serious challenge for all participants in the educational process.

At the beginning of the COVID-19 pandemic, teachers had different experiences with their digital pedagogic skills. The teachers who were already experienced in using e-learning systems before the COVID-19 pandemic certainly had an advantage in adapting to the new situation, which enabled them to move more quickly and efficiently to the digital form of teaching when it became necessary due to the pandemic. Digital transformation initiates the development of new skills [10]. In this context, it is crucial to understand how students experience online learning so that we can develop successful interventions and correct learning shortcomings. Examining teachers' attitudes toward online teaching during the transition helps us better understand the limitations and potential of this form of learning, allowing us to anticipate and adapt to the consequences of this sudden shift to online teaching.

Following the defined research objective, three research questions were asked:

RQ1: What is the perception of schoolteachers at Belgrade University about online practice teaching during the COVID-19 pandemic?

RQ2: What are the common challenges likely to be faced by Belgrade University teachers during online classes during the COVID-19 pandemic?

RQ3: What lessons can be drawn to improve teaching?

LITERATURE REVIEW

The sudden transition from traditional face-to-face education to online learning has brought with it several challenges for students, teachers and education leaders. Given the growing popularity of online education, many higher education institutions are considering how to most effectively deliver course content to their online students [11].

Hodges et al. [12] defined emergency teaching as "temporary transfer of teaching to an alternative way of teaching due to crisis circumstances. There is no doubt that the current context is leading to a reconsideration of investments in educational technology, as investors, educational technology companies, governments, officials and decision-makers seek to support the urgent transition to a remote-teaching situation [13][12].

The COVID-19 pandemic has made online learning the new standard in most if not all, educational contexts around the world. It is no longer an unknown phenomenon even in many developing countries where online education was not sufficiently developed before the pandemic [14]. Online education is seen as a promising avenue for accessing genuine resources and facilitating worldwide communication [15]. The pandemic has highlighted the shortcomings of the current higher education system and the need for additional training of educators in digital technologies to adapt to the dynamic educational environment that is rapidly transforming around the world [16]. In support of this, Heng & Sol [14] suggest that it is necessary to identify strategies to maintain and further strengthen the positive momentum caused by the pandemic in the context of the wider integration of information and communication technologies (ICT) in education, especially in higher education. The effective and convenient methods for online education students to attain their learning objectives can be provided by digital technology, including email, learning management systems, discussion boards, video conferences, social media, and more [11].

Different authors highlight different factors that contribute to the improvement of online learning, as well as different limitations. Mishra et al.[17] indicated good practice in the implementation of online teaching. It is about teachers regularly collecting feedback from the students about the advantages and disadvantages of online teaching and continuing to work until they achieve the desired level of student satisfaction. Mahmood [18] also states that collecting feedback from students is a factor that contributes to the improvement of online teaching and adds several other factors such as: implementing flexible rules for teaching and evaluation, recording online lectures, and providing support through assistants. Krishnan et al.[19] go further, stating that free online resources always create a stimulating learning environment, improve students' analytical and critical skills, and encourage interaction between teachers and students. Based on the results of Almaiah et al.[20], it point out that three main challenges hinder the use of e-learning systems: (1) change management issues, (2) e-learning system technical issues and (3) financial support issues.

METHODS

The survey questionnaire used in the research was compiled based on the author's research and using the following publications: Hasan & Khan [21]. It is thus adapted to specific issues of online learning and COVID-19 in higher education from the point of view of teachers. The research was conducted on a random sample of 100 respondents, i.e., the teachers of higher education, more precisely, from the University of Belgrade in the Republic of Serbia. It was distributed online, by email. The research was conducted in the period from January to March 2023. To participate in the research, respondents had to have experience in monitoring or teaching online classes during the pandemic caused by the COVID-19 virus. The questionnaires are structured in two main sections. The first section includes demographic data on respondents, while the second section focuses on teachers' attitudes about online learning.

Table 1 shows the structure of the sample. The largest number of respondents are female, between the ages of 41 and 50, and have completed doctoral academic studies. When it comes to the title, the largest number of them have the teaching title of associate professor. Thirty-nine respondents have been working in higher education for 3 to 10 years. The structure of the sample is dominated by respondents working in executive positions (76 of them).

Table 1: Structure of the sample

	Number	%
<i>The gender of the respondent</i>		
Male	42	42%
Female	58	58%
<i>Age</i>		
20-30 years	28	28%
31-40	29	29%
41-50	34	34%
51 and above	9	9%
<i>Education level</i>		
Basic academic studies	11	11%
Master academic studies	21	21%
Doctoral academic studies	68	68%
<i>Title</i>		
Demonstrator	3	3%
Teaching Associate	11	11%
Assistant	11	11%
Researcher	7	7%
Docent	17	17%
Associate professor	27	27%
Full professor	24	24%
<i>Work experience in higher education</i>		
3-10 years	39	39%
11-20 years	27	27%
21-30 years	20	20%
31-40 years	14	14%
<i>Position</i>		
Managerial	27	27%
Executive	76	76%

Source: The authors

In addition to descriptive statistical analysis, the Mann-Whitney U test and the Kruskal-Wallis test will be used for the paper. The mentioned tests will be used to determine whether the respondents' characteristics influence their answers (for questions where the respondents had to answer using a five-point Likert scale). In particular, it will be examined whether the gender, age, title, length of service and position influence the respondent's answer.

RESEARCH RESULTS AND DISCUSSIONS

When asked to assess the level of their IT literacy, the respondents with the highest average score (Mean = 4.21) evaluated the use of the search engine, as well as the use of it for academic research (Mean = 4.17). On the other hand, they rated the use of Learning Management Systems with the lowest average score (Mean = 3.45). Using the Mann-Whitney U test, the existence of a statistically significant difference in the level of information literacy between the male respondents (Median = 4.06) and female respondents (Median = 4.00) was not identified ($U = 1076.00$, $z = -0.997$, $p = 0.319$, $r = 0.0997$). Further, the same test did not identify the existence of a statistically significant difference in the level of information literacy between the respondents in management positions (Median=4.00) and respondents in executive positions (Median = 4.00) ($U = 821.00$, $z = -0.739$, $p = 0.460$, $r = 0.0739$). The Kruskal-Wallis test did not identify the existence of a statistically significant difference in the level of information literacy between the respondents of different age groups, that is different levels of education and teaching profession ($p > 0.05$). The same test identified the existence of a statistically significant difference between the respondents with different lengths of service. The respondents with work experience from 3 to 11 years have a higher median score (Median = 4.500) compared to the other three groups of respondents.

Table 2: The level of the teachers' IT literacy

	Mean	Std. Deviation	Min	Max
Using browsers	4.21	0.782	2	5
Using browsers for academic research purposes	4.17	0.805	1	5
Using data analytics	4.14	0.888	2	5
Installing software	4.12	0.795	2	5
Text editing	4.06	0.897	2	5
Creating presentations	4.06	0.919	2	5
Using the network to communicate and share data with others	3.90	0.905	2	5
Learning Management Systems	3.45	0.936	1	5

Source: The authors

When asked to rate the facts about e-learning, the respondents expressed the highest degree of agreement with the fact that they had enough knowledge and skills to use e-learning during the COVID-19 pandemic (Mean = 4.05), as well as with the fact that they had experience in using e-learning (Mean = 3.98) (Table 2). On the other hand, the respondents had the lowest degree of agreement with the statements that e-learning was a waste of time during the COVID-19 pandemic (Mean = 3.06) and that they lacked skills for effective communication with students (Mean = 3.12). Using the Mann-Whitney U test, the existence of a statistically significant difference in attitudes about e-learning between male respondents (Median = 3.425) and female respondents (Median = 3.700) was identified, while this difference is of small strength ($U = 873.500$, $z = -2.408$, $p = 0.016$, $r = 0.2408$). The same test did not identify the existence of a statistically significant difference in attitudes about e-learning between the respondents in managerial positions (Median = 3.500) and respondents in executive positions (Median = 3.500) ($U = 774.00$, $z = -1.111$, $p = 0.267$, $r = 0.111$). The Kruskal-Wallis test did not identify the existence of a statistically significant difference in attitudes about learning between the respondents of different levels of education, work experience and teaching title ($p > 0.05$). On the other hand, the Kruskal-Wallis test identified the existence of a statistically significant difference in attitudes about e-learning between respondents of different ages. Thus, the respondents aged 31 to 40 have a higher median (Median = 3.900) compared to other age groups of respondents.

Table 3 shows the results of the analysis of respondents' attitudes about e-learning.

Table 3: Attitudes of respondents about e-learning

Facts about e-learning	Mean	Std. Deviation	Min	Max
I have sufficient knowledge and skills to use e-learning during the COVID-19 pandemic	4.05	0.857	2	5
I have experience using e-learning	3.98	0.921	2	5
I feel a lack of computer literacy	3.65	1.114	1	5
I prefer conventional learning to e-learning	3.58	1.296	1	5
Online teaching is very different from conventional teaching	3.56	1.149	1	5
I get a satisfactory and timely response from IT services	3.56	1.085	1	5
There are enough clear instructions/training on how to organize the digital education process	3.54	1.150	1	5
The platforms chosen by the university to support e-learning are easy to use The platforms chosen by the university have the necessary features and functions that I need	3.52	1.283	1	5
It is difficult to adopt new teaching methods in a short period of time	3.50	1.000	1	5
The University provides technical support for e-learning	3.49	1.243	1	5
Using e-learning during this pandemic is not appropriate for me	3.44	1.290	1	5
I feel the need to be taught how to work in a digital educational environment	3.40	1.073	1	5
E-teaching and learning during the pandemic caused by the emergence of the COVID-19 virus have more advantages than disadvantages	3.38	1.213	1	5

Facts about e-learning	Mean	Std. Deviation	Min	Max
I feel the need to be taught how to work in a digital educational environment	3.33	1.101	1	5
My discipline is suitable for e-learning	3.30	1.243	1	5
The preparation of electronic educational content is very time-consuming	3.24	1.248	1	5
I need to learn how to use my computer for e-learning	3.23	1.294	1	5
I have trouble designing learning materials in an electronic environment	3.16	1.212	1	5
I lack the skills to communicate effectively online with my students	3.12	1.249	1	5
E-learning is a waste of time during this pandemic	3.06	1.309	1	5

Source: The authors

Regarding the first research question, several important issues were observed. The teachers most often used the Microsoft Teams platform (52 of them) and Zoom (31 of them) to conduct online classes. On average, the largest number of teachers (52) needed an average of 1-2 hours to prepare for online teaching. We should also add the fact that 48 teachers think that they need more time to prepare an online lesson compared to a classroom lesson. 36 of them think that their time for preparing a lesson conducted online has not changed compared to the time for preparing a lesson in the classroom, while 16 of them think that they need less time. To the greatest extent, the teachers delivered teaching materials to students during or after the lesson (40 of them). For 27 of them, the time to deliver the material varied from situation to situation. 18 of them delivered the materials more than a week after the start of the class, while 15 of them did so less than 7 days before the start of the class. The evaluation was carried out to the greatest extent by a combination of tasks, tests and exams (in 64 cases), that is, only by an exam (in 26 cases). When it comes to the success of online teaching, the largest number of respondents, 26 of them, think that it has contributed to greater use of digital tools and platforms, thus providing an answer to the third research question. Further, a significant number of teachers, 17 of them, believe that online teaching contributed to greater student autonomy, i.e. improved the creativity of teachers.

The largest number of respondents, 69 of them, consider flexibility to be the greatest advantage of online teaching. In addition, as advantages of conducting classes online, they state the reduction of costs (16 of them) and greater availability of materials (15 of them). The largest number of respondents, 82 of them, cite the lack of interaction between teacher and student as the main drawback of online classes. We should also add the frequent occurrence of technical problems during teaching. This answers the second research question.

In addition to descriptive statistics, the Mann-Whitney U test and the Kruskal-Wallis test were also used in the paper. The Mann-Whitney test was used to determine whether the respondent gender (the students and teachers) and student funding status affected the responses (for questions that asked the respondents to circle one out of five Likert-type answers). On the other hand, the Kruskal-Wallis test was used to determine whether the age of the respondents (the students and teachers), title and number of years of work experience in education influenced the answers. Statistical software for social sciences, IBM SPSS, version 23, was used for statistical data processing.

RESULTS AND DISCUSSION

In the following, the results of the research carried out on the example of students are first presented, followed by the results on the example of teachers.

Table 4 shows the structure of the sample. The largest number of respondents are female, between the ages of 41 and 50, and have completed doctoral academic studies. When it comes to the title, the largest number of them have the teaching title of associate professor. Thirty-nine respondents have been working in higher education for 3 to 10 years. The structure of the sample is dominated by respondents working in executive positions (76 of them).

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When asked to assess the level of their IT literacy (Table 5), the respondents with the highest average score (Mean = 4.21) evaluated the use of the search engine, as well as the use of it for academic research (Mean = 4.17). On the other hand, they rated the use of Learning Management Systems with the lowest average score (Mean = 3.45). Using the Mann-Whitney U test, the existence of a statistically significant difference in the level of information literacy between the male respondents (Median = 4.06) and female respondents (Median = 4.00) was not identified ($U = 1076.00$, $z = -0.997$, $p = 0.319$, $r = 0.0997$). Further, the same test did not identify the existence of a statistically significant difference in the level of information literacy between the respondents in management positions (Median = 4.00) and respondents in executive positions (Median = 4.00) ($U = 821.00$, $z = -0.739$, $p = 0.460$, $r = 0.0739$). The Kruskal Wallis test did not identify the existence of a statistically significant difference in the level of information literacy between the respondents of different age groups, that is different levels of education and teaching profession ($p > 0.05$). The same test identified the existence of a statistically significant difference between the respondents with different lengths of service. The respondents with work experience from 3 to 11 years have a higher median score (Median = 4.500) compared to the other three groups of respondents.

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It is difficult to adopt new teaching methods in a short period of time	3.50	1.000	1	5
The university provides technical support for e-learning	3.49	1.243	1	5
Using e-learning during this pandemic is not appropriate for me	3.44	1.290	1	5
I feel the need to be taught how to work in a digital educational environment	3.40	1.073	1	5
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I need to learn how to use my computer for e-learning	3.23	1.294	1	5
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CONCLUSION

The pandemic caused by the COVID-19 virus has caused significant changes and adjustments in all aspects of people's lives and work. In particular, this meant major changes in higher education activities, including the teaching process, which in many cases had to switch to a fully online format with a large number of obstacles in the provision of alternative forms of education accompanying this process.

This paper examines teachers' attitudes towards online learning. The knowledge gained from the experience of teachers will influence the formation of future teaching practices and will contribute to continuous discussions about the way the education sector develops, including the role of online teaching in the post-pandemic period. The discussion could encourage the development of the idea to do guides on best practices for remote teaching.

The paper presented the impact of the global pandemic of COVID-19 on the universities in Serbia that are included in the research. The results of this study can provide valuable information and guidance for higher education teachers, faculty members, and decision-makers involved in developing and managing effective learning through online platforms. By exploring appropriate theories and pedagogical practices for online teaching, this study can help meet the identified needs of teachers. It is necessary to pay special attention to the increasing appreciation of the contribution of e-learning and related educational modalities based on modern technological solutions. These may be some possible paths for the adoption of e-learning in higher education institutions in a post-COVID-19 environment.

Future research could compare the use of online tools during and after the COVID-19 pandemic to determine the impact of e-learning transformation. Namely, it is important to see whether after the pandemic there only online teaching is, only offline teaching, or both online and offline teaching.

In addition to the prominent contributions of this study, limitations should also be noted. The results of this study cannot be generalized to the entire institution and the wider online learning community. Only the attitudes and perspectives of the teachers were taken into account in the study. Therefore, it is recommended that in future research dealing with the challenges of online learning during the pandemic, students' attitudes are also considered.

REFERENCES

- [1] Matejić, T., Knežević, S., Arsić, V. B., Obradović, T., Milojević, S., Adamović, M., Mitrović, A., Milašinović, M., Simonović, D., Milošević, G. & Špiler, M. (2022). Assessing the Impact of the COVID-19 Crisis on Hotel Industry Bankruptcy Risk through Novel Forecasting Models. *Sustainability*, 14(8), 4680.
- [2] Srebro, B., Mavrenski, B., Bogojević Arsić, V., Knežević, S., Milašinović, M., Travica, J. (2021). Bankruptcy Risk Prediction in Ensuring the Sustainable Operation of Agriculture Companies. *Sustainability*. 13(14):7712. <https://doi.org/10.3390/su13147712>
- [3] Marković, I., Nikolovski, S., Milojević, S., Živković, D., Knežević, S., Mitrović, A., Fišer, Z. & Djurdjević, D. (2020). Public trust and media influence on anxiety and depression levels among skilled workers during the COVID-19 outbreak in Serbia. *Vojnosanitetski pregled*, 77(11), 1201-1209.
- [4] Kamal, T., & Illiyan, A. (2021). School teachers' perception and challenges towards online teaching during COVID-19 pandemic in India: an econometric analysis. *Asian Association of Open Universities Journal*, 16(3), 311-325.
- [5] Aisha, N., & Ratra, A. (2022). Online education amid COVID-19 pandemic and its opportunities, challenges and psychological impacts among students and teachers: a systematic review. *Asian Association of Open Universities Journal*, 17(3), 242-260.
- [6] González, C., Ponce, D., & Fernández, V. (2023). Teachers' experiences of teaching online during COVID-19: Implications for postpandemic professional development. *Educational technology research and development*, 71(1), 55-78.
- [7] Yang, B., & Huang, C. (2021). Turn crisis into opportunity in response to COVID-19: experience from a Chinese University and future prospects. *Studies in Higher Education*, 46(1), 121-132
- [8] Srebro, B., Milenković, D., Janjušić, D., Dzafić, G., Miletić, V., & Jevtić, B. (2023). Shaping the textile women's digital work sustainability by legislative and taxation adjustments. *Industria Textila*, 74(1), 21-27
- [9] Pham, H.-H., & Ho, T.-T.-H. (2020). Toward a "new normal" with e-learning in Vietnamese higher education during the post COVID-19 pandemic. *Higher Education Research & Development*, 1–5. doi:10.1080/07294360.2020.1823945.
- [10] Mitić, N., Popović, M., Miškić, M., Srebro, B. (2020). The Impact of Competences and Skills on Female Entrepreneurship Development in Digital Era, *LIMESplus*, 3, 65-96.
- [11] Dumford, A. D., Miller, A. L. (2018). Online learning in higher education: exploring advantages and disadvantages for engagement. *Journal of Computing in Higher Education*, 30, 452–465. <https://doi.org/10.1007/s12528-018-9179-z>.
- [12] Hodges, C., Moore, S., Lockee, B., Trust, T., & Bond, A. (2020, March 27). The difference between emergency remote teaching and online learning. *EDUCAUSE Review*, 2020, 3. <https://er.educause.edu/articles/2020/3/the-difference-between-emergency-remote-teaching-and-online-learning>.
- [13] Vlachopoulos, D. (2020). COVID-19: Threat or opportunity for online education? *Higher Learning Research Communication*, 10(1), 16–19. DOI: 10.18870/hlrc.v10i1.1179.
- [14] Heng, K., & Sol, K. (2021). Online learning during COVID-19: Key challenges and suggestions to enhance effectiveness. *Cambodian Journal of Educational Research*, 1(1), 3-16.
- [15] Paudel, P. (2021). Online education: Benefits, challenges and strategies during and after COVID-19 in higher education. *International Journal on Studies in Education (IJonSE)*, 3(2), 70-85.

- [16] Rashid, S., & Yadav, S. S. (2020). Impact of COVID-19 pandemic on higher education and research. *Indian Journal of Human Development*, 14(2), 340-343.
- [17] Mishra, L., Gupta, T., & Shree, A. (2020). Online teaching-learning in higher education during lockdown period of COVID-19 pandemic. *International journal of educational research open*, 1, 100012.
- [18] Mahmood, S. (2021). Instructional strategies for online teaching in COVID-19 pandemic. *Human behavior and emerging technologies*, 3(1), 199-203.
- [19] Krishnan, I. A., Ching, H., Ramalingam, S., Maruthai, E., Kandasamy, P., Mello, G., Munian, S. and Ling, W. (2020). Challenges of Learning English in 21st Century: Online vs. Traditional During Covid-19, *Malaysian Journal of Social Sciences and Humanities (MJSSH)*, 5(9), 1 - 15. doi: 10.47405/mjssh. v5i9.494.
- [20] Almaiah, M. A., Al-Khasawneh, A. & Althunibat, A. (2020). Exploring the critical challenges and factors influencing the E-learning system usage during COVID-19 pandemic. *Education and Information Technology*, 25, 5261–5280. <https://doi.org/10.1007/s10639-020-10219-y>.
- [21] Hasan, N., & Khan, N. H. (2020). Online teaching-learning during COVID-19 pandemic: students' perspective. *The Online Journal of Distance Education and e-Learning*, 8(4), 202-213.

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