Article

Recognizing Predictors of Students' Emergency Remote Online Learning Satisfaction during COVID-19

Ivana Kovačević, Jelena Anđelković Labrović *, Nikola Petrović and Ivana Kužet

Faculty of Organizational Sciences, University of Belgrade, 11000 Belgrade, Serbia;
ivana.kovacevic@fon.bg.ac.rs (I.K.); nikola.petrovic@fon.bg.ac.rs (N.P.); ivana.kuzet@fon.bg.ac.rs (I.K.)
* Correspondence: jelena.andjelkovic.labrovic@fon.bg.ac.rs

Abstract: In order not to lose continuity in education during COVID-19, universities mainly found the solution in Emergency remote teaching. Student satisfaction with online learning experience is one of the measures of the excellence of learning practice. Our goal was to test the hypothesis that the predictors of students' satisfaction with emergency remote online learning are their prior experience, attitude toward online learning, their motivation, aspects of the learning situation they value (expectations), and their digital competencies. For estimating students' satisfaction, a survey was created and disseminated, resulting with 547 responses from students of engineering education. Results showed that all students had some experience with online learning platforms and MS Teams. Attitude toward online learning in this situation was neutral, as well as the level of motivation. Their expectations were relatively high in comparison to their satisfaction with all relevant aspects of the online learning situation, while their digital competency was rather perceived as advanced. Our results showed that the prediction of the emergency remote online learning satisfaction for engineering students can be achieved based on previous positive experience with learning platform, motivation for learning in a specific situation, the importance they put to the learning achievement, and their level of digital competency.

Keywords: emergency remote online learning; learning; COVID-19; students' satisfaction

1. Introduction

Universities all over the world reacted to a pandemic situation caused by COVID-19 in most cases by transferring to online teaching and learning in order to prevent the virus' spread. The reaction had to be fast. Faculties managed differently, but certainly the only possible solution was to move to the online environment and thus continue the teaching process in best possible way. A special challenge was for those faculties and universities that did not already have prepared and implemented online courses and they just switched from face-to-face to online teaching. Looking from the perspective of researchers in the field of online learning, it would not be precise to consider this teaching in the time of COVID-19 as a form of online education in terms that this was not a process that was planned and designed in advance. The author [1] suggested the term "emergency remote teaching" and maybe this suits the best for this situation since it refers to a temporary solution and approach, as an alternative way of teaching delivery, which is fully remote in an online environment. What is important is that classes were delivered and students were taught in online learning environment, so there is an experience from which we can learn and prepare better for some future similar situations.

No matter to what extent the emergency remote teaching process was structured and prepared, from the students' perspective online learning happened. Therefore, we proposed for this specific situation to use the term "emergency remote online learning". If we perceive it in accordance with one definition of online learning where the author [2] emphasizes that it is an entirely virtual learning experience provided by institutions

where learning occurs using web-based technology without the learner's physical presence, some results of previous research in the domain of online learning satisfaction could be considered. Previous research showed that students' satisfaction with online learning could be corelated with their readiness to learn online [3–9]. Some correlated it with quality of interaction with teachers and peers [10–15], the use of specific learning platforms [16–18], and their expectations and attitudes towards online learning [19–21] as well as instructional content and overall course design [13,22,23]. In one study, the authors [1] suggested that in this specific situation this should not be considered as a specifically designed online course and it should not be traditionally evaluated. Rather, students' interests, motivations, attitudes, and their ability to use a learning platform could be seen as extremely important for their success in learning, while, in another study, the authors [24] suggested a conceptual framework as a necessity for understanding and planning learning in these environments. Therefore, we wanted to investigate how satisfied students were with online learning in this specific situation as well as what most affected their satisfaction.

1.1. Learning and Teaching during COVID-19

UNESCO [25] reported that in May 2020 Universities were closed in 153 countries. Therefore, learning was disabled for 68.5% of the total enrolled learners. Research results [26] showed that, in Australia, Germany, Italy, the Republic of Ireland, and United Kingdom, all the countries closed campuses and moved to online teaching. However, in developing countries (Brazil, China, Chile, Egypt, Hong Kong, India, Indonesia, Jordan, Malaysia, Nigeria, Republic of Korea, Singapore, South Africa, and United Arab Emirates), most of them reported campus closures, but just three of them reported a complete shift to online learning.

There is not enough research regarding the learning experience during COVID-19 [19,27]. Research results [28] showed that students in the Philippines were not ready for online learning and that teachers were not ready as well [27]. On the other hand, some authors [29] showed that students in India were really satisfied with e-learning and with the efforts universities were making to keep enabling education to continue. From her experience during COVID-19, a researcher [19] suggested that, in order to ease the transfer to online learning and for online learning to be effective, students' attitudes towards e-leaning, their concentration, and their engagement are crucial. In their study, some authors [30] highlighted the importance of being aware of students' experiences in learning during COVID-19, especially of their emotions in a remote learning situation and found out that students' expressions were mostly related to negative emotional experience. Research results from the Kingdom of Saudi Arabia [17] showed that students were satisfied with learning and teaching approaches and students' perception of the most effective platforms for online learning and teaching during COVID-19 were presented. Another author [31] presented that the factors that positively influenced students' satisfaction and their perceived learning outcomes during COVID-19 were interaction in the classroom, motivation, course structure, instructor knowledge, and facilitation. One author [32] presented framework with tree elements, teaching pedagogy, educational technologies, and e-learning management system, concluding from the students' feedback that for interactive learning using different technologies, synchronous teaching, and active learning activities as well as a practical approach are important.

Although there are some specifics when it comes to engineering education regarding teaching practices that need to be more practically oriented, it seems that similar challenges occurred during COVID-19 online teaching and learning. Research [33] on online engineering instructions identified a reliable internet connection as triggering concern, also a lack of motivation, work–life balance, peer support/interaction, focus, engagement, and clear guidelines from instructors. Specifically, for an engineering education, an author [34] proposed a modified, blended learning model that could be applied during COVID-19 in which, besides the importance in organizing online lectures and classes, he emphasizes

the challenge in delivering online laboratory classes in the teaching process, for which he proposes modified approaches and solutions.

In Serbia, closure of all activities was announced in the middle of March 2020. Therefore, consequently, our faculty, one of the largest technical faculties in Serbia, decided to move all its activities online. Since the situation required immediate reaction, we chose Microsoft Teams platform because all our students already had accounts and we proudly managed to transfer to online teaching in a very short period of time, in a week, although the online teaching process was not prepared in advanced lectures, exercises were delivered live, and teachers provided a lot of different electronic materials as additional learning resources.

1.2. Students' Satisfaction with Online Learning

Students' satisfaction is the crucial topic when assessing online learning [35]. Online learning satisfaction is complex and multidimensional, so it is expected that a variety of factors influence it. Studies in the field of online learning show that the quality of interaction is the main factor of learning satisfaction [36]. There are a remarkable number of studies emphasizing the importance of instructors' feedback [36–39] but predictive studies also found that interaction between students could predict online learning satisfaction [11]. As a matter of fact, some authors found that to be an advantage of online learning over the classic ways of studying, offering more possibilities for peer interaction [14,15]. Although some author [35] did not find the predictive potential of interaction between learners for the satisfaction, other authors [3] said that social interaction (with peers and the instructor) influences student perceptions of learning and satisfaction. One author [13] found that the interaction between instructor and students strongly contributes to learning achievements and course satisfaction.

Some authors claim that satisfaction in online learning is based on the quality of interaction that is dependent on the technological solutions of educational tools. In order to achieve a satisfactory level of educational tool usage, appropriate digital skills are required. Basically, some experience with similar or the same digital platform is a good base for online learning to go smoothly. Contrarily, a student's frustration and dissatisfaction may occur [40]. In one longitudinal study [41], it was shown that previous experience with an online course "at the same location" (using the same tools) is a predictor of program satisfaction, along with the course conduct (including the elements of course design).

Some authors [36] found that students' internet self-efficacy (the belief in one's capability to organize and execute Internet-related actions required to accomplish assigned tasks [42]), are good predictors of online learner satisfaction. One study [43] proved correlation between ICT competencies and online learning satisfaction, similar to another one [21]. Yet, some studies did not find that link [44]. One author [45] integrated different study results and found nine factors including skills developed by students, while another author [37] identified digital literacy as one of the key challenges of successful online learning and teaching. Therefore, it is not only a student's ability in an online learning context that matters. Instructors should also express high levels of competency [21,39,41], which might be seen in the course design. Course design characteristics might be determinants of a positive perception of the online learning experience [39,46]. Specifically, some authors [13] concluded that the structure and coherence of the learning material and the course, the stimulation of learning motivation, and the facilitation of collaborative learning are important for students' perceptions of learning achievements and course satisfaction.

One study [47] concluded that students' expectations and needs are important determinants of their involvement, leading, consequently, toward satisfaction. Expectations from online courses often include flexibility, a well-structured course, and quality of tutorial and technical equipment [13]. Some studies see a learner's expectations as important factors that affect e-readiness [20,21]. The importance of students' readiness for e-learning was explored in many research works [3–5,7–9] as a concept covering a wider group of variables from technical competencies to motivational and attitudinal aspects, persistently

being linked in studies with satisfaction and motivation [6]. One author [5] associated students' e-learning readiness with social competencies, communication competencies, and technical competencies in online learning. Other authors [4] investigated how motivational factors and students' actions during learning are influencing academic outcome in an online learning environment. Some authors [3] investigated the correlation between students' readiness (or preparedness) for online learning with their satisfaction. Looking at online learning readiness through six measures, online work skills, social technology familiarity, online learning efficacy, self-directedness, organization skills, and socialization, they concluded that efficacy and online work skills were significantly and positively related to satisfaction, in opposite with socialization, which was found to be significantly and negatively associated with satisfaction.

It is a well-known fact that a positive attitude toward technology leads to a higher satisfaction with the online learning process [20]. Similarly, motivation inciting a student's engagement might influence satisfaction, but it is rather a two-way process. The power of engagement (active involvement) in a course should not be neglected since it was shown that it is one of the critical factors of learning success [48,49]. It is in direct correlation with a positive learning outcome and cannot be observed independently of motivation [50]. Some authors found that this kind of engagement is a consistent predictor of satisfaction [51] and that it is possible to preserve motivation when courses are synchronous [52], but students' engagement in online learning can be challenging [53].

Finally, other authors [21] concluded that when observing online learning satisfaction, factors that should be taken into consideration, besides the teaching process and instructional content, are e-competencies of students and educators, as well as the attitudes toward this mode of learning and the usability of the system. In their study, some authors [20] tried to conceive a comprehensive, structural model integrating the concept of online learning satisfaction with the result, indicating that computer self-efficacy and motivation for learning have a direct, positive effect on course satisfaction, mediating the effect of e-readiness.

The important issue for this study is the question of personality fit. Some studies claim that online courses are not suitable for all kinds of learners [54], while others try to personalize and adapt learning systems to different profiles of learners. They start from personal factors as the predisposition [46] for success and satisfaction in online learning. We omitted that factor because this situation offers no other possibility to choose. Nevertheless, some personal characteristics might influence the level of satisfaction.

2. Theoretical Framework and Hypotheses

Although student satisfaction depends on different determinants, in the situation when it is expected to react fast in order to provide continuity of the educational process, academic staff is in no position to take into a consideration each and every of them. In order to respond promptly to a crisis and to ensure that students do not suffer, we have to focus on the main things that guarantee deliverance and offer just enough satisfaction so they do not feel as being abridged in the process.

As the research problem was in the domain of academic learning in the unforeseen circumstances as COVID-19, we focused just on the potential factors of students' satisfaction with online learning during the second semester (March–June 2020) in the process of an academic engineering education.

The sudden demand to prepare "overnight" a course and carry it out (perform) in no ordinary conditions represented the challenge for scholars and required many unexpected prerequisites. The success in the endeavors depended on scholars' competencies, digital tools available (both for them and students), their previous experience, motivation to learn, and lot of independent and dependent factors.

The main goal of the research was to assess the level of engineering students' satisfaction with an online learning experience during the courses conducted in the first period of lockdown, as well as to identify the key predictors of online learning satisfaction in

a similar crisis situation. One of the important predictors of academic achievement is satisfaction with the process of learning [55]; in this case, this process was compromised. Therefore, in this research we wanted to see how scholars responded to the situation, was that response successful, and what might be aspects of the situation that were relevant for the students' satisfaction. As the learning process is two-sided, we might have included the satisfaction of the educators as well, but it was out of the scope of this research. The aspect of their satisfaction with studying becomes even more important in the situation when they feel their life is endangered, provoking constant anxiety and less life satisfaction.

The research rationales were based on the results of the preliminary research that recognized three aspects: e-readiness (experience, attitudes, motivation to learn in the time of crisis) [56], satisfaction about course design, teachers' delivery, the online learning experience, and the potential correlation between the level of their digital skills' development and online learning.

The framework of the research is given in Figure 1, which illustrates the potential relation between dimensions. This framework should be verified in the context of similar research and longitudinal and follow-up studies.
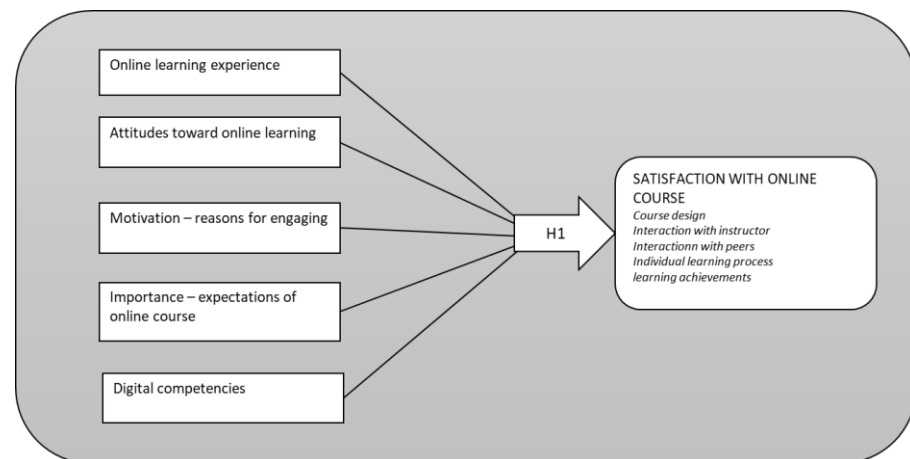

Figure 1. Research framework: potential relations between variables.

According to the framework, it is believed that satisfaction with an online course might be predicted by previous experience, attitudes toward online learning, reasons why they are present in the online course (motivation), and from expectations of the course (an importance they attribute to different aspects of the learning experience). Additionally, we should not forget that the sense of competence might mediate the relations between variables, with the idea that digital competencies should have been the prerequisites of online learning, provoking more or less satisfaction with the process.

Online learning satisfaction is a subjective perception and cognitive and emotional evaluations of the learning process [45]. and various studies indicate that it is a complex and multidimensional concept, expecting that various factors influence it [14]. Therefore, in this study, it was seen as the consequent (dependent variable).

In the quest for potential predictors of students' learning satisfaction in the ad hoc, organized, distance (online) learning via platform (MS Teams), we started from the previous experience with this model of learning, especially using a similar or the same platform for similar purposes, as well as their evaluations of the experience (satisfaction with the platform). Research corroborates the importance of the positive experience with the learning environment for current satisfaction [41].

The second aspect we took into a consideration was the attitudes that students have toward online learning. It was expected that a more positive attitude would lead toward better performance and follow the evaluation of the experience. Studies showed that attitudes toward technological tools might be relevant for user (learner) satisfaction [20].

Additionally, motivation proved to have a huge potential to influence satisfaction [20,51,52] and it might be based on reasons why someone was using it. For example, some students were focused on learning and learning material and did not care about the way content was presented to them. Others were focused strictly on the achievement, while some students were highly dependent on the learning environment and quality of the educational tools. Reasons for being engaged were different but they all contributed to the motivation score.

The importance of different aspects of the learning experience was also emphasized. Some students expected and stressed the significance of the course design. Others were more concerned with interaction and collaboration possibilities. The need for relatedness with peers and instructors was found to be important [10]. Additionally, the flexibility of the learning process and the possibility for self-regulation were often seen as relevant factors when describing the learning process via platforms. One of the advantages some authors see is the possibility for self-regulated learning and constant self-monitoring of the achievement goal orientation [55]. Additionally, satisfaction might be connected with the online environment being able to fulfill the needs for self-efficacy and competency [10].

In this case, skillfulness might be based on digital competencies students have and on the speed with which they can acquire and improve them. Digital competencies are seen as students' ability to access, manage, understand, integrate, communicate, evaluate, and create information safely and appropriately through digital technologies [57], or, here, through a digital learning platform.

Different research postulated different predictors of online learning satisfaction [11,12, 35,39,41,46,47,51], with some author [45] offering a summary of potential factors influencing it and other one [31] trying to define a model with the key determinants of satisfaction in COVID-19 online learning circumstances. They provide guidelines to educators who can rely on them and consult them when they meticulously plan online learning course. Yet, the question remains of what to do and on what aspects to focus when we are not so well prepared and when we find ourselves in the situation to manage the learning process without a previously planned agenda and overcoming an unexpected situations, as this one was.

We posted hypothesis (H1) that the predictors of engineering students' satisfaction with emergency remote online learning were their: (1) prior experience, (2) attitude toward online learning, (3) (nature of) their learning motivation, (4) aspects of the learning situation they value (expectations), and (5) current digital competencies.

3. Research Method

In order to estimate students' satisfaction regarding emergency remote online learning and teaching during COVID-19, we conducted the survey among students of an engineering education. The survey encompassed academic courses at all years of studying and answers were collected at the end of the second semester, in June 2020, during the curfew.

3.1. Instruments

For this purpose, we developed a questionnaire with six sets of questions: first, regarding their prior experience in the use of digital platforms for learning; second, regarding their attitudes towards online learning and learning platforms; third, their reasons and motivation to learn on digital platforms; fourth, expectations towards e-learning course design; fifth, different learning aspects; and sixth, their digital competencies' levels. Additionally, there were a few general questions about their year of birth, gender, year of study, and field of study. For the questions where they were asked to assess the level of agreement, a five-degree Likert scale was used (1—completely disagree, 2—mainly disagree, 3—Moderately agree, 4—Mainly agree, 5—completely agree).

The prior experience was covered with questions concerning their experience with online learning and online learning platforms, as well as their opportunity to use the MS Teams' platform. They also evaluated this experience and reported their level of satisfaction.

Attitude toward online learning was on the scale with 11 items concerning their opinions about online learning platforms as an educational tool (question examples: While nothing can replace the in-class lecturing, learning via a platform is a more flexible way.). We gained that the internal reliability for this scale was $\alpha(11) = 0.90$.

The online learning motivation scale was based on different areas of reasons for being present at the online courses. It included 14 questions concerning the need not to lose continuity in the learning process, the need to escape from the current situation, the need to learn no matter how, and so on. The internal reliability of the scale was $\alpha(14) = 0.75$.

Digital competencies' assessment was based on a digital competence framework (Carretero et. al., 2017) that proposed 21 competencies classified into five areas of competence: (digital literacy, three competency/items; communication and cooperation, six competency/items; creating digital content, four competency/items; safety and security, four competency/items; problem solving, four competency/items) The internal reliability of the scale was $\alpha(21) = 0.94$. Their self-assessed competency had four levels (basic, intermediate, advanced, and expert).

Expectations from online learning considered aspects of the online learning situation that students valued and anticipated to be satisfied. Questions were the same as in the scale of online learning satisfaction with the root question differing (How do you value following learning aspects?), with an internal reliability of the scale $\alpha(23) = 0.93$. This concept of assessment was taken from the ideas of the author [13] who defined five indicators of students' expectations with online courses: course design (three items), interaction with the instructor (five items), interaction with peers (four items), the learning process (five items), and learning achievement (six items).

Satisfaction with online learning was measured with same set of items as the expectations from online learning, with the idea to make a comparison between them and see if those aspects that students valued were satisfied and to what extent. The internal reliability of the satisfaction scale was high, with $\alpha(23) = 0.95$.

The reliability of the proposed scales was acceptable, including the motivation scale that had the least reliability due to the fact that it consisted of various reasons for attending courses.

3.2. Research Sample

The research was conducted at one of the largest public engineering faculties in Serbia. The questionnaire was distributed using Google forms via the MS Teams platform, which was used for delivering all courses by our faculty. Data were collected during two teaching weeks, at the end of the semester. The link was posted on the course page of all compulsory courses in each year of study and teachers asked the students to fill it out with additional explanations. The questionnaire was filled by 547 students, out of which 68.5% were females and 31.5% males. Since it is a four-year study program, the sample was almost equally distributed: first year, 20.5%; second, 29.3%; third, 27.7%; and fourth, 22.5%.

4. Results

We posted the hypothesis (H1) that engineering students' satisfaction with emergency remote online learning could be measured with their: (1) prior experience, (2) attitude toward online learning, (3) (nature of) their learning motivation, (4) aspects of the learning situation they value (expectations), and (5) current digital competencies. Following, the descriptive data for predictor variables as well as for the online learning satisfaction are given in Table 1.

Table 1. Descriptives for predictor variables and learning satisfaction.

		N	Mean	Standard Deviation
PRIOR EXPERIENCE (1–5)	with platforms	547	2.68	1.102
	frequency of use	547	2.07	0.987
	with MS Teams	547	2.7	1.471
PRIOR SATSIFACTION (1–5)	with platforms in general	547	3.48	0.824
	with MS Teams	547	3.98	0.892
ATTITUDE (1–5)	toward online learning	547	3.17	0.329
MOTIVATION (1–5)	reasons to learn	547	3.04	0.619
EXPECTATIONS (1–5)	importance of learning aspects	547	4.12	0.59
DIGITAL COMPETENCIES (1–4)	(digital literacy, communication and cooperation, creating content, security and safety, solving problems)	547	2.96	0.585
CURRENT SATISFACTION (1–5)		547	3.51	0.785

N—The number of respondents who answered the questions.

Concerning the previous experience with online learning platforms and MS Teams, students all had some experience with them but the duration and frequency of usage was relatively low. They used them sometimes, rather rarely. Nevertheless, they evaluated these experiences from neutral (for platforms, in general) toward mainly satisfied (for MS Teams). Attitude toward online learning situation was neutral, as well as the level of motivation that students expressed in this situation. It is interesting that the level of expectations was relatively high compared with the modest perception of the satisfaction with all relevant aspects of the online learning situation, while digital competency was rather perceived as advanced.

4.1. Content of the Attitude, Motivation, and Digital Competence

Our previous research [56] showed that respondents saw online learning as a necessary evil (M = 3.96; SD = 1.201), emphasizing, as more positive sides, its flexibility (M = 3.94; SD = 1.092) and possibility to cooperate well (M = 3.76; SD = 1.06). Some respondents saw it as an easier way to learn (M = 3.18; SD = 1.228) with more fun (M = 3.14; SD = 1.205) and offering more potential than a traditional way of learning (M = 3.14; SD = 1.169), although they did not feel particularly isolated (M = 2.90; SD = 1.361) and restricted (M = 2.72; SD = 1.21), probably because they did not experience digital platforms as tools for more open interaction but rather as an additional tool for learning (M = 2.67; SD = 1.191).

Additionally, considering motivation, if we try to describe the content of the students' motivation, it seems that the main reason for being present at online classes was a desire not to lose continuity in studying (M = 4.4; SD = 0.882), with the idea that the way of studying does not matter (which is especially important in these situations of not planned learning online (M = 3.88; SD = 1.119)). It was not a decision of a student to enroll in this kind of course, but the fact that this was the only way he or she could continue his or her studies. Nevertheless, they also experienced some enjoyment in the process (M = 3.08; SD = 1.314) and found it challenging (M = 2.92; SD = 1.344), focusing one the advances in the possibility to multitask (M = 3.66; SD = 1.273) and to not participate in activities they did not want to (M = 3.45; SD = 1.334). Additionally, sometimes some side aspects were valued, such as contact with others (M = 2.85; SD = 1.352), sometimes expressing frustration from the demand to learn in these specific circumstances (M = 2.88; SD = 1.529). Students rarely emphasized that online learning was their way to escape from an unpleasant reality (M = 2.03; SD = 1.132) and current problems (M = 2.60; SD = 1.237).

Their self-assessment of digital competencies was in almost at the advanced level for the majority of them, which was not unexpected due to the fact that they were students of engineering education with experience with online learning. They expressed a high level of capability to conduct reliable online searches and store data (M = 3.2; SD = 0.661 for digital literacy) and communicate and collaborate, as well as participate in a digital environment (M = 3.22; SD. 624 for digital communication and collaboration), create and edit digital content in legal and ethical manners (M = 2.55; SD = 0.725 for Creating digital content), protect digital devices and their online identity (M = 2.77; SD = 0.760 for Safety and security), and solve technical problems and use digital tools in an innovative manner (M = 3.08; SD = 0.693 for Solving problems).

4.2. Expectations Versus Satisfaction: Online Learning Aspects' Importance and Satisfaction

It was found that students had high expectations from the online courses; they highly valued course design, learning process, and learning achievement but they were left a little bit unsatisfied in the domains. As can be seen in Table 2, there were statistically significant differences between the importance of the learning aspects and their satisfaction with them.

Table 2. Differences Between Importance Of Online Learning Aspects And The Satisfaction With Them.

		Importance	Satisfaction	t	df	Sig.
COURSE DESIGN (structure and organization, platform usability, and effort–outcome ratio)	Mean	4.46	3.52	23.735	546	0
	N	547	547			
	SD	0.652	0.846			
	SD	0.926	0.995			
INTERACTION WITH INTRUCTORS (feedback, support, personal contact, accessibility, expertise)	Mean	4.14	3.8	8.745	546	0
	N	547	547			
	SD	0.677	0.809			
INTERACTION WITH PEERS (easy and fast exchange, variety of communication tools, support cooperative learning, personal contact)	Mean	3.76	3.43	7.327	546	0
	N	547	547			
	SD	0.868	1.016			
LEARNING PROCESS (time and place flexibility, learning pace and strategy flexibility, opportunity to control learning outcome and application, support motivation)	Mean	4.08	3.36	15.659	546	0
	N	547	547			
	SD	0.754	1.027			
LEARNING ACHIEVEMENT (acquire subject knowledge and skills to apply, skills in communication and cooperation, self-regulated learning, internet and scientific practice, improve digital competencies)	Mean	4.15	3.41	18.676	546	0
	N	547	547			
	SD	0.739	0.962			

There were statistically significant differences between the levels of importance students attributed to different elements of the online learning experience and the level of their satisfaction with them. It seems that students valued more course design, interaction with instructor and peer, learning process, and achievement than they were satisfied with their realization. The most valued were course design, but the most satisfaction was gained from interaction with instructors.

4.3. Relations between Predictor Variables and Course Satisfaction

Research shows, as it was expected, that attitudes toward online learning was in positive correlation with positive experience with the online platform (r(547) = 0.2; $p < 0.000$).

Additionally, as can be seen from Table 3, there were correlations between online learning satisfaction with predictor variables as well as the correlation among predictor

variables. Nevertheless, motivation was not connected with the digital competency of the students.

Table 3. Correlations between variables.

		Motivation	**Digital Competencies**	**Expectations**	**Course Satisfaction**
	r	0.249 **	0.106 *	0.137 **	0.238 **
Attitude	Sig.	0.000	0.013	0.001	0.000
	N	547	547	547	547
	r		0.018	0.212 **	0.472 **
Motivation	Sig.		0.674	0.000	0.000
	N		547	547	547
	r			0.196 **	0.209 **
Digital competencies	Sig.			0.000	0.000
	N			547	547
	r				0.406 **
Expectations	Sig.				0.000
	N				547

* Correlation is significant at the 0.05 level (2-tailed). ** Correlation is significant at the 0.01 level (2-tailed).

4.4. Possibility to Predict Emergency Remote Online Learning Satisfaction

We wanted to make a prediction of satisfaction with online learning based on the experience engineering students had during the COVID-19 crisis. As it was not a regular situation of online learning with previously prepared materials and tools, there was an idea to extract key aspects to take into consideration when there is a necessity for emergency remote online learning. Although numerous factors matter, some of them became more relevant in these circumstances and the COVID-19 situation can be seen as the natural experiment providing us with the insights to online learning dynamics.

Regression analysis (Table 4) was used to propose the regression model of online learning satisfaction prediction. Regression equation was found to be statistically significant ($F = 40.943$; $p < 0.01$) and included identified predictors: OLS = -0.99 + 0.39MTSat + 0.204MOT + 0.167ILA + 0.129DigCom + 0.106IIP + 0.077PS (as can be seen from the coefficients in Table 5).

Table 4. Predictor model: summarized effect of predictors and Analysis of variance regression and residuals.

Model Summary					**ANOVA**				
Model	**R**	**R Square**	**Adjusted R Square**	**Std. Error of the Estimate**	**Sum of Squares**	**df**	**Mean square**	**F**	**Sig.**
	0.707a	0.500	0.487	0.562					
1	Regression				16.11	13	12.932	40.943	0.000a
	Residual				168.346	533	0.316		
	Total				336.457	546			

Table 5. Coefficients predicting online learning satisfaction (OLS).

	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	−0.992	0.302		−3.279	0.001
experience with online learning platforms	0.015	0.03	0.022	0.519	0.604
frequency of usage of online platforms	−0.036	0.03	−0.046	−1.2	0.231
experience with MS Teams	0.009	0.019	0.018	0.486	0.627
digital platforms satisfaction (PS)	0.074	0.034	0.077	2.17	0.03
MS Teams satisfaction (MTSAT)	0.343	0.032	0.39	10.659	0
importance of course design	−0.033	0.049	−0.028	−0.677	0.499
interaction with instruction importance	0.006	0.05	0.005	0.116	0.908
importance of the interaction with peers (IIP)	0.096	0.038	0.106	2.537	0.011
importance of the learning process	0.062	0.047	0.06	1.328	0.185
importance of learning achievement (ILA)	0.178	0.049	0.167	3.645	0
attitude	0.114	0.077	0.048	1.473	0.141
Motivation (MOT)	0.258	0.045	0.204	5.701	0
digital competencies (DigCom)	0.173	0.045	0.129	3.848	0

Therefore, we could predict emergency remote online learning satisfaction (Figure 2) in about 50% of cases (r square = 0.500; $p < 0.001$) based on previously experienced satisfaction with platform, motivation for online learning, developed digital competencies, and importance they assign to learning achievement and interaction with peers. We concluded that our hypotheses H1 was partly supported, since in the domain of importance, expectations of online learning, it was found that only two out of five elements of importance were identified as predictors of online learning satisfaction.
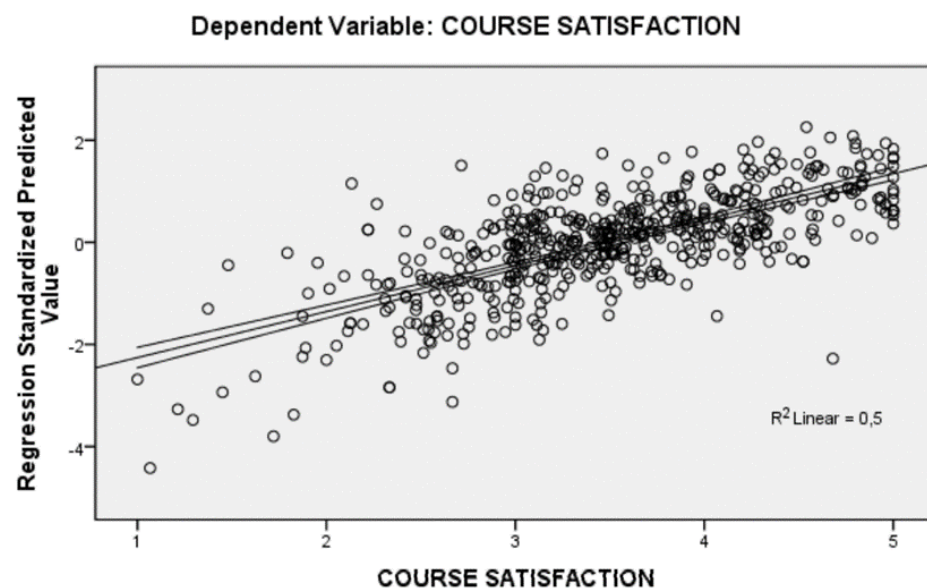
Figure 2. Scatterplot with regression curve for course satisfaction.

5. Discussion and Conclusions

Our results showed that the prediction of the emergency remote online learning satisfaction (at least for the engineering students) can be achieved based on previous positive experience with the learning platform, motivation for learning in a specific situation, the importance they put to the learning achievement, and their level of digital competency. Additionally, importance of the interaction with peers matters and general positive experience with digital platforms.

These results are in the concordance with some previous studies. For example, some studies reported dissatisfaction with online learning due to system usability problems. A recent study [58] found that student in Pakistan rated the institutional learning management system low, reporting that it did not offer proper interaction with the instructor. It goes along with the importance of choosing the right online platform, which was also the problem in another recent study [16], where it was found that one-quarter of students learning during COVID-19 did not have access to a reliable internet connection, opening the question of the digital equity gap, also reporting "Zoom fatigue" and work–life balance issues. One author [37] believes that technical difficulties, along with time management, represent weaknesses of online learning, followed by challenges of unequal distribution of ICT infrastructure and technology costs.

In predictions of online learning satisfaction, different predictors were extracted. A novelty in our approach considered the fact of the uniqueness of the situation (COVID-19 crisis) and on the explicitly defined digital competencies measured with a self-assessment scale based on the DigComp framework [59]. Digital learning capabilities are of great importance, and digital illiteracy is a particular challenge in the situation [37].

One author [60], when defining distance education, emphasized that it is a planned and structured experience conducted via different media channels where the learner and facilitator are physically distant. We did not have this kind of situation of preplanning and structuring learners' experiences.

The scope and the generalization of our results should only cover the situation of online learning that is not the learner's choice and decision and the process of preparing the material is ad hoc. We believe that in these emergency situations, when we have to continue with the learning process in irregular circumstances, there is no time to consider many aspects, just to focus on the most relevant ones that are connected with satisfaction.

One implicit indicator of the fact that we did not have a regular situation is the discrepancy found between the importance of different online learning aspects that build the expectations of learners and their actual satisfaction with these aspects of the course.

Two important implications based on research results of this study could be emphasized:

It is possible to predict students' satisfaction in the case of emergency online learning.

Prediction of students' online learning satisfaction could be achieved based on their previous experience and satisfaction with a platform, their motivation for online learning, their digital competencies, and the importance they assign to learning achievement and interaction with peers, with this order of importance.

Limitations of the study are, at least, twofold. First we did not include the important variable of the learning outcomes and, also, we did not take into consideration the environmental factors that affect the mental and emotional state of students due to the pandemic.

As students' learning satisfaction is found often to be in correlation with their achievement and university course success [10,39,46,48,55], it is important to map factors that influence their positive perception. Yet, we did not include objective measures of achievement because the scope of the study did not include an evaluation process and we finished the data gathering before final exams. We only included the importance student put on it and their subjective satisfaction with achieving course goals.

Additionally, we did not take into consideration studying obstacles related to technical issues. We included in our sample only students with access to digital platforms, but other authors, in their study [61], reported the problem of a lack of students' capabilities to communicate remotely (problem of devices, internet, and applications).

While trying to find predictors for learning satisfaction, we focused on the elements of online learning that were found to be relevant in a situation when this mode of learning was not a first choice for students but rather imposed by the situation. Therefore, this is why we did not take personal preferences and a personal variable into consideration, as some studies did [54]. Nevertheless, focusing on the current COVID-19 crisis, maybe we can introduce variables considering personal coping mechanisms in stressful situations, as Islam and colleagues did [62]. They found that students experience heightened depression and anxiety, with around 15% of them having moderately severe depression and 18.1% severely suffering from anxiety. Additionally, one of the important weaknesses of online learning is the likelihood for distractions followed by frustration, anxiety, and confusion due to the possible lack of attention [37].

The same author [37] summarized aspects to pay attention to when preparing online learning in emergency and crisis situations. He found some advances in flexibility (of time and location), widening potential audience and courses combined with immediate feedback. Additionally, he recognized the opportunities this kind of learning provides for innovation, pedagogical approaches' transformation, digital and problem solving, critical thinking, and adaptability skills' development.

Finally, the question arises: What can we do when the situation requires shifting to an online learning practice when we are not prepared for that and when the so-called emergency remote teaching and learning occur? Our answers, based on research results, are that we should focus on acquainting students with different online learning platforms and tools, introducing some online cooperative activities along with traditional learning methods, and consequently building their digital skills and competencies. Additionally, it is expected that those focused on learning achievement would be more satisfied because the process of studying is continuous in spite of difficulties.

When the moment comes, educators have to choose the right online platform and to be ready also to provide support to motivate students; so focus should be made on teachers' competencies as well. In order to be able to design online learning courses, teachers should be aware of the specificities of online instructional design so additional training should be provided for them [37], especially because it is shown that students were not satisfied with the level of teachers' training for online lectures and their expertise [22] and ability to easily deliver online lectures during this specific situation [58]. They need to develop their digital competencies in order be able to use different learning platforms and be aware of their possibilities for content delivery, learner engagement, and interaction with students. In order to be able to motivate students to be engaged and learn, they need to feel comfortable in this environment as well. It is essential for them not to feel frustrated and isolated, to have a positive attitude towards e-learning, and not to be afraid about their role in this new teaching process. It is important for them to be aware of the additional effort that needs to be made in order to adjust to traditional ways of content design and delivery to a new online environment. For a better understanding of this situation, further research could focus on students' outcomes (grades) before and after crises, while analyzing causes of potential discrepancies. Secondly, focus should be on teachers and the ways to provide them possibilities of upskilling for using modern e-learning tools and modes of different course design and delivery in order to foster students' online learning satisfaction.

Author Contributions: Conceptualization, I.K. (Ivana Kovačević) and J.A.L.; methodology, I.K. (Ivana Kovačević); validation, I.K. (Ivana Kovačević), J.A.L., N.P. and I.K. (Ivana Kužet); formal analysis, I.K. (Ivana Kovačević), J.A.L., N.P. and I.K. (Ivana Kužet); investigation, I.K. (Ivana Kovačević), J.A.L., N.P. and I.K. (Ivana Kužet); resources, I.K. (Ivana Kovačević), J.A.L., N.P. and I.K. (Ivana Kužet); data curation, I.K. (Ivana Kovačević), J.A.L., N.P. and I.K. (Ivana Kužet); writing—original draft preparation, I.K. (Ivana Kovačević), J.A.L., N.P. and I.K. (Ivana Kužet); writing—review and editing, I.K. (Ivana Kovačević) and J.A.L.; visualization, J.A.L., N.P. and I.K. (Ivana Kužet); supervision, I.K. (Ivana Kovačević); project administration, J.A.L. All authors have read and agreed to the published version of the manuscript.

Informed Consent Statement: Informed consent was obtained from all subjects involved in the study.

Data Availability Statement: The data presented in this study are available on request from the authors.

Conflicts of Interest: The authors declare no conflict of interest.

References

1. Hodges, C.; Moore, S.; Lockee, B.; Trust, T.; Bond, A. The Difference between Emergency Remote Teaching and Online Learning. *Educ. Rev.* **2020**, *27*, 1–9. Available online: https://er.educause.edu/articles/2020/3/the-difference-between-emergency-remote-teaching-and-online-learning (accessed on 21 June 2020).
2. Broadbent, J. Comparing online and blended learner's self-regulated learning strategies and academic performance. *Internet High. Educ.* **2017**, *33*, 24–32. [CrossRef]
3. Joosten, T.; Cusatis, R. Online Learning Readiness. *Am. J. Distance Educ.* **2020**, 1–14. [CrossRef]
4. Yeh, Y.-C.; Kwok, O.-M.; Chien, H.-Y.; Sweany, N.W.; Baek, E.; McIntosh, W. How College Students' Achievement Goal Orientations Predict Their Expected Online Learning Outcome: The Mediation Roles of Self-Regulated Learning Strategies and Supportive Online Learning Behaviors. *Online Learn.* **2019**, *23*, 23–41. [CrossRef]
5. Yu, T. Examining Construct Validity of the Student Online Learning Readiness (SOLR) Instrument Using Confirmatory Factor Analysis. *Online Learn.* **2018**, *22*, 277–288. [CrossRef]
6. Yılmaz, R. Exploring the role of e-learning readiness on student satisfaction and motivation in flipped classroom. *Comput. Hum. Behav.* **2017**, *70*, 251–260. [CrossRef]
7. Pillay, H.; Irving, K.; Tones, M. Validation of the diagnostic tool for assessing Tertiary students' readiness for online learning. *High. Educ. Res. Dev.* **2007**, *26*, 217–234. [CrossRef]
8. Brauer, A.; Abrami, P.C.; Surkes, M. The development of a questionnaire for predicting online learning achievement. *Distance Educ.* **2004**, *25*, 31–47. [CrossRef]
9. Smith, P.J.; Murphy, K.L.; Mahoney, S.E. Towards Identifying Factors Underlying Readiness for Online Learning: An Exploratory Study. *Distance Educ.* **2003**, *24*, 57–67. [CrossRef]
10. Hsu, H.-C.K.; Wang, C.; Levesque-Bristol, C. Reexamining the impact of self-determination theory on learning outcomes in the online learning environment. *Educ. Inf. Technol.* **2019**, *24*, 2159–2174. [CrossRef]
11. Parahoo, S.K.; Santally, M.I.; Rajabalee, Y.; Harvey, H.L. Designing a predictive model of student satisfaction in online learning. *J. Mark. High. Educ.* **2015**, *26*, 1–19. [CrossRef]
12. Kuo, Y.-C.; Walker, A.; Belland, B.R.; Schroder, K. A predictive study of student satisfaction in online education programs. *Int. Rev. Res. Open Distrib. Learn.* **2013**, *14*, 16–39. [CrossRef]
13. Paechter, M.; Maier, B.; Macher, D. Students' expectations of, and experiences in e-learning: Their relation to learning achievements and course satisfaction. *Comput. Educ.* **2010**, *54*, 222–229. [CrossRef]
14. Endres, M.L.; Chowdhury, S.; Frye, C.; Hurtubis, C.A. The Multifaceted Nature of Online MBA Student Satisfaction and Impacts on Behavioral Intentions. *J. Educ. Bus.* **2009**, *84*, 304–312. [CrossRef]
15. McFarland, D.; Hamilton, D. Factors affecting student performance and satisfaction: Online versus traditional course delivery. *J. Comput. Inf. Syst.* **2005**, *46*, 25–32. [CrossRef]
16. Nash, C. Report on Digital Literacy in Academic Meetings during the 2020 COVID-19 Lockdown. *Challenges* **2020**, *11*, 20. [CrossRef]
17. Almusharraf, N.; Khahro, S. Students Satisfaction with Online Learning Experiences during the COVID-19 Pandemic. *Int. J. Emerg. Technol. Learn. iJET* **2020**, *15*, 246. [CrossRef]
18. Martin, L.; Tapp, D. Teaching with Teams: An introduction to teaching an undergraduate law module using Microsoft Teams. *Innov. Pract. High. Educ.* **2019**, *3*, 58–66.
19. Bao, W. COVID-19 and online teaching in higher education: A case study of Peking University. *Hum. Behav. Emerg. Technol.* **2020**, *2*, 113–115. [CrossRef]
20. Wei, H.-C.; Chou, C. Online learning performance and satisfaction: Do perceptions and readiness matter? *Distance Educ.* **2020**, *41*, 48–69. [CrossRef]
21. Ilgaz, H.; Gülbahar, Y. A snapshot of online learners: E-Readiness, e-Satisfaction and expectations. *Int. Rev. Res. Open Distrib. Learn.* **2015**, *16*. [CrossRef]
22. Hossain, M.E.; Hoq, M.N.; Sultana, I.; Islam, R.; Hassan, M. Determinants of Students Satisfaction at Higher Educational Institution in Bangladesh: Evidence from Private and Public Universities. *Malays. Online J. Educ.* **2019**, *3*, 49–58.
23. Shin, S.; Cheon, J. Assuring Student Satisfaction of Online Education: A Search for Core Course Design Elements. *Int. J. E-Learn.* **2019**, *18*, 147–164.
24. Whittle, C.; Tiwari, S.; Yan, S.; Williams, J. Emergency remote teaching environment: A conceptual framework for responsive online teaching in crises. *Inf. Learn. Sci.* **2020**, *121*, 311–319. [CrossRef]
25. UNESCO. Global Monitoring of School Closures caused by COVID-19. 2020. Available online: https://en.unesco.org/covid19/educationresponse (accessed on 24 May 2020).
26. Crawford, J.; Butler-Henderson, K.; Rudolph, J.; Malkawi, B.; Glowatz, M.; Burton, R.; Magni, P.A.; Lam, S. COVID-19: 20 countries' higher education intra-period digital pedagogy responses. *Int. Perspect. Interact. Educ.* **2020**, *3*. [CrossRef]

27. Toquero, C.M. Challenges and Opportunities for Higher Education amid the COVID-19 Pandemic: The Philippine Context. *Pedagog. Res.* **2020**, *5*, em0063. [CrossRef]

28. Alipio, M. *Education during COVID-19 Era: Are Learners in a Less-Economically Developed Country Ready for E-Learning*; ZBW–Leibniz Information Centre for Economics: Kiel Hamburg, Germany, 2020.

29. Harsha, R.; Bai, T. Covid-19 Lockdown-Challenges to Higher Education. *CapeComorin* **2020**, *2*, 26–28.

30. Loukomies, A.; Juuti, K. Primary Students' Experiences of Remote Learning during COVID-19 School Closures: A Case Study of Finland. *Educ. Sci.* **2021**, *11*, 560. [CrossRef]

31. Baber, H. Determinants of Students' Perceived Learning Outcome and Satisfaction in Online Learning during the Pandemic of COVID19. *J. Educ. E-Learn. Res.* **2020**, *7*, 285–292. [CrossRef]

32. Ahshan, R. A Framework of Implementing Strategies for Active Student Engagement in Remote/Online Teaching and Learning during the COVID-19 Pandemic. *Educ. Sci.* **2021**, *11*, 483. [CrossRef]

33. Asgari, S.; Trajkovic, J.; Rahmani, M.; Zhang, W.; Lo, R.C.; Sciortino, A. An observational study of engineering online education during the COVID-19 pandemic. *PLoS ONE* **2021**, *16*, e0250041. [CrossRef] [PubMed]

34. Ożadowicz, A. Modified Blended Learning in Engineering Higher Education during the COVID-19 Lockdown—Building Automation Courses Case Study. *Educ. Sci.* **2020**, *10*, 292. [CrossRef]

35. Alqurashi, E. Predicting student satisfaction and perceived learning within online learning environments. *Distance Educ.* **2018**, *40*, 133–148. [CrossRef]

36. Kuo, Y.-C.; Walker, A.E.; Schroder, K.E.; Belland, B.R. Interaction, Internet self-efficacy, and self-regulated learning as predictors of student satisfaction in online education courses. *Internet High. Educ.* **2014**, *20*, 35–50. [CrossRef]

37. Dhawan, S. Online Learning: A Panacea in the Time of COVID-19 Crisis. *J. Educ. Technol. Syst.* **2020**, *49*, 5–22. [CrossRef]

38. Eichelberger, A.; Ngo, H.T. College students' perception of an online course in special education. *Int. J. Educ. Media Technol.* **2018**, *12*, 11–19.

39. Eom, S.B.; Wen, H.J.; Ashill, N. The Determinants of Students' Perceived Learning Outcomes and Satisfaction in University Online Education: An Empirical Investigation. *Decis. Sci. J. Innov. Educ.* **2006**, *4*, 215–235. [CrossRef]

40. Choy, S.; McNickle, C.; Clayton, B. *Learner Expectations and Experiences: An Examination of Student Views of Support in Online Learning*; National Centre for Vocational Education Research: Adelaide, Australia, 2002.

41. Freeman, L.; Urbaczewski, A. Critical Success Factors for Online Education: Longitudinal Results on Program Satisfaction. *Commun. Assoc. Inf. Syst.* **2019**, *44*, 630–645. [CrossRef]

42. Eastin, M.S.; LaRose, R. Internet Self-Efficacy and the Psychology of the Digital Divide. *J. Comput. Commun.* **2006**, *6*. [CrossRef]

43. Pena, M.I.C.; Yeung, A.S. Satisfaction with online learning: Does students' computer competence matter? *Int. J. Technol. Knowl. Soc.* **2010**, *6*, 97–108. [CrossRef]

44. Puzziferro, M. Online Technologies Self-Efficacy and Self-Regulated Learning as Predictors of Final Grade and Satisfaction in College-Level Online Courses. *Am. J. Distance Educ.* **2008**, *22*, 72–89. [CrossRef]

45. Gibson, A. Measuring business student satisfaction: A review and summary of the major predictors. *J. High. Educ. Policy Manag.* **2010**, *32*, 251–259. [CrossRef]

46. Kauffman, H. A review of predictive factors of student success in and satisfaction with online learning. *Res. Learn. Technol.* **2015**, *23*. [CrossRef]

47. Harsasi, M.; Sutawijaya, A. Determinants of Student Satisfaction in Online Tutorial: A Study of A Distance Education Institution. *Turk. Online J. Distance Educ.* **2018**, *19*, 89–99. [CrossRef]

48. Hu, P.J.-H.; Hui, W. Examining the role of learning engagement in technology-mediated learning and its effects on learning effectiveness and satisfaction. *Decis. Support Syst.* **2012**, *53*, 782–792. [CrossRef]

49. Conrad, D.L. Engagement, Excitement, Anxiety, and Fear: Learners' Experiences of Starting an Online Course. *Am. J. Distance Educ.* **2002**, *16*, 205–226. [CrossRef]

50. Akbari, E.; Naderi, A.; Simons, R.-J.; Pilot, A. Student engagement and foreign language learning through online social networks. *Asian-Pac. J. Second Foreign Lang. Educ.* **2016**, *1*, 76. [CrossRef]

51. Kucuk, S.; Richardson, J.C. A structural equation model of predictors of online learners' engagement and satisfaction. *Online Learn.* **2019**, *23*. [CrossRef]

52. Luna, M.E.O.; Cruz, C.S.L.; Arce, J.O. Achievement, Engagement and Student Satisfaction in a Synchronous Online Course. In Proceedings of the 2019 IEEE Global Engineering Education Conference (EDUCON), Dubai, United Arab Emirates, 8–11 April 2019; pp. 124–132.

53. Henrie, C.R.; Halverson, L.; Graham, C. Measuring student engagement in technology-mediated learning: A review. *Comput. Educ.* **2015**, *90*, 36–53. [CrossRef]

54. Cohen, A.; Baruth, O. Personality, learning, and satisfaction in fully online academic courses. *Comput. Hum. Behav.* **2017**, *72*, 1–12. [CrossRef]

55. Im, T.; Kang, M. Structural Relationships of Factors Which Impact on Learner Achievement in Online Learning Environment. *Int. Rev. Res. Open Distrib. Learn.* **2019**, *20*. [CrossRef]

56. Anđelković Labrović, J.; Kovačević, I. Students perception towards online learning in the time of Covid-19: Case of Serbia. In Proceedings of the XVII International Symposium SymOrg 2020, Belgrade, Serbia, 7–9 September 2020; pp. 102–108.

57. Law, N.; Woo, D.; de la Torre, J.; Wong, G. *A Global Framework of Reference on Digital Literacy Skills for Indicator 4.4.2. Information Paper No. 51*; UNESCO Institute for Statistics: Montreal, QC, Canada, 2018.

58. Sarwar, H.; Akhtar, H.; Naeem, M.M.; Khan, J.A.; Waraich, K.; Shabbir, S.; Hasan, A.; Khurshid, Z. Self-Reported Effectiveness of e-Learning Classes during COVID-19 Pandemic: A Nation-Wide Survey of Pakistani Undergraduate Dentistry Students. *Eur. J. Dent.* **2020**, *14*, S34–S43. [CrossRef] [PubMed]

59. Carretero, S.; Vuorikari, R.; Punie, Y. *DigComp 2.1: The Digital Comeptence Framework for Citizens with Eight Proficiency Levels and Examples of Use*; European Union: Brussels, Belgium, 2017.

60. Saykılı, A. Distance education: Definitions, generations, key concepts and future directions. *Int. J. Contemp. Educ. Res.* **2018**, *5*, 2–17.

61. Lassoued, Z.; Alhendawi, M.; Bashitialshaaer, R. An Exploratory Study of the Obstacles for Achieving Quality in Distance Learning during the COVID-19 Pandemic. *Educ. Sci.* **2020**, *10*, 232. [CrossRef]

62. Islam, M.A.; Barna, S.D.; Raihan, H.; Khan, M.N.A.; Hossain, M.T. Depression and anxiety among university students during the COVID-19 pandemic in Bangladesh: A web-based cross-sectional survey. *PLoS ONE* **2020**, *15*, e0238162. [CrossRef] [PubMed]