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Student Perceptions of First-time Online Learning During the COVID-19 Pandemic in Vietnam

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Cover Page Footnote

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Introduction

The Lunar New Year holiday ran from January 23 to January 29, 2020, in Vietnam. Coinciding with this major holiday, Coronavirus disease (COVID-19), after first being observed in Wuhan, China, was rapidly spreading throughout the world (WHO, 2020a). The World Health Organization (WHO) declared the COVID-19 outbreak a public health emergency of international concern on January 30, 2020 (WHO, 2020b). Right after the Lunar New Year holiday, Vietnam, like many other countries worldwide, took immediate action on containing the virus by keeping students at home. Schools were closing around the world (UNESCO, 2020a), and UNESCO (2020b) stated that education institutions should provide alternative modes of learning.

The Vietnamese government announced the closure of schools on March 27, 2020 (Vietnamese Government, 2020), due to the increasing concerns about and the increase in new cases of COVID-19 infections nationally and globally. As a result, a nontraditional school model quickly emerged. Universities went online to help students continue their academic studies through various platforms.

Historically, Vietnam has been slow to adopt any online learning mode, as is evidenced in their government policies and guidelines. In 2008, the Ministry of Education and Training (MOET) announced a strategic plan to improve the incorporation of information technology into the education sector from 2008 to 2012 (MOET, 2008). In 2016, the Vietnamese government approved a project aimed at enhancing the utilization of information technology in support of teaching to help improve the quality of education and training from 2016 to 2020 (Vietnamese

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Government, 2017). The quote below shows that Vietnam is focusing on the application of information technology in teaching and learning.

> *Tăng cường ứng dụng công nghệ thông tin nhằm đẩy mạnh triển khai chính phủ điện tử, cung cấp dịch vụ công trực tuyến trong hoạt động quản lý, điều hành của cơ quan quản lý nhà nước về giáo dục và đào tạo ở trung ương và các địa phương; đổi mới nội dung, phương pháp dạy - học, kiểm tra, đánh giá và nghiên cứu khoa học và công tác quản lý tại các cơ sở giáo dục đào tạo trong hệ thống giáo dục quốc dân góp phần hiện đại hóa và nâng cao chất lượng giáo dục và đào tạo. (p. 2)*
>
> [Translation: Strengthening the application of information technology to promote e-government implementation; providing online public services in the management and administration activities of the government management agency on education and training at the central and local levels; and renovating content, teaching-learning methods, testing, evaluating, scientific research, and management work at educational institutions in the national education system contribute to the modernization and improvement of quality of education and training.]

The abrupt transition from in-person learning to an online learning model in the spring of 2020 due to the COVID-19 pandemic was unprecedented in Vietnamese history. The COVID-19 outbreak was crucial in bringing online learning to the mainstream in Vietnam. However, considering the advances in technology students are exposed to in their daily lives, it seems pertinent and reasonable to incorporate technology into education to best serve students' needs and goals. Bloom (1981) states that educators must continue evaluating learning conditions to enable each student to maximize their learning.

The purpose of this study was to discover student perceptions of first-time online learning during the COVID-19 pandemic in Vietnam and their future expectations about this learning mode. The research questions that guided this study are:

1. During the school closure in spring 2020 due to the pandemic outbreak, what were the components of first-time online learning that learners recognized as helpful and challenging?
2. What are the components of online learning learners expect in the future?

The significance of this study lies in the fact that its findings will help schools better understand the potential for online learning in Vietnam and provide an example of online learning practices for university faculty, administrators, and management in many other countries around the world. It will also support opportunities for collaboration between global higher education institutions and Vietnam to facilitate online education.

This article will begin with a review of previous studies related to learner perceptions of online learning. After that, the study design will be detailed and results summarized. Finally, the results of the study will be discussed, including limitations, followed by the conclusions drawn from this study.

Literature Review

Studies on Student Perceptions of Online Learning Before the Pandemic

Online learning has been incorporated into higher education curriculums since the mid-1990s (Harasim, 2017). As a result, there have been studies evaluating students' perceptions related to online learning, specifically what students view as the strengths and weaknesses (or challenges).

With respect to time, flexibility was reported as a strength of online learning. An online setting made students more collaborative when working in groups (Petrides, 2002) due to the flexibility with time. Participants liked online learning due to the advantage of time management (Hill, 2002; Song et al., 2004).

Convenience was also identified as a strength of online learning. Students participated in online discussions in a discussion-oriented online course at their convenience and accessed course materials through their home computers (Poole, 2000). In Ophoff and Johnston's (2014) study, 66 of 130 respondents either strongly agreed or agreed that they enjoyed interacting on the discussion forums and found them more valuable than a face-to-face classroom environment. In Adam and Nel's (2009) longitudinal case study, a blended and online learning mode gained positive student perceptions over traditional classroom learning as it involved face-to-face teaching, digital media, and digital communication.

Regarding online course components, studies (Petrides, 2002; Vonderwell, 2003) have revealed that some students were more thoughtful and careful when responding in writing in the asynchronous online learning environment. Most respondents in Ophoff and Johnston's (2014) study either strongly agreed or agreed that they enjoyed the video lectures available in each module. All interview participants in Morris (2011) mentioned that required discussion board participation made them satisfied with the online courses.

Other strengths were also reported. In Song et al.'s (2004) study, most learners agreed that design of the course was one of the helpful components in their online learning experiences. Yang and Durrington (2010) reported that the quality of the online course structure impacted student perceptions of online course quality. In Huss and Eastep's (2013) study, 59% of students responded that tools such as tutorials helped them better understand the technology or content being taught in the modules.

Studies also revealed student perceptions of the weaknesses of online learning. A lack of immediacy in responses (Petrides, 2002) and the delay of immediate feedback from the instructor (Vonderwell, 2003) were reported as weaknesses in the asynchronous online discussion. Feedback from instructors was identified as an important factor (Yang & Durrington, 2010) affecting student satisfaction with online courses.

Lack of a sense of community and/or feelings of isolation were other challenges learners reported in their online learning experiences. Learners felt isolated from faculty (Vonderwell, 2003) or from both faculty and other learners (Woods, 2002), and peer interactions were deemed crucial in students' perceptions of online course quality (Yang & Durrington, 2010). Learners

felt a lack of a sense of community in online learning environments (Hara & Kling, 2001; Song et al., 2004). Communication/interaction and instructor involvement/support, which could contribute to building a sense of community, were found to be two of the factors interrelated in students' successful online learning experiences (Morris, 2011). In contrast, in Huss and Eastep's (2013) study, only 10% of respondents expressed that regular interaction with classmates was very important in an online course, while 58% indicated that they wanted an online module to include content and audio and visual messages from an instructor.

Student Perceptions of Online Learning During the Pandemic

With the shift to exclusive online learning during the COVID-19 pandemic, the opinions of students regarding online learning have become a major topic of discussion. As a result, many studies have evaluated students' perceptions of online learning after school closures associated with the COVID-19 pandemic.

In the studies reviewed, effectiveness is identified as a primary strength of online learning: most participants perceived that online learning was effective in times of school closures and social distancing during the pandemic (Ali, 2020; Layali & Al-Shlowiy, 2020; Demuyakor, 2020; Khalil et al., 2020). Ali's (2020) meta-analysis pointed out the needs of online and remote learning during the pandemic. Layali and Al-Shlowiy's (2020) review of four studies revealed that students perceived e-learning tools, such as Google Docs, Telegram, Nearpod, and Mobile Technologies, effective for English as a Second or Foreign Language (ESL/EFL) in Saudi universities during the pandemic. In Demuyakor's (2020) study, the majority of Ghanaian international students in Beijing, China, cited the effectiveness of online learning, indicating that transitioning to online learning was appropriate during the COVID-19 pandemic. Two-thirds of the respondents in Khalil et al.'s (2020) study agreed that online learning worked better for some disciplines. Most of the preclinical students preferred online learning for the upcoming academic years. In contrast, in Nambiar's (2020) study, most of the students perceived that online learning was less effective and less structured compared to face-to-face classroom learning in terms of social presence, interaction, satisfaction, and overall quality.

Convenience was reported as another strength of online learning. In Nambiar's (2020) study, participants indicated that online classes were convenient for saving time. In Khalil et al.'s (2020) study, students all agreed that online sessions saved time for them and that their performance had improved.

Challenges were also reported. Concerning technologies, Ali (2020, p. 22) pointed out the importance of staff and student readiness for online learning, basic information and communications technology (ICT) infrastructure preparation, ICT tools for staff and staff accessibility to applications and learning platforms, and staff competence with ICT tools to deliver lessons. In Nambiar's (2020) study, technical support was identified as an important factor in learner satisfaction with online classes. In Khalil et al.'s (2020) study, technical issues, such as internet connection and the use of online tools, were identified as challenges. Layali and Al-Shlowiy (2020) and Demuyakor (2020) reported that slow internet connection was a challenge.

Other identified challenges included the lack of a sense of a community in an online environment (Demuyakor, 2020), negative student attitudes toward the effectiveness of online learning (Nambiar, 2020; Khalil et al., 2020), and quality assurance in and the implementation of the content delivery (Khalil et al., 2020).

Methods

The study adopted mixed research methodology: quantitative (online survey) and qualitative (interview) data collection methods. The researchers made this decision based on the insight gained from previous studies on student perceptions of online learning that were conducted quantitatively, qualitatively, or both, using survey (e.g., Nambiar, 2020; Demuyakor, 2020), interview (Morris, 2011), or both survey and interview (e.g., Song et al., 2004) as data collection methods. An online survey is cost saving and effective in getting authentic data (Toepoel, 2017). Using multiple sources for data collection helps validate and crosscheck findings (Patton, 2001).

Research Site and Participants

The site for this study was a large university in Ho Chi Minh City, Vietnam. Before closures due to the COVID-19 pandemic, the primary content delivery of educational material was through face-to-face classroom instruction.

Participants were undergraduates in Business and English. In spring 2020, students in English participated in their first-time online learning with a set class schedule and required login times through Google Classroom for official course meetings, and Business students, through Zoom. The university recorded the lessons and provided the recordings as a part of course resources.

Data Collection

Online Survey

The online survey was created to address the initial research questions. The survey consisted of a set of eight questions including learner demographics, perceived helpful and challenging components of first-time online learning, and expectations of future online learning. Survey questions 6–8 had multi-select answer options to determine the range of student perceptions. Respondents were also allowed to provide further opinions in writing. Many of the answer options used in survey questions 6–8 were either adopted or adapted from the Online Learning Survey (OLS) (2014) and from Song et al. (2004). These answer options and their sources are below (see Appendix A for the complete survey).

> *Answer options in survey question 6*:
> Comfort with online technologies; Motivation (Song et al., 2004, p. 65). Fewer distractions; Flexibility (time, learning); Convenience (OLS, 2014, p. 3).
> *Answer options in survey question 7*:
> Lack of community (Song et al., 2004, p. 67). Less social interaction; Less hands-on experience; Harder to pay attention; Harder to retain information; Internet access (OLS, 2014, p. 3). Technical problems (Song et al., 2004, p. 67; OLS, 2014, p. 3).
> *Answer options in survey question 8*:

> Completing coursework online only; Combination of meeting in a classroom setting and completing coursework online; Instant feedback from lecturers (OLS, 2014, p. 6).

Interview

The interview protocol was developed by referring to the interview protocol in Song et al. (2004) and adopting part of it. The purpose of the follow-up interviews was to gain more in-depth insight into learner perceptions and their future expectations aligned with the research questions (see Appendix B for the list of interview questions). Interview questions 1–4 were in alignment with survey questions 6–8. Interview question 5 was additionally asked to find out participants' advice for online faculty and students. Voluntary interview participants were recruited from among the survey respondents. Ten self-selected respondents signed an informed consent form and participated in the interview. The medium for the interview was the English language, and the interviewer switched from English to Vietnamese if interviewees needed further clarification during the interview. Each interview was conducted for approximately 30 minutes during the first half of the 2020 fall semester. Interview responses were audio-recorded and transcribed verbatim to ensure accuracy of the data.

Data Analysis

Quantitative analysis of the survey data focused on the areas addressed in the research questions: student perceptions of helpful and challenging components of first-time online learning and their future expectations of this learning mode in Vietnam. Analysis of the survey data was completed using SPSS software. Subsequent analysis of the data in SPSS occurred by dividing the total respondents into two groups: *experienced* for a group of participants who had experienced online learning before the pandemic and *inexperienced* for a group of participants who had not. The participants were so grouped to determine if there were any significant differences in perceptions of first-time online learning between the experienced and the inexperienced with regard to the research questions.

The interview data was analyzed based on the qualitative research perspective (Patton, 2001) and in alignment with the research questions. The indicators identified in the interview protocol assisted with coding. In the process of the data analysis, themes and patterns were compiled according to the research questions. The responses to interview question 5 on suggestions given to online faculty and students were also analyzed based on the indicators identified in the interview protocol. The next section summarizes the results of the analysis.

Results

A total of 101 respondents anonymously participated in the survey. Table 1 below displays their demographic information.

Table 1

Demographics of Students Responding to the Survey

	Number of Students (N=101)	Percent
Age		
Late teens	22	21.8
20s	79	78.2
Gender		
Male	35	34.7
Female	66	65.3
Area		
Business	51	50.5
English	50	49.5
Online learning experience before pandemic		
Experienced	59	58.4
Inexperienced	42	41.6

According to the results of the survey analysis, respondents experienced live online sessions, both live online sessions and recorded lessons, and recorded lessons in spring 2020 after the school closures.

Regarding the first research question, *During the school closure in spring 2020 due to the pandemic outbreak, what were the components of first-time online learning that learners recognized as helpful and challenging?*, the majority of the participants identified the following components ranked in the top four as helpful: flexibility (time, learning), live platform(s) such as Zoom and Google Classroom, comfort with online technologies, and lesson delivery. The participants identified the following components as challenging: internet access, technical problems, difficulty paying attention, and lack of community and less social interaction (see Appendix C for the survey results).

When compared with all respondents, the two most helpful components identified in both the experienced and inexperienced groups were also live platform(s) and flexibility (time, learning), with slightly different response rates. The two biggest challenging components identified again in both the experienced and inexperienced groups were internet access and technical problems, with slightly different response rates as well. Further statistical analysis of correlations was attempted using SPSS to determine the linear relationships between students' experience and the identified helpful or challenging components of first-time online learning. The study found that there was no correlation between them.

In relation to the second research question, *What are the components of online learning learners expect in the future?*, future expectations identified in all respondents are better live platform and combination of meeting in a classroom setting and completing coursework online. Likewise, future expectations identified in both the experienced and inexperienced groups included better live platform and combination of meeting in a classroom setting and completing coursework online, with slightly different response rates.

In-depth student perceptions were discovered in the follow-up interviews. Below are the interview participant profiles.

Table 2

Interview Participant Profiles

Pseudonyms	Major	Gender	Age	Previous Online Courses
S1	English	Female	19	No
S2	English	Female	20	No
S3	English	Female	21	Yes
S4	English	Female	20	No
S5	English	Male	19	No
S6	Business	Male	19	No
S7	Business	Female	19	Yes
S8	Business	Female	20	No
S9	Business	Male	20	No
S10	Business	Male	19	No

In the interviews, convenience (5/10) and flexibility (3/10) were found to be the helpful components of first-time online learning. Less social interaction (6/10) and technical problems (2/10) were identified as challenging. Six of seven future expectations were related to lessons and lesson activities in an online learning setting: live lesson planning, lesson activities, teaching strategies, and learning theory online and practicing offline; the remaining future expectation was combining online learning with traditional classroom learning.

The interviewees also made suggestions for online faculty and first-time future online students. Eight of 10 responses for online faculty were about teacher-student interactions: making sure students understand the lesson by speaking slowly, asking questions, monitoring students during the online lessons, and checking emails regularly (5/10); and providing interactions and activities (including group work, quizzes, games, and practical exercises) (3/10). Five of 10 responses for first-time online students were technological advice, including being familiar with online applications and having a stable internet connection.

Discussion

During the school closure in spring 2020 due to the pandemic outbreak, what were the components of first-time online learning that learners recognized as helpful and challenging? The helpful components of first-time online learning ranked as the top four in all respondents (i.e., flexibility (time, learning), live platform(s) such as Zoom and Google Classroom, comfort with online technologies, and lesson delivery (see Appendix C for the survey results)) were mainly about the participants' familiarity with the technology and its effect on their perceptions of first-time online learning. As was evident in the previous studies (e.g., Petrides, 2002; Song et al., 2004), flexibility (time, learning) was one of the primary helpful components identified in this study. In the follow-up interviews, four of 10 students mentioned that online courses were flexible when they participated in online discussions or their course meetings. As S5 stated in the interview, "Time and device were flexible. You could learn while you're working [on something else] and you could use any device, computer, laptop, tablet, cellphone, etc., to take part in the class." Live platform(s) such as Zoom and Google Classroom, the second most helpful component of first-time online learning, followed by comfort with online technologies and

lesson delivery, probably indicated that participants were performing flexibly with online platforms despite the fact that they had been in the traditional learning mode for a long time.

According to the helpful components of first-time online learning mentioned above, the participants seemed to be already digital natives displaying their familiarity with the technology and other online components necessary for lesson delivery. This indicated the influence of learners' experience with the technology on their first-time online learning, as aligned with previous studies (e.g., Hill, 2002; Song et al., 2004). In the interview, some participants even tried to provide advice. As S2 commented in the interview, "There are many apps that are more quality than Zoom. I wanna mention the Skype app, which is so popular for all users to learn online, especially its network connection is more stable than Zoom." It seemed evident that there existed an interface between their unrecognized preparedness and the current lesson delivery as early as spring 2020. This was in contrast to previous studies that describe most students coming from developing countries as being accustomed to traditional face-to-face learning (Ananga & Biney, 2017), reflecting negatively on their learning habits.

Challenging components of first-time online learning ranked in the top four in all respondents (i.e., internet access, technical problems, difficulty paying attention, and lack of community and less social interaction (see Appendix C for the survey results)) implied some difficult or negative aspects of students' transition to the online learning model. Similar to the findings in previous studies (e.g., Demuyakor, 2020; Khalil et al., 2020), internet access was found to be the most challenging, followed by technical problems. S10 commented on the challenges in the interview, stating, "Well, studying online will never match studying offline, since it frequently appears issues such as internet connection, lagging, we may not hear the teacher clearly, or the teacher doesn't equip with the necessary tools to demonstrate perfectly." As reported in previous studies (Nambiar, 2020; Ali, 2020), technical support was assumed to play a crucial part in successful first-time online learning. "Difficulty paying attention" being ranked in the top three indicated that some participants might feel more challenged than others due to lack of experience with the online learning model.

Lack of community and less social interaction both being ranked in the top four challenging issues aligns with previous studies (Song et al., 2004; Yang & Durrington, 2010; Hara & Kling, 2000; Morris, 2011) that revealed that the sense of community was important to many students. Probably, the COVID-19 pandemic boosted student perception of lack of community in online learning in this study because there was no face-to-face interaction at all during the initial period of online learning in their university. As S4 stated in the interview, "I was so bored in learning at home. Who could stare at a computer screen for several hours? But I could sit in the classroom as long as possible…In the classroom I sit next to my friends. I will ask them anything if I'm scared of teachers. And learning online wasn't like that. They would ignore it despite being shy."

The results of the survey analysis between the experienced and inexperienced groups turned out similarly. Common helpful components of first-time online learning identified in both groups ranked within the top four (i.e., flexibility, live platform(s) such as Zoom and Google Classroom, and comfort with online technologies) and common challenging components of first-time online learning identified again in both groups ranked within the top four (i.e., internet access, technical problems, and difficulty paying attention) were aligned with the findings in all respondents.

There were no significant differences between the experienced and inexperienced groups in their perceptions of helpful or challenging components. The results among all respondents again indicated that the participants demonstrated their familiarity with technologies while facing technical problems and the online learning setting itself. We also found among all respondents that participants' familiarity with technologies seemed to positively influence their first-time online learning experiences. Primary challenges to them were more about internet access and technical problems rather than a sense of a lack of humanity (Eastep, 2013).

What are the components of online learning learners expect in the future?
Common future expectations identified in all respondents, and in both the experienced and inexperienced groups, ranked in the top two in all cases included better live platform and combination of meeting in a classroom setting and completing coursework online. Therefore, the potential future direction of online learning identified in this study was blended and online learning.

Participant expectations of some aspects of face-to-face classroom learning in the online setting that were revealed in the interview (such as facilitated student engagement, interactions, activities, practical exercises, quizzes, and games) showed what the participants were experiencing during their transition to the online learning model.

Additionally, the suggestions from interview participants regarding online faculty and future first-time online students include some implications that should be considered. Eight of 10 responses about teacher-student interactions suggested for faculty members and five of 10 responses about the technological advice for online students might indicate that the participants were still in their transition from traditional classroom learning to the online learning model. In particular, the advice given to future first-time online students in this study contrasted with that in Morris' (2011) study, in which most of the participants were veteran online learners, providing the following advice for other online students: time management, responsibility, and staying on task. As opposed to the advice from those who had overcome barriers in online courses, the advice from the interview participants in this study may indicate that the online learning model was new to the participants and their primary needs were physical, including technological needs.

Limitations

Two key limitations were identified in this study. First, the study was conducted in the context of an English as a Foreign Language (EFL). The survey was composed in the English language, and the authors recognized that some survey questions might have been misunderstood. One example is the question, "Before the COVID-19 pandemic, did you ever experience online learning in your university?" Despite the fact that the definition of online learning was provided in the survey and, further, the university had not yet offered any online courses until the school closure in spring 2020, 59 of the 101 respondents claimed that they experienced online learning before the pandemic. Therefore, it was unclear how the respondents understood the survey question mentioned above. They might have misunderstood computer-mediated activities or use of educational technology in the classroom as aspects of online learning (or vice versa) and therefore responded that they experienced online learning before the pandemic.

Second, in the survey, respondents were allowed to provide their additional opinions in writing. However, it turned out there were almost no responses in writing. Therefore, it is assumed that the respondents' proficiency in English might have been a barrier to providing their opinions further.

Conclusion

This study revealed that the participants living in one developing country have some familiarity with technology. On the other hand, the biggest challenges they encountered during their initial period of online learning in spring 2020 (internet access, technical problems, difficulty paying attention, lack of community, and less social interaction found in all respondents and ranked in the top four) provide some indicators that this kind of learning mode seemed to be new to them. To boost students' successful online learning experiences in the future, the study provides implications for further research and practices focusing mainly on countries similar to Vietnam.

First, faculty, staff, and students need to be well prepared to participate in this kind of learning mode through training and other support. This includes developing good practices for solving technical problems faculty and students might face during online lessons. For example, this could incorporate technical support from institutions as well as collaborative efforts among staff, faculty, and students.

Second, the instructional design of online courses needs to address the sense of community and social interactions online students might expect to experience in an online setting (especially during their transition period). The instructional design of online courses might include non-graded formative assessments such as games, quizzes, and opportunities to work collaboratively, as some interviewees pointed out in this study.

Lessons learned through the implementation of online learning during the COVID-19 pandemic will lead higher education institutions to strive to build more resilient education systems. It is crucial that higher education institutions and educators in countries similar to Vietnam design online courses based on students' educational experiences.

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Appendix A: Survey Questions

Online Learning Survey

Class meetings went online during the school closure in spring 2020 due to the COVID-19 pandemic, and we are interested in hearing about your experiences with it and your opinions about it for the future. Your responses to the following questions will be appreciated. This survey is anonymous. ***Note*:** Online learning describes a course with components of the lecture, discussion, and assignment feedback delivered online.

1. How old are you?
   ____Late teens ____20s ____30s ____40s and over

2. What is your gender?
   ____Male ____Female

3. What is your major?
   ____Business ____English

4. Before the COVID-19 pandemic, did you ever experience online learning in your university?
   ____Yes ____No

5. During the school closure in spring 2020 due to the COVID-19 pandemic, you experienced online learning. Did it include live online sessions or recorded lessons, or both?
   ____Live online sessions
   ____Recorded lessons
   ____Both live online sessions and recorded lessons

6. What were the helpful components of online learning environments? Check on all that are relevant to you.
   ____Lesson delivery
   ____Lesson materials
   ____Comfort with online technologies
   ____Motivation
   ____Fewer distractions
   ____Live platform(s), such as Zoom and Google Classroom
   ____Flexibility (time, learning)
   ____Discussion
   ____Convenience
   ____Other (Please describe below)

7. What were the challenging components of online learning environments? Check on all that are relevant to you.
   ____Technical problems
   ____Lack of community
   ____Less social interaction
   ____Harder to practice learned skills online
   ____Less hands-on experience
   ____Harder to pay attention
   ____Harder to retain information
   ____Internet access
   ____Feedback from a lecturer
   ____Communication with a lecturer
   ____Other (Please describe below)

8. If you experience online learning again in the future, what do you expect? Check on all that are relevant to you.
   ____Better live platform
   ____Recorded lessons only
   ____Completing coursework online only
   ____Combination of meeting in a classroom setting and completing coursework online
   ____Instant feedback from lecturers
   ____Other (Please describe below)

Appendix B: Interview Questions

1. Tell us about your online learning experience in spring 2020 due to the COVID-19 pandemic.
2. What were the helpful/challenging components of online learning?
3. How satisfied were you with the online learning? Please tell me details.
4. If you experience online learning again in the future, what do you expect?
5. Now, you have experience with online learning. What suggestions would you give to a student who will experience it for the first time? What suggestions would you give to faculty teaching online?

Appendix C: Survey Results

1. Respondents' experience of first-time online learning in spring 2020
   Live online sessions (56.4%); both live online sessions and recorded lessons (34.7%); recorded lessons (8.9%)

2. Student perceptions of first-time online learning from all respondents.

Student Perceptions	Components
Helpful	Flexibility (Time, learning) (64.4%), live platform(s), such as Zoom and Google Classroom (61.4%), comfort with online technologies (48.5%), lesson delivery (44.6%)
Challenging	Internet access (61.4%), technical problems (52.5%), harder to pay attention (44.6%), lack of community (36.6%) and less social interaction (36.6%)

3. Student perceptions of first-time online learning based on previous experience with online learning (Experienced vs. Inexperienced).

Student Experience	Student Perceptions	Components
Experienced	Helpful	Live platform(s), such as Zoom and Google Classroom (59.3%), flexibility (time, learning) (57.6%), lesson delivery (45.8%), comfort with online technologies (40.7%)
	Challenging	Internet access (64.4%), technical problems (55.9%), harder to pay attention (44.1%), lack of community (40.7%), harder to practice learned skills online (40.7%)
Inexperienced	Helpful	Flexibility (time, learning) (73.8%), live platform(s), such as Zoom and Google Classroom (64.3%), comfort with online technologies (59.5%), lesson materials (47.6%) and convenience (47.6%)
	Challenging	Internet access (57.1%), technical problems (47.6%), harder to pay attention (42.9%), less social interaction (35.7%)

4. Expectations of online learning in the future.
   - Better live platform (57.4%); combination of meeting in a classroom setting and completing coursework online (49.5%) identified in all participants
   - Better live platform (61%) and combination of meeting in a classroom setting and completing coursework online (39%) identified in the Experienced group; combination of meeting in a classroom setting and completing coursework online (59.5%) and better live platform (50.0%) identified in the Inexperienced group.