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The role of educational social networks in teaching information technology during a pandemic: A case study

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Abstract. The implementation of distance learning requires considerable technical support and reorganization of the entire education model, therefore in the Republic of Serbia, primarily in higher education institutions, a hybrid model of education is used, while a smaller number of higher education institutes are accredited for distance learning. However, the declaration of a state of emergency by the Government of the Republic of Serbia on March 15, 2020, along with the decision to temporarily close all educational institutions due to the epidemiological situation caused by the COVID-19 virus, represented a major challenge for the education system in the country itself. The preparation of most higher education institutions for the transition to online teaching ran parallel to the implementation itself, while the problems that inevitably arose were solved "on the fly", so that the teaching process would not be interrupted, but also in order to maintain the quality of teaching in took place under the given conditions. That is why the goal of this research was to determine the role of educational social networks in teaching in the field of information technology, at the Department of Management, Design and Textile Engineering - Academy of Technical - Art Professional Studies in Belgrade. The research results point to the conclusion that the effects of online teaching are mostly positive, but that it is necessary to work on further improvement, as well as more up-to-date elimination of shortcomings.

Keywords: Teacher, students, social networks, online classes, Covid pandemic, survey.

Introduction

In Serbia, distance learning gained full and mass practical application precisely at the time of the COVID 19 virus pandemic. Due to the epidemiological situation in Serbia caused by COVID 19, the Government of the Republic of Serbia made a Decision on the suspension of teaching in higher education institutions, secondary and primary schools and preschool institutions (Stojanovic, 2020). From March 17, 2020, the Ministry of Education, Science and Technological Development organized distance learning in order to ensure proper and uniform behavior of educational institutions, in accordance with the decisions of the Government of the Republic of Serbia. On March 16, 2020, the Ministry of Education, Science and Technological Development, through the Conference of Universities of Serbia and the Conference of Academies and Higher Schools of Serbia, sent recommendations to higher education institutions regarding the declaration of a state of emergency. Higher education institutions that use their own online platform for teaching and distance learning, in accordance with those recommendations, continued to use it. Those higher education institutions that did not have their own

online platform used free Google tools for distance learning, which they could download independently. As methods of distance education in extraordinary conditions, higher education institutions, in accordance with their possibilities, posted teaching materials on their websites or sent them directly to students via e-mail (Stojanovic, 2020). Distance education is becoming an alternative to classical education at all levels of education, higher education institutions opt for online learning organized through information and communication technologies. The preparation of most higher education institutions for the transition to online teaching ran parallel to the implementation itself, while the problems that inevitably arose were solved "on the fly", so that the teaching process would not be interrupted, but also in order to maintain the quality of teaching. (Kovačević et al, 2021). Teaching at the Academy of Technical and Artistic Studies in Belgrade took place mainly via Google Meet, Google Classroom, and the Zoom platform. The goal of this pilot research is to determine the students' opinion about online classes, that is, whether the material from the field of information technology (which includes subjects: computers, project management, internet presentation and management information

systems) was explained to them in an interesting way - via social networks. Do students recognize social networks and communication channels as a useful tool for learning material and does the use of educational social networks in teaching change - a way of communication and cooperation among students, but also students and teachers (see Niemi and Kousa, 2020; Toquero, 2021; Petrila et al, 2022; Abdallah et al, 2023; Baral et al, 2023). The results showed that the teacher singled out the ease of preparing lessons, the interest of students in teaching, the increased quality of teaching materials, the possibility of faster and easier access to materials as benefits of online teaching. On the other hand, as disadvantages of this type of teaching, the respondents singled out workload, lack of time, lack of technical equipment, weak internet connection, control of students (see Junus et al, 2021; Markov, 2021; Szopiński and Bachnik, 2022; Gurung and Stone, 2023; Gibbson, 2003; Ner et al, 2024).

Research objective

To examine the quality of distance learning from the students' point of view - the Academy of Technical and Artistic Studies in Belgrade (Department of Design, Management and Textile Engineering), a questionnaire was prepared. Respondents answered the questions that were formulated in accordance with the research objective. The questionnaire consisted of a general part provided for basic data about the respondents (gender, type of occupation, year of study) and a special part (satisfaction, quality, motivation and communication) that related to the perception of the quality of online teaching. The survey was anonymous and closed - electronically. Due to the unorganized data for the publication "Teaching aids in the teaching of informatics", we provide partial data related to "The role of educational social networks in teaching information technology during a pandemic Covid-19".

Research methodology

In the theoretical part of the work, the method of analysis and synthesis and the descriptive method were used. Appropriate statistical methods were used in the empirical part of the work. Descriptive statistics - percentages - were used to process general data about online classes. Content analysis was used to process the open-ended answers (to questions about the advantages and disadvantages of online teaching)(see Bulatovic, 2011; Bulatovic, 2013; Rajovic and Bulatovic, 2016; Bulatovic and Rajovic, 2018; Arsenijevic, 2021).

Analysis and Discussions

Although the corona virus pandemic has brought the concept of distance learning to the fore in the field of education, it should be noted that its origins date back to the 19th century, at the University of Chicago (USA). In 1840, Pitman formed a kind of interactive concept of distance learning that took place in the form of postal items, or more precisely,

correspondence between lecturers and students (Alan, 2003; Bataineh and Atoum, 2021). This was very well received, resulting in other colleges and universities adopting this practice: Illinois Wesleyan College - 1874, Chatauqua School of Theology in New York State - 1881, Correspondence University, Ithaca - 1883, University of London - 1858 years (see Mathieson, 1971; Pittman, 2001). Koet and Aziz (2021) state that The United States Distance Learning Association was founded in 1987, whose main purpose is to study various aspects of the process of acquiring knowledge and skills through teaching that includes the use of different types of technologies in the distance learning process. It can be seen that distance education, in a certain sense, still belongs to the innovative models of education, according to its basic characteristics, the scope of its distribution, but also according to the possibilities that are in the process of permanent development and improvement, which is directly related to permanent development in the field of ICT and Internet. In the field of education in general, between different actors in the implementation process there are opportunities for establishing different types of communication, which can be one-way, two-way or multi-way. With today's level of development of technological support for distance education, communication between participants can take place not only as one-way and two-way, but also as multi-way communication, and the interaction itself can take place through these modalities (Saykili, 2018). One of the shortcomings that can arise during the implementation of certain programs is the creation of distance programs in which the "teacher" (implementer, mediator, moderator) will have a central and dominant role (Burns, 2011). How online teaching in information technology courses looked from the perspective of students at the Department of Design, Management and Textile Engineering - Academy of Technical and Artistic Studies in Belgrade, we will see in the answers to the students' questions that follow. We also want to emphasize that we are here applied the Dubovečak (2022) procedure, adapted for the needs of this research.

The structure of respondents implies the division of respondents based on some characteristics. In our pilot research, the characteristics refer to gender, type of occupation and years of study. In relation to the total number of 42 respondents (7 men and 35 women). Types of occupations at the Department of Technology, Management and Textile Engineering - Academy of Technical and Artistic Studies include manager in the textile industry, textile and clothing designer, and textile engineer. In the first year of study, the total number of respondents was 24 (3 men and 21 women), in the second year 15 respondents (2 men and 13 women) and in the third year there were 8 respondents (2 men and 6 women).

Table 1. Basic data on respondents (gender, type of occupation, year of study)

Number of respondents	42	
Gender	men	women
	7	35
Types of occupations	Manager in the textile industry	
	Textile and clothing designer	
	Textile engineer	
Year of study	I	
	II	
	III	

Table 2. Quality of perception of online teaching

Satisfaction with IT teaching on the Google Classroom	The first group of questions
Satisfaction with teaching in the field of IT on the Google meet	
Satisfaction with IT teaching on the Zoom social network	
The online teaching on the used social network in the field of IT during the pandemic was of high quality	Another group of questions
I was motivated to listen to online classes in the field of IT on the most used social network	
Online teaching in the field of IT on the most used social network was completely understandable to me	
Online teaching in the field of IT is explained in an interesting way through the most used social network	
I didn't notice any ambiguities in the online IT classes on the most used social network more than in the usual live IT classes	The third group of questions
I recognize the most commonly used social network as a useful tool for online IT learning	
The use of the most commonly used educational social network in online teaching in the field of IT changes the way of communication and cooperation among students compared to live teaching	
Conducting online teaching in the field of IT through the most commonly used educational social network made it easier for me to evaluate and self-evaluate the tasks I created	
Communication and cooperation among students during online classes in the field of IT through the most commonly used educational social network is better than during live classes	The fourth group of questions
I was happy to be present at online classes in the field of IT through the most commonly used educational social network	

The quality of the perception of his teaching is derived from the following criteria: satisfaction, motivation, quality and communication. Student satisfaction has been studied by researchers from the aspects of the influence of various factors (Yukselturk and Yildirim, 2008; Kırmızı, 2015; Baber, 2020). On the other hand, by researching the organization of teaching conditioned by the Covid-19 crisis, we find in the works:Wyk (2020), Paliwal and Singh (2021), Gautam and Gautam (2021). Van Wyk (2020) came to the conclusion that teachers and students were satisfied with online teaching as well as the support tools applied in online learning. Paliwal and Singh (2021) conclude that a particular problem in online teaching is the lack of communication and time management competencies among teachers. Gautam & Gautam (2021) view infrastructure availability, technical support and student perception as key factors influencing the effectiveness of the online learning process. It turns out that students are motivated for distance learning (Song et al, 2004; Reznikova and Posidelova, 2021), and that this kind of teaching encourages student-faculty contact, cooperation among students and active learning (Baldwin and Trespalacios, 2017). Apart from motivation, the phenomenon of time in this lesson is also valuable.

The value of distance learning is also in efficient time management (Song et al., 2004; Al Ghazali, 2020), emphasis on the time for performing work tasks (Baldwin and Trespalacios, 2017), as well as in time and space flexibility (Deli Girik, 2020). Likewise, thanks to distance learning, different talents and ways of learning are respected (Baldwin and Trespalacios, 2017), i.e. the individuality of students (Reznikova and Posidelova, 2021). In addition to motivation, time and individuality, some of the values or positive aspects of this teaching are related to course design, comfort with online technologies, quick feedback, quality of synchronous lectures, accessibility, mobility of learning... (Baldwin and Trespalacios, 2017; Ahmed, 2021; Reznikova and Posidelova, 2021). Young and Cornelius (2004) express skepticism towards online teaching, through the presentation of negative experiences. Identified factors that cause skepticism towards online teaching are: Delayed/late feedback. When individuals are not in a situation to receive feedback, they feel frustrated, depressed and less motivated. This delayed communication can in drastic cases influence individuals to give up for a shorter or longer period from following the further course of activities. (Korkmaz and Toraman,2021).Lack of information

technology (IT) knowledge and unavailability of technical support. Many individuals have little technical computer knowledge. Therefore, education on the technical aspects of using the various segments of the online mode would be ideal. Psychologically speaking, the lack of technical support frustrates and demotivates (Korkmaz and Toraman,2021). Lack of self-discipline and self-motivation. Although online users enjoy the flexibility of working hours and other previously mentioned benefits of this mode, they must keep in mind that they take some responsibility for their own activities. Therefore, in the process of the online mode of work, self-discipline, self-control and self-motivation represent "a good servant but a bad master"(Korkmaz and Toraman,2021). Poorly designed infrastructure as a contributing factor to demotivation. Korkmaz and Toraman (2021) conclude that the situation in which the work organization does not know how to adequately design an online work environment, more precisely - the infrastructure that supports the fulfillment of these needs and requirements, affects the employee's work motivation, in our case students drastically reduces. It can be assumed that there will be a growing gap between the individual's needs and the current work environment, which leads the individual to a feeling of inadequacy with work tasks and dissatisfaction with the work process.

First group of questions: 27.9% of students responded under a) satisfaction with teaching in the field of IT on the Google Classroom social network; Under b) satisfaction with teaching in the field of IT on the social network Google meet - answered 47.2% of respondents; 24.9% of respondents answered under c) satisfaction with teaching in the field of IT on the Zoom social network. Various researches have shown that student expectations are a crucial factor that directly affects student satisfaction. Also, student expectations are the best way to influence their satisfaction (Brown et al., 2014). When researching student satisfaction, it is possible to recognize their expectations. In conclusion, the positive approach used in many forms of online teaching has shown that high student expectations lead to successful learning outcomes (Gold, 2011). Analyzing the results of the survey, we notice two statements from the area of established student satisfaction with which the students agreed the most. These are claims that determine the level of student satisfaction with the success of online classes they had during the Covid-19 pandemic and a claim that determines student satisfaction with the time they had available to master the course material. Therefore, according to the opinion of the students, the online teaching was well organized, the teachers helped the students with their advice to facilitate the online teaching, using online platforms. The leading conclusions are about the benefits of online teaching in terms of access from various remote

environments and the use of online platforms that successfully simulated the teaching environment.

Second group of questions: Under a) 24.9% of online classes on the used social network in the field of IT during the pandemic were of high quality; 19.3% I was motivated to listen to online classes in the field of IT on the most frequently used social network under b); online teaching in the field of IT on the most frequently used social network was completely understandable to me 20.8% under c); 22.5% of the online teaching in the field of IT was explained in an interesting way through the most used social network under d) and 12.5% did not notice any ambiguities in the online teaching in the field of IT on the most used social network more than in the usual teaching IT live answered under e. Today's students often use computers and Internet technologies for personal and student/business purposes, and possess a good user level of computer work and use of Internet technologies. It is not surprising that 20.8 % of the respondents claimed that the online teaching in the field of IT on the most used social network was completely understandable to me, while 12.5% of the respondents claimed that they did not notice any ambiguities in the online teaching in the field of IT on the most used social network. social network more than in a regular live IT class. Accordingly, students who successfully use computers and information technologies have a more positive attitude towards online classes, in contrast to students who do not have a lower level of use of information technologies (19.3% I was motivated to listen to online classes in the field of IT on the most commonly used social network). Students mostly accept the form of distance learning because they were offered the opportunity to use this form of teaching in addition to traditional teaching during their previous education and studies. Attitudes about distance learning are mostly positive and are correlated with attitudes about the use of computers and Internet technologies. Attitudes to accept distance learning and having previous experience using some forms of distance learning are positively related.

The third group of questions: 35.7% I recognize the most frequently used social network as a useful tool for online learning of IT students answered under a) The use of the most commonly used educational social network in online classes in the field of IT changes the way of communication and cooperation among students compared to live classes, answered 14.2% of respondents under b) Conducting online classes in the field of IT via the most commonly used educational social network made it easier for me to evaluate and self-evaluate the tasks I was working on 28.8% of the respondents answered under c) Communication and cooperation among students during online classes in the field of IT through the most commonly used educational social network is better than during live classes, answered 21.3% of respondents under.

Students who encounter the study for the first time do not yet have experience and social contacts with other students. During online classes, teachers, with their approach and available opportunities, focus on establishing and maintaining a good communication climate among students and towards the teacher. This is achieved by clearly presenting and presenting the structure of the course and teachers, including activities that encourage mutual work and interaction of students, creating trust, rules of clear communication, opening questions and topics... Student motivation is also influenced by individual differences among students, and various factors they encounter during their studies. The motivation to study also differs depending on the stage of study. There are different motivations for students to study, from the fact that learning leads them to a goal (diploma), to the fact that they are interested in a certain area and want to improve their knowledge in that area, to the fact that the student's environment influenced his choice of course - friends, employment opportunities, and the like.. Lack of motivation is also related to the personality of the student and his current and future goals and expectations, but also to the personality of the teacher, i.e. his competences, attitudes, teaching methods and organization... (see Rahman and Sathi, 2020; Rajab et al, 2024).

The fourth group of questions: The respondents gave the following answer to this question: Under a) I was happy to attend online classes in the field of IT via the most commonly used educational social network 26.8%; Under b) It was easy for me to follow online classes in IT via the most used social network 38.4%; Under c) Communication and cooperation between students and teachers during online classes in IT via the most commonly used educational social network is better than during live classes 11.2%, Under d) During online classes in IT, I gained new knowledge and skills about social networks 23.6%. In examining the perception of online teaching in relation to traditional teaching, the conclusions are reached that students perceive traditional teaching positively in relation to online teaching (Gopal et al, 2021). Negative assumptions about distance learning are: the necessity of having equipment and access to the Internet, the lack of social contacts, i.e. direct communication on multiple levels: the professor-student relationship and the student-student relationship, and the lack of control, i.e. a greater need for self-discipline. Students' assumptions about the advantages of distance learning are: accessibility to all participants from various environments, flexibility in terms of choosing the place and time of study, saving time, greater availability of information, the possibility of self-checking and greater independence and individualization of teaching (Humphrey and Wiles, 2021).

Conclusion

Our research record, based on similar research by Hashim et al (2020), Khan et al (2021), Arco (2023),

Perera and Abeysekera (2024), points to the following conclusions:

1. In Serbia, distance learning gained full and mass practical application precisely at the time of the COVID 19 virus pandemic. Due to the epidemiological situation in Serbia caused by COVID 19, the Government of the Republic of Serbia made a Decision on the suspension of classes in all educational institutions.
2. On March 16, 2020, the Ministry of Education, Science and Technological Development, through the Conference of Universities of Serbia and the Conference of Academies and Colleges of Serbia, sent recommendations to higher education institutions regarding the declaration of a state of emergency and the suspension of classes. Higher education institutions that use their own online platform for teaching and distance learning, in accordance with those recommendations, continued to use it. Those higher education institutions that did not have their own online platform used free Google tools for distance learning, which they could download independently.
3. Teaching at the Academy of Technical and Artistic Studies in Belgrade took place mainly via Google Meet, Google Classroom, and the Zoom platform. The goal of this pilot research is to determine students' opinions about online classes, that is, whether the information technology material was explained to them in an interesting way - via social networks. Do students recognize social networks and communication channels as a useful tool for learning material and does the use of educational social networks in teaching change - a way of communication and cooperation among students, but also students and teachers.
4. A questionnaire was created to examine the quality of distance learning from the students' point of view - Academy of Technical and Artistic Studies in Belgrade. The questionnaire consisted of a general and a specific part. The survey was anonymous and closed - electronically. It was conducted on June 20, 2020, and 42 respondents participated in it. In the first year of study, the total number of respondents was 24, in the second year 15 and in the third year 8 respondents.
5. Analyzing the results of the survey, we notice two statements from the area of established student satisfaction with which the students agreed the most. These are claims that determine the level of student satisfaction with the success of online classes they had during the Covid-19 pandemic and a claim that determines student satisfaction with the time they had available to master the course material. Satisfaction with teaching in the field of IT on the social network Google meet - was answered by 47.2% of respondents; 24.9% of respondents claim that the online teaching on the used social

network in the field of IT during the pandemic was of high quality; 35.7% of respondents emphasize that they recognize the most frequently used social network as a useful tool for online IT learning; while 38.4% of them claim that it was easy to follow online IT lessons through the most commonly used social network.

As stated by Popovic et al (2023), the students highlighted the greatest value of this kind of teaching, its economy, accessibility of teaching materials, regularity... Students agree that online teaching and learning can encourage the development of information literacy and stimulate the development of digital competencies necessary for life, work and study in modern society. The results also point to some of the limitations of distance learning, such as the presence of technical obstacles, the overload of demands and obligations placed before students, the lack of discussions and interactivity that can affect the psycho-physical condition of students.

References:

- ABDALAH, N; ABDALAH, O; ALKIANI, J. A; Student perspective of classroom and distance learning during covid-19 pandemic: case study. *International Journal of Instruction*, v.16,n.3, pp.395-420.2023.
- AHMED, T; Emergency Remote Teaching during COVID-19: Lessons Learned. *International Journal of Computing*,v. 9,n.4,pp. 23–41.2021.
- AL GHAZALI, F; Challenges and opportunities of fostering learner autonomy and self-access learning during the COVID-19 pandemic. *Studies in Self-Access Learning Journal*, v.11, n3, pp.114–127.2020.
- ALAN, T; Reflections on student support in open and distance learning. *The International Review of Research in Open and Distance Learning*, v.4, n.1. 2003.
- ARCO, L. J. P; *Possibilities and limitations of social media in education processes during the pandemic: The teachers perspective*. In CTE Workshop Proceedings (Vol. 10, pp. 315-325).2023.
- ARSENIJEVIC,J;*The effects of online teaching at higher education institutions during the Covid-19 pandemic*. College of Vocational Studies for Teacher Education in Kikinda, pp.5-23.2021.
- BABER, H; Determinants of Students' Perceived Learning Outcome and Satisfaction in Online Learning during the Pandemic of COVID-19, *Journal of Education and e-Learning Research*, v.7,n.3,pp. 285-292.2020.
- BALDWIN, S. J; TRESPALACIOS, J;*Evaluation instruments and good practices in online education*. Online Learning.2017.
- BARAL, R. K; BHATTA, L; GHMIRE, S. N; Emergency remote teaching in Nepali higher education institutions during COVID-19. *Distance Education*, pp.1-17.2024.
- BATAINEH, K. B; ATOUM, M. S; A silver lining of coronavirus: Jordanian universities turn to distance education. *International Journal of Information and Communication Technology Education*, v.17,n.2, pp.1–11.2021.
- BROWN, S,A; VENKATESH, V; GOYAL, S; Expectation confirmation in information systems research: A test of six competing models. *MIS Quarterly*, v.38,n.3,pp.729–756.2014.
- BULATOVIC,J; Key Issues in Information Systems Management: A Serbia Perspective (Delphi study). *Global Journal of Computer Science and Technology*, v.11,n.19, pp.35–50. 2011.
- BULATOVIC,J; RAJOVIC,G; Environmental Awareness Population in City Municipality of Zvezdara (Belgrade) - for the Sustainable Zvezdarske Forest, *World News of Natural Sciences*,n. 16, pp.1-17.2018.
- BULATOVIC,J;Demographic Differences and Professional Stress of College Employees: A Case Study in Serbia, *Kultura i Edukacija*, v.5,n.8,pp.153-184.2013.
- BUMS, M; Distance education for teacher training: Modes, models, and methods. Washington, DC: Education Development Center, Inc. *porary Educational Research*,v.5,n.1,pp. 2-17.2011.
- DELLI GIRIK, A. M; Is the online learning good in the midst of Covid-19 Pandemic? The case of EFL learners. *Journal Sinestesia*, v.10,n.1, pp.1–10.2020.
- DUBOVEČAK,I;*The role of educational social networks in teaching the Croatian language during the pandemic* (paper number 31). Book of Proceedings Stoo2 - Hub of the Faculty of Teacher Education, University of Zagreb.2022.
- GAUTAN, D. K; GAUTAM, P. K; Transition to online higher education during COVID-19 pandemic: turmoil and way forward to developing country of South Asia-Nepal. *Journal of Research in Innovative Teaching & Learning*, v. 14,n.1,pp. 93-111.2021.
- GIBBONS, C; Surviving a pandemic-Understanding the role of student stress, personality and coping on course satisfaction and anxiety during lockdown. *Innovations in Education and Teaching International*, v. 60n.4, pp.463-475.2023.
- GOLD, S; A constructivist approach to online training for online teachers. *Journal of Aysnchronous Learning Networks*, v. 5,n.1,pp. 35–57.2011.
- GOPAL, R;SINGH, V; AGGARWAL, A; Impact of online classes on the satisfaction and performance of students during the pandemic period of COVID

19. *Education and Information Technologies*, 26(6), pp.6923-6947.2021.
- GURUNG, R. A; STONE, A. M; You can't always get what you want and it hurts: Learning during the pandemic. *Scholarship of Teaching and Learning in Psychology*, v. 9,n.3, pp.264.2023.
- HASHIM, S; MASEK, A; ABDULLAH, N. S; PAIMAN, A. N; MUDA, W. H. N. W; Students' intention to share information via social media: A case study of COVID-19 pandemic. *Indonesian journal of science and technology*,v. 5,n.2, pp.236-245.2020.
- HUMPHREY, E. A; WILES, J. R;Lessons learned through listening to biology students during a transition to online learning in the wake of the COVID-19 pandemic. *Ecology and evolution*, v. 11, n.8, pp.3450-3458.2021.
- JUNUS, K; SANTOSO, H. B;PUTRA, P. O. H; GANDHI, A; SISWANTINING, T; Lecturer readiness for online classes during the pandemic: A survey research. *Education sciences*, v.11,n.3, pp.139.2021.
- KHAN, M. N; ASHRAF, M. A; SEINEN, D; KHAN, K. U; LAAR, R. A; Social media for knowledge acquisition and dissemination: The impact of the COVID-19 pandemic on collaborative learning driven social media adoption. *Frontiers in Psychology*,n. 12, 648253.2021.
- KIRMIZTI,O; The influence of learner readiness on student satisfaction and academic achievement in an online program at higher education, *TOJET: The Turkish Online Journal of Educational Technology*, v.14,n.1, pp.133-142.2015.
- KOET, T., W; AZISS, A. A; Teachers' and students' perceptions towards distance learning during the covid-19 pandemic: A systematic review. *International Journal of Academic Research in Progressive Education and Development*, v.10,n. 3, pp.531-562.2021.
- KORKMAZ, G; TOROMAN, Ç; Are we ready for the post-COVID-19 educational practice? An investigation into what educators think as to online learning. *IJTES*,v. 4, 4, pp.293-309.2021.
- KOVAČEVIĆ,J;RADOVANOVIĆ,V;RADOJEVIC,T;K OVAČEVOC,V;The effects of online teaching at higher education institutions during the Covid-19 pandemic. XXVII Development Trends Gathering: "On-line Teaching at Universities", Novi Sad, 15 - 18.pp.35-38.2021.
- MARKOV,Z;*Online teaching from the perspective of students during the Covid-19 pandemic - Pilot research*. College of Vocational Studies for Teacher Education in Kikinda, pp.25-43.2021.
- MATHIESON, D. E;*Correspondence study: A summary review of the research and development literature*. SYRACUSE, N. J; National Home Study council/ERIC clearing house on adult education.1971.
- NER, D; SHKLARSKI, L; LATZER, Y; *Review of the international research related to social work education during COVID-19*. Social Work Education and the COVID-19 Pandemic, pp.6-17.2024.
- NIEMI, H. M; KOUSA, P; A Case Study of Students' and Teachers' Perceptions in a Finnish High School during the COVID Pandemic. *International journal of technology in education and science*, v.4,n.4, pp.352-369.2020.
- PALIWAL, M; SINGH, A; Teacher readiness for online teaching-learning during COVID- 19 outbreak: a study of Indian institutions of higher education. *Interactive Technology and Smart Education*,v. 18,n.3, pp.403-421.2021.
- PERARA, R. H. A. T; ABEYSEKERA, N; Factors affecting learners' perception of e-learning during the COVID-19 pandemic. *Asian association of open universities journal*,v. 17, n.1, pp.84-100.2022.
- PETRILA, L.; GOUDENHOOF, G; GYARMATI, B. F; POPESCU, F. A; SIMUT, C; BRIHAN, A. C; Effective teaching during the COVID-19 pandemic? Distance learning and sustainable communication in Romania. *Sustainability*, v.14,n. 12, 7269.2022.
- PITTMAN, V; *A century, plus – Independent study in the American university*. DETC News Spring,pp.13-18.2001.
- POPOVIC, K; GLIŠIĆ, T; JORGIC, D; Student perceptions of the values and limitations of distance learning during the Covid-19 pandemic, *Research in Pedagogy*, v.13, n.1, pp.119-130.2023.
- RAHMAN, A; SATHI, N. J; Knowledge, Attitude, and Preventive Practices toward COVID-19 among Bangladeshi Internet Users. *Electronic journal of general medicine*, v. 17, n.5.2020.
- RAJAB, L; ALMARABEH, T; MOHAMED, H; MAJDALAWI, Y; Strategic evaluation of e-learning: A case study of the university of Jordan during crisis. *International Journal of Data and Network Science*, v.8,n.1,pp. 109-116.2024.
- RAJOVIC,G;BULATOVIC,J; Quality of life in rural villages of Montenegro - Gnjili Potok and Vranještica: Case study,*Scientific Electronic Archives*, v.9,n.2,pp.24-35.2016.
- REZNIKOVA, A; POSIDELOVA, V; *Modern telecommunication systems and messengers as the alternative didactic platforms after Covid-19 pandemic lockdown*. In E3S Web of Conferences (Vol. 273, p. 12106). EDP Sciences.2021.
- SAYKILI, A; Distance education: Definitions, generations, key concepts and future directions. *International Journal of Contemporary Educational Research*, v.5,n.1, pp.2-17.2018.

SONG, L; SINGLETON, E. S; HILL, J. R; KOH, M. H; Improving online learning: Student perceptions of useful and challenging characteristics. *The internet and higher education*,v. 7,n.1, pp.59–70.2004.

STOJANOVIC,D;Analysis of the implementation of distance learning in Serbia during the Covid 19 pandemic.pp. 121-140. 2020.Available at:<http://www.ebooks.iien.bg.ac.rs> (08.10.2023).

SZOPINSKI, T; BACHNING, K;Student evaluation of online learning during the COVID-19 pandemic. *Technological Forecasting and Social Change*, 174, 121203.2022.

TOQUERO, C. M; Emergency remote education experiment amid COVID-19 pandemic. *IJERI: International Journal of Educational Research and Innovation*, n.15, pp.162-176.2021.

VAN WUK, M. M; Academic support under COVID-19 lockdown: what students think of online support e-tools in an ODeL course. *Interactive Technology and Smart Education*,v. 18,n.2, pp.137-157.2021.

YANG, Y; COMELIUSD, L. F; *Students' perceptions towards the quality of online education: A qualitative approach.* Association for Educational Communications and Technology.2004.

YUKSELTURK, E; YILDRIM, Z; Investigation of interaction, online support, course structure and flexibility as the contributing factors to students' satisfaction in an online certificate program. *Educational Technology & Society*, v.11,n.4, pp.51-65.2008.