

2021

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Recommended Citation

Kara, Nuri, Enablers and barriers of online learning during the COVID-19 pandemic: A case study of an online university course, *Journal of University Teaching & Learning Practice*, 18(4), 2021. Available at: <https://ro.uow.edu.au/jutlp/vol18/iss4/11>

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Enablers and barriers of online learning during the COVID-19 pandemic: A case study of an online university course

Abstract

COVID-19 has affected university students' learning experiences on a great scale. The aim of this study was to understand the enablers and barriers to the effectiveness of online learning in a university course during the COVID-19 pandemic, using a qualitative case study approach. Participants were 44 first-year university students enrolled in a digital game history and analysis course at a private university. Structured and semi-structured interviews were conducted to collect the data, which were then organized and transcribed into full text. Inductive data analysis was applied with content analysis. The researcher used axial coding to compose themes by considering the commonalities among codes created. Five main themes emerged, namely online content, online assignments, online assessment, instructor behavior and practices, and psychological issues. Based on the findings, taking online courses at home and joining online classes from home positively affected students' mood during the lockdown. On the other hand, students declared feeling pressure due to many online courses. All themes and codes are reported in detail together with direct quotations from students.

Keywords

Online learning, university students, COVID-19, enablers and barriers; qualitative case study

Introduction

The COVID-19 pandemic has greatly affected students' learning experiences and forced many students to switch to online learning (Aguilera-Hermida, 2020). Students have faced many challenges during this online learning period (Hodges et al., 2020). Understanding students' experiences and thoughts about this period can inform our understanding of the effectiveness of online learning. In online learning, students are physically distant from instructors and interact with technology (Aguilera-Hermida, 2020; Wang et al., 2013). Online learning has great potential for education because it creates alternative learning opportunities for students (You, 2016). Several studies have focused on the different dimensions of online learning. Gray and DiLoreto (2016) investigated the relationships among course structure/organization, learner interaction, student engagement, and instructor presence on student satisfaction and perceived learning. Student engagement was also examined in a study by Kahn et al. (2017) and self-regulated learning in online learning environments is one of the variables most frequently investigated (Beach, 2017; Cho et al., 2017; Wong et al., 2019). Learning benefits of online peer feedback (van Popta et al. 2017) and professional development in online learning environments (vanOostveen et al., 2019) have also been investigated.

There are several studies regarding online learning during the COVID-19 pandemic. Hew et al. (2020) investigated the impact of online flipped classrooms on student success during the COVID-19 pandemic. The results show that the online flipped classroom approach has similar success compared with traditional flipped classrooms. Yates et al. (2020) examined the home learning experiences and perspectives of high school seniors during the COVID-19 outbreak. Their findings indicate that supporting students with efficient use of technology improves the online learning experience. van Wyk (2020) explored prospective teachers' views on online tools with academic supportive roles during the quarantine. The prospective teachers liked the academic support tools and felt the tools contributed to their learning. Guangul et al. (2020) investigated the difficulties of online assessment in higher education institutions during the COVID-19 quarantine period. The findings of their study show that technical problems and failure to maintain academic integrity are the major challenges in online assessment. Rajabalee and Santally (2020) aimed to examine the connections among student engagement, satisfaction, and performance in an online learning module. The results suggest that satisfaction and engagement should be integrated into online learning processes. Although many studies have been carried out during the COVID-19 pandemic, detailed studies that investigate online learning in specific contexts are still needed.

Some recent studies have also investigated the effects of the COVID-19 pandemic on higher education. Abushammala et al. (2021) conducted a student survey to understand the challenges that occurred during the pandemic in higher education institutions. Based on the findings, reduced student satisfaction, extra coursework and inability to pay tuition fees were the main challenges. In addition, Wilson et al. (2020) examined higher education students' experiences during the pandemic. The reflections of four students were deeply analyzed in the study. The findings revealed that the pandemic not only negatively affected learning experiences, but also created social distance. Although these studies, which focus more on the challenges, make valuable contribution to the literature, research studies focusing on the positive and negative aspects of online learning are needed. Therefore, this study aims to fulfill this gap by investigating enablers and barriers of effective online learning during the COVID-19 pandemic.

Studies have focused on university students and the factors affecting online learning. Gaytan (2015) explored student ideas regarding factors related to retention of online learning. An increased number of online instructions given by faculty, meaningful feedback, course credits, and raising GPA were the most important factors cited. Afolabi (2017) investigated university students' practices regarding the use of open educational resources in online learning. Learning skills, acceptability, perception and competencies of students were the main factors affecting online learning experiences. Dumford and Miller (2018) examined student engagement by considering the online courses taken by university students. The results show that more online classes lead to less engagement in learning activities. Hobson and Puruhito (2018) investigated the factors affecting students' academic performance in online learning environments. Knowledge development, commitment to their future and self-efficacy are factors that affect student success in online learning. Alqurashi (2019) examined the effects of self-efficacy and different types of interaction on student success and satisfaction in online learning. While student-content interaction is the most important factor for student satisfaction, self-efficacy has a strong effect on student success. Cole et al. (2019) aimed to explore the factors affecting online student engagement on a student and course basis. The results show that active learning practices in online classes positively affect the student engagement.

Liu and Pu (2020) investigated the factors affecting students' continued use of online learning. The results show that the quality of instructor, course design and usability of the online learning system positively affect student willingness to continue using online learning. Van Wart et al. (2020) examined the literature-based concepts in online learning from a student perspective. Technology and instructor competency are considered the most critical factors for online learning. Finally, Kumi-Yeboah et al. (2020) investigated the effects of technologies on the learning experiences of online learners. Digital educational technologies such as blogs, wikis and video lectures, multimedia presentations and social media tools have positive effects on the online learning experiences of students. Most of the studies summarized here are related to the engagement, academic performance and satisfaction of the students. There is still a need for a detailed study investigating enablers and barriers of online learning.

Therefore, the research questions of this study were:

RQ1. What are the enablers of effective online learning during the COVID-19 Pandemic?

RQ2. What are the barriers to effective online learning during the COVID-19 Pandemic?

Method

The aim of this study was to understand the enablers and barriers of online learning in an online digital game history and analysis course. A qualitative approach was used as participants' experiences are of primary significance in the context of this study, and a descriptive case study methodology was applied for data collection and analysis. Descriptive case study allows researchers to describe the specific intervention in its real-life setting (Yin, 2003).

Participants

Participants were 44 first-year university students (34 males) enrolled in a digital game history and analysis course. The average age of the participants was 20 years. Forty-one students were enrolled in the Digital Game Design department of a private university in Turkey. Two participants were taking the course as minor students and one was an Erasmus student. The majority of participants had not taken fully online courses before. However, all stated that they had sufficient ability to use PCs or smart phones for online learning.

Procedures

The COVID-19 pandemic was officially announced in Turkey on 11th March 2020 and face-to-face education at all universities was cancelled. Distance education began on the 23rd March 2020. Thus, all content of the course ‘Digital Game History and Analysis’ was moved to Blackboard Learn, which was used as the main platform for online learning. The online course included weekly content, assignments, quizzes and exams. The content including presentations, videos and documents was uploaded to Blackboard Learn on a weekly basis. Synchronous online sessions of approximately one-hour were also held each week to teach the content. For assignments, students were expected to upload the answers to reflection questions related to the weekly topics. Students completed five assignments, two quizzes, one midterm and one final exam. The online test component of the Blackboard Learn system was used for all these quizzes and exams. While only multiple-choice questions were administered in quizzes, different type of questions, such as ‘fill in the blanks’, multiple choice and jumbled sentence were implemented in midterm and final exams.

Data collection

Structured interviews were used to understand the enablers and barriers to the effectiveness of online education. These interviews had two main parts: demographic questions and questions related to the online process. Sample interview questions were about placement and presentation of course materials, online exams, students’ experiences and the effects of the pandemic on online learning. The survey component of Blackboard Learn was used to conduct the interviews. The questions included in the interview protocol were uploaded to the system and students answered the questions individually. Participation was voluntary. A total of 32 out of 44 students answered the interview questions. In cases where answers were not sufficiently detailed, semi-structured interviews with 15 volunteer students were implemented via Zoom. The same questions included in the interview protocol were asked of students in synchronous online interview sessions. The interviews were conducted by the researcher and each took approximately 25–30 minutes.

Data analysis

Inductive analysis was mainly applied with content analysis. Content analysis is a technique enabling researchers to analyze written content (Fraenkel & Wallen, 2006). Marshall and Rossman (2011) explained qualitative analytic procedures as “organizing the data, immersion in the data, coding the data, writing analytic memos, generating categories and themes, offering interpretations, searching for alternative understandings and writing the report” (p. 209). Qualitative data analysis thus started with organizing and working with the data. In this step, the data gathered via interviews were organized and transcribed into an MS Word document. After organizing the data, the coding which formed the main process of content analysis was applied. Axial coding was used because it “enables researchers to group the codes according to conceptual categories that reflect commonalities among codes” (Marshall & Rossman, 2011, p. 215). Themes emerged based on the axial coding. The researcher composed themes by considering commonalities among codes created. The next step was making interpretations. The researcher tried to create meaningful connections by looking at the themes and related codes. In the writing up step, the researcher created all themes as titles and explained all titles in accordance with the research questions by giving quotations.

Trustworthiness of the study

Ethical procedures were followed to conduct the research. Informed consent was obtained from all individual participants included in the study. Intercoder reliability was ensured in this study by using a research assistant as intercoder. The intercoder reliability score was .87, indicating a good level of reliability (Miles & Huberman, 1994). Additionally, member checking confirmed the accuracy of the qualitative findings through taking some data from the interviews back to the participants (Creswell, 2009). Therefore, one of the transcripts of the 15 semi-structured interviews was sent to the interviewee to check the raw data of the recorded interview. Feedback from the interviewee indicated the data was consistent with the recorded interview. Finally, peer debriefing (i.e., review of the research process by a person who has information about the study (Creswell & Miller, 2000)) was implemented. All interviews and case study process were checked and approved by an associate professor teaching in the same faculty of the university.

Findings

Five main themes emerged: online content, online assignments, online assessment, instructor behaviors and practices, and psychological issues. Themes, together with enablers and barriers, are presented in Table 1.

Table 1:

Main themes and related enablers and barriers for the effectiveness of online learning

Theme	Enablers	Barriers
Online content	<ul style="list-style-type: none"> • Online platform including a variety of content options such as presentation, video, web link and documents • Synchronous online video conference platform • Categorizing the online content as weekly modules • Presenting the online content in an ordered and limited way rather than all at once. 	<ul style="list-style-type: none"> • Lack of peer support • Lack of direct and immediate contact with the instructor • Unbalanced distribution of online content • Unclear statements in content presentation • Dominance of PowerPoint presentations and inadequate use of other content types such as summary videos, visuals and animations.
Online assignments	<ul style="list-style-type: none"> • Student flexibility in doing online assignments • Detailed feedback on submissions • Multiple submission possibilities • Quick and on-time grading of submissions • Assignments related to the weekly content or topics • Clear, explanatory statements used in assignments • Allowing late submissions. 	<ul style="list-style-type: none"> • Limited time duration for assignment submission • No grading provided after submissions • Lack of detailed feedback about the submissions • Too many reading materials needed for doing the assignments • Unclear or inappropriate wording in assignment questions.

Online assessment	<ul style="list-style-type: none"> • Online platform included a variety of test options such as ‘fill in the blank’, multiple choice, matching and ordering • Announcing assessment rules/ procedures before the exams • Balancing the time and number of questions • Grading correct answers only • Balanced distribution of points for related question types • Using short answer type questions such as multiple choice, ‘fill in the blank’ and matching rather than essay questions • Letting students to see the results and grading immediately after the online exams. 	<ul style="list-style-type: none"> • Unbalanced timing • Unbalanced difficulty level of the questions • Question styles not suitable for online format.
Instructor behaviors and practices	<ul style="list-style-type: none"> • Flexible procedures applied by the instructor • Being gentle rather than judgmental • Informative and positive messages • Quick response • Capable of administering online teaching and learning • Keeping students updated. 	<ul style="list-style-type: none"> • Late responses to student messages • Negative wording in online messages • Incompetent with online procedures.
Psychological issues	<ul style="list-style-type: none"> • Comfort of home • Comfort of unlimited access to online course content • The ease of taking online content, assignments or exams remotely. 	<ul style="list-style-type: none"> • The stress of staying at home for days • Feeling pressure with many online courses • The difficulty of adapting fully to online courses.

Theme one: Online content

Most students participated in the structured interviews declared that the online content presented via Blackboard Learn should be rich enough for the topics covered. However, ten of 15 students participated in the semi-structured interviews mentioned the heavy reliance on PowerPoint presentations compared to other content types. For instance, a student stated:

“Weekly content should include different types of materials such as videos, games and animations instead of PowerPoint presentations”.

Another student noted:

“PowerPoint presentations do not make the course effective. When the instructor uploaded presentations, video and additional exercises into the weekly content, I enjoyed that course”.

Twenty-six of the 32 students participated in the structured interviews indicated that the online courses must be synchronous rather than only providing the course materials asynchronously. On the other hand, twenty-five students across both structured and semi-structured interview groups declared that close connections could not be built with their peers. In addition, the majority of students across both groups described problems related to lack of communication with the instructor. For instance:

“In [the] classroom, it was easy to get support from my friends. But, in the synchronous online environment, I cannot directly talk to my friend or share information. Besides, I don’t feel comfortable in online class compared to physical class in terms of asking questions or talking to the instructor during the class”.

Nearly half of the students participated in the structured interviews mentioned the importance of presenting the content in a structured way. Besides, seven of 15 students from the semi-structured interview group declared that the content should be distributed evenly across the weeks, for example:

“One of the weeks, there was only one PowerPoint presentation, while other weeks included a variety of materials, such as videos, web links and animations. PowerPoint presentation only does not satisfy me in this course. In addition, the content loads of the weeks should be consistent”.

Seven of 15 students participated in the semi-structured interviews observed that giving all course content at the beginning of the semester decreased their motivation. They felt the content should be separated into small modules which can be offered at different times. In addition, twenty of 32 students from the structured interview group said that the titles of the content files should be clear enough to understand. For instance:

“In our online course, every week, the presentation and reading chapter of the topic was uploaded to the weekly content of Blackboard system. This motivated me because I could follow the course easily and the content was easily understandable”.

Theme two: Online assignments

Twenty-seven students across both groups declared that doing assignments in online classes was an advantage for them. On the other hand, nineteen of 32 students participated in the structured interviews indicated that limited time for submissions makes the online learning process difficult. One student noted:

“In online class, I can search the Internet for the assignment ... I don’t feel pressure on me for finishing the assignment. But, the time limits for assignments need to be long enough”.

A majority (28 of 32 students from the structured interview group) mentioned the importance of feedback. In addition, twenty-three students across both groups said that the grades without explanations or feedback did not satisfy them. For example:

“In online assignments, I want to see detailed comments regarding my submission. The detailed feedback satisfies me in terms of seeing my correct or wrong answers. If I get lower scores from an assignment, I need to see the detailed feedback explaining that score”.

Ten of 15 students participated in the semi-structured interviews preferred multiple submission opportunities in online platforms. On the other hand, fifteen students across both groups explained that there should be a page limit on the reading materials read in one week, as it was difficult to finish all articles or book chapters to answer the questions. They confessed that they submitted some assignments without finishing the reading list. For instance:

“We have too many reading chapter assignments to be completed in one week. Fortunately, the instructor always gives the chance of unlimited attempts in our assignments. This makes me relaxed because I know that I can resubmit the assignment if I am not satisfied with the uploaded one”.

Thirty students across both groups declared that the grading should be rapid for online learning. For instance:

“When the instructor does not finish grading our submissions before new assignments, I feel demotivated. I don’t want to wait for grading because I need to see my points to consider the upcoming assignments”.

Nine of 15 students from the semi-structured interview group emphasized the importance of consistency between assignments and weekly topics. The majority of students across both groups felt that the assignments should be clear enough to understand easily; sometimes, the questions were too long and complex. Most (29 students across both groups) considered the late submission option an enabler, commenting:

“Some courses, we cannot upload the assignments after due date. I believe that the submit button should be active after [the] due date. The instructor should give this option to students. I can be sick or have other problems. hence, I want to know that I can submit even if the due date has expired”.

Theme three: Online assessment

Eight out of 15 students participated in the semi-structured interviews stated that they prefer to answer multiple choice, matching or ordering questions in online assessment rather than open-ended questions. On the other hand, twenty-one students across both groups declared that they need to know the exam rules before the online exam begins. For example, a student stated:

“The rules must be announced before the exam begins. Otherwise, I cannot relax and concentrate easily”.

Twenty-four of 32 students participated in the structured interviews emphasized that the time needs to be consistent with the number of questions in online exams. For instance:

“In our midterm exam, the duration for the online exam was too short ... I couldn't finish the exam ... because the last question was about filling the blanks in a long sentence. If there was additional time, it would be effective”.

Most students across both groups felt that only correct answers should be graded and there should be no points subtracted for wrong answers; students find negative marking/subtracting points for wrong answers unfair. On the other hand, nearly half the students across both groups noted that the points for questions should be the same or similar to each other. A student stated:

“When the points of the questions are the same, I feel calm and start from the first question. Otherwise, I worry about the high point questions.”

Twenty-three students across both groups declared that the questions in online exams should not be too hard to answer. In addition, the majority of students across both groups stated that short answer type questions are easy to handle in online exams. Besides, eleven of 15 students participated in the semi-structured interviews pointed out that short answer questions, such as matching, true/false and ‘fill in the blanks’ should be used in online exams. For example, a student stated:

“One of the questions was an open-ended question in an online exam. While trying to answer it, the session ended and my answer was lost”.

Seven of 15 students participated in the semi-structured interviews emphasized that the grades and correct answers should be announced immediately after the online exam. For instance:

“I want to see the results immediately after the online exam ... Comparing my answers with the correct answers enhances the course reliability”.

Theme four: Instructor behaviors and practices

Nine of 15 students participated in the semi-structured interviews explained that the instructor should adapt to procedures in the online environment. For example:

“In our course, the instructor offered several ways to get scores, additional to online exams. Online assignments and making online presentations were among these ways ... although my exam scores were low, I could pass the course with the assignment and presentation scores”.

Nearly half the students across both groups felt that the instructor should understand the needs of students and try to help them especially while in quarantine. For instance, a student stated:

“I e-mailed the instructor explaining that I cannot make the presentation because of my sickness. He didn't give me zero and postponed my presentation to another time”.

Twenty-four students across both groups mentioned the importance of messaging in online communication. For example:

“I really liked the instructor’s positive attitude shown in the e-mails. He mostly starts with “hello” and finished with a greeting message. This makes me happy because some instructors only add body message to their e-mails without captions or greetings”.

Eight of 15 students participated in the semi-structured interviews favored quick responses to their emails. One student stated:

“In academia, it is really hard to get quick responses to e-mails ... we were lucky because I got a response to my emails max in 2–3 hours. Sometimes, I got a response at night out of the office or class hours”.

The majority of students across both groups stated that the instructor should be capable of using online tools such as links and announcements otherwise student motivation decreased. In addition, twenty-eight of 32 students participated in the structured interviews indicated that they want to hear updates about the course especially when in quarantine. For example, a student stated:

“In our course, the instructor used online announcements in Blackboard Learn and he sent e-mails frequently. This was important for me because I could follow the progress of the course via those e-mails or announcements”.

Theme five: Psychological issues

Twenty-six students across both groups stated that accessing online classes at home made them relax. However, the majority of the students participated in the semi-structured interviews indicated that despite the comfort of staying at home, it negatively affected their moods because spending every day at home was difficult. For example:

“Staying at home has advantages. I do not hurry ... I don’t need to use transportation ... I don’t need to make schedules for physical classes ... online learning made my life easier. But, if this situation continues any more, it may affect my psychology negatively”.

Most students across both groups emphasized that unlimited access to online content and recorded synchronous sessions gave them flexibility in organizing their time. On the other hand, ten of 15 students participated in the semi-structured interviews emphasized that multiple courses created pressure for them. For example:

“At the beginning I thought that it was easy to take many courses online. But, as the time passes, finishing assignments, taking online exams and doing projects of several courses was too difficult because my psychology was not good enough to concentrate on all of them. I believe that in online period, especially in quarantine, there should be a limit on taking online courses per semester”.

Twenty-three students across both groups observed it was easy to attend all sessions remotely. These online processes did not require any great action. However, twenty of 32 students participated in the

structured interviews pointed out that adaptation to the online learning was not easy because of negative moods and a lack of clarity about the future.

Discussion

The aim of this study was to understand the enablers and barriers to the effectiveness of online learning in an online university course during the COVID-19 pandemic. Five main themes emerged from content analysis namely online content, online assignments, online assessment, instructor behavior and practices, and psychological issues. Findings related to each of these themes are discussed.

Online content

A variety of content options such as presentation, video, web link and documents were the first enabler of effective online learning. This was similar to Hew et al.'s (2020) suggestion that there is a need to use a variety of media and activities to attract attention of students in online classrooms. The second enabler was the synchronous online videoconference platform, linked to the need for videoconferencing-assisted interaction in online asynchronous platforms. Such interaction may enhance the effectiveness of online learning. As Van Wart et al. (2020) declared, online interaction is one of the significant success factors in online learning. The third enabler was categorizing the online content as weekly modules. Organizing content by dividing it into weekly modules can support students with their learning.

In regard to the barriers, lack of peer support was the first barrier to the effectiveness of online learning. Dumford and Miller (2018) concluded that university students taking online courses have little chance to get peer feedback. In addition, some studies emphasized that peer feedback supports improvement in critical thinking and self-confidence skills of students especially in online processes of higher education (Ertmer et al., 2007; van der Pol et al., 2008). Hence, lack of peer support can decrease the effectiveness of online learning. The second barrier was lack of direct and immediate contact with the instructor. Inability to reach the course instructor or not getting instructor support was considered an obstacle to online learning. Yates et al. (2020) affirmed that teachers need to support students to keep them motivated during online learning. Similarly, lack of tutor support decreases student performance and creates disappointment around online course-taking (Rajabalee & Santally, 2020). Unbalanced distribution of online content was the third barrier. The unbalanced loads of weekly online content may create a burden for students. The fourth barrier was unclear statements in content presentation. Van Wart et al. (2020) support this finding by indicating that teaching presence, including clear instructions in online content, is one of the critical success factors for online learning. The last barrier was dominance of PowerPoint presentations and inadequate use of other content types—such as summary videos, visuals and animations. Reliance on PowerPoint presentations can weaken the potential of online content.

Online assignments

Flexibility of doing online assignments was the first enabler mentioned by the students. Flexible online learning environments allow students to decide their learning path and time (Horn & Staker, 2014). Students could choose the best time and way to do the online assignments in these flexible environments. The second enabler was detailed feedback on submissions. Feedback can improve the engagement of students and promotes learning (Espasa & Meneses, 2010; Hatziapostolou & Paraskakis, 2010). Similarly, Alvarez et al. (2012) emphasized that detailed feedback provides

guidelines to students not only informing but also improving their work. The third enabler was multiple submission possibilities. Students considered the chance for multiple submissions as an enabler for effective online learning, also supported by findings from other studies (Tila & Levy, 2020). The fourth enabler was quick and on-time grading of submissions. Tila and Levy (2020) also emphasized expectations of timing and auto-grading in online assignments. The fifth enabler was assignments related to weekly content or topics. Most students believe that assignments should reflect weekly content or course topics. Similarly, online learning environments should allow students to demonstrate their success in the course (Şahin & Yurdugül, 2020). The sixth enabler was explanatory and clear statements used in assignments. As Alvarez et al. (2012) indicated, students expect clear and detailed guidelines regarding online assessment or feedback from the teacher. The last enabler was allowing late submissions—opportunities for late submissions can reduce the concerns of students especially in quarantine.

Barriers were mostly negative versions of the enablers. The first barrier was limited time for assignment submissions. Giving a short period of time especially for large assignments can disadvantage online learners. The second barrier was no grading provided after submissions. As Tila and Levy (2020) explained, auto-grading provided immediately after online assignments is useful for students. The third barrier was lack of detailed feedback about the submissions. This is supported by the finding that feedback improves student performance and ensures satisfaction with online processes (Espasa & Meneses, 2010). Lack of feedback in online environments may negatively affect student learning. The fourth barrier was too many reading materials needed for assignments. An unbalanced academic load may decrease the motivation of online learners. The last barrier was unclear or inappropriate wording of assignment questions. Spelling mistakes and incomprehensible expressions in online assignments can cause difficulties for students.

Online assessment

Providing a variety of test options, such as ‘fill in the blank’, multiple choice, matching and ordering was the first enabler of online learning. Similar to this finding, Gaytan and McEwen (2007) stated that a variety of assessment techniques (quizzes, timed tests, weekly assignments and projects) can improve the effectiveness of online assessment. The second enabler was announcing the assessment rules or procedures before the online exams. This supports the finding that online learners expect assessment-related notifications (Şahin & Yurdugül, 2020). The third enabler was balancing the time of online tests and number of questions to help students avoid exam stress. Grading the correct answers only was the fourth enabler. Students think that taking only the correct answers into consideration will support them during the challenging online learning period. The fifth enabler was balanced distribution of points for related question types. In online exams, the scores for all questions should be equal and the evaluation should be in favor of the student. The sixth enabler was using short answer type questions such as multiple choice, ‘fill in the blank’ and matching rather than essay questions. Short text assignment formats can increase the value and effectiveness of online assessment processes (Earl, 2013). The last enabler was letting students see their results and grading immediately after the online exams. Several studies have indicated that students want to know their grades instantly with online assessment and grading (Betlej, 2013; Khan & Khan, 2019; Uddin et al., 2016).

Unbalanced timing was the first barrier to the effectiveness of online learning. Improper use of time in online exams can lead to reduced student acceptance and ignored needs (Ilgaz & Adanır, 2020; Khan & Khan, 2019). The second barrier was unbalanced difficulty level of the questions. While very easy questions reduce the effectiveness of online assessment, very difficult questions can create

stress and anxiety. The last barrier was question styles not suitable for the online format. As Gamage et al. (2020) indicated, innovative assessment methods and criteria suitable for online learning support students in achieving the targeted learning outcomes.

Instructor behaviors and practices

The first enabler in this section was flexible procedures applied by the instructor. Rapid adaptation of instructors to the situation helps students increase their online learning effectiveness (Van Wart et al., 2020). The second enabler was being gentle rather than judgmental. When instructors value students in online environments they increase students' academic success and commitment to online processes (Jaggars & Xu, 2016). Use of informative, positive messages was another enabler. Students appreciated positive and explanatory feedback messages in online processes. This reaffirms the finding that feedback should be personal, motivating and appropriate to student expectations (Hatzia Apostolou & Paraskakis, 2010). The fourth enabler was quick responses—timely responses to students' questions help students increase their motivation for online learning (Hew et al., 2020; Jaggars & Xu, 2016). The fifth enabler was competence in administering online teaching and learning. Quality education offered by instructors who have mastered online processes makes it easy for students to adapt to the online format (Van Wart et al., 2020). The last enabler was keeping students updated. Continuous and regular notifications are important for students to maintain their commitment to online education.

The first barrier was late responses to student messages, a negative version of the quick response enabler. It is clear that delayed responses may decrease student commitment. The second barrier was negative wording in online messages. Using negative messaging in feedback may cause students to move away from the online system. Discussion forums, WhatsApp groups and e-mails were the most preferred online tools by students during the quarantine (van Wyk, 2020), and the content of messages delivered using these tools should be supportive and motivating. The last barrier was instructors lacking competence with online procedures. As Van Wart et al. (2020) stated, poor instructional design, ineffective teaching, and inadequate use of materials related to online processes can cause students to opt out of online education.

Psychological issues

Students' psychological situations play an important role in determining the effectiveness of online learning during the COVID-19 pandemic. The first enabler in this category was the comfort of home. According to most students, taking online courses at home and joining online classes from home positively affected their mood during the lockdown. The second enabler was the comfort of unlimited access to online course content. Dhawan (2020) described how users can flexibly access tools for online learning without time constraints in this challenging period. The last enabler was the ease of taking online content, assignments or exams remotely. Students could attend online classes without the physical effort of going to university, using public transport and dressing.

Regarding psychological barriers, the first was the stress of staying at home for many days. Although students mentioned home comfort as an enabler, they also considered it a barrier over an extended time period. Family members, housework and noise make it difficult for students to concentrate on online lessons at home (Aguilera-Hermida, 2020). The second barrier was feeling pressure due to many online courses. Heavy course load in online learning can lead to burnout in students. As Wanner and Palmer (2015) emphasized, extra workload can raise students' concerns about online learning. The last barrier was the difficulty of adapting to fully online courses. This fits with the

finding that students considered negative mood in online processes as one of the most common emotional difficulties (Aguilera-Hermida, 2020).

Conclusion

The aim of this study was to understand enablers and barriers to the effectiveness of online learning in an online university course. Content analysis indicated five main themes: online content, online assignments, online assessment, instructor behaviors and practices, and psychological issues. The results indicate that students are aware of both enablers and barriers to online learning especially during the COVID-19 pandemic. Well-structured online content, assignments and assessment are factors that make online learning successful. Instructor competence, behavior and attitudes are also of great importance for effective online learning. This research aids teachers, instructional designers and relevant academicians, by revealing students' experiences and thoughts about online learning.

The findings of this study are expected to guide instructors in designing and teaching online higher education courses. The detailed themes with student quotes can offer practical implications for instructors and researchers, as the pandemic forced them to switch to online education quickly. Findings regarding the theme of online content can contribute to the organization of online content delivered in learning management systems. Students' thoughts on online assignments and online assessment themes can be a guide for organizing online assignments and exams using online tools. Findings on the theme of instructor behaviors and practices can help instructors to be aware of the effects of their behavior and attitudes on students' learning in online environments. Student reflections on the theme of psychological issues can support instructors or instructional designers to tailor the online learning environment to the needs of learners in the COVID-19 period.

The study has several limitations. First, this research was limited to the views of students who participated in the study. Second, it may not be possible to generalize the results due to the nature of the case study. However, findings presented in accordance with well-structured methodology and research questions may be integrated into similar contexts. Lastly, the author took part in this research as both a researcher and instructor. To avoid research bias, the author did not make any distinction between students who participated in the study and those who did not. Participation in the study did not affect the course scores of the students.

In future, experimental studies investigating the factors affecting online learning are needed. Not only students but also instructors should be integrated into research to better understand the effectiveness of online learning during the COVID-19 pandemic. Higher education administrators could also be included in future work as institutional policies play a key role in online learning practices in this challenging period.

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