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## CHAPTER 7

### DETERMINANTS INFLUENCING PRE-SERVICE TEACHERS' INTENTIONS TOWARD FUTURE INTEGRATION OF ONLINE TEACHING<sup>3</sup>

**Abstract:** The global pandemic prompted widespread changes across various societal domains, including education, where online teaching and learning emerged as a pivotal response at all educational levels. This study aims to explore the attitudes of pre-service teachers toward online learning amid the pandemic and to uncover the determinants impacting their inclination to integrate online teaching in their future teaching practices with students or preschool pupils. Factors such as the ease of utilizing online education, perceived usefulness, respondents' anxiety levels, teaching quality, relevance for future pedagogical work, safety of online systems/platforms, and facilitating conditions were investigated. The research collected data via an online survey conducted among 129 pre-service teachers from the Faculty of Education in Jagodina. The findings from multiple regression analysis revealed that the proposed model accounted for 64.5 percent of the variance in respondents'

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willingness to utilize online teaching in the future. Notably, the safety of using online systems/platforms made the most substantial unique contribution, followed by perceived usefulness, and anxiety levels. However, other factors did not exhibit statistically significant direct influences. The study suggests that creating favorable conditions to enhance the identified significant factors is essential for effectively implementing online education in standard educational settings.

*Keywords: Anxiety, inclination towards online education, perceived usefulness, pre-service teachers' attitudes, safety*

## INTRODUCTION

Information and communication technologies (ICTs) offer distinctive educational and training opportunities by enhancing both teaching and learning. They also promote innovation and creativity for individuals and organizations. Moreover, the utilization of ICT can assist in shaping an educational policy that cultivates inventive and innovative settings within educational institutions (Abdullah et al. 2019; Altawaty et al. 2020; Selim 2007).

E-learning is playing an important part in the current educational environment, as it is changing the entire education system and becoming one of the most popular academic topics (Samir et al. 2014). Many users of e-learning platforms believe that online learning makes e-learning easier to administer and allows learners to readily access teachers and instructional materials (Mukhtar et al. 2020). E-learning has reduced traditional learning costs, administrative tasks, and travel expenses. It encourages self-directed learning from anywhere, even in difficult circumstances. However, it lacks practical skills, lacks face-to-face learning experiences, and may limit online assessments to objective questions. Both teachers and students benefit from online learning, but drawbacks include theoretical knowledge and a lack of practical application (Maatuk et al. 2022).

Online learning has been underutilized in the past, especially in developing countries. However, the crisis caused by the COVID-19 pandemic forced the whole world to rely on this type of educational work. Many teachers struggle with remote classes due to a lack of experience and lack of proper guidelines, as online learning has become the norm (Simamora, de Fretes, Purba, & Pasaribu 2020). In their research Aboagye et al. (2020) analyzed student issues on how to cope with e-learning during the outbreak of COVID-19 and determined whether students are prepared to study online or not. The research indicated that learners should have access to a hybrid approach that mixes traditional and e-teaching. In another study conducted by Radha and colleagues in 2020, an effort was made to examine the self-directed learning capabilities of students already well-acquainted with

web-based technologies through the process of e-learning. The study's results revealed that e-learning gained significant popularity among students across various educational institutions amid the COVID-19 pandemic lockdown.

After the outbreak of the COVID-19 pandemic, there has been a rapid and substantial growth in online education within Serbian universities. Traditional classrooms swiftly transitioned into virtual e-classrooms, necessitating a complete overhaul of teaching methodologies to accommodate new challenges and changing circumstances. During this challenging period, the concern has shifted from whether online teaching and learning methods can deliver high-quality education to how educational institutions can effectively embrace online learning on a large scale, as noted by Dhawan (2020). The global resistance to change has become a critical issue for educational institutions, as their ability to adapt while upholding educational standards is now in jeopardy. Given that it's not feasible for academic institutions to entirely revamp their curricula overnight, the shift from in-person lectures to online classes stands out as the sole viable solution. The most formidable challenges in online education revolve around issues of distance, scalability, and personalized teaching and learning. Institutional innovation becomes the cornerstone for educators to navigate through this pandemic, as suggested by Liguori and Winkler (2020). The question arises, based on the experience gained during pandemics, to what extent online teaching will be applied in regular circumstances in the future.

## LITERATURE REVIEW

### Online Learning Systems in Education

Online learning, originating from 1963 guidelines by the Association of College and Research Libraries, is now referred to as web-based learning, e-learning, computer-assisted instruction, and Internet-based learning (Maddison 2017). Sarah Guri-Rosenbilt (2005: 469) defined e-learning as “electronic media used for various learning purposes ranging from conventional classroom add-on functions to online substitution for face-to-face meetings with online encounters”. Arkorful and Abaidoo (2015: 30) defined e-learning as “using information and communication technologies to enable access to online teaching and learning resources”, while Ruiz, Mintzer, and Leipzig (2006: 207) defined e-learning as “the use of Internet technologies to deliver a broad array of solutions that enhance knowledge and performance”.

The use of online learning systems as part of edutech has grown in higher education across the world (Allen & Seaman 2007). With the increased use of online education, practitioners and policymakers should understand its user acceptance to improve the student learning experience (Tarhini, Hone & Liu 2014). However, a substantial part of lectures have traditionally been conducted in the university

classroom, and so it is still a fresh notion in the university environment due to the unexpectedly imposed physical distance after the outbreak of COVID-19 (Cao et al. 2020; Viner et al. 2020; Wang et al. 2020). During the lockdown, instructors recorded lectures online, students watched programs, and real-time connections were made through online video classrooms via a cloud platform (Kim, E.J., Kim, J.J. and Han 2021).

The consensus is that the effectiveness of online teaching hinges on its ability to replicate the traditional classroom experience while catering to students' needs (Sriram, 2014). Consequently, it's crucial to comprehend the factors motivating users to engage in online classes. In simpler terms, if users do not effectively utilize the online teaching system, its advantages won't be fully realized (Keengwe & Malapile, 2014). Furthermore, research indicates that implementing online teaching should not be viewed merely as a technical fix; instead, the fundamental prerequisites for successful implementation encompass a thoughtful consideration of pedagogical aspects, such as the online learning process, in addition to the consideration of social, individual, and organizational factors (Tarhini, Hone & Lui, 2013). According to Concannon et al. (2005), the next generation of students will increase the need for incorporating smart technology into higher education. Furthermore, they argued that colleges might attract and engage many more students by incorporating a wide range of modern technology into the learning process. However, there are still considerable technological barriers in the education industry (Going, Xu, Yu 2004; Tarhini & Elyas 2016). Educators fear that students have higher chances of cheating using online learning. Đorđević & Milutinović (2021) discuss the potential use of cryptography in online learning and group work to address issues like cheating and disagreements.

With all that said, among the significant success factors of online teaching, user acceptance has a key impact (Park, Nam & Cha 2012).

### **Studies on the acceptance of online learning**

Many studies have been undertaken in the literature to quantitatively measure pre- or in-service teachers' acceptance of ICT (Chien, Chang, Yeh, Chang 2012; Sang, Tondeur, Ching, Dong 2015). Because ICTs are becoming increasingly important in all human activities, individual acceptance of technology is regularly investigated and improved with several recognized models (Sanchez-Prieto, Olmos-Miguelanez, Garcia-Penalvo 2016). Theory of Reasoned Action - TRA, the Theory of Planned Behavior - TPB, the Technology Acceptance Model - TAM, and the Unified Theory of Acceptance and Use of Technology - UTAUT are some of these models. TAM is the most often used model (Davis, Bagozzi, Warshaw 1989). The model's primary goal is to explain consumers' attitudes toward technology adoption (Chang et al.,

2017). Furthermore, past educational research in Serbia has expanded the TAM model, resulting in a plethora of external influences (Đorđević 2020; Milutinović 2020, 2022; Milutinović & Mandić 2022). In a meta-analysis research, Abdullah and Ward (2016) discovered that subjective norm, experience, perceived enjoyment, computer anxiety, and self-efficacy are the most commonly utilized external components for the TAM model. Also, they stated that in the context of e-learning experience is the sixth most commonly employed external component.

Perceived usefulness (PU) in e-learning refers to users' belief that e-learning supports their learning objectives (Lin, Chen, and Fang 2010). Lin et al. (2010) defined Perceived Ease of Use (PEU) in the context of e-learning as the degree to which users perceive that using an e-learning system will be simple. According to Abbasi et al. (2011: 36), behavioral intention (BI) is "a cognitive process of individuals' readiness to perform specific behavior and is an immediate antecedent of usage behavior." Milutinović (2020) found that teachers' intention to utilize computers in the classroom is directly and significantly influenced by their perceived usefulness and perceived ease of use in Serbia.

By including external variables in TAM, more attention is paid to sophisticated relationships in education. Anxiety significantly hinders technology acceptance, particularly in education, as individuals often feel uncomfortable and fearful about the use of technology, potentially preventing their adoption or reducing usage (Sahin, F. & Sahin, Y. L. 2021). Safety is crucial for effective online learning systems, ensuring data privacy, integrity, and user authorization (Almaiah, Alamri, and Al-Rahmi 2019). Teaching quality in e-learning systems significantly influences learners' satisfaction. Instructors' technical and pedagogical skills, response timeliness, teaching style, and technology control contribute to positive learning experiences (Obaid 2020). E-learning acceptance model perceived usefulness refers to the degree to which respondents believe that participating in online classes has helped them become more productive in using technology in their future teaching work. E-learning acceptance model facilitating conditions refers to the degree to which respondents feel supported when using online classes (Natasia, Wiranti, and Parastika 2022).

## METHODS

### **Aim of the study**

This study aims to examine the attitudes of pre-service teachers, pre-service preschool teachers, and pre-service boarding teachers about online teaching during the pandemic. Also, this research aims to examine the factors that influence the intention of pre-service teachers to implement some form of online teaching

with their future students. Factors associated with utilizing online education are retrieved from the literature review. To achieve this aim, the influence of independent variables (perceived usefulness, perceived ease of use of online education, level of anxiety, teaching quality, relevance for future pedagogical work, safety of online systems/platforms, and facilitating conditions) on the dependent variable (behavioral intention to use online teaching) was examined.

### Sample

Participants were students from the Faculty of Education in Jagodina using an online survey questionnaire during the school year 2020/2021. There were 129 students in total (see Table 1), from whom 124 (96,1%) students were female. The average age of the respondents was 21.16 (SD 4.63) years. Only 10 minutes were enough to complete the survey.

Table 1: Participants in the study

Study program	<i>f</i>	%
Undergraduate academic studies - Class Teacher	35	27.1
Undergraduate academic studies - Preschool teacher	61	47.3
Undergraduate academic studies - Boarding School Teacher	2	1.6
Master academic studies - Class Teacher	14	10.9
Master academic studies - Preschool teacher	15	11.6
Master academic studies - Boarding School Teacher	2	1.6
<b>Total</b>	<b>129</b>	<b>100.0</b>

### Research organization, instrument and data analysis

The questionnaire was designed for this study to assess students' intentions to use computers in school. In addition to the questions on demographics (gender, age, study year), as well as evaluation of self competences, institutional organization of online learning, positive and negative characteristics of online learning, a set of questions was compiled to assess participants' responses and measure the research variables. The variables perceive usefulness of online learning, perceive ease of use, anxiety level, safety of using online systems/platforms, teaching quality, perceive usefulness for future pedagogical work, facilitating conditions, and behavioral intention to use online teaching utilized in the questionnaire were modified (translated to Serbian and adapted) from various sources indicated in the Appendix, and the total number of items was 42. Respondents were asked to score each statement on a five-point Likert scale, with 1 denoting strong disagreement and 5 denoting strong agreement.

The data was analyzed in SPSS utilizing descriptive statistics and exploratory factor analysis. Factor analytic procedures are statistical methods used to analyze relationships within a group of observed variables (Beavers et al. 2013). These analyses share similar methodology and functionality, allowing for a wide range of research purposes and theories. The flexibility of these methods fuels ongoing debate about their appropriate applications across various disciplines and applications, making them a widely used tool in research. Afterwards, multiple regression is used. Multiple regression analysis is a popular statistical method in scholarly research due to its versatility, ease of interpretation, robustness to assumptions violations, and widespread availability (Mason and Perreault 1991).

The results of all assessments showed good reliability of the questionnaire. Data normality is confirmed, multicollinearity is not violated, and there are no atypical points.

## RESULTS

### *Descriptive statistics*

The outcomes of the variables' descriptive statistics, calculated through SPSS, are presented in Table 2. Apart from anxiety, all construct means exceeded the mid-point of the scale at 3.00, suggesting positive responses to the model's constructs.

Table 2: Descriptive statistics of the constructs

Variables	Mean	Std. deviation	$\alpha$
Behavioral intention	3.53	1.23	0.92
Perceived ease of use	4.11	0.97	0.93
Perceived usefulness	3.72	1.17	0.95
Anxiety	<b>2.43</b>	1.35	0.90
Safety	3.89	0.99	0.90
Facilitating conditions	4.06	0.89	0.89
Perceived usefulness for future pedagogy	<b>4.17</b>	0.80	0.96
Teaching quality	<b>4.17</b>	0.78	0.94

The standard deviations varied from 0.78 to 1.35, indicating a rather tight spread in the replies of individuals around the mean. To ensure the trustworthiness of the applicable measurement scale, a Cronbach Alpha ( $\alpha$ ) value of 0.70 or above is required (De Vellis 2003). Table 2 shows that the reliability (i.e. internal consent) of all constructs ranged between 0.89 and 0.96.

*The attitudes of pre-service teachers on online teaching during the pandemic*

When asked to evaluate their competencies for using computers and for active participation in online classes, 79.1 % of respondents answered that they have high or very high knowledge in working with computers (Figure 1) and 87.6% of them expressed very good or excellent competencies in participating in online classes (Figure 2).

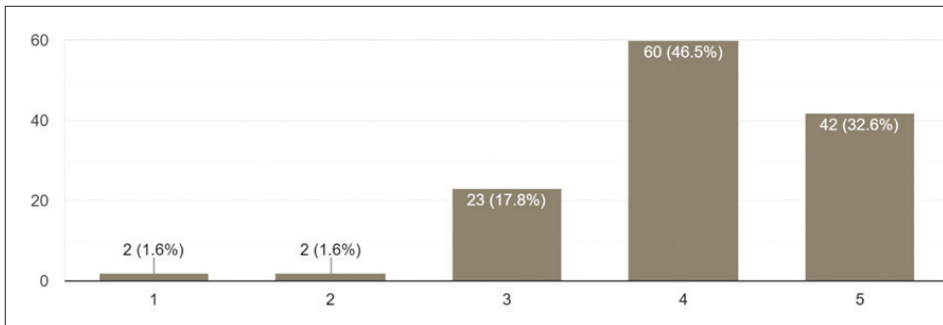


Fig. 1. Self-evaluation of respondents on competences for using computers

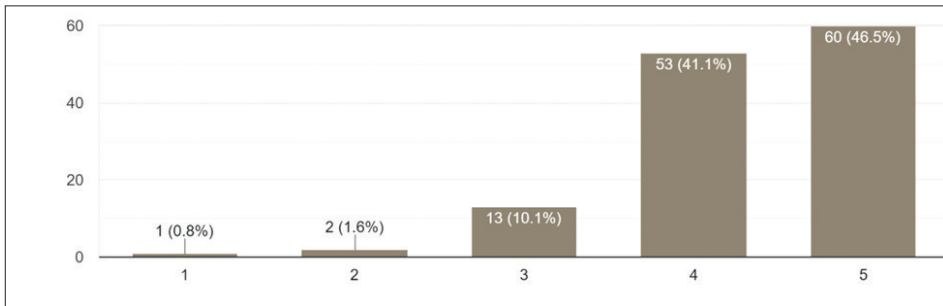


Fig. 2. Self-evaluation of respondents on competencies for active participation in online classes

Participants listed laptops (55.8%) as the most commonly used devices for following and participating in online classes, followed by mobile phones (34.1%), and personal computers (9.3%). Majority of participants in the study rated on-line learning on the Faculty as excellent (55%) during the COVID-19 pandemic (Figure 3).

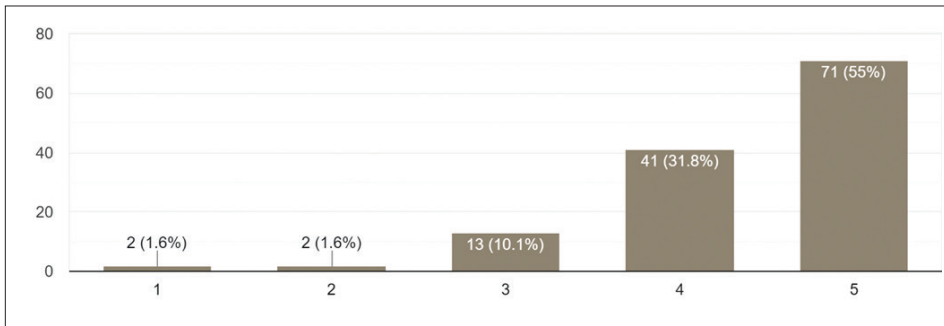


Fig. 3. Participants' satisfaction with the organization of online classes in their institution (faculty) during the pandemic

Viber (75.2%) and Zoom (96.1%) represent the most frequently employed applications for facilitating communication between instructors and students in the context of online courses (see Figure 4). Conversely, Moodle (95.3%) and Google Classroom (48.8%) emerge as the prevalent learning management systems through which professors guide their students.

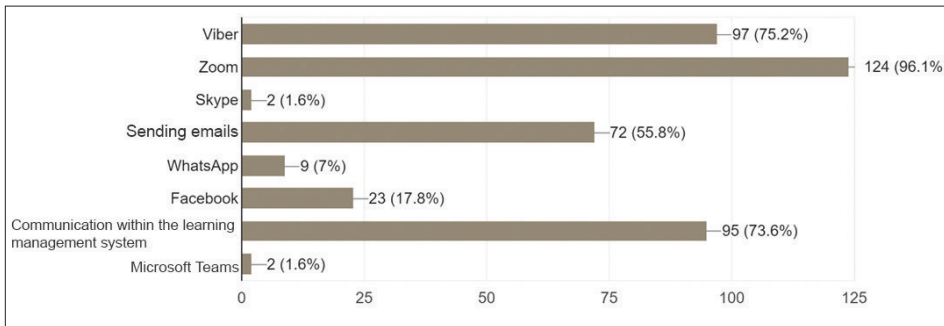


Fig. 4. The most common tools for communication between professors and students during the implementation of online classes

When inquired about the level of success in attaining learning outcomes through online classes during the COVID-19 pandemic, respondents predominantly provided positive (72.9%) responses (See Figure 5). On the other hand, while respondents held a favorable opinion of the knowledge and skills they gained in online classes, most of them did not choose the highest grade compared to traditional learning (see Figure 6).

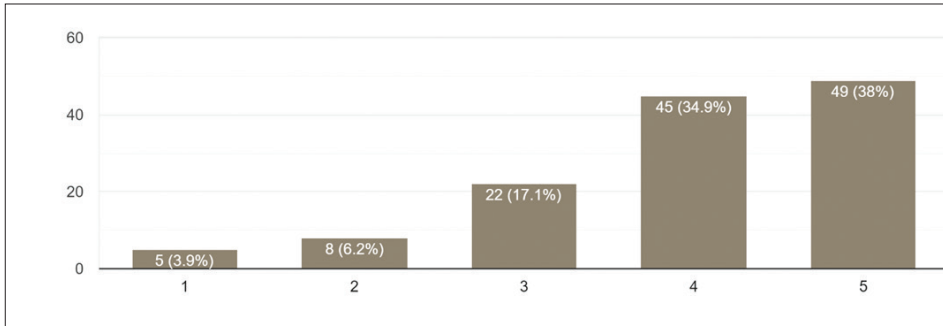


Fig. 5. Participants' opinion on how successfully learning outcomes are achieved through online classes during the pandemic

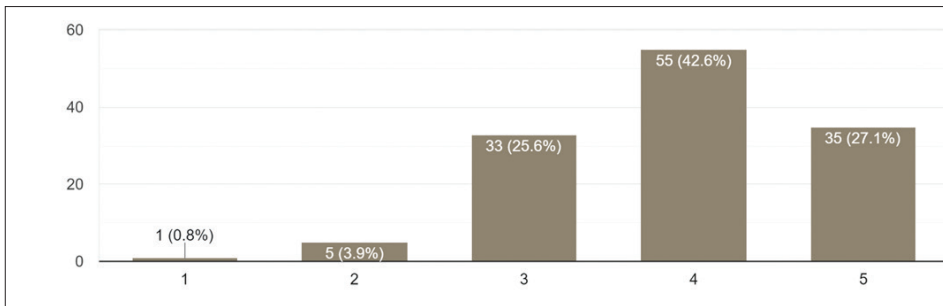


Fig. 6. Self-evaluation of respondents' knowledge and skills acquired during online classes compared to traditional classes

The most frequently cited advantages of online learning, according to the participants, include: Eliminating the need for travel, thereby saving time and money (84.5%), Enhanced class participation ease (47.3%), Enjoying the comfort of learning from home (57.4%), Decreased absenteeism (47.3%), Greater flexibility in attending classes and learning (45%), and Becoming acquainted with innovative teaching approaches (43.4%) (see Figure 7).

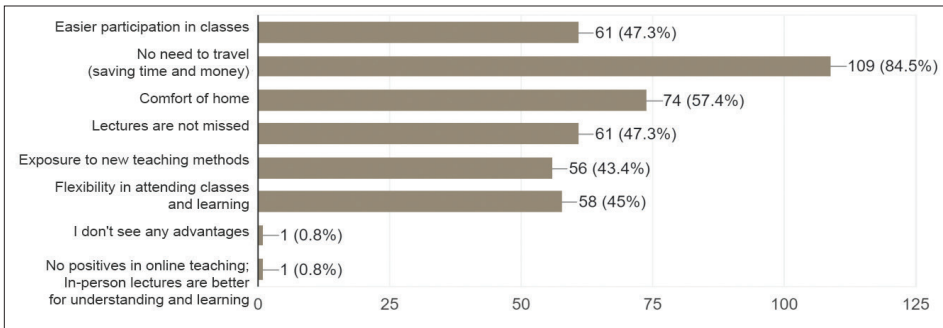


Fig. 7. Positive characteristics of online teaching compared to the traditional type of teaching

The biggest disadvantages of online learning are the lack of personal contact (60.5%) and technical difficulties (59.7%), as well as too many hours spent in front of the computer (45%), missed practical experience and some laboratory exercises (41.1%), lack of physical presence on campus (40.3%), challenges with concentration and participation in classes (27.9%) (see Figure 8).

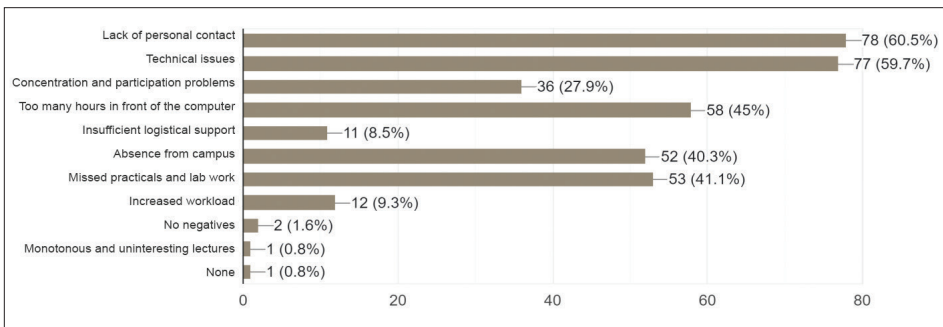


Fig. 8. Negative characteristics of online teaching compared to the traditional type of teaching

### Influential Factors for Pre-Service Teachers' Online Engagement Intentions

To investigate the underlying structure of the scale used for measuring variables that could influence students' intention, an exploratory factor analysis utilizing Maximum Likelihood and Oblimin with Kaiser normalization rotation was performed on the 42 items. Using Kaiser's eigenvalues-larger-than-one criteria, which retains all factors with eigenvalues larger than 1.0, the number of components

was determined. Furthermore, Hair Jr. et al. (2010) suggested a factor loading of  $\pm 0.50$  for items to hold practical significance for interpretation. As demonstrated in Table 3, the factor structure was verified with satisfactory loadings for all items.

Table 3: Exploratory factor analysis

	1	2	3	4	5	6	7	8
TEACHING_QUALITY1							.504	
TEACHING_QUALITY2							.549	
TEACHING_QUALITY3							.755	
TEACHING_QUALITY4							.750	
TEACHING_QUALITY5							.691	
TEACHING_QUALITY6							.718	
TEACHING_QUALITY7							.712	
TEACHING_QUALITY8							.619	
PEDAGO_USEFULNESS1	.547							
PEDAGO_USEFULNESS2	.558							
PEDAGO_USEFULNESS3	.561							
PEDAGO_USEFULNESS4	.548							
PEDAGO_USEFULNESS5	.869							
PEDAGO_USEFULNESS6	.878							
PEDAGO_USEFULNESS7	.919							
PEDAGO_USEFULNESS8	.927							
PEDAGO_USEFULNESS9	.854							
FACILITATEING_COND1						.836		
FACILITATING_COND2						.715		
FACILITATING_COND3						.727		
FACILITATING_COND4						.733		
USEFULNESS1			-.895					
USEFULNESS2			-.897					
USEFULNESS3			-.538					
USEFULNESS4			-.867					
ANXIETY1		.817						
ANXIETY2		.880						
ANXIETY3		.964						
ANXIETY4		.913						
EASYUSE2					.581			
EASYUSE1					.426			
EASYUSE3					.489			

INTENTION1				-.480				
INTENTION2				-.719				
INTENTION3				-.642				
SAFETY1								.518
SAFETY2								.784
SAFETY3								.812
SAFETY4								.705

Note. Extraction Method: Maximum Likelihood. Rotation Method: Oblimin with Kaiser Normalization.

To investigate the association between variables, correlation, and multiple regression analyses were performed.

According to preliminary examination, the assumptions of normality, linearity, homoscedasticity, and the lack of multicollinearity were not violated.

Table 4: Correlations between constructs (N=129)

	Intention	Safety	Facilitating conditions	Usefulness for future	Teaching quality	Anxiety	Ease of use
<b>Safety</b>	.739**						
<b>Facilitating conditions</b>	.425**	.461**					
<b>Usefulness for future pedagogy</b>	.575**	.640**	.567**				
<b>Teaching quality</b>	.535**	.620**	.618**	.707**			
<b>Anxiety</b>	-.181*	-.084	.120	.131	.097		
<b>Ease of use</b>	.663**	.722**	.635**	.673**	.743**	.031	
<b>Usefulness</b>	.698**	.617**	.486**	.518**	.591**	-.094	.709**

\*\* p < 0,001 \* p < 0,05

As shown in Table 4, all seven variables (perceive usefulness, perceive ease of use, anxiety, safety, teaching quality, perceive usefulness for future pedagogical work, facilitating conditions) are positively linked with the behavioral intention to use online teaching.

Table 5: Multiple regression results

	Unstandardized Coefficients		Standardized Coefficients		
	B	Std. Error	Beta	t	Sig.
(Constant)	-.236	.404		-.584	.560
Safety	.498	.103	<b>.402</b>	4.830	<b>.000</b>
Facilitating conditions	-.015	.100	-.011	-.149	.882
Perceived usefulness for future pedagogy	.234	.127	.153	1.845	.067
Teaching quality	-.120	.140	-.076	-.853	.396
Anxiety	-.118	.050	<b>-.130</b>	-2.344	<b>.021</b>
Perceived ease of use	.122	.130	.096	.936	.351
Perceived usefulness	.357	.082	<b>.340</b>	4.369	<b>.000</b>

The multiple regression findings revealed that the suggested predictors accounted for 64.5 percent of the variance in the students' intention to use online teaching in future profession. Among the proposed factors (refer to Table 5), the most significant individual contribution was attributed to the safety of using online systems/platforms (beta = 0.402,  $p < 0.001$ ), followed by the perceived usefulness (beta = 0.34,  $p < 0.001$ ), and the level of anxiety (beta = -0.13,  $p < 0.05$ ). While other factors did not directly display statistically significant effects on the intention to use online teaching, they did contribute to the overall variability percentage.

## DISCUSSION

Transitioning to online learning as a result of COVID-19 has been a difficult task for higher education institutions. This study examines the factors that impact students' use and acceptance of online learning under COVID-19 stay-at-home orders. The results aligned with prior research conducted in emerging countries. In Malaysia, Goh and Blake (2021) identified significant impacts of e-learning infrastructure on the acceptance of e-learning. Furthermore, in four Southeast Asian countries, the framework, institutional support quality, and teacher proficiency were found to contribute to e-learning success (Bhuasiri et al. 2012).

In this study students expressed a high level of competence for using online teaching, generally positive attitudes towards online teaching, and a low level of anxiety, indicating their adaptability to digital learning platforms and their confidence in engaging with virtual education methods. Respondents expressed their high

contentment with the well-structured online classes and the positive educational achievements fostered by the Faculty. Their satisfaction is a testament to the effective organization and impactful outcomes of the education provided. The proposed predictors, including the perception of usefulness and ease of use, respondents' anxiety level, safety considerations, lecturer's support, usefulness for future pedagogical work, and facilitating conditions, are significantly correlated to engaging in future online teaching. The intention of future teachers and educators to use online teaching is directly influenced by their assessment of the system's efficacy, their level of apprehension, and their confidence in the system's security measures.

### **Implications for educational policy and practice**

This study could prompt educational institution leaders to focus on key factors that are instrumental in enhancing the adoption of online teaching among upcoming educators and teachers, thus catering to a wide range of individuals within the field.

The comprehensive responses obtained through the questionnaire empower researchers and educational leaders to assess the level of acceptance towards utilizing online platforms, enabling them to make informed decisions and enhance pedagogical practices accordingly.

The high competence level and positive attitudes expressed by students towards online teaching, along with low anxiety, signify their adaptability and confidence in utilizing digital learning platforms. This highlights a potential shift towards increased acceptance and proficiency in virtual education methods among students.

The study revealed high contentment with well-structured online classes and positive educational outcomes. The satisfaction of the respondents serves as evidence of the effective organization and the positive impact of the Faculty's educational approaches. This underscores the importance of well-structured and organized online classes for effective learning.

The identified predictors, such as perception of usefulness, ease of use, anxiety levels, safety considerations, lecturer support, and facilitating conditions, show a significant correlation to engaging in future online teaching. Understanding and addressing these factors are crucial for fostering an environment conducive to successful online teaching and learning experiences.

The intentions of future teachers and educators to engage in online teaching are directly influenced by their evaluation of the system's effectiveness, anxiety levels, and confidence in the security measures. This suggests that taking steps to enhance efficacy, reduce anxiety, and ensure security will be pivotal in encouraging the adoption of online teaching methodologies.

These findings emphasize the necessity for the thorough training of upcoming teachers and educators, emphasizing the implementation of strong safeguards for online systems, cultivating a deep comprehension of their utility, and addressing the concerns faced by teachers and educators.

For the optimal implementation of online classes, it is imperative to establish favorable conditions that facilitate progress in the aforementioned key elements. Ensuring a conducive environment for learning is paramount, allowing individuals from all walks of life to benefit from the advantages of online education efficiently and effectively.

### **Limitations and recommendations for future research**

Although all methodology precautions were undertaken, there are limitations of this study. Data were collected through self-report, highlighting the significance of cautious interpretation to ensure accurate analysis and unbiased findings, thus fostering a robust understanding of the authentic associations among variables. The study's limited generalizability arises from its focus on students, pre-service teachers, and preschool teachers, rather than employed teachers and educators, making it challenging to extrapolate the findings to a broader population. The inadequate grasp of practical skills by the participants, coupled with the complex challenges arising from incorporating online teaching into the existing educational framework, may result in an inaccurate depiction of the real circumstances. About 35% of the variance remained unexplained, leaving room for further investigation and analysis to gain a comprehensive understanding of the underlying factors contributing to these results.

Future research could include studies among practicing teachers and educators to assess the impact of instructional methods on student learning outcomes, explore the role of technology in education, and investigate the effects of diverse classroom environments on student engagement and achievement.

## **CONCLUSION**

This research delved into the attitudes of pre-service teachers in Serbia regarding online education, with the aim of consolidating prior research to create a novel assessment method for gauging the adoption of online learning, especially in a developing country.

Theoretical research underscores the importance of establishing robust connections between the TAM variables and the five external teaching variables, shedding light on their potential implications in diverse educational contexts. Empirical

evidence reinforces a strong correlation between these variables and the future intentions of pre-service teachers and educators when it comes to integrating online teaching into their future professional endeavors. This study highlights students' favorable inclinations toward online teaching, indicating their adaptability and confidence in using digital learning platforms. The positive educational outcomes and the high satisfaction levels among respondents affirm the effectiveness of well-structured online classes provided by the Faculty. The identified predictors, notably perceived usefulness, anxiety levels, and security considerations, show significant correlations with teachers' intentions to adopt online teaching. Addressing these factors and creating a conducive environment for successful online teaching practices will be pivotal in fostering widespread acceptance and the effective incorporation of virtual education methods among both future educators and students.

These findings enhance our understanding of the specific factors influencing the acceptance of online teaching in educational settings. They offer valuable insights for educators, policymakers, and stakeholders in their efforts to enhance user experiences and promote the effective integration of information technology in education. This study provides significant outcomes that shed light on the extent to which pre-service teachers embrace online learning applications and their willingness to adopt these applications in their future educational practices.

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## APPENDIX

### List of Constructs and Corresponding Items

Teaching quality (adapted from Teo 2010)

During online classes:

TEACHING\_QUALITY1 Teachers could explain the concepts clearly

TEACHING\_QUALITY2 Teachers were knowledgeable in ICT

TEACHING\_QUALITY3 I was satisfied with the answers given by my teachers

TEACHING\_QUALITY4 The teachers were focused on helping me learn

TEACHING\_QUALITY5 The tutorial activities were well-managed

TEACHING\_QUALITY6 The teachers were accessible when I needed to consult them

TEACHING\_QUALITY7 The teachers were patient when they interacted with me  
TEACHING\_QUALITY8 The group sessions were well facilitated

Usefulness for future pedagogical work  
(adapted from Teo 2010)

Because of what I have learnt from the course:

PEDAGO\_USEFULNESS1 I am able to apply the course contents in my future job

PEDAGO\_USEFULNESS2 What I had learned from the course is useful for my  
future job

PEDAGO\_USEFULNESS3 I am able to use the knowledge from the course to help  
my colleagues

PEDAGO\_USEFULNESS4 I can contribute to my future work place more

PEDAGO\_USEFULNESS5 I can integrate ICT in my future work creatively

PEDAGO\_USEFULNESS6 I know how to search, evaluate and select appropriate  
IT resources to support my work

PEDAGO\_USEFULNESS7 I am able to adopt and adapt ICT resources in my work

PEDAGO\_USEFULNESS8 I can integrate ICT into my future work with minimal  
help

PEDAGO\_USEFULNESS9 I can manage ICT resources more effectively in my  
future workplace

Facilitating conditions (adapted from Teo 2010)

When I needed help using the online environment:

FACILITATING\_COND1 Instructions were available to me (e.g. video)

FACILITATING\_COND2 Specialized instruction was available to help me

FACILITATING\_COND3 A specific person was available for me to provide as-  
sistance

FACILITATING\_COND4 I knew where to find it

Experiencing the usefulness of online education

(adapted from Teo, Zhou, Fan & Huang 2019)

USEFULNESS1 The use of online teaching improves teaching.

USEFULNESS2 The use of online teaching makes teaching more effective.

USEFULNESS3 Using online teaching makes it easier to complete teaching tasks.

USEFULNESS4 In general, I find online teaching to be beneficial in education.

Ease of Use of Online Education

(adapted from Teo, Zhou, Fan & Huang 2019)

EASYUSE1 I find it easy to learn how to use online teaching tools.

EASYUSE2 I find it easy to interact in online classes.

EASYUSE3 I find the interaction in online classes to be adaptive.

Respondent's anxiety level

(adapted from Teo, Zhou, Fan & Huang 2019)

ANXIETY1 I'm afraid of using online classes.

ANXIETY2 The thought that by pressing the wrong key I could cause the computer to destroy a large amount of information scares me.

ANXIETY3 I hesitate to use online classes for fear of making mistakes I can't correct.

ANXIETY4 Using online tools and systems in class scares me a bit.

Safety of using online systems/platforms

(adapted from Farooq, Ahmad, Khadam, Lorenz & Isoaho 2020)

SAFETY1 I believe that the online teaching systems have sufficient technical capacity to ensure that a third party cannot modify the data I send

SAFETY2 Online teaching systems have sufficient security measures in place to protect my personal information

SAFETY3 Online teaching systems are reliable

SAFETY4 Online teaching systems have high integrity

Intention to use online teaching in future profession

(adapted from Teo, Zhou, Fan & Huang 2019)

INTENTION1 I plan to use online teaching often and in regular circumstances.

INTENTION2 I will probably use online teaching as soon as I start working.

INTENTION3 I will use some form of online teaching in my future profession.