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Dear TOJDE Readers,

Welcome to Volume 24 Issue 2 of TOJDE.

There are 20 articles in April 2023 issue of TOJDE. 54 authors from 15 different countries contributed to the issue. These countries are Greece, Indonesia, Jordan, Kosovo, Malaysia, Pakistan, Philippines, Republic of Korea, Saudi Arabia, Slovakia, Turkiye, Ukraine, United Arab Emirates, USA and Vietnam.

ONLINE DISCUSSION: EFFECTS OF IDENTITY VERSUS ANONYMITY AND INTERACTION WITH PEDAGOGICAL AGENTS authored by Glenn SMITH and Metin BESALTI is the first article. This study investigates: (a) how the task relevance of postings differs between anonymous versus identified online discussions in elementary school, and (b) how game-like conversations with story characters impact the task relevance of postings. Authors employ a mixed-method approach, combining both qualitative and quantitative research data.

The title of the 2nd article QUASI-PROFESSIONAL EDUCATIONAL ENVIRONMENT IN THE PROFESSIONAL TRAINING OF FUTURE TEACHERS. The authors are Hanna ALIEKSIEIEVA, Liubov PETUKHOVA, Maryna NESTERENKO, Kristina PETRYK and Renata BERNATOVA. This article substantiates the relevance of quasi-professional educational environment in the system of professional training of future teachers, which implies the creating conditions at the university as close as possible to the realities of the teacher's work. There are motivational, cognitive-operational and reflexive dimensions in the article.

The 3rd article, LONG DISTANCE LAB AFFAIRS: PHYSICS ACHIEVEMENT AND METACOGNITION EFFECTS OF DISTANCE LABORATORIES IN A SENIOR HIGH SCHOOL IN THE PHILIPPINES, is written by Alfredo C. PADIOS, Jr. and Macario V. TOBIA, Jr.. In this study, authors investigate the effects of three physics distance learning modes; the module-only (MO), virtual lab plus module (VLM), and the physical lab plus module (PLM) classes in physics achievement and metacognition employing the pretest-posttest and repeated measures research designs. The study shows that not only do physical and virtual labs supplement distance modular learning, they are also complementary that both must be used in distance learning.

THE EXTENT OF IMPLEMENTATION OF BLENDED LEARNING IN SENIOR HIGH SCHOOL SCIENCE EDUCATION VIS-A-VIS STUDENTS' ACADEMIC ACHIEVEMENT is the title of the 4th article, and the authors are Romel C. MUTYA and Apreyll-Rose L. MASUHAY. This study investigates the extent of implementation of blended learning in senior high school (SHS) science education as to the content, communication, technology, pedagogy, and assessment vis-à-vis students' academic achievement. In the end, the study concludes that several things should be considered in implementing blended learning in the new normal education.

uan Minh Hoang NGUYEN, Thu Hoai Thi DO and Quang Nhat NGUYEN are the authors of the 5th article titled FACTORS CONTRIBUTING TO VIETNAMESE UNIVERSITY LECTURERS' BURNOUT IN ONLINE EMERGENCY CLASSROOMS AMIDST THE COVID-19 PANDEMIC. This large-scale study aimed to investigate the impacts of underlying factors on lecturers' burnout in emergency online classrooms during the outbreak of the COVID-19 pandemic. The results of this study suggest critical pedagogical implications for higher education leaders and administrators to prepare emergency online classes for sustained education in times of crisis.

The title of the 6th article is THE EFFECT OF KNOWLEDGE SHARING, ATTITUDE, AND SATISFACTION ON NOVICE UNIVERSITY STUDENTS' ONLINE LEARNING ACHIEVEMENT. Sinan KESKIN, Mustafa Serkan GUNBATAR and Hayati CAVUS are the authors. The aim of this study is to examine the causal relationship between academic achievement, online course satisfaction, attitudes towards online learning and knowledge sharing behaviors of these novice university students in terms of the emergency remote teaching process. Future avenues and precautions about designing the ERT courses have been suggested in light of the research findings in the study.

DISHONESTY IN ONLINE LEARNING: DISTANCE LEARNING PERSPECTIVES DURING PANDEMIC is the 7th article. Pasca Dwi PUTRA, Andri ZAINAL and Roza THOHIRI are the authors. This study aims to see the level of academic dishonesty that occurs during online lectures. The research was conducted by the Faculty of Economics and Business, public and private universities. The results show that clear administration and good interaction between lecturers and students would increase student learning satisfaction and reduce academic dishonesty.

The authors of the 8th article are George Boon Sai TEOH and Agnes Wei Lin LIAU. The title is DISTANCE LEARNERS' EMOTIONAL INTELLIGENCE AND PERCEPTIONS OF THEIR SITUATIONAL BARRIERS IN LEARNING ENGLISH. The purpose of this explanatory mixed methods study is to collect quantitative and qualitative data regarding students' emotional intelligence (EI) and the situational barriers (SB) they faced in learning English via distance education. The results are discussed with different dimensions in the study.

Mesut DEMIRBILEK and Sitar KESER are the authors of the 9th article. The title of this article is LIFE SATISFACTION OF OPEN EDUCATION HIGH SCHOOL STUDENTS REGARDING VARIOUS DEMOGRAPHIC. In the present study, the descriptive demographic characteristics, life satisfaction levels, and differentiation status of open education high school students according to various variables are revealed. The findings indicate that the life satisfaction levels of open education high school students are low. In addition, life satisfaction differs according to the variables age, families' monthly income, and the reason for choosing open education high school.

The 10th article is authored by George VORVILAS, Alexandros LIAPIS, Alkis KOROVESIS, Dimitra ANGELOPOULOU, Nikos KAROUSOS and Efstathios P. EFSTATHOPOULOS. The title is CONDUCTING REMOTE ELECTRONIC EXAMINATIONS IN DISTANCE HIGHER EDUCATION: STUDENTS' PERCEPTIONS. The study aims to record and analyze students' perceptions of the implementation of remote electronic examinations by the Hellenic Open University. Regarding the examination topics and the duration of the examination sessions, important issues are reported in the article.

A MODEL OF REMOTE TEACHING AND LEARNING UNDER EMERGENCY AND SUSTAINED CRISIS CONDITIONS: A DESCRIPTION OF NOVEL DISTANCE EDUCATION CONTEXTS AND MANIFESTATIONS is the 11th article, authored by William H. STEWART, Patrick R. LOWENTHAL and David J. RICHTER. This conceptual paper discusses key differences between formal distance education, emergency remote teaching, and the evolving practice of Sustained Remote Teaching (SRT). Authors suggest a descriptive contextual model as a research analytic for discussion in the field of distance education.

The 12th article is written by Gaye TOPA CIFTCI, Murat Ertan DOGAN and Burcin UNAL. The title is THE WHATSAPP APPLICATION USE AS A SUPPORT SERVICE IN DISTANCE EDUCATION: A CASE ANALYSIS. This study aims to reveal the strengths and limitations of the WhatsApp application as a support service in distance education, conducted through a learning management system during the COVID-19 pandemic, and make suggestions on improving its use in this capacity. The most important results of the study are that the application supported and strengthened distance learning by allowing instant communication, but that the absence of a moderator caused various limitations in this communication.

Nour Awni ALBELBISI, Ahmad Samed AL-ADWAN and Akhmad HABIBI are the authors of the 13th article titled A QUALITATIVE ANALYSIS OF THE FACTORS INFLUENCING THE ADOPTION OF MOOC IN HIGHER EDUCATION. The purpose of this research is to highlight the factors influencing the adoption of MOOCs in the Malaysian context. The findings indicated in the article are important for improving the implementation of MOOCs in the Malaysian higher education system for MOOC learners and related stakeholders.

The 14th article titled DEVELOPMENT OF LEARNING MODELS IN WEB PROGRAMMING COURSES WITH COMPUTER-BASED LEARNING TUTORIALS is authored by Muhammad

MULTAZAM, Zulfiati SYAHRIAL and RUSMONO. The result of this research shows a web programming learning model computer-based learning tutorial that is effective for improving student learning outcomes in web programming courses.

The title of the 15th article is UNCOVERING CHALLENGES AND OPPORTUNITIES FOR IMPROVEMENTS OF DISTANCE LEARNING IN TEACHER EDUCATION: KOSOVO'S EXPERIENCE and the author is Elmedina NIKOCEVIQ-KURTI. The study aims to investigate the pre-service teachers' experiences with online teaching, but also to uncover the challenges and opportunities for improving the distance education in the future. A qualitative research approach using phenomenology is adapted for the study. Five themes are derived from the analysis of the interview data: quality of teaching activities, positive aspects of online teaching, limitations, factors affecting online teaching, and recommendations to improve online teaching and learning in the future.

The 16th article is written by Aatif IFTIKHAR, Naeem AHMED and Saif ul Mujahid SHAH. The title is ANALYZING DIGITAL DIVIDE AMONG UNIVERSITY STUDENTS OF PAKISTAN. This study has focused on assessing the problems students faced while acquiring online education with special reference to the theoretical background of digital divide. The results of the study indicate that online education further increases an already existing digital divide between have and have nots.

Saif-Ur-REHMAN, Elgilani Eltahir ELSHAREIF and Faisal KHAN are the authors of the 17th article and the title is NEW LEARNERS' SATISFACTION WITH ONLINE EDUCATION: A LONGITUDINAL STUDY. Keeping in view the importance of online education, the current study focuses on pedagogy of how to increase the efficiency of a learner. The authors discuss student-teacher-contact and student-student contact in the article.

The 18th article is authored by Shaden MASADEH, Rabab ABUMALLOH and Noha LABANI. The title is CONTINUOUS INTENTION TO USE ONLINE LEARNING DURING COVID-19 PANDEMIC BASED ON THREE DIFFERENT THEORETICAL MODELS (TAM, SVT, TOE). The study provides directions for designers and developers to establish a more effective online learning environment, which is more suited for the new digitized generation during unexpected conditions.

The title of the 19th article is STUDENTS' DISCOURSES DURING THE ONLINE DISTANCE LEARNING IN THE FIRST WAVE OF THE COVID19 PANDEMIC: AN ACTION RESEARCH WITH STUDENTS AS CO-RESEARCHERS. The author is Konstantinos SIPITANOS. In this paper, an action research is presented with the teacher acting as researcher and the students as co-researchers. According to article, online education is not a success story as promoted by researchers, policymakers, and other stakeholders; rather it lacks human elements like humor, psychological support, and instant interaction.

The 20th article is written by Can SAYGINER. The title is EXAMINING UNIVERSITY STUDENTS' BEHAVIOURAL INTENTION TO DISTANCE LEARNING DURING COVID-19: AN EXTENDED TAM MODEL. This study aims to evaluate the effects of distance learning, deriving independent variables adopted from ETAM. Results indicate that Computer Anxiety had a negative impact on Self-efficacy. Self-efficacy had a positive influence on Experience. Experience and Enjoyment had positive effects on Perceived Ease of Use. Enjoyment had a positive influence on Perceived Usefulness.

Hope to meet again in the next issue of TOJDE.

Cordially,

Dr. T. Volkan YUZER

Editor in Chief

ONLINE DISCUSSION: EFFECTS OF IDENTITY VERSUS ANONYMITY AND INTERACTION WITH PEDAGOGICAL AGENTS

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ABSTRACT

This study investigated: (a) how the task relevance of postings differed between anonymous versus identified online discussions in elementary school, and (b) how game-like conversations with story characters impacted the task relevance of postings. A total of 342 fourth graders in Slovenia participated in the study. During one and a half-hour, synchronous online sessions, students read short web-based eBooks with small group online discussions and game-like conversations with characters. We employed a mixed-method approach, combining both qualitative and quantitative research data. All discussion postings were qualitatively coded in terms of discussion relevance, and other functionalities. The frequencies of the qualitative codes were computed statistically. The results revealed that students in name-identified group discussions were significantly more on-task than those in anonymous discussions. Furthermore, students who engaged in game-like interactions with story characters were also significantly more on task than those who did not. The effective design of small-group synchronous online discussions within an interactive eBook has great potential in promoting engagement in reading, and making reading more social, in times of pandemic-caused remote education, or at any time.

Keywords: Online discussion, elementary school, distance education, pedagogical agents.

INTRODUCTION

The popularity of threaded discussions as a learning tool in online courses increased for several decades (Allen & Seaman, 2013). They are ubiquitous in online learning and Learning Management Systems (Chen, Wang, & Hung, 2009). Online discussions allow students to extend dialogue beyond the time and space of the classroom (Bertera & Littlefield, 2003), giving them more time to process information and compose meaningful responses (Schoech, 2000), helping them to actively co-construct the knowledge (Kanuka & Anderson, 1998) and to engage in critical thinking (Garrison, Anderson, & Archer, 2001). Online discussions allow students more equitable opportunities to engage with their peers and with the content, while potentially offering anonymity, which enables them to freely participate without fear of judgement or being recognized by others (Baglione & Nastanski, 2007). Although there are numerous benefits of online discussion in education, there are also problems. Low quality postings can frustrate students and discourage them from participating (Murphy & Coleman, 2004). To some extent, these limitations can be resolved when online discussions are carefully designed (Chin, Sum, & Foon, 2008). However, keeping students

on task in online discussion challenging (Dooley, & Wickersham, 2007). Dooley & Wickersham (2007) compared full-class versus small group online discussions in an online graduate course. They found that close to 50% of the postings in the full-class discussions were off-topic, while far less of the small group discussion postings were off-topic. It seems common sense that, in discussions, whether face-to-face or online, “the most direct indicator that students may be learning about class topics is that they are talking about [the] class topic,” (p 441, Guzdial, & Turns, 2000). However, the authors found no empirical studies that being on-task, versus off-task, improves learning. However, apparently instructors feel strongly that discussions being on-topic is important to them (Dooley & Wickersham, 2007).

The current study of online discussions is set in fourth grade. Executive function improves developmentally from childhood, to adolescence to adulthood (Piper et al., 2012). Thus, fourth grade students may find it more challenging to stay on-task (Montroy et. al, 2016) than other populations, such as university students who often participate in studies of online learning. While so-called “off-task” postings and communications often have important social and even educational functions, off-task behavior leading to a loss of instructional time is a well-established problem in elementary school (Godwin, et al., 2016). Therefore, understanding what factors influence being on-task, is worth investigating.

Anonymity

Online discussion allows students to interact anonymously, which helps students control their personal information and minimize cultural and gender bias (Chester and Gwynne, 1998). Most studies on anonymous versus user identified discussions suggest advantages for anonymity (Bertera & Littlefield, 2003; Bowen, Farmer, & Arsenault, 2012; Miyazoe & Anderson, 2011; Roberts & Rajah-Kanagasabai, 2013). Participants in Bertera & Littlefield (2003) suggested advantages for both anonymous discussion (more honesty in responses), and for identified discussion (learning benefits related to cultural competency). We found only one study suggesting disadvantages, i.e., weaker learning outcomes, for anonymous discussion participants (Landers and Callan, 2014).

However, almost all studies of anonymity versus identity in online discussion focus on university students and asynchronous courses, not blended learning (Bertera & Littlefield, 2003; Bowen, Farmer, & Arsenault, 2012; Miyazoe & Anderson, 2011; Roberts & Rajah-Kanagasabai, 2013). With the recent covid-19 pandemic, social distancing and the resultant remote-schooling, we should consider how to make online discussions effective with K-12 students. How does anonymity play out in online discussions in K-12 populations, such as elementary school students? We need to better understand how online learning environments should be designed for K-12 populations.

Online Interaction

Another potential advantage of online discussion, in distance education, is the possibility of providing different types of interaction. Moore’s theory of transactional distance, posits three forms of interaction vital to online learning: learner-instructor, learner-learner and learner-content (Moore, 1989). Online discussion is one of the most common forms of learner-learner interaction in distance learning and blended learning. Perhaps because learner-content is hard to measure, studies on learner-instructor and learner-learner interaction are much more common than studies on learner-content (Xiao, 2017). Researchers sometimes investigate learner-content interaction as an intervention, inclusion or exclusion of a learner-content interaction treatment. In this study, we take a similar and literal approach to learner-content interaction, where the content is personified by interactive pedagogical agents. We represent characters in eBook stories as simple interactive pedagogical agents, where students interact with the content by clicking pm words to form sentences, in game-like conversations with characters in stories. This solves a methodological problem of verifying that some minimum amount of interaction with content has occurred.

For elementary school children, who are recently moving into distance and blended learning, exploring some more engaging forms of learner-content interactions might be warranted. Since much, if not most, of course content today is represented on the computer, one might think of learner-content interaction as learner-computer interaction. There are some precedents for interaction with computer entities stimulating

more human-human interaction. Valkenburg & Peter (2007), to test the displacement hypothesis (online communication displaces time spent with existing friends) versus the stimulation hypothesis (online communication stimulates time spent with existing friends and the quality of these friendships), surveyed 1,210 teenagers on time spent with friends, quality of relations and online communication. Instant messaging, which was mostly used to communicate with existing friends, positively predicted time spent with existing friends. Other forms of social media were less predictive of time with friends.

According to Twenge, Spitzberg, & Campbell (2019), social media use and in-person social interaction are positively correlated. Teenagers spending more time on social media also spend more time with friends in person. However, teenagers low in in-person social interaction and high in social media use reported the highest levels of loneliness.

Pedagogical Agents

Pedagogical agents are virtual characters with human-like qualities of speech, gestures, or movement (Sweller, Ayres & Kalyuga, 2011) used in education. According to a meta-analysis, pedagogical agents can significantly motivate learning (Schroeder, & Adescope, 2014) and generally improve learning (Davis, 2018).

With motivation to learn, there is a difference between short term effects and longer learning trajectories. There is a distinction between current motivation to read a particular text versus habitual motivation to read regularly (Schiefele et al., 2012). Since there is a literacy crisis linked to declining independent reading (Mol & Bus, 2011), it is worth exploring various motivational effects of media. In digital texts, pedagogical agents promoting high inquiry arousal (asking intriguing or paradoxical questions) can increase germane cognitive load (Drobisz, 2017), improving schema acquisition (Kalyuga, 2010).

Blended Learning to Online Learning

Before 2020, much of K12 schooling was blended, or hybrid learning (Horn, & Staker, 2011), with most K12 classrooms in the United States and in European countries, periodically taking their students to the computer lab or using hand-held computers in the classroom. However, with the Covid-19 pandemic in the spring of 2020, K-12 schooling moved entirely online. Results were mixed. Students who ordinarily were motivated and excelled in school, did fine, while less motivated students, who generally struggle, struggled even more. Students whose families did not have effective internet fell back. Thus, the educational digital divide was exacerbated across a number of countries (Hall et al., 2020; Iivari et al. 2020).

For Fall 2020, (Education Week, 2020; Lieberman, 2020) “73% of the 100 largest school districts [nationwide] have chosen remote learning only as their only back-to-school instructional model, affecting over 8 million students.” Also, 51% of districts offered blended learning.

Despite Covid-19 vaccines, probably online learning variants, including blended-learning, will remain more popular than pre-Covid-19, for K-12 learning, including elementary school. Thus, research programs about K-12 online learning are more relevant than ever. Research exploring how multimedia design factors influence social interaction in blended and online learning are vital. The current study focuses on how two such specific design factors influence being on-task in online discussions in elementary school: (1) anonymous versus identified online discussion, and (2) the influence of pedagogical agent-based learner-content interaction.

Research Questions

Research question one: How does anonymous versus participant-identified affect the task-relevance of online discussions in fourth grade blended classes?

Research question two: How does learner-content interaction affect task-relevance of online discussions in fourth grade blended classes?

METHOD

Research Design

We used a mixed-method approach, combining qualitative and quantitative research data (Creswell, 2014). Our primary qualitative data was transcripts of small group discussions, downloaded from the eBook database. The researchers read and reread these discussion postings, and discussed them. We recognized multiple dimensions of the qualitative aspects of the discussions and created a coding scheme accordingly. Appendix shows the full coding scheme. The primary quantitative data was frequency counts of qualitative codes.

Participants

Participants were 342 fourth graders in 21 classes, in eight public schools in Ljubljana, the capital of Slovenia. We selected fourth graders because, by then, the vast majority of Slovenian students can read fairly well, and because fourth graders tend to have “incredible energy and emotion, industriousness and curiosity, increased awareness of the world around them” (Anderson, 2011), and thus would be open to experiencing a new technology for reading. We sampled schools in Ljubljana - population approximately 290,000 - by networking the contacts of our ten student researchers, pre-service teachers some of whom had interned in schools across Ljubljana. In other cases, our pre-service student teachers “cold-called” school principals, who recommended specific teachers. We further selected schools to get a broad range of areas in the extended Ljubljana metropolitan area, including schools close to the city-center, in the suburbs and just outside the official border of the city.

Because of privacy issues, we could not gather information on gender or age. We conducted three related studies: Study one with 42 participants, study two with 40 participants and study with three 260 participants. The studies had different numbers of participants, because studies one and two were lead-up studies to the larger study intended for another purpose. The results reported in this paper, much like Fleming’s discovery of the value of penicillin, were fortuitous, yet worthwhile, discoveries.

Materials

We used web-based interactive eBooks in Slovenian, each drawn from a story, not yet read by students, from 4th grade language textbooks. In addition to text pages, these eBooks contained: (a) group discussions, “book clubs,” of four to six students randomly grouped. Students read text pages, until a pop-up informed them a discussion was available. When they clicked on a talk balloon icon, they entered the discussion interface (see Figure 1). Typically, three or four students synchronously texted in the discussion, a group size most successful for collaboration (Dobao, 2012; Morgan, Allen, Moore, Atkinson, & Snow, 1987). (b) For learner-content interaction, they encountered game-like conversations with characters (pedagogical agents). See Figure 2, translated into English. Students arrived at a page with a pedagogical agent, i.e., an image of a character from the story, a question to respond to, and a lexicon of words on buttons to click on to form sentences to respond to the question. Students received automated text feedback to their answers and changes in the character’s facial expression. We used this minimal form of game-like interaction, also used in Smith et al., (2013) for ESL learning, because a meta-review of using games for learning suggests that excessively rich game scenarios often result in less learning (Wu, Zhang, & Wang, 2020). (c) Learner-content interaction also included open-ended questions (see Figure 3): students typed in their response and either clicked on the “submit” button or return key. They received a polite response, “Thanks for your response. You teacher will read it.” and were instructed to read on.



Figure 1. Interface for discussion



Figure 2. For learner-content interaction, game-like conversation with character, translated into English.



Figure 3. Interface for open-ended questions.

Procedures

All students participated in a one and a half-hour synchronous online discussion session. The activities in the online discussions aligned with their language arts curriculum, drawn from their language arts textbook. The teachers regularly asked their students to participate in online activities, so the study was part of their regular learning routine. A Slovenian pre-service teacher used a PowerPoint presentation, delivered online, to appraise students of study procedures. Students: (1) opened the web-based interactive eReader site up on a browser, (2) logged into the eReader with a username and password and (3) read through three short eBook stories online.

We conducted three such studies, with slight variations. In study one, the students' usernames were their first and last names, e.g., JohnDoe. In each eBook, they experienced both individual learner-content interaction (conversation with characters and open-ended questions) and small group discussions). In study two, the usernames were anonymous, a combination of the school and a number, e.g., Smartno1, Smartno2, etc. Otherwise, there were no significant differences between study one and study two. In study three, there were anonymous usernames and only the social learner-learner interactions (small group discussions), with no individual learner-content interaction.

Data Collection and Data Analysis

We used each posting as a unit of analysis, since in these fourth-grade discussions, each posting was invariably one thought unit. While fourth graders were excited to work with interactive online eBooks, they were also distracted by this situation. The game-like interactions in the eBooks could potentially distract or engage them from the story. Further, the presence of other students in an online discussion, could distract them from the story and the discussion topics. The fourth graders were easily distracted from being on task. Therefore, as per the dependent variable on our research questions, being on task, the first, high level coding dimension for discussion postings was Book Relevance (with two values, yes or no).

Secondly, we noticed a dialectic, or dialogic aspect, to these fourth-grade discussions. There was a pattern of questions, answers, follow-up questions, interspersed with statements. This pattern held true when students discussed the eBook discussion question, or matters not relevant to the book. Thus, we employed a second coding dimension, "Type: Question, Answer or Statement" (Q, A or S for short). Next, we created a third coding dimension, category, which was a description of the posting, providing more detailed coding of text postings. All codes are explained with examples in Appendix. For our quantitative data, we computed statistics on the frequencies of the different qualitative codings.

Reliability

We had at least two researchers (pre-service teachers) independently code all postings. For Category, the Kappa measure of inter-rater reliability was .935, or 93.5% ($T = 80.11$), which is certainly acceptable. For book relevance (one proxy for staying on-task), our Kappa measure of inter-rater reliability was 1.0 or 100% ($T=36.15$).

FINDINGS

To compute inter-rater reliability, two of our student researchers independently coded a subset of the discussion postings, specifically 1,293 postings or one third of the total postings. Our Kappa (McHugh, 2012) inter-rater reliability as per was 0.95, or an agreement of 95.8%. Kappa values of over 0.6 are considered acceptable, while values over 0.81 are considered almost perfect agreement (McHugh, 2012).

Quantitative Data

For the purposes of answering our research questions related to task relevance, we initially used book relevance. The difference in rate of book relevance, as determined by a Chi-square test, between study one, using student names as usernames, ($M = 0.69$, $SD = 0.46$) and study two, using anonymous usernames (M

= 0.53, SD = 0.5) was significant, $F = (1, 14.9)$, at the 0.001 level. With first and last names as usernames, 69% of the postings were book relevant; while for anonymous usernames, 53% were book relevant. The Phi and Cramer's V effect sizes were 15.8%, i.e., small but significant. Therefore, 15.8% of the difference in discussion relevance was explained by anonymous versus identified usernames. Figure 4 shows a graph of the differences.

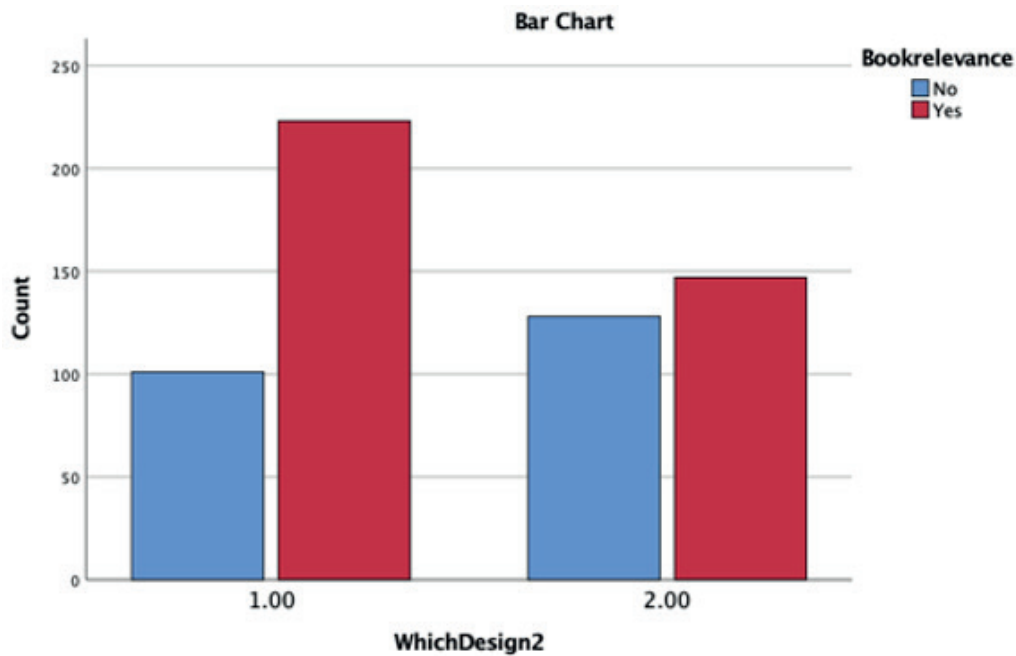


Figure 4. Book relevance for study 1 versus study 2

However, we decided that in terms of online discussion, discussion relevance more directly pertained to “task relevance” in online discussions, than did book relevance. Discussion relevance was a computed variable, i.e., whether, or not, Broad Category was “discussion.” The analyses for book relevance was virtually identical with the analyses for discussion relevance. See Table 1.

Table 1. Descriptive statistics for Discussion Relevance

Study	Number postings	Mean	Std. Dev.
Study 1	324	.633	.483
Study 2	275	.505	.501
Study 3	2,942	.290	.454

The first and second studies differed only in terms of username anonymity and identity. The difference in rate of discussion relevance, as determined by a Chi-square test, between study one, with student names as usernames, ($M = 0.633$, $SD = 0.483$) and study two, with anonymous usernames ($M = 0.505$, $SD = 0.501$) was significant, $F = (1, 9.85)$, at the 0.002 level. With student names as usernames, 63% of the postings were discussion relevant, while with anonymous usernames, 50% were discussion relevant. See Table 1 and Figure 5. The Phi and Cramer's V effect sizes were 12.8% or small, meaning that 12.8% of the difference in discussion relevance was explained by anonymous versus identified usernames.

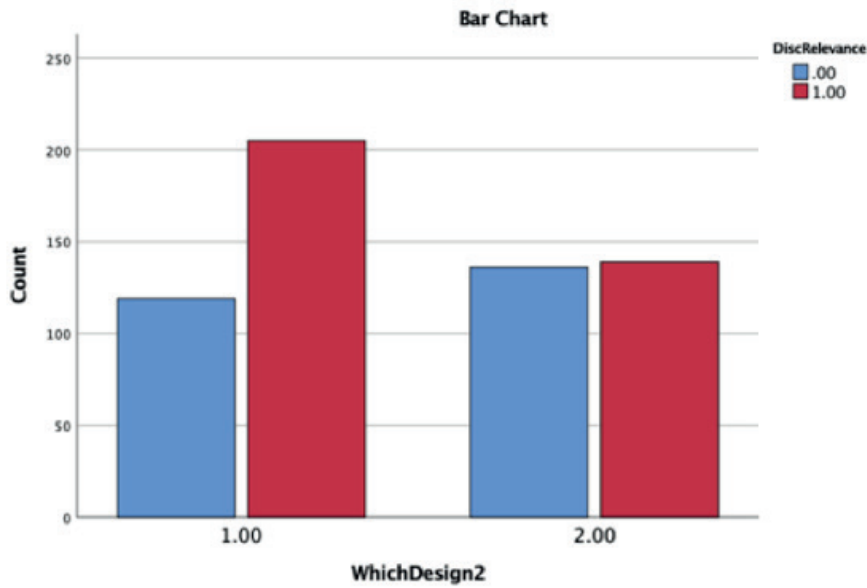


Figure 5. Discussion relevance for all discussions in Study 1 and Study 2

The difference in rate of discussion relevance between study two, anonymous usernames with learner-content game-like interaction ($M = 0.505$, $SD = 0.501$) and study three with anonymous usernames but without learner-content game-like interaction ($M = 0.290$, $SD = 0.454$) was also significant, $F = (1, 14.68)$, at the 0.0001 level. See Figure 7 and Table 3. Here the Phi and Cramer's V effect sizes were both 11%, also small, meaning that 11% of the difference in discussion relevance was explained by the inclusion of learner-content interaction, such as game-like conversations with characters and open-ended questions. This does provide evidence that name identified usernames and learner-content interaction promote task relevance in online discussions.

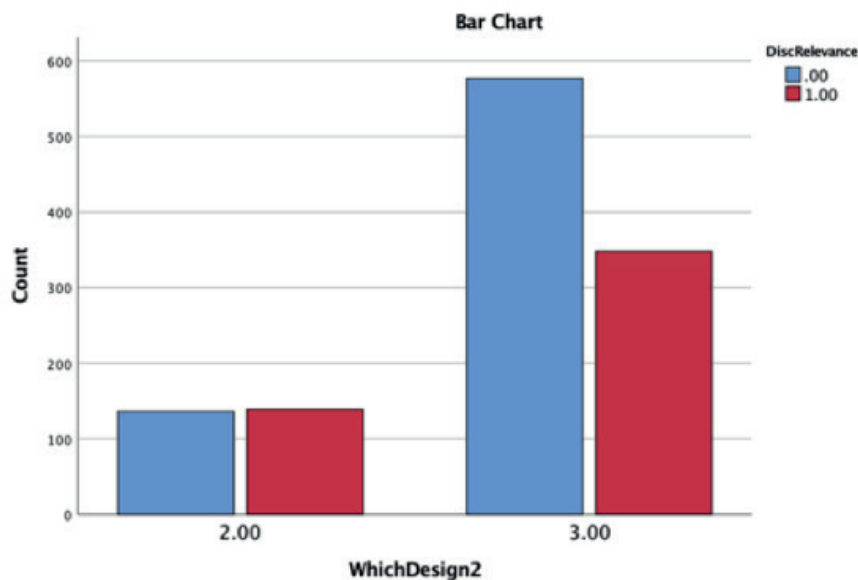


Figure 6. Discussion relevance for all discussions in Study 2 and Study 3

To keep our analysis complete, we also compared the difference in rate of book relevance between study two, anonymous usernames with learner-content game-like interaction ($M = 0.53$, $SD = 0.5$) and study three with anonymous usernames and without learner-content game-like interaction ($M = 0.34$, $SD = 0.47$) was also significant, $F = (1, 10.7)$, at the 0.001 level. Phi effect size was 9.5% or small. See Figure 7.

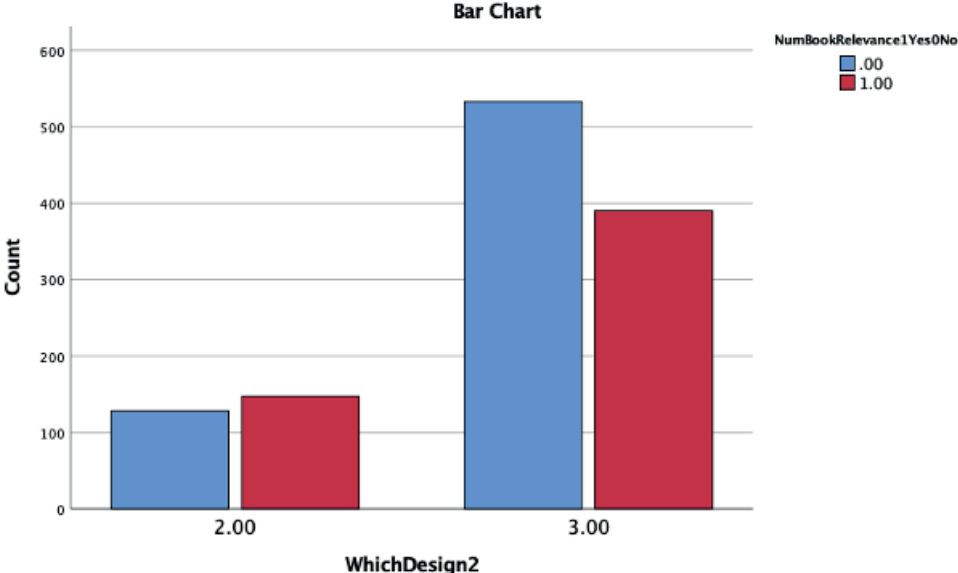


Figure 7. Book relevance for all discussions in Study 2 and Study 3

Qualitative Data

In the quantitative results above, task-relevance (discussion relevance) was significantly higher in study one, where usernames were students’ actual names, than in study two where usernames were anonymous. Example discussions illustrate how anonymity versus identity exert these differences. In studies one and two, some of the discussions were based on the book *Kekec in Pehta*, by Josip Vandot and Andrej Rozman Roza. Overall, the students in study one provided both discussion relevant and irrelevant postings. However, in the sample discussion from study one in Table 2, all the postings were discussion relevant. In the story, a young boy, Kekec, has been temporarily living with another family whose daughter is blind. Kekec deliberately lets himself be captured by the “witch” Pehta, because Kekec wants to steal the medicine Pehta has made, and then escape and use the medicine to cure the daughter’s blindness. The discussion question asks, “In what other way could Kekec get the medicine?” meaning in what way, besides stealing could Kekec obtain the medicine. The discussion starts with Anna suggesting, “He could ask her for the medicine.” In the rest of discussion, the students discuss how Kekec asking Pehta for the medicine might play out, in terms of causal consequences and motivations of the characters. This is an ideal educational outcome. The students demonstrate their comprehension of the story and the empathy with the characters and an aesthetic approach (Rosennblatt, 1994, 1995) to reading, imaginatively experiencing the story.

Table 2. Discussion Study 1 (identity with pseudonyms), In what other way could Kekec get the medicine?

NAME	MESSAGE	TASK-RELEVANCE	TYPE	CATEGORY	CATEGORY BROAD
Anna	He could ask her for medicine	Yes	A	DA	D
Anna	He could secretly steal it	Yes	A	DA	D
Tom	He could ask her	Yes	A	DA	D
Anna	Yes, he could also do it like that	Yes	A	DAA	D
Anna	Why can't Pehta just give it to him?	Yes	Q	DQ	D
Tom	But she would catch him because she would notice that the medicine is gone	Yes	A	DA	D
Anna	Yes, but he could lie and say it wasn't him	Yes	A	DAA	D
Tom	Because Pehta wants to be the one who heals Mojca	Yes	A	DAA	D
Tom	But he could search the apartment	Yes	A	DAA	D
Anna	That is also true but why Pehta, why not Mojca's parents	Yes	Q	DQ	D
Tom	Because she is the only one with the medicine	Yes	A	DAA	D
Anna	Yes, but Pehta could give the medicine to the parents	Yes	A	DAA	D
Tom	No, because she doesn't want to	Yes	A	DAA	D
Anna	Yes, but doesn't she want to?	Yes	Q	DQ	D

The same discussion in study two features important differences. See Table 3. The discussion starts with smartno8 suggesting "He could sneak into Pehta's home." This reflects either a low level of involvement with the discussion or low level of comprehension of the story, since the discussion question actually asks "In what other way could Kekec get the medicine?," meaning other than stealing it (he actually steals the medicine in the story). Smartno3 asks for a clarification, "What?," perhaps because s/he understands that smartno8's suggestion runs counter to the discussion question. Smartno16, perhaps imitating the researcher's comment, chimes in with "I think so too." Agreement in an online discussion is sometimes an easy way out. Over the next postings, the discussion proceeds on track, if at a low level, "I think he could take Pehta and then find the cure and then run away," "Nooo I wrote that wrong," and "He could find it on his own." The rest of the discussion gets hijacked by identity issues, such as asking who other discussants are and talking about changing their avatar images, until smartno3 finally gets fed up and decides to move on to the next story, Videk. As in study one, the students in study two also made relevant postings. The main difference was that the relevant answers were not of as high a quality as in study one - students mainly gave different short answers and did not move the discussion forward. Also, when comparing the irrelevant answers in study one versus two, the ones in study two were mainly connected to students' unknown identities and wanting to know who was who.

Table 3. Discussion Study 2 (anonymity), In what other way could Kekec get the medicine?

NAME	MESSAGE	TASK-RELEVANCE	TYPE	CATEGORY	CATEGORY BROAD
Smartno8	He could sneak into Pehta's home	Yes	A	DA	D
SmartnoT	That is one way to do it, I agree	Yes	A	DAA	D
Smartno3	What?	No	Q	M	M
Smartno16	I think so too	Yes	A	DAA	D
Smartno24	I think first he should take Pehta and then find the cure and run away	Yes	A	DA	D
Smartno24	No, I wrote that wrong	No	S	CO	C
Smartno3	He could find it on his own	Yes	A	DA	D
Smartno8	I have a new face	No	S	CO	C
Smartno24	I have a new profile picture	No	S	CO	C
Smartno3	Yes, I am constantly changing it	No	S	CO	C
Smartno8	j	No	S	O	O
Smartno24	What j?	No	Q	CO	C
Smartno3	What j?	No	Q	CO	C
Smartno8	I have a new profile	No	S	CO	C
Smartno3	Who are you Smartno24?	No	Q	IQ	I
Smartno8	I made a mistake	No	S	CO	C
Smartno3	What???????????????	No	Q	CO	C
Smartno3	I'll just move on to Videk	Yes	S	S	S
Smartno4	Who are you?	No	Q	IQ	I

We can understand the flow of these online discussions better by examining a state-transition graph visualizing the dynamic distribution of postings by most common categories, in the entire dataset (see Figure 9). The left part of Figure 8 shows two “clusters.” The first cluster focuses on the discussion topic (categories DQ, Discussion Question, DA, Discussion Answer, and DAA, Discussion Answer Answer or elaboration of a Discussion Answer) while the other cluster focuses on identity-related categories (IQ, Identity Question and IA, Identity Answer) and its subsidiary offshoot to off-discussion topics (categories CO, Comment Other and O, Other). Based on this, it is clearly visible that on-topic and off-topic conversations are not intertwined, but participants rather discuss one topic at a time and then drift to another one. On the right side of Figure 9, this is more evident. If we know the categories of the last two messages, we can predict the category of the next one. For instance, if there are two postings in the Other category (often nonsense), the probability of the next posting being Other is 75%. Two successive postings of Discussion Answer category, are 51% likely to be followed by another.

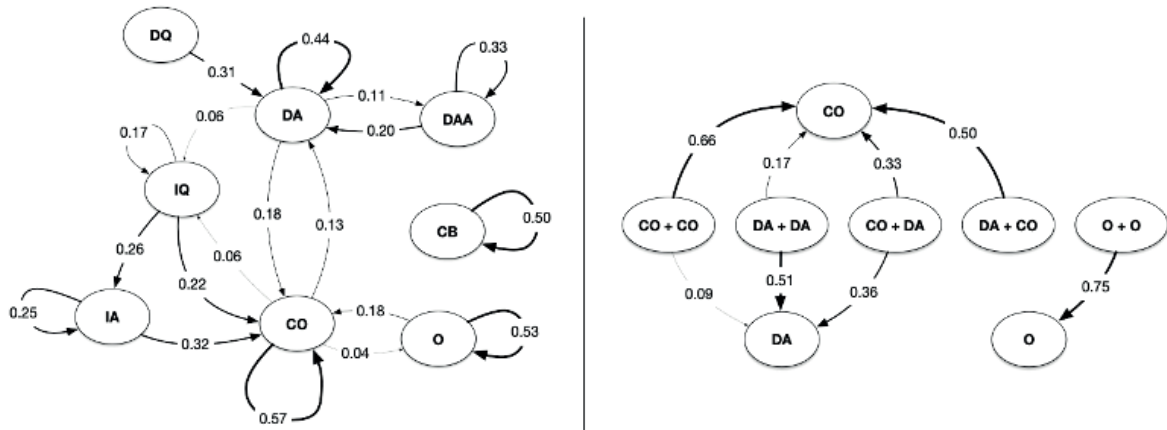


Figure 8. State-transition graph showing dynamic distribution postings by category

Learner-Content Interaction versus no Learner-Content Interaction

The difference in rate of discussion relevance between study two, anonymous usernames with learner-content game-like interaction and study three, anonymous usernames without learner-content game-like interaction, was significant. However, we could not find dialog in the transcriptions of the discussions suggesting any causal mechanisms.

A closer examination of several sessions from sample game-like conversations with character might provide some insight. Figure 2 shows a screenshot of a conversation game with a character, translated into English. It turns out that - with some exceptions - these conversation games with characters were fairly easy for the fourth graders in terms of making inferences from the story. The greater challenge was figuring out what sequence of words, or what sentence, would be accepted by the game. This was slightly challenging because Slavic languages like Slovenian allow for considerable flexibility in word order. Table 4 shows a typical interaction. It was difficult for the game designers to anticipate every possible correct permutation. Thus, the fourth graders had to try several combinations to find the winning sentence. Nevertheless, the fourth graders enthusiastically embraced this challenge. The simple feedback of changing facial expressions and text feedback apparently engaged fourth graders. The biggest difference between study two and study three, was that study two participants experienced these conversations with character games and open-ended questions, while those in study three did not. Participants in study two were also significantly more on task in discussions.

Table 4. A sample session from a conversation with character game

Student input	True/Try again
Because than policeman is faster	Try again
Because is faster	Try again
Because is more resourceful	Try again
Because is more resourceful than policeman	True
Because is smarter than policeman	True

DISCUSSIONS AND CONCLUSION

Our results suggest that using actual names as usernames allows elementary school students in a hybrid/blended learning class to discuss online with fewer distractions (e.g., fewer inquiries about identity). These students actually knew each other from the earlier face-to-face classes and were thus curious who they were conversing with online. However, since relationships between elementary school students are important in general, whether in hybrid courses or fully online courses, one might also expect similar significant results, but perhaps smaller in scale, in fully online courses. In any case, the advantage of identified usernames might stem from higher levels of social presence increasing user involvement.

Pragmatically, more on-task comments should result in more and better learning of the actual curriculum. Transcripts in the current study seem to confirm this. For this age group (fourth graders), anonymity is not helpful in online discussions. This also suggests that the research practice of using samples of convenience, such as college undergraduates and graduate students (e.g., Bertera & Littlefield, 2003; Bowen, Farmer, & Arsenault, 2012; Miyazoe & Anderson, 2011; Roberts & Rajah-Kanagasabai, 2013) can skew the results. If more studies of online learning included other populations, such as K-12 students, and in more situations, besides threaded discussions in online courses and in Learning Management Systems, the advantages of anonymity in online discussions would be shown to be less, and the advantages of identified online discussions would be revealed to be greater.

Our results also suggest that learner-content interaction, in the form of simple pedagogical agents, game-like conversations with story characters and open-ended questions, results in more discussion relevant postings. We propose a theoretical idea, we call the interaction bleed-over hypothesis, i.e., that increased interaction in one of Moore's (1989) three forms of interaction (student-content interaction) may stimulate higher quality interaction in another modality (student-student interaction). Moreover, this provides an easily quantifiable method to include learner-content interaction in research about online learning. If pedagogical agents, in the form of "conversations with character" games are used, download of the logs of such interactions provide a precise measure of such learner-content interaction. Methods like this could help to address the dearth of research on learner-content interaction in online learning noted by Xiao (2017).

However, since the coded discussions made no direct reference to the conversation with character games, we can only speculate on the causal mechanism. The data from the conversation with character games suggest that the inferences students needed to make were easier than finding the right form of phrasing that the game required. Perhaps, the students were excited by this simple game-like interaction, which provided feedback via simple two-dimensional pedagogical changing facial expressions. Moreover, there was, by design, similarity in the interface and interaction between the game-like conversations with characters and the small group discussions (see Figures 1 and 2). As part of the learner-content interaction, students also typed answers to open-ended questions. Perhaps both these open-ended questions also primed students to interact in the discussion? Or perhaps, the text-based interaction with virtual characters engendered greater involvement with the story, much as interaction with non-player characters in multi-player games might stimulate interest in the game, in turn engendering more interest in discussion of the story? This seems to imply that individual game-like interactions that are similar to online discussions can stimulate productive discussion in this age group. However, these are speculations that need to be specifically investigated with experimental research isolating these variables more carefully.

Hosting small-group synchronous online discussions within an interactive eBook, a text/multimodal narrative, is itself an innovative idea. It might be a way to promote interest in reading, and make reading more social, in times of pandemic-caused remote education.

Suggestions for the Future Research

We suggest, in future studies, the use of easily quantifiable learner-content interaction, such as interactions with pedagogical agents. This could help to increase the research on learner-content interaction, to balance out the data investigating Moore's paradigm of transactional distance with its three forms of interaction vital to online learning: learner-instructor, learner-learner and learner-content.

Further, as the Covid-19 pandemic trails off, completely remote K-12 learning will trail off from its highest during the pandemic. However, it is a fair guess that blended and online learning may remain higher than in the pre-covid period. Therefore, more studies of online discussions in K-12 situations, including in elementary, would be helpful for education.

Educational Implications

We suggest that K-12 teachers consider the use of small group online discussions in the context of blended learning, particularly with identified usernames. We acknowledge that access to computers in classrooms and/or computer labs is potentially a limiting factor that schools should continue to address. However, the learning affordances of online discussions in online textbook have great potential.

Limitations

Limitations are: (a) in the studies with learner-content interaction, there were two forms of interaction, pedagogical agents and open-ended questions. Therefore, it was difficult to parcel out the effects of each of these forms of interaction, and (b) the study was conducted with fourth graders, so may not generalize completely to other grade levels.

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APPENDIX

Coding Scheme for the Dimension

Name	Abbrev	Description	Example
Chatting*	C	Not related to the discussion question	
Chatting, greeting	CG	greeting their classmates	Heeeeeeyyyyy!
Chatting about books	CB	Chatting about which books they liked and what parts were their favourite	What book do you like the most?
Encouragement	CE	encouraging others to join the chat	Let someone write somewhere.
How they feel	CF	chatting about how they feel	How are you? I'm bored.
About other things	CO	chatting about other things, such as their next class, what they want to do etc.	Let's go out.
Curse words	CC	using curse words or being mean to someone, responding to them in a mean manner	You're an ass.
Switching*	S	talking about where in the system they currently are, what tasks they are working on, asking about how to move on from a task etc	How do you move to ...?
Discussion*	D	Related to the discussion question or discussion content	
Discussion, question	DQ	posing a question that somehow relates to the discussion question	Do you think this is the correct answer?
Encourages further discussion	DE	posing a question that directly encourages further discussion about the discussion question	Will anyone answer me?
Answering discussion question	DA	answering the discussion question directly	So that he would somehow eat
Commenting on the answer	DAA	answering a question or commenting on the answer of someone else, that is still somehow related to the discussion question	Maybe also
Moderating*	M	Serving the purpose of moderating the discussion	
Encouraging	ME	encouraging the students, giving praise	Very good thinking.
Leading questions	MQ	Asking questions relevant to the discussion question, to encourage further discussion	What else could you do?
Technical answers	MA	answering the students' questions, related to how the eBook works, or anything else – the answer can also be a question	You click on the greater than sign to read on.
Identity*		Related to who someone was, either question, answer, anything related to personal identity, or even virtual identity such as choice of avatar or changing of avatar	
Identity question	IQ	Asking a question about someone's identity	Franca15, who are you?
Identity answer	IA	Answering a question about who you are someone is.	I am Janez.
Both identity question and answer	IQA	Answering a question about who you are & asking who another person is.	I am Janez. Who are you?
Other	O	any typo, any message that was sent too fast, anything that does not make any sense at all and/or can not fit into any other category	dsfhjkl;lkffds

Note: * These codes fit into Category Broad

QUASI-PROFESSIONAL EDUCATIONAL ENVIRONMENT IN THE PROFESSIONAL TRAINING OF FUTURE TEACHERS

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ABSTRACT

During the distance education process caused by COVID-19, students do not have sufficient opportunity to do pedagogical practice, which requires strengthening their practice-oriented component of learning in other forms. This article substantiates the relevance of quasi-professional educational environment in the system of professional training of future teachers, which implies the creating conditions at the university as close as possible to the realities of the teacher's work. The conditions which allowed to improve the graduates' readiness to do their professional duties were developed and experimentally proven. The peculiarities of quasi-professional tasks based on imitation of real work situations, where student has no rules or samples for the completing, are revealed. In this way, they independently develop possible models for their behavior in similar situations, based on theoretical and methodological knowledge and skills. The effectiveness of the author's system of quasi-professional tasks aimed at the development of students' pedagogical thinking and their mastery of the experience of modeling lessons is presented and examined. They are represented by three groups: didactic, methodological and technological, each of which has a specific purpose. It allows to cover all the spheres of professional development of higher education students: motivational, cognitive-operational and reflexive.

Keywords: Lesson modeling, practice-oriented learning, professional training of future teachers, quasi-professional educational environment, quasi-professional tasks.

INTRODUCTION

The European community is unanimous in believing that the introduction of distance learning is a key solution to ensuring the continuity of higher education. However, its quality cannot be ensured at the same level. There are several reasons for this.

The group of scientists (Farnell et al., 2021) found that although 89.3% of students have their own computer, only 41% always have a good Internet connection. Therefore, students' opportunities for online learning are varied in terms of access to technology and learning materials. In addition, the main forms of educational process during the pandemic in European universities were real-time lectures (74.6%), presentations sent to students (44.5%) and asynchronous pre-recorded lectures available online via video (32.1%) or audio (20.6%). Under such conditions, the transition to urgent distance learning has been difficult in sectors with a practical focus. Importantly, as many as 69% of respondents said that losing physical access to universities was also negative, including library resources that provide access to learning materials and a quiet place to study, which is important for students who do not have a supportive home environment (Alain et al., 2013; Bekirova et al., 2020; Ozga et al., 2021; Vaganova et al., 2020).

The deterioration in students' academic performance was noticeable. Data summarized by G. Di Pietro, F. Biagi, P. Costa, Z. Karpinski, J. Mazza indicate that almost all higher education students who participated in distance learning have a standard deviation in the results of final testing from 6.5 to 14 score (with a maximum value of 100 score). The scientists' report contains several arguments that partially explain the current situation. Firstly, students who are under quarantine, tend to spend less time to study than when universities operate normally. Secondly, they suffer from stress and anxiety due to COVID-19, which negatively affects their ability to concentrate on learning activities at home. Thirdly, the closure of educational institutions and lack of personal communication decreases students' overall motivation to participate in learning activity (Di Pietro et al., 2020; Bekirova et al., 2020; Mantulenko, 2020).

These tendencies require a substantial modification of the type of learning activity of future teachers, which would both motivate professional activity and discourage academic dishonesty.

Moreover, the current stage of school reform reflects the modernized requirements for a new generation teacher – an educational innovator capable of changing the world around; a patriot who cherishes national identity; a professional who can create educational environment based on the values of childhood and aimed at the individual personal development of each pupil. Modern pedagogical activity requires competent and unconventional solving of varied tasks, which is impossible only if students have the knowledge and skills to design and conduct a lesson using a universal algorithm. This is an area of expression of their creative potential and flexibility of professional thinking in decision making.

A detailed study of the first experience of online education in universities (Aktar et al., 2022) allowed to identify the problem areas of distance pedagogical education with the aim of its improvement.

Therefore, the process of improving the professional training of future teachers, which should be as practice-oriented as possible, has been considerably intensified. The organization of quasi-professional educational environment, i.e., to create an environment in the university that is maximally close to the realities of the teacher's workplace, is the best strategy for achieving practice-oriented training.

THEORETICAL FRAMEWORK OR LITERATURE REVIEW

Pedagogical conditions for effective professional training of future teachers for modelling the modern lesson. There are various models of professional teacher training in the world that focus on mastering their skills in modeling and conducting lessons. In this context, it should be noted the specific approach of Singapore universities, where student learning outcomes are not limited to pedagogical competencies and knowledge of teaching methods. Educators attach great importance to the full development of the teacher's personality, which includes the development of appropriate principles and values. Often, they hold professional interview that create the context for future activities and are intended to make student-teachers reflective and effective practitioners (Practicum Handbook, 2021; Huang & Lambert, 2020).

This is also the opinion of Ciaran Sugrue who argues that teacher training should be sufficiently extensive, include personal development and go beyond the merely functional and instrumental development of the future teacher (Sugrue, 2002).

Analysis of the experience of Spanish universities shows the effectiveness of student training practices that focus on their autonomy, self-regulation in professional decision-making and cooperation, so that they can progressively manage complex knowledge in new situations. This allows to overcome the excessive abstractness and over-theoreticalisation of pedagogical education and ensure the development of students' practical capabilities, which will enable them to have a qualified and competent employment (Estrada et al., 2020).

Consider the pedagogical conditions of the quasi-professional educational environment in the university, which have proved their effectiveness in ensuring the high-quality training of future teachers for modelling and conducting modern lessons in Ukraine: organization of subject-subject interaction between lecturers and students, introduction of contextual learning technology into the educational process of the university, and activation of reflexive activity of future teachers. Briefly describe the essence of each of these pedagogical conditions.

The essence of subject-subject interaction is the creation of conditions for the exchange of experience between the participants in the educational process, which is carried out in a collaborative learning activity based on the principles of cooperation. The core of this dialogue is equality of position: the teacher's respect for the student's academic requirements, the ability to see him/her as an active participant rather than a passive consumer of knowledge and to support this role. In such conditions of the student-centered environment, the most productive cognitive activity of future teachers is possible: searching, formulating and solving creative pedagogical tasks, detailed analysis and collaborative research of professional situations, where the results are personally valuable knowledge and active decision-making (Borodavko et al., 2020).

The realization of contextual learning technology at the university provides for the creation of a special context for future professional activity by artificial modeling of its fragments. The term "context" is explained as a system of internal and external conditions and factors of human behavior and activity that influence the perception, understanding and transformation of a particular situation by a subject (Koval et al., 2019). The introduction of a professional context into the training of teachers implies organizing students' activities through context-oriented lectures, work-based games, solving quasi-professional (practice-oriented) tasks and others. In these cases, the student does not have a given sample, algorithm, or rule for solving a problematic situation, but finds a solution on his own. This ensures the development of pedagogical thinking of future teachers, which embodies the level of formation of their mental, cognitive, creative and research abilities, operational and technological skills that allow to solve any problem situation.

The specifics of teacher's work requires him to constantly self-assess his own achievements and self-improvement (Cepic, & Pejic Papak, 2021; Lavonen, 2020; Matveeva et al., 2020; Sugrue, 2002; Zholudeva et al., 2022). For this reason, it is important to stimulate students' reflective activity during their studying at the university. Reflexivity as a personal entity is defined by a combination of abilities, methods and strategies that allow to overcome possible difficulties through mental operations (awareness, analysis), and acts as a mechanism for finding ways of personal growth. The constant practice of critical analysis of the mistakes made during the modelling and conducting of the lesson with their further correction, identification of the prospects of pedagogical development makes the person a subject of its own activity, and, consequently, forms a strong internal system of the person's attitudes to professional reflective activity.

Table 1 presents a comparative characteristic of traditional and experimentally tested innovative professional training conditions for future teachers according to different criteria.

Table 1. Comparative characteristics of traditional and innovative professional training conditions for future teachers

Criterion	Traditional	Organization of subject-subject interaction of teachers and students
Orientation of the educational process	To imparting theoretical knowledge, to introducing examples of activities	to creative collaboration, active interaction in the learning of the subject
The role of the teacher	Authoritarian	Democratic, partnership-based, student-centered
Forms and methods of work	Lecture-monologue, study of practical experience	Dialogue, discussion, analysis of pedagogical situations, group discussion
	Traditional	Introduction of contextual learning technology to the educational process
The aim	Formation of professional skills and competences	Developing the student's pedagogical mindset
The student's role	Passive	Active in making independent conscious decisions
Forms and methods of work	Practicing teacher activity algorithms in different situations	Context-oriented lectures, work-based games, quasi-professional (practice-oriented) tasks
	Traditional	Activation of reflexivity for future teachers
The aim	Finding mistakes for objective evaluation	Finding mistakes to determining ways of improvement
The subject of the analysis	Teacher	Student

This table demonstrates the principle advantages of innovative educational conditions, because higher education students are given the opportunity to independently determine their own position in relation to the facts presented by the teacher. Also, future teachers become motivated to effectively build interactions, consider the diversity of pedagogical options and find optimal solutions to achieve success in their professional life.

METHOD

In this study we used a number of scientific research methods. Theoretical: analysis of scientific literature in order to understand the status and prospects of problem development; synthesis, summarization, comparison methods to understand the specifics of professional training of future teachers; modelling method to develop a model of a quasi-professional educational environment. Empirical: diagnostic (questionnaire, interview) to determine the level of students' skills in modeling and conducting lessons; pedagogical experiment in order to examine the effectiveness of the system of quasi-professional tasks; statistical methods for quantitative and qualitative analysis of the educational experiment results and determination of scientific validity of the obtained research results.

RESULTS AND DISCUSSION

A system of quasi-professional tasks for training future teachers to modelling and conducting lessons. The variety of a modern teacher's functions demands activity and creativity in decision-making. Students acquire a minimal professional experience in the school environment, mostly during the practice period. However, current researches prove the effectiveness of local educational forms for developing high school students' readiness to work in schools. These are quasi-professional tasks based on imitation of real work situations, where student has no rules or samples for the completing. In this way, future teachers develop possible models for their behavior in similar situations, relying on theoretical and methodological knowledge and skills. Strengthening the practical component of the training of future teachers prevents the emergence of a complex set of difficult professional problems that most teachers with 1-3 years of experience face (Donina et al., 2020; Rodriguez et al., 2018; Vaganova et al., 2020). And also overcome the problem of procrastination among students, which has noticeably spread during period of the distance learning (Ucar et al., 2021).

Therefore, practical examples play an important role in the training of students. It should be cases presented on video or real-life stories, as well as demonstrations or samples and discussions. It is also effective to play the “expert game”, i.e., to watch others’ mistakes in the process of simulating situations with a professional context (Nagovitsyn et al., 2020; Zhou & Guob, 2016).

For example, the students were more interested in doing exercises that included watching video materials by practicing teachers who implemented some pedagogical strategies and their analysis afterwards, discussing their own variants of development with the teacher and, most importantly, the realization of artificial conditions (Century et al., 2020; Power et al., 2017; Selezneva et al., 2021; Timperley et al., 2007).

In this regard, researchers working in professional training of future teachers emphasize the importance of introducing different types of quasi-professional tasks into the educational process of the university for the implementation of contextual learning technology. The students not only demonstrate theoretical knowledge formed by the lectures, but also express their own opinion and reproduce the activities of teachers and students in an imaginary lesson, detail specific methodological cases, evaluate them from different positions, predict possible options for pedagogical events.

In 2018-2021 a number of higher education institutions in Ukraine conducted a study to determine the effectiveness of the author’s system of quasi-professional tasks. The experiment involved 346 students of Berdyansk State Pedagogical University, Volodymyr Vynnychenko Central Ukrainian State Pedagogical University, Vasyl Stefanyk Precarpathian National University. In the process of experimental work during the classes of the methodological cycle we specially simulated pedagogical situations which were solved by the students by means of a system of quasi-professional tasks. This allowed them actively practicing in the complex activity of creating and conducting lessons, and making informed and responsible decisions regarding the organization of the educational process in a New Ukrainian School.

It should be noted that quasi-professional tasks have been developed and implemented systematically. They are presented by three groups: didactic, methodological and technological, each of them has a certain goal specification. This allows to cover all the spheres of professional development of higher education students: motivational, cognitive-operational and reflexive (Fig.1). Consider the examples of these tasks in more detail.

Didactic quasi-professional tasks were assigned to students for their awareness of pedagogical modelling as a personally significant process for their professional activity in implementing the educational process at school and developing a basis for its holistic vision (Gorbatiuk et al., 2019; Hurenko et al., 2017; Kravchenko et al., 2018; Shchetynina et al., 2019). For example:

1. Watch several videos of the lessons. Determine and substantiate the important professional and personal teacher’s qualities which, in your opinion, affect his/her effectiveness.
2. Develop a teacher’s activity algorithm for modelling the lesson. Share your ideas about the differences between pedagogical modelling and the creation of a lesson plan.
3. Group discussion of positive and negative aspects of teacher’s work.
4. Brainstorm. Identify the reasons that decelerate or complicate the process of education reform.
5. Essay and discussion. Predict the possible characteristics of the lesson in the school of the future.



Figure 1. The goal specification of quasi-professional tasks system for training of future teachers for modelling and conducting lessons

By using such quasi-professional tasks, some important results were achieved: the majority of high-school students had a clear orientation towards pedagogical activity and a positive orientation towards the process of lesson modelling. Also, the important skills of performing mental operations (analysis, synthesis, prediction, generalization, reasoning, transfer of knowledge to new conditions) were recorded.

Methodological quasi-professional tasks were introduced to mastering the general algorithm of pedagogical modeling by future teachers, namely: develop skills of planning, resource selection and lesson modeling in conditions of educational variability. The participants were offered the following kinds of work:

1. The work-based game “Lesson Examination”. Students are grouped into pairs. The task for the student in a role of “teacher” is to carry out the phased planning of the lesson (topic and class to choose from) indicating time duration of each stage; the task of “expert” is to analyze the work of “teacher”, to point out the mistakes, to find out the ways of optimization of the lesson’s model.
2. Model a fragment of a conversation in second grade on the topic “Excursion through the human body”. Suggest any activity for pupils to support the learning of this topic. Alternatively, in the context of distance learning, prepare digital materials for the children’s self-study of the topic.
3. Develop differentiated tasks for pupils’ practical work on the computer on the topic “Text editor”. Prove the feasibility of this differentiation.
4. Model a fragment of the lesson (choose the topic and the class yourself), in which LEGO technologies are integrated. Implement your project in an academic group (co-worker students take on the role of pupils). Discuss the results of your activity.
5. Join into groups. Each group models a particular part of the Informatics lesson that acquaints pupils with the graphics editor using a variety of software (Paint, Tux Paint, Paint-online, Canva, Crello, GIMP, Inkscape, etc.), presents and analyzes the results.
6. Prepare a presentation of the current variable Mathematics textbooks for a certain class. Describe briefly the essence of the methodological systems they represent. Discuss the results in your group.

Such tasks contributed to the development of future teachers' skills in time management and selection of optimal educational forms, methods, and tools in accordance with the lesson goal, organize subject-subject interaction of learners at different stages of the lesson, effectively select optimal resources in compliance with the goal, content and educational program results. In addition, the students' ability to analyze, compare and choose among the various textbooks, workbooks and other teaching aids as the most effective ones, and to establish the correspondence between the goals, content and results of the lesson has developed considerably. The most important result was the individual experience of each high school student in modelling lesson fragments according to their place in the New Ukrainian School system.

Technological quasi-professional tasks are implemented to develop students' ability to model, conduct and analyze a lesson (lesson system) based on the use of modern educational technologies in conditions of educational variability. Gaining such experience is a necessary condition for training future teachers to implement the concept of New Ukrainian School. Listed below are examples of these tasks.

1. Analyze the video recording of the lesson modelled and conducted by a knowledgeable teacher. Identify which modern teaching technologies were used at different phases of the lesson. Discuss in your group possible variations of other teaching technologies that could be used.
2. Model the lesson using optimal teaching technology at different phases. Choose the topic and the class by yourself. Perform the lesson in an academic group, where the role of the pupils is played by other students.
3. Develop a few integrated project tasks for pupils of the given age. Identify the difficulties they may face while working on this task.
4. Model the lesson on the basis of critical thinking technology. Choose the topic and the class by yourself. Predict its effectiveness.
5. Join into groups and make an algorithm for carrying out the reflection of the pedagogical plan. Discuss the ideas suggested by your colleagues. Create a collective universal memo for the teacher on lesson's reflection.
6. Join into groups. Analyze current electronic methodological portals for teacher self-improvement. Select courses, webinars and seminars that would be useful for modern teachers. Present in the group the results of your search.

The proposed tasks positively influenced the students' ability to implement educational technologies at different stages of the lesson, developed their skill to effectively implement their own pedagogical idea, to realize reflection, and to engage productively in professional self-development and self-improvement. Many of the experiment's participants were shown to be capable of educational creativity. The analysis of the results of the pedagogical experiment has shown that the introduction of the system of quasi-professional tasks as a means of implementing the technology of contextual learning of future teachers has increased the level of their training for lesson modelling (Table 2). Students in the experimental group with a high level of readiness to conduct lessons in primary schools (29.65%) were fully aware of the benefits of the phenomenon of educational variability and successfully used it in their activities. They were willing to model modern lessons using different methodological systems, selected the most appropriate resources, and used relevant educational technologies according to lesson phases and the expected results, organized subject-subject interaction between the learners, demonstrated interest in their own professional self-development and self-improvement, and actively reflected on the pedagogical strategy.

Table 2. Levels of project-model competence of future primary school teachers

Levels	Control group		Experimental group	
	Number of participants (174)	%	Number of participants (172)	%
At the beginning of the experiment (ascertaining phase)				
High	30	17,24	27	15,70
Medium	89	51,15	86	50,00
Low	55	31,61	59	34,30
At the end of the experiment (control phase)				
High	34	19,54	51	29,65
Medium	102	58,62	100	58,14
Low	38	21,84	21	12,21

The experiment participants who demonstrated a medium level of readiness for lesson modelling (58.14%) frequently acknowledged the importance of pedagogical modelling. However, they were not always able to find the most appropriate modern educational technologies, mainly using the limited resource of interactive activities when introducing pupils to the key definitions and types of educational activities. In order to optimally determine the resources of the lesson, students sometimes turned for help to a teacher or lecturer. They made some minor methodological mistakes during the organization of the subject-subject interaction, but they recognized them in the lesson analysis and were then able to correct them.

Future teachers with a low level of readiness (12.21%) were insufficiently sure in the correctness of the chosen profession and did not realize the essential differences between the process of lesson modelling and drawing up the lesson plan, indicating a poor development of their pedagogical mindset. Students at this level did not always consider the possibility of improving the effectiveness of the lesson by using variable programs, textbooks, worksheets and didactic materials. The most difficult task for them was to create and objectively analyze the lesson, identify an individual trajectory of self-improvement.

CONCLUSION

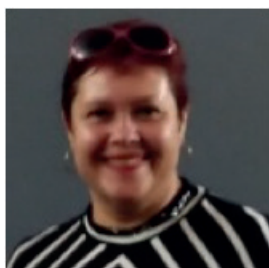
The quality of professional teacher training at university has a direct impact on their readiness to successfully and comfortably discharge their job duties. The COVID-19 pandemic has enabled a critical rethinking of the efficiency of traditional forms and methods for students' experience in modeling and conducting lessons. The lack of social interaction between lecturers and students during the creation of a professional context has severely complicated the educational process and led to a decline in students' learning outcomes. This encourages new creative decisions regarding the organization of students' productive learning activities.

Future teachers should not only be informed about the theoretical aspects of the organization of the educational process in school, but also have certain methodological skills. The organization of quasi-professional educational environment in a higher education institution firstly, ensures the practice-oriented approach of training future teachers through their analysis of different pedagogical situations and implementation of a system of quasi-professional tasks; secondly, it significantly influences the development of their pedagogical thinking, which allows to turn the limited experience of modeling lessons into a universal capacity for this activity.

The pedagogical conditions for organizing this environment (organization of subject-subject interaction between teachers and students, implementation of contextual learning technology in the educational process of the university, activation of future teachers' reflective activity) have proved their effectiveness, as evidenced by the results of the examination and observation of the experimental groups' participants. And the system of quasi-professional tasks proposed in this study has practical value for educators who are enhancing their professional teaching education.

Considering the current situation with the impact of the COVID-19 pandemic on all spheres of human activity, we believe it is necessary to investigate the readiness of future teachers to organize the distance education process at school and to develop effective ways to improve this aspect of their professional training in our further research.

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LONG DISTANCE LAB AFFAIRS: PHYSICS ACHIEVEMENT AND METACOGNITION EFFECTS OF DISTANCE LABORATORIES IN A SENIOR HIGH SCHOOL IN THE PHILIPPINES

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ABSTRACT

Due to the necessity to continue learning even during the pandemic, schools opened utilizing distance learning modalities. However, there is a dearth of evidence on the effectivity of this modalities in physics. In this study, we investigated the effects of three physics distance learning modes; the module-only (MO), virtual lab plus module (VLM), and the physical lab plus module (PLM) classes in physics achievement and metacognition employing the pretest-posttest and repeated measures research designs. All learning modules used were in digital formats sent through free messaging platforms. Analysis of data includes paired samples t-test, one-way ANOVA, repeated measures ANOVA, and independent samples t-test. Results revealed that all three distance learning modes have significantly higher post-test than pre-test scores. Further analysis showed, however, that only VLM had significantly higher gain scores than MO. Initially, at pre-MO and post-MO administrations, male students had significantly higher metacognition but this diminished after they perform both virtual and physical labs. It was in post-PLM where students have significantly better metacognition than pre-MO and post-MO. This study showed that not only do physical and virtual labs supplement distance modular learning, they are also complementary that both must be used in distance learning.

Keywords: Distance learning, distance physical lab, distance virtual lab, distance physics lab, modular distance learning, metacognition, physics achievement.

INTRODUCTION

Delivery of education in the world is put into test when the pandemic caused by COVID-19 spread across the globe in the early part of year 2020. Billions of students across many countries were affected. Classes in Philippine basic education that usually concludes late March or early April were forced to end, mostly without final exams. No classes of any sort were conducted for several months until the Department of Education (DepEd) drafted its Basic Education Learning Continuity Plan (BE-LCP). Here, the department in-charge of the country's basic education concluded that schools must open due to the risks marginalized children face as school disruptions continue such as the increasing likelihood of their not going back to schools. However, only distance learning modes are allowed due to government restrictions on any gatherings. Choices can be classified into online, modular, homeschooling or combinations thereof. Most public schools opted for printed modular learning mode due to learners' lack of internet connectivity and computers (DepEd 2020). Distance learning, although argued to be different with distance education by various authors (e.g. (Cropley and Kahl 1983; Holmberg 1989; King et al. 2001), will be treated as the same in this study. Both will be

described as an “umbrella” term for all learning modes where teachers and learners are separated in space (Holmberg 2005). Such learning may be done through TV or radio, printed materials, telephone or through internet. Distance learning have vast history of practice that can be traced back more than a hundred years ago (Spector et al. 2014). Although, in earlier times, it was criticized to be slow and ineffective because then, correspondence were through postal offices (Bernard et al. 2009). On the other hand, printed modular distance learning being used by most Philippine public schools involves the giving of printed modules to learners to which they will study and answer at home for a week. Parents receive and return modules in schools at some scheduled day usually every Monday.

The Senior High School (SHS) department in Aurora State College of Technology (ASCOT) employed a slightly different approach called digital modular distance learning (DMDL). Electronic copy in static PDF format of modules is sent to students through free messaging platforms to which they can download and answer in a week. Answers are accepted in any form, but students send pictures of their handwritten or encoded works through the same media. Because teaching and learning happens through electronic means, a cellphone, a laptop or a desktop, this mode may also be called e-learning (Guri-Rosenblit and Gros 2011). One major difference between DMDL and e-learning is the use of learning management systems where lessons are viewed, and outputs are uploaded by the students. Use of such systems may be more superior in several ways except that DMDL is a lot less costly as it uses less internet data for connection – an important consideration because ASCOT SHS is populated mostly by students that belong to families with low income (Padios et al. 2021). On the other hand, if online learning is implemented to students from low-income families, they may not like it not because of its quality but because of its affordability and accessibility causing them to have negative perceptions which will affect their learning satisfaction (Dastidar 2021). Although nothing in the literature yet had studied our version of digital modular distance learning, some studies on e-learning demonstrated effectiveness in distance learning (e.g. Encarnacion et al., 2021; Iancu et al., 2021). Hence, even with a seemingly unexplored learning mode, hopes were taken from almost similar proven ones.

However, some subjects just need laboratory activities for a more effective instruction, one of these is physics. It is just difficult to teach physics without lab because during face-to-face (F2F) or in-person classes, use of lab in instruction resulted to positive results in terms of science achievement as well as attitude towards science (Wang et al., 2015; Wen et al., 2020; Xu et al., 2020, and; Zacharia & Olympiou, 2011). Therefore, it is but imperative that alternative for F2F labs be tried.

Solutions to distance physics labs can be in the form of hands-on distance lab or take-home lab, remote lab, and computer simulation or simply virtual lab. Hands-on distance lab involves physical experimentation but done at home. Impact of hands-on distance lab were found to be no different from hands-on F2F lab but students in the distance lab feel that what they do is less scientific (Moosvi, Reinsberg, and Rieger 2019). Remote lab involves manipulation of equipment that is in school, or other laboratories, by students studying at home via the internet. Such labs employed in the past have demonstrated good results in the teaching and learning process (Heradio et al., 2016; Morales-Menendez et al., 2019, and; Viegas et al., 2018). However, aside from being expensive and complicated, these labs were also employed in higher education institutions specializing in engineering courses whose students are expected to be computer program literates, it is their trade. Finally, use of computer simulations or simply virtual lab involves manipulation of objects in a computer program that simulates what happen in real life. Studies that explored the effectivity of virtual lab showed that it is at least equal to or better than a physical lab (e.g. Puntambekar et al., 2021; Pyatt & Sims, 2012). These studies however were employed in an F2F classroom setting under the direct supervision of a teacher. In a learning mode during the pandemic, learning environment as well as work dependence had changed, hence the interest of the current study.

Several studies have measured the effectiveness of doing labs in the past and the most common measure is the students’ achievement scores (e.g. Hamed & Aljanazah, 2020; Wan Ab Kadir et al., 2021). This directly tells us how much was learned through a laboratory intervention compared to some control treatment, usually traditional practices. Coupled with achievement is also the measure on the changes of students’ attitudes after going through a proposed lab (e.g. Fox et al., 2021; Van De Heyde & Siebrits, 2019). Such practice of monitoring changes in students’ attitude is as important with achievement because it also matters when one enjoys learning. Fast growing measures after lab instruction are changes in students’ learning constructs such as metacognition and self-efficacy (e.g. Carpendale & Cooper, 2021; Haeruddin et al., 2020; Jones et

al., 2021; Salar & Turgut, 2021). Metacognition, mostly defined as one's "ability to think about its own thinking," is the learners' awareness and control in their ways of understanding. The importance of this construct relies on the hope that learning can be improved with students of any cognitive level (Thomas and McRobbie 2001). On the other hand, self-efficacy is a "person's particular set of beliefs that determine how well one can execute a plan of action in prospective situations" (Bandura 1977). A high self-efficacy in learning physics for instance enables learners to believe they can grasp even the hardest concepts. Later studies have also demonstrated how self-efficacy predicts science achievements (Sagun and Prudente 2021). Both self-efficacy and metacognition are measured in an instrument called self-efficacy, metacognition, and learning inventory in science (SEMLI-S) developed by G. Thomas et al. (2008), in this study shall only be termed metacognition. The current study is then steered towards evaluating the effects of distance learning modes on physics achievement scores and metacognition.

PURPOSE OF THE STUDY

During the course of learning under the pandemic, universities and schools have realized the power of distance education, not only as a remedy for emergency in education, but also as a conscious choice for learning. Since laboratory experimentation is an integral part of teaching physics (American Association of Physics Teachers 1998), the current study is then aimed to evaluate the effectiveness of distance learning initiatives which includes distance physical and virtual lab in learning early lessons in General Physics I of ASCOT SHS students in Science, Technology, Engineering and Mathematics (STEM) strand, i.e. kinematics, and the laws of motion. In response to the growing call for equality among sexes, and because many researchers reported attitude and achievement gap between this group (e.g. Espinosa et al., 2019; Stoeckel & Roehrig, 2021), scores of male and female students shall also be compared to decide whether these distance learning initiatives give equal opportunities. Specifically, this study aims to:

1. Determine if there is a significant difference in the physics achievement of SHS STEM students when exposed in the following distance learning modalities:
 - 1.1. Module-only class (MO)
 - 1.2. Distance virtual laboratory plus module class (VLM)
 - 1.3. Distance physical laboratory plus module class (PLM)
2. Determine if there is a significant difference in physics achievement of male and female SHS STEM students when exposed in the different distance learning modalities.
3. Determine if there is a significant difference in the physics learning metacognition of SHS STEM students when exposed in the following distance learning modalities:
 - 1.1. Module-only class (MO)
 - 1.2. Distance virtual laboratory plus modular class (VLM)
 - 1.3. Distance physical laboratory plus modular class (PLM)
4. Determine if there is a significant difference in physics learning metacognition of male and female SHS STEM students exposed in the different distance learning modalities.

METHODS

To measure the effects of each distance learning modalities being investigated, the Module Only (MO), Virtual Laboratory plus Module (VLM) and Physical Laboratory plus Module (PLM), we employed the pretest-posttest and repeated measures research designs. Although with threats to validity, pretest-posttest research design is employed t'o test the effectiveness of a teaching intervention due to some of its strengths such as its being cost-effective and it addresses ethical issues in learners' assignment of treatment or control (Tan-lei and Zhu 2018). Repeated measures, on the other hand, is appropriate when comparing two or more teaching strategies on the same students (Salkind 2010). Figure 1 shows the conceptual framework of the study where Physics Achievement was measured by three different Physics Achievement Tests (PAT) while Metacognition was measured by the Self-efficacy, Metacognition and Learning Inventory in Science (SEMLI-S).

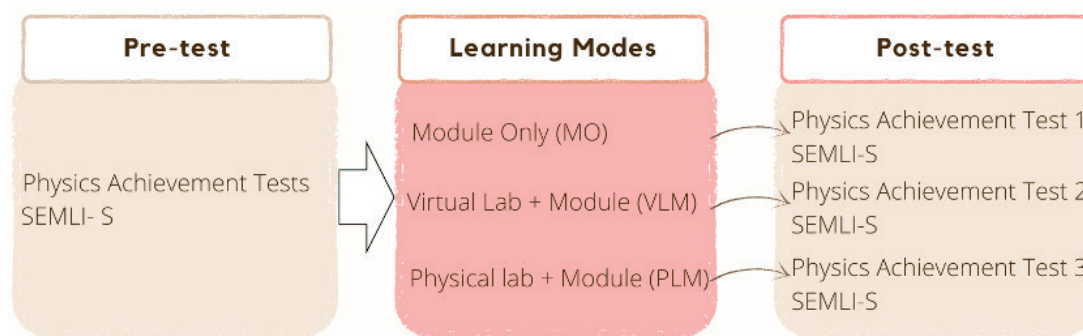


Figure 1. The conceptual framework of the study

Learning modules being referred to in this study are in the form of static PDF following an inquiry-based learning. These modules are sent to students via messaging platforms every Monday. Scheduled sending of modules like this is highly advantageous to students as they can plan to buy mobile data subscriptions once in a week. They can buy the cheapest subscription that ranges from Php 30.00 to Php 50.00 (USD0.60 to USD1.00). Guided inquiry approach was used in both laboratory activities. Students were only given a “challenge prompt.” One example of a challenge prompt during the virtual laboratories was “Discuss factors affecting the range of a projectile.” During physical laboratory, one challenge prompt used was “What happens when a force is applied slowly? quickly?” The module was a self-learning module developed by the physics teacher, who is also the first author, following the format: Activity, Discussion, Input, Application, Synthesis, and Evaluation.

Physics lessons covered were in kinematics and the laws of motion in dynamics. Under MO, the topics covered were uniform motion and accelerated (both horizontal and free fall) motion. Projectile motion and the law of acceleration were covered in the VLM while in PLM, the laws of inertia and interaction. The whole duration of the study lasted for almost three months.

Participants

This research was conducted during the pandemic caused by the corona virus disease 2019 (COVID-19) at the Senior High School (SHS) department of Aurora State College of Technology (ASCOT) where the only mode of classes possible is a distance learning. ASCOT SHS is in the province of Aurora located at 15.7336° N, 121.5713° E. Aurora is geographically north of Luzon but in territory belongs to Central Luzon or Region III in the Philippines. Currently inhabited by more than 235 000 Filipinos, Aurora is a rural community in the foot of Sierra Madre Mountain ranges and along the coast of the Pacific.

Grade 12 Science, technology, engineering, and mathematics (STEM) students who are taking General Physics I were the participants in this study. All students initially participated, however, out of 32, one of them dropped-out of the roll due to online game distractions while another was not able to answer and submit modules until late in the semester. There was a total of 30 willing and volunteer participants: 19 of them are male while 11 are female. A letter, a confidentiality statement and a consent form explaining the content of the research and voluntary participation were signed by both parents and students.

Research Instruments

The modules used followed the “Activity, Discussion, Input, Application, Synthesis, and Evaluation” format. Preliminary phases of the module are meant for discovery of knowledge using an inquiry approach. All answers for each activity are provided except for the evaluation part. Each module used was subjected for content and grammar critiquing by professors at the same college.

Metacognition as a learning theory does not influence learning alone (Thomas and McRobbie 2001). Learning is influenced by metacognition together with other constructs thus, an instrument must encompass these considerations. An instrument called Self-efficacy, Metacognition and Learning Inventory – Science (SEMLI-S) developed by G. Thomas et al. (2008) fits this criteria, hence its adaptation with permission in the current study. The only change in inventory is that “science” is changed into “physics.” The inventory composed of 30 statements: five statements for learning risks awareness (e.g. “I am aware of when I am about to have a learning challenge.”), seven for cognitive connectivity (e.g. “I seek to connect what I learn in my life outside of class with science class.”), three for control of concentration (e.g. “I adjust my level of concentration depending on the difficulty of the task.”), nine for monitoring, evaluation and planning (e.g. “I stop from time to time to check my progress on a learning task.”) and six stems for self-efficacy (e.g. “I believe I will receive an excellent grade in this course.”).

Achievement in physics was measured by a teacher-made test called Physics Achievement Test (PAT). There were three PATs used: PAT1 for uniform motion and uniformly accelerated motion, PAT2 for projectile motion and law of acceleration and PAT3 for the laws of inertia and interaction. Multiple choice questions from each PATs were selected from the summative tests given to STEM students for the past three years. The criteria used in choosing the questions were (1) higher order thinking level of questions from Bloom’s Taxonomy of Objectives, (2) difficulty index that ranges from 0.30 to 0.70, and (3) the average difficulty must be approximately equal across each PATs. Given these criteria, 25 questions for each PAT were chosen with a difficulty index of 0.34 to 0.65. PAT1 had an average difficulty index of 0.486, PAT2 with 0.493 while PAT3 had 0.478. Analysis of variance showed no significant differences with these indices hence, the three tests had statistically equal difficulty. Questions were subjected for construct validity test by a professor in the education department. After carrying out the suggestions, the physics achievement test was finalized.

Data Collection and Analysis

All PATs and the SEMLI-S were pre-tested before classes started. First two lessons were measurement and vector quantities delivered in modular format, this can be regarded as the “getting-to-know” phase. Only after students finished studying two more modules which contain uniform motion, acceleration and free-fall motion was the PAT1 and SEMLI-S post-tested.

Participating students were trained on how to conduct laboratory activity using the guided inquiry approach. First, a video tutorial prepared by the teacher was sent to them. The next day, a sample challenge prompt was given which they will answer by conducting a virtual laboratory using an appropriate PhET interactive simulations, a freeware downloadable for both computers and android phones. They were asked to write down the procedures they did, present the data they gathered in a table or graph, interpret it then provide a conclusion which should answer the challenge question. Their papers were checked and commented on. On the third day, the instructor showed two possible ways to experiment (this serves as the “answer key” for the sample prompt), present the data and drew conclusion in the given exercise. It was on their second attempt that most of them mastered doing an experiment without a procedure, only a challenge prompt. Still, the teacher showed possible ways on how to conduct the experiment and prepare a laboratory report.

After the training, the first challenge prompt included in this study was sent which they answered by experimenting using the appropriate PhET interactive simulation. They had to send their laboratory report first before they receive their module. There were two challenge prompts they answered for two weeks: one for projectile motion and another for law of acceleration. After these lessons, PAT2 and SEMLI-S were administered.

On the third and fourth challenge prompt, students had to answer by experimenting with real objects. Some assistance such as providing hints and answering questions were provided here by the instructor as some of them had difficulty innovating and designing experiments. Laboratory reports still followed the same format and means of submission. However, the teacher required that evidence for the conduct of the experiment such as a video or a picture must accompany the lab report. After receipt of each report, modules were sent for them to study. Finally, PAT3 and SEMLI-S were administered.

The results of each PAT and SEMLI-S were tabulated and analyzed, measures of central tendency and standard deviations were calculated. PAT results were analyzed using paired samples t-test for the significant differences between pretest and posttest scores in each distance learning. For additional insights from this dataset, we also analyzed gain scores using one-way analysis of variance. Comparison of physics achievement gain scores between male and female participants was performed using independent samples t-test.

SEMLI-S data was analyzed using a one-way repeated measures ANOVA; Bonferroni post-hoc analysis was performed to further inspect significant differences between each learning mode. Finally, comparison between SEMLI-S scores of male and female participants were performed using the independent samples t-test.

FINDINGS

This study aimed to determine the effects of each distance learning modalities on students' physics achievement scores and metacognition. We administered all pretests during the very first day of class opening then posttest after a conduct of each learning mode. During the first four weeks, classes were purely modular (MO). On the sixth and seventh week, MO classes were preceded by a conduct of virtual labs. On the ninth and tenth week, it was preceded by a conduct of experimentations with real objects. This process is presented in table 1. Data gathered were analyzed and the results are presented in this chapter.

Table 1. Weekly activities and the administration of instruments.

Week	Activities	Tests
1	Orientation Obtained Parents' Consent General class orientation	Pre-test: Physics Achievement Tests SEMLI-S
2	Training Training on: conduct of lab writing of lab report	
3	Learning through modules	
4	MO Learning through modules	
5		Post-test: PAT1 and SEMLI-S
6	Virtual lab then modules	
7	VLM Virtual lab then modules	
8		Post-test: PAT2 and SEMLI-S
9	Physical lab then modules	
10	PLM Physical lab then modules	
11		Post-test: PAT3 and SEMLI-S

Physics Achievement

Result of comparing the mean percentage scores (MPS) between pretest and posttest across each learning modalities are presented in table 1. All distance teaching techniques used during the entire study resulted to a statistically significantly higher posttest scores than pretest scores. The teacher-written modules when used alone and when coupled with distance virtual and physical labs are effective in learning physics. However, based on Philippine's Department of Education standard of mastery (DepEd 2012), module-only classes did not show improvement for the test scores where both were only at "average mastery" level. On the other hand, VLM classes improved from "average mastery" to "moving towards mastery" while PLM classes improved from "low mastery" to "moving towards mastery" both implying that investigated distance physics instruction (DMDL) is better when accompanied with distance laboratory experimentations.

Table 2. Comparison between pretest and posttest scores across different learning modalities.

Learning Mode	MPS	Level of Mastery ^a	Std. Deviation	Std. Error Mean	t	Sig. (2-tailed)	
MO	Pre-test	39.38	Average Mastery	10.315	1.883	-7.74**	0.000
	Post-test	62.47	Average Mastery	11.383	2.078		
VLM	Pre-test	37.83	Average Mastery	9.885	1.805	-15.67**	0.000
	Post-test	72.33	Moving towards Mastery	10.646	1.944		
PLM	Pre-test	33.00	Low Mastery	14.89	2.719	-9.07**	0.000
	Post-test	65.83	Moving towards Mastery	13.728	2.506		

Note: ** $p < .01$, ^aLevels of Mastery: Mastered (96-100), Closely approximating mastery (86-95), Moving towards mastery (66-85), Average (35-65), Low (15-34), Very low (5-14), Absolutely no mastery (0-4)

To compare the three distance learning modes investigated, we performed an analysis of gain scores. One-way analysis of variance for gain scores showed that at least one learning mode had better gain scores over the other modes $F(2,87)=4.247$, $p=.017$. Post-hoc analysis using Tukey's HSD, as recommended for one-way ANOVA (Kirk 2013), is presented in table 2. Here, only the digital modular distance learning (DMDL) coupled with distance virtual labs (here called VLM) using appropriate phet interactive simulations showed significantly higher gains scores than the lone use of modules for learning.

Table 3. Tukey's HSD post-hoc analysis of gain scores.

Learning Mode		Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
(I)	(J)				Lower Bound	Upper Bound
MO	VLM	-11.416*	4.232	0.023	-21.506	-1.325
	PLM	-9.749	4.232	0.061	-19.839	0.342
VLM	PLM	1.667	4.232	0.918	-8.423	11.757

Note: * Significant at $p < .05$

Respondents' Sex and Physics Achievement

We performed independent samples t-test to compare gain scores between male and female participants, the results are presented in table 3. Comparison showed no statistically significant difference among the gain scores of male and female participants which implies that all distance learning modalities used were gender fair when it comes to physics achievement, a fast-growing consideration in teaching that aims to provide equal chances for both sexes to learn.

Generally speaking, females outperform males in schools (Maligalig and Albert 2008; Voyer and Voyer 2014) and sometimes even in physics achievement (Collado 2019; Constante and Aagsalud 2019; Yerdelen-Damar and Pesman 2013). However, other studies also point in opposite direction as girls' achievement scores in physics wane and tend to be outperformed by boys (Krakehl and Kelly 2021; Lubinski and Benbow 1992; Taasooobshirazi and Carr 2008) probably due to girls being less interested in this field of science than boys (Adams et al. 2006; Hoffmann 2002; Murphy and Whitelegg 2006; Robertson et al. 2010). Sex differences in cognitive understanding exist (Halpern 2014) due to differences in abilities such as spatial, memory as well as language and mathematical abilities (Halpern 2014). Collado (2019) on the other hand demonstrated this sex differences in physics achievement may be closed by training girls with spatial ability. Additionally, achievement gap among sexes also varies across and within nations (Miller and Halpern 2014; Stoet and Geary 2013) due to differences in culture and gender equity scores. Thus, it is not surprising for the current study to result into equal achievement scores among sexes similar to other studies (Gambari et al. 2013; Long and Jiar 2014)

Table 4. Statistics on comparisons of PAT gain scores between male and female participants.

Learning Modes	Sex	N	Mean Gain Score	t	Sig.
MO	Male	19	24.628	-.674 ^{ns}	0.506
	Female	11	20.418		
VLM	Male	19	36.053	-.924 ^{ns}	0.363
	Female	11	31.818		
PLM	Male	19	36.227	-1.243 ^{ns}	0.225
	Female	11	26.97		

^{ns} - not significant

Metacognition

Students' metacognition was also measured after each learning modalities using the SEMLI-S. Repeated measures ANOVA was used to analyzed scores taken before the start of classes, after MO, after VLM, and after PLM. First, epsilon ($\epsilon=.686$) was calculated according to Greenhouse & Geisser (1959) due to violation of sphericity, this was used to correct the one-way repeated measures ANOVA. Results showed that at least one learning mode had significantly higher gain scores at $F(2.06, 59.72) = 9.67, p < .01, \text{partial } \eta^2 = .25$. Post-hoc analysis then follows using Bonferroni as suggested for datasets that violate sphericity in repeated measures ANOVA (Maxwell 1980), the result is presented in table 4. It was only in the fourth administration of the instrument where we observed improvement where PLM significantly increased metacognition from PreMO and MO classes. No other significant increase in metacognition was observed.

Table 5. Bonferroni post-hoc analysis of metacognition.

Distance Learning Modes		Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval for Difference	
(I)	(J)				Lower Bound	Upper Bound
PreMO	MO	-.124	.072	.585	-.328	.081
	VLM	-.410	.147	.055	-.827	.006
	PLM	-.621**	.137	.001	-1.009	-.232
MO	VLM	-.287	.140	.298	-.683	.110
	PLM	-.497**	.140	.008	-.895	-.099
VLM	PLM	-.210	.112	.417	-.526	.106

Note: ** Significant at $p < .01$

Sex and Metacognition

SEMLI-S scores across learning modes were also compared among sexes, the result is presented in table 4. Metacognition was statistically higher for males than females before classes start (PreMO) and after the end of classes that only made use of learning modules (MO) which is alarming as most schools in the Philippines only use modules during distance classes. However, at the third and fourth administration of the instrument, after two distance physics virtual laboratories and two distance physical laboratories, females have caught up – they now have statistically equal metacognition to males. (Yerdelen-Damar and Pesman 2013) had similar findings comparing physics metacognition between sexes. Though there were no treatments prior to the administration of the inventory, their measurement was conducted after the entire physics course. Thus, it is safe to assume that some laboratory experimentations were performed along the way that, like the current study, have improved female students' metacognition.

Table 6. Metacognition of male and female participants measured and compared after each learning modes.

Distance Learning Mode	Sex	N	Mean	SD	t	df	Sig. (2-tailed)
Pre-classes	Male	19	2.79	.20	2.412*	28	.023
	Female	11	2.49	.47			
PostMO	Male	19	3.02	.47	3.321**	28	.003
	Female	11	2.44	.44			
PostVLM	Male	19	3.24	.69	1.552	28	.132
	Female	11	2.83	.72			
PostPLM	Male	19	3.46	.58	1.765	28	.088
	Female	11	3.02	.79			

Note: * significant at $p < .05$, ** significant at $p < .01$

DISCUSSIONS AND CONCLUSION

Learning physics has always been difficult and scary for many students (Lipszyc 2012; Williams 2000) due to traditional lectures and problem solving; thankfully, more and more modern teaching strategies are being discovered and implemented. In this study, we applied and tested in distance education some of existing and plausible pedagogies, these are module-only class (MO), distance virtual labs plus module (VLM), and distance physical lab plus module (PLM). All learning modules used were teacher-made that employs an inquiry-based approach while the laboratory activities were guided inquiry.

Results showed that all the three distance learning modalities have significantly higher posttest than pretest scores. Although all pedagogies exhibited learning effectiveness, it was with VLM that we observed a significantly higher gain score than MO which indicates that virtual labs successfully increased students' learnings from modules alone. Virtual labs have been observed to be more helpful in learning physics concepts compared to physical labs during F2F (Oymak and Ogan-Bekiroglu 2021) and even during distance classes (Bodegom, Jensen, and Sokoloff 2019) due to less efforts in setting-up of instruments and practically zero measurement errors. Some unnecessary and unintended learning likewise occurs in physical labs due to these errors. Lately, Dark (2021) and Nogueira and Hernandez (2021) demonstrated that both virtual and physical distance physics laboratory experimentations can possibly be conducted by students at home. In fact, Sithole et al. (2020) demonstrated that distance laboratories are not uncommon strategies to deliver physics instruction even before the COVID-19 pandemic. However, during the pandemic, the situation is worse due to lack of or slow communication between teachers and learners. Thus, physics teachers opted for computer simulations that proved effective in improving physics achievement during in-person classes (Bayrak 2008; Constante and Agsalud 2019) and during distance classes (Azizah et al. 2022; Onah et al. 2020; Yusuf and Widyaningsih 2020) similar to the findings of the current study.

Achievement scores between sexes were compared. Our study demonstrated that male and female students' gain scores were statistically equal across each learning modes. This finding is uncommon on physics achievement scores as several previous results showed that males outperformed their female counterparts in this specific area of science (Krakehl and Kelly 2021; Taasoobshirazi and Carr 2008). This cognitive difference among sexes though is caused by several factors such as interest in physics or even differences in abilities, e.g. girls are more inclined in reading (Stoet and Geary 2013) while boys have higher spatial ability (Voyer, Voyer, and Bryden 1995). Furthermore, due to increasing gender equality among communities, sex differences in physics achievement has also been diminishing in time (Miller and Halpern 2014). Philippines is one of those countries that succeeds in closing the gap between men and women (Schwab et al. 2019) thus supporting further the result of this study.

We also measured students' metacognition at the opening of school year (pre-MO), after MO, after VLM, and after PLM classes. We found that metacognition only improved at the fourth administration, after PLM classes, where results in the pre-MO and post-MO were significantly outscored. Improvisation of students'

metacognition is helpful in learning physics (Anderson and Nashon 2007; McInerney et al. 2014) as this will make them inform, thus, regulate their own learning (Fouche 2013). Though metacognition may be improved through direct instruction, it may also be improved through exposure to some conditions that makes one aware and regulate learning such as writing of reflection (Langdon et al. 2019). In this study, it is shown that metacognition may also be improved through a conduct of physical physics lab similar to the findings of Sandi-Urena et al. (2012), an essential contribution to the field that lacks studies in improving metacognition (Zohar and Barzilai 2013).

When male and female students' metacognitions were compared after each learning modalities, males had significantly higher scores than females at pre-MO and post-MO partly explaining the differences in interests and abilities between these groups. However, these differences disappeared after VLM and PLM classes implying that female students caught up and had their metacognition improved after conducting labs.

Although VLM improved physics achievement scores better than PLM, it was only in PLM where we observed a significant improvement of metacognition which implies that, although physical labs did not significantly increase test scores from modular approach, it made the students become more aware and self-regulated in their learning. Like the findings from Puntambekar et al. (2021), this study had demonstrated again that physical and virtual labs are complementary and that they both must be used in physics instruction. Both physics labs also catered fairly to both sexes in terms of learning and metacognition, another reason not to hesitate from performing virtual or physical lab even during distance classes.

In this study, we were able to provide empirical evidence that conduct of both physical and virtual laboratory activities in physics are necessary even during distance classes as they improve physics achievement scores and metacognition. Adding to previous methods of improving metacognition, findings demonstrated that conduct of labs will also do the trick. Future studies may expound further on the impacts of conducting lab in students learning and abilities as well as explore on more methods to improve metacognition.

Given all this, the current study, like any other studies, have its limitations such as the small number of respondents and the highly criticized pretest-posttest research design. Due to our intent to be as less disruptive possible, we did not conduct interviews to gain insights on students' experience which could have given more substance to the study. This may also be considered by future research directions.

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THE EXTENT OF IMPLEMENTATION OF BLENDED LEARNING IN SENIOR HIGH SCHOOL SCIENCE EDUCATION VIS-A-VIS STUDENTS' ACADEMIC ACHIEVEMENT

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ABSTRACT

This study investigates the extent of implementation of blended learning in senior high school (SHS) science education as to the content, communication, technology, pedagogy, and assessment vis-à-vis students' academic achievement. In this analytical research design, data were gathered from 182 students and 12 science teachers using stratified random sampling. Gathered data were systematically treated and analyzed utilizing descriptive and inferential statistics such as frequency, percentage count, mean, standard deviation, one-way analysis of variance (ANOVA), and Pearson Product-Moment Correlation. Findings revealed the extent of implementation of blended learning in SHS science education as moderately implemented as perceived by the students and teachers. As to the students' profiles, there was a significant relationship between technology and the parent's monthly income. There was no significant difference in the extent of implementation of blended learning across all variables as perceived by the teachers. After implementing blended learning, the student's academic achievement in science was outstanding, and this put forward a significant relationship between content and assessment in their academic achievement. The study concluded that several things should be considered in implementing blended learning in the new normal education. Students' and teachers' involvement in the implementation is essential for improving the modality and the school administrators may consider undertaking specific plans and activities such as the need for teachers to attend training, seminars, and workshops related to blended learning implementation.

Keywords: Blended learning, distance learning, extent of implementation, new normal, science education.

INTRODUCTION

Education should be dynamic and ever evolving, adapting to the demands of students' needs. In this time of pandemic, it must be designed to meet the needs in the present educational set-up. Education and learning are dynamic fields (Bozkurt & Zawacki-Richter, 2021; Harinarayanan & Pazhanivelu, 2018). In previous decades, it has always been associated with the presence of schools, classrooms, examinations, teachers, students, and textbooks. However, as the COVID-19 pandemic impacted the educational system around the world (Owusu-Fordjour, 2020; UNESCO, 2020), the Philippines addressed the challenges through its Basic Education Learning Continuity Plan (BE-LCP), which aims to ensure the safety, health, and well-being of the students, teachers, and personnel and has been designed with a legal framework responsive to the new normal education. One of the learning delivery modalities that has been implemented is blended learning (DepEd, 2020a).

Blended learning integrates face-to-face with online distance learning, modular distance learning, and TV/Radio-based Instruction (Allen & Seaman, 2016; Auditor & Mutya, 2022; DepEd, 2020b; Llego, 2020; Miller et al.; 2017). As one of the trends in an educational context, it is a better approach as it views learning as a continuous process rather than a single-time event and enables students to be independent learners outside the classroom (Jachin & Usagawa, 2017; Porter et al., 2014).

Several studies were conducted about implementing blended learning (Divayana, 2019; Onguko, 2013; Setiawan, 2019; Yudhana, 2021). Ghani et al. (2021) revealed that blended learning was beneficial in students learning endeavors in providing comfort during assessment and facilitating peer discussion. Students' engagement, achievement, and perceptions of learning increased, and they developed skills such as the ability to self-pace and self-direct using blended learning (Hesse, 2017). However, previous studies only focused on blended learning and its implementation. By this, the researcher wanted to fill in the gap by conducting a study on the extent of the implementation of blended learning in science as to the content, communication, technology, pedagogy, and assessment that will genuinely benefit senior high school students (SHS).

As educators, the researchers believed that in knowing the extent, more programs would be proposed and developed to facilitate and respond to the needs of the students in this time of adversity (Bruggeman et al., 2021; Ma & Lee, 2021), and it is for these reasons that the study has been conducted. Thus, the study aims to investigate the extent of implementation of blended learning in science education in senior high school (SHS) as to the content, communication, technology, pedagogy, assessment, and student's academic achievement in science after implementing blended learning.

LITERATURE REVIEW

Blended learning integrates benefits afforded by both traditional face-to-face education and pure online learning to deliver course content (So & Brush, 2008; Broadbent, 2017). As the pandemic disrupted the educational institutions, blended learning has become popular and has been utilized to address the challenges brought by the pandemic (Bervell & Arkorful, 2020; Hilmi & Ifawati, 2020; Rachmadtullah et al., 2020; Taddaoui & Chekou, 2021). It provides ultimate flexibility in presenting content (Patterson, 2016) through different asynchronous and synchronous teaching strategies that provide more opportunities for reflection and feedback from students (Dakduk et al., 2018). According to Beaver and Hallar et al. (2015), blended learning is a formal education in which a student engages at least in part through online learning with some element of student control over the location, path, pace, and time; the modalities along each student's learning path within a subject are connected to provide an integrated learning experience.

In science teaching and learning, different strategies can be embedded in blended learning, such as combining different didactic approaches and delivery methods (Klentien & Wannasawade, 2016). Stockwell et al. (2015) revealed that blended learning improves science education. Kwan et al. (2009) provide an alternative practice model to enhance the blended learning experiences in science education. Learners' ability to assess and critically evaluate knowledge sources is established. This can go a long way in producing skilled learners who can be innovative graduates enough to satisfy employment demands (Kintu et al., 2017). Thus, blended learning constitutes a paradigm shift toward more diversified goal-oriented, personalized pedagogies and improves quality education (Jachin & Usagawa, 2017). Learning outcomes in knowledge, skills, attitudes, and values should be assessed (DepEd, 2020b).

As to technology, students nowadays are linked to technology, creating a highly collaborative, community-based mindset. As a result, they are less willing to tolerate the traditional 'sage-on-a-stage' teaching style, with a passive approach to delivering content (Leboff, 2020). A study from Nguyen et al. (2020) found that about 75% of internet users surveyed said that they are more likely to communicate digitally via email, text message, and social media rather than communicating in person. The deployment of technologies in teaching and learning is not a new paradigm. In the 21st century, students are familiar with digital environments, and therefore lecturers are encouraged to use technology in teaching to stimulate and employ students' learning. One of the most significant transitions of access to technology in the classroom has been a shift from traditional learning toward blended learning (Edward et al., 2018).

Teaching and learning with the aid of blended learning practices provide pedagogical productivity, knowledge access, collaborations, personal development, cost-efficiency, simplifies corrections that are necessary for effective and engaging learning experiences, and promote learners' learning success and engagement (Baragash & Al-Samarraie, 2018). Findings from prior studies by Edward et al. (2018) and Ghazal et al. (2018) indicated that blended learning enhances students' learning engagement and experience outside the classroom with synchronous tools and asynchronous tools. Meanwhile, the advantages of blended learning are increasingly being recognized (Jones, 2019). These include the provision of new learning environments, more opportunities for learning, less recognition, and reinforcement of students' efforts (Lee et al., 2016). Wai and Seng (2015) and Nguyen (2017) suggested that blended learning offers benefits and is more productive than traditional e-learning and adds interactivity and more motivation, leading to better feedback, social interactions, and the use of learning materials (Sun and Qiu, 2017). A further study by Panjaitan et al. (2019) suggested that measuring user acceptance and adoption of blended learning implementation is essential to prevent failures and improve the effectiveness of information technology for teaching and learning. For successful blended learning implementation, continuous training for faculty staff and students is necessary to enhance delivery effectiveness (Washington, 2016; Ali et al., 2019). Also, blended learning design should always be based on the learning context, the specific subject, and its actual objective (Mozelius, 2017).

Blended learning approach enhanced students' engagement and experience (Ghazal et al., 2018). The result of the study by Wai and Seng (2015), Nguyen (2017), and Dakduk et al. (2018) gives information about the advantages of blended learning. Owston et al. (2019) recommended how the blended learning implementation in science is composed. Lastly, Baragash & Al-Samarraie (2018), Lee et al. (2016), Klentien & Wannasawade (2016), and Mozelius (2017) discussed the different aspects of the extent of implementation of blended learning.

The studies mentioned above, and the literature reinforced the present study by providing the researcher's knowledge, information, and insights. Various authors' ideas, concepts, results, and findings support the present study, particularly on blended learning and its implementation. However, the researcher also wanted to know the extent of the implementation of blended learning to the SHS students and if it would significantly affect their academic performance in science concerning the content, communication, technology, pedagogy, and assessment.

THEORETICAL FRAMEWORK OF THE STUDY

This study, underpinned by the Complex Adaptive Blended Learning System (CABLS) Framework of Wang, Han, and Yang (2015), is designed to facilitate a deeper, more accurate understanding of the dynamic and adaptive nature. There are six elements in the system, all with their sub-system: the learner, the teacher, the technology, the content, the learning support, and the institution. In this framework, learners' roles vary or adapt when they interact with system pieces for the first time or in new ways. The most crucial factor is the well-documented shift from passive to active learning. This is critical for the development and training of lifelong learners, which has been highlighted as a crucial trait in 21st-century society. On the other hand, teachers' roles are new in mixed classrooms and will change in tandem with students as they interact with and change to one other and the other four aspects of the system. New labels will identify these teachers, such as facilitators, mentors, advisers, and moderators.

The CABLS framework emphasizes how a blended learning environment may help learners acquire metacognitive abilities, such as reflecting on the efficacy of their learning processes and adjusting their learning techniques to reach their intended learning outcomes (Wang et al., 2015). In short, the learner is expected to be self-regulated with learning becoming internally rather than externally controlled (Anthony et al., 2020). Reflecting on this theory, the researcher prompts to get answers about the extent of the implementation of blended learning in SHS science education vis-à-vis Students' Academic Achievement. Thus, this framework is deemed appropriate for this research endeavor.

PURPOSE OF THE STUDY

The study investigates the extent of implementation of blended learning in science education in senior high school as to the content, communication, technology, pedagogy, and assessment vis-à-vis students' academic achievement. Specifically, it determines the significant difference in the extent of implementation of blended learning when grouped according to the respondents' profile and the significant relationship between the extent of implementation of blended learning to the students' academic achievement in science.

METHOD

Design

This study employed an analytical research approach employing the quantitative method. Analytical research brings together subtle details to create more provable assumptions. It needs critical thinking skills and careful assessment to find the gap in a study (Valcarcel, 2017). It helps establish the relevance of an idea and confirm a hypothesis (Omar, 2015). This design is deemed appropriate to find the significant difference in the extent of implementation of blended learning when grouped according to the respondents' profiles and to determine the significant relationship in the extent of implementation of blended learning to the students' academic achievement in science.

Participants

The respondents of the study were the SHS students and science teachers in two public schools utilizing a blended learning modality at the onset of the school year in Surigao del Norte, Philippines. The schools were selected based on the purposive sampling technique, and the SHS students were selected through stratified random sampling with proportional allocation. There were 182 students and 12 science teachers.

Data Collection and Analysis

A certificate from the graduate school, superintendents, and the school principals was secured before the conduct of the study to adhere to the safety and health protocols. Upon approval, researchers sent an invitation, an informed consent form that indicates voluntary participation and roles of the respondents, and a provision to withdraw from the study at any time. A research outline with a copy of the participant's rights and confidentiality protection was also attached to that form. All these were sent to the respondents via email and messenger. All these were given to the respondents. For confidentiality and anonymity, a code was assigned to each respondent. The hard copies of the data gathered from the respondents were kept in locked file cabinets, while the soft ones were stored in password-protected computers.

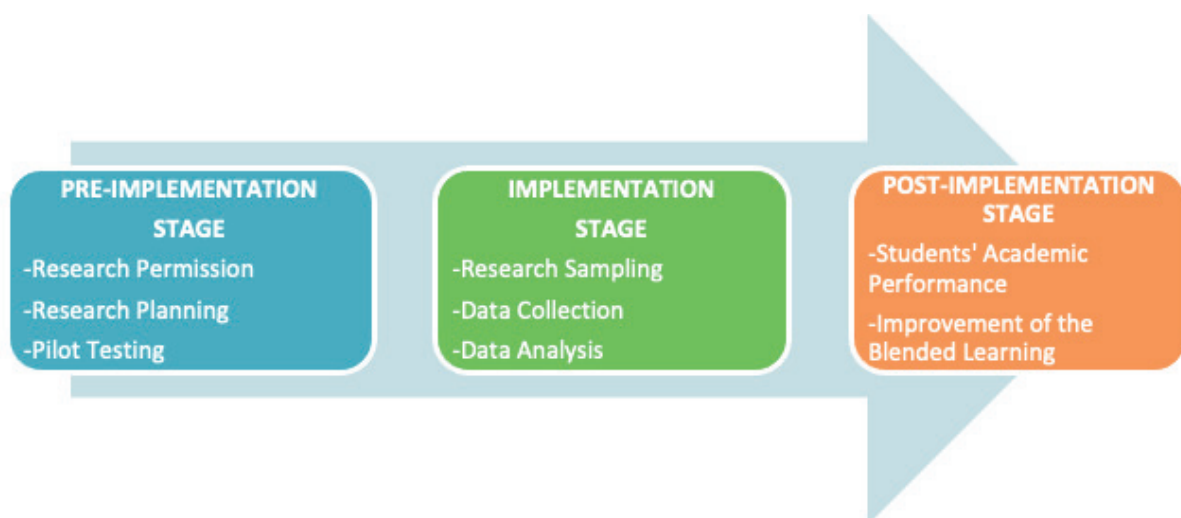


Figure 1. Implementation Process of the Study

Data were systematically treated and analyzed using descriptive and inferential statistics to achieve a correct and reliable result. Frequency and Percentage count were used to describe the variables for the demographic profile of the respondents. Means \pm standard deviation (SD) statistical analysis was utilized to evaluate the extent of implementation of blended learning. One-way Analysis of Variance (ANOVA) was utilized to determine the significant difference in the extent of implementation of blended learning variables in science when grouped according to respondents' profiles. Pearson Product-Moment Correlation was used to determine the significant relationship between the extent of blended learning implementation in SHS science and their academic achievement.

Research Instrument

A modified researcher-made questionnaire with some items derived from Cabero et al. (2010) was utilized in the study. Part I obtained the profile of the respondents, part II consisted of 25 – item questions regarding the extent of implementation of blended learning, and part III determined the students' academic achievement. Moreover, the research instrument was reproduced and distributed via email and messenger.

Validity and Reliability

To ensure the validity and reliability of the results, the instrument was reviewed and checked by experts. Expert's comments and suggestions were considered in the final draft and the reliability of the instrument was established using Cronbach's alpha (Table 1). The questionnaire consisted of 5 items in every variable of the extent of implementation of blended learning.

Table 1. Reliability testing of research instrument divided into six components and their corresponding Cronbach's alpha coefficient and interpretation

Constructs	No. of Items	Cronbach's alpha	Interpretation*
Content	5	0.91	Excellent
Communication	5	0.93	Excellent
Technology	5	0.87	Good
Pedagogy	5	0.89	Good
Assessment	5	0.88	Good

*Legend: Below 0.50 (unacceptable); 0.50-0.59 (poor); 0.60-0.69 (questionable); 0.70-0.79 (acceptable); 0.80-0.89 (good); 0.90 and above (excellent)

FINDINGS

Profile of the Respondents

A total of 182 students and 12 teachers participated in the study. Table 2 shows the descriptive statistics of the demographic characteristics of respondents.

Table 2. Profile of the Respondents

Groups	Variable	Profile	Responses	
			f	%
Teachers	Sex	Male	4	33.33
		Female	8	66.67
	Age	21-30	9	75.00
		31-40	3	25.00
	Highest Educational Attainment	Bachelor's Degree	5	41.67
		Master's Degree Unit Earner	5	41.67
		Master's Degree	1	8.33
		EdD/PhD Unit Earner	1	8.33
	Length of Teaching Experience	0 to 3	9	75.00
		4 to 6	2	16.67
		10 and above	1	8.33
	Relevant trainings attended	0	1	8.33
		1 to 2	3	25.00
		3 to 5	4	33.33
6 and above		4	33.33	
Students	Sex	Male	53	29.12
		Female	129	70.88
	Grade Level	11	74	40.66
		12	108	59.34
	Track	Academic	160	87.91
		TVL	2	1.10
		Arts and Design	15	8.24
		Sports	5	2.75
	Parent's Monthly Income	₱10,000-below	102	56.04
		₱11,000-₱20,000	34	18.68
		₱21,000-₱30,000	15	8.24
		₱31,000-above	31	17.03
	Parent's Highest Educational Attainment	Elementary level	13	7.14
		Elementary graduate	4	2.20
		High school level	17	9.34
		High school graduate	25	13.74
		Vocational	1	0.55
College level		30	16.48	
College graduate		89	48.90	
Master's Unit Earner		3	1.65	

Demographic information of the teachers consists of sex, age, highest educational attainment, length of teaching experience, and relevant training attended. Most of the respondents were female (67%), and their ages group mostly belonged from 21 to 30 years old (75%). Most of them were master's degree unit earners (41.57%) and bachelor's degree graduates (41.57%). In terms of the number of years in teaching, most of the respondents were newly hired teachers with 0-3 years of experience (75%) further classified as beginning or experienced teachers and attended more than three relevant training in education.

The profile of the students consists of sex, grade level, track/strand, parent's monthly income, and parent educational attainment. Most of the students were females (71%), and most were grade 12 students (59.34%).

There were 160 enrolled in the academic track, 2 in the TVL track, 15 in the arts and design track, and 5 in the sports track. More than half of the students had ₱10,000-below parents' monthly income (56.04%). Regarding the parent's highest educational attainment, most of them were college graduates (48.90%).

The extent of implementation of Blended Learning to SHS Students in Science

The extent of implementation of blended learning to SHS students in science is presented in Table 3. Technology, pedagogy, and assessment were perceived as moderately implemented by the students, and teachers, while content and communication were perceived as highly implemented. Overall, the extent of implementation of blended learning in SHS is moderately implemented as perceived by the students (3.15±0.43) and teachers (3.17±1.06).

Table 3. The extent of Implementation of Blended Learning to SHS Students in Science

Constructs	Students		Teachers	
	MeanSD	QD	MeanSD	QD
Content	3.17±0.46	HI	3.19±1.04	HI
Communication	3.15±0.55	HI	3.18±1.09	HI
Technology	3.13±0.57	MI	3.20±1.13	MI
Pedagogy	3.12±0.50	MI	3.15±1.09	MI
Assessment	3.20±0.49	MI	3.13±1.07	MI
Overall	3.15±0.43	MI	3.17±1.06	MI

Legend: 1-1.75 – Not at all (NA); 1.76-2.5 – Slightly implemented (SI); 2.51-3.25 – Moderately implemented (MI); 3.26-4- Highly implemented (HI)

The extent of Implementation of Blended Learning when Grouped According to the Respondents' Profile

The significant difference in the extent of implementation of blended learning when grouped according to the respondents' profile variables was evaluated and measured and the results are presented in Table 4 and 7.

As observed from Table 4, based on students' profiles, p-values are higher than 0.05 level of significance across all factors in the implementation of blended learning when grouped by sex, grade level, track, strand, and parents' highest educational attainment. This result implied that there was no statistically significant difference in the extent of implementation of blended learning in SHS in terms of content, communication, technology, pedagogy, and assessment with respect to the respondents' sex, grade level, track, strand, and parents' highest educational attainment. On the contrary, it was found that there was statistically significant difference in the extent of implementation of blended learning in terms of technology when student-respondents were grouped by parents' monthly income.

Table 4. The extent of Implementation of Blended Learning when Grouped According to the Students' Profile

Students' Profile	Dependent Variable	f	p-value	Remarks
Sex	Content	0.23	0.63	Not Significant
	Communication	0.00	0.97	Not Significant
	Technology	0.23	0.64	Not Significant
	Pedagogy	1.11	0.29	Not Significant
	Assessment	3.89	0.07	Not Significant
Grade level	Content	1.03	0.31	Not Significant
	Communication	1.80	0.18	Not Significant
	Technology	0.35	0.55	Not Significant
	Pedagogy	0.95	0.33	Not Significant
	Assessment	0.06	0.81	Not Significant
Track	Content	0.16	0.93	Not Significant
	Communication	0.23	0.88	Not Significant
	Technology	0.67	0.57	Not Significant
	Pedagogy	0.21	0.89	Not Significant
	Assessment	0.03	0.99	Not Significant
Strand	Content	3.09	0.07	Not Significant
	Communication	0.94	0.44	Not Significant
	Technology	2.25	0.07	Not Significant
	Pedagogy	0.31	0.87	Not Significant
	Assessment	1.77	0.14	Not Significant
Parents' Monthly Income	Content	0.64	0.59	Not Significant
	Communication	2.18	0.09	Not Significant
	Technology	2.78	0.04	Significant
	Pedagogy	1.69	0.17	Not Significant
	Assessment	2.45	0.07	Not Significant
Parents' Highest Educational Attainment	Content	0.16	0.99	Not Significant
	Communication	0.54	0.80	Not Significant
	Technology	1.32	0.25	Not Significant
	Pedagogy	0.30	0.96	Not Significant
	Assessment	0.34	0.94	Not Significant

Legend: p value < 0.05 Significant

The extent of implementation of blended learning when grouped according to the teachers' profile is presented in Table 5. As observed from the results, p-values under content and assessment are less than 0.05 level of significance. These signify that there was statistically significant relationship between the extent of implementation of blended learning in terms of content and assessment and the academic achievement of the students. The correlation coefficient $r=0.45$ indicates that the relationship between content and academic achievement is moderately positive. In other words, as the implementation of blended learning in terms of content enhances, the academic achievement of the students increases. Since across all teachers' profiles considered, p-values are all greater than 0.05 level of significance. These inferred that as perceived by the teachers, the extent of implementation of blended learning in terms of content, communication, technology, pedagogy, and assessment did not statistically significantly differ across teachers' profiles.

Table 5. The extent of Implementation of Blended Learning when Grouped According to the Teachers' Profile

Profile	Variables	f	p-value	Remarks
Sex	Content	0.35	0.57	Not Significant
	Communication	0.66	0.44	Not Significant
	Technology	0.74	0.41	Not Significant
	Pedagogy	0.29	0.60	Not Significant
	Assessment	0.23	0.64	Not Significant
Age	Content	0.41	0.54	Not Significant
	Communication	2.56	0.14	Not Significant
	Technology	2.24	0.17	Not Significant
	Pedagogy	1.86	0.20	Not Significant
	Assessment	0.37	0.56	Not Significant
Highest Educational Attainment	Content	0.23	0.87	Not Significant
	Communication	0.40	0.76	Not Significant
	Technology	0.33	0.80	Not Significant
	Pedagogy	0.24	0.86	Not Significant
	Assessment	0.01	1.00	Not Significant
Teaching Experience	Content	0.16	0.85	Not Significant
	Communication	0.41	0.67	Not Significant
	Technology	0.54	0.60	Not Significant
	Pedagogy	0.21	0.81	Not Significant
	Assessment	0.21	0.82	Not Significant
Relevant training	Content	0.44	0.73	Not Significant
	Communication	0.76	0.55	Not Significant
	Technology	0.78	0.54	Not Significant
	Pedagogy	0.80	0.53	Not Significant
	Assessment	1.34	0.33	Not Significant

Legend: p value < 0.05 Significant

Academic Achievement of Senior High School

The academic achievement of the SHS students is shown in Figure 2. It can be gleaned that only 3 students got the grade under 75-80 grades which is fairly satisfactory, 13 students got 81-85 grades which is satisfactory, 39 students got 86-90 which is very satisfactory, 107 students got the grade of 95 which is outstanding, and 20 students got the grade of 96 and above which is outstanding. The majority of the students (n=107) got an “outstanding” rating.

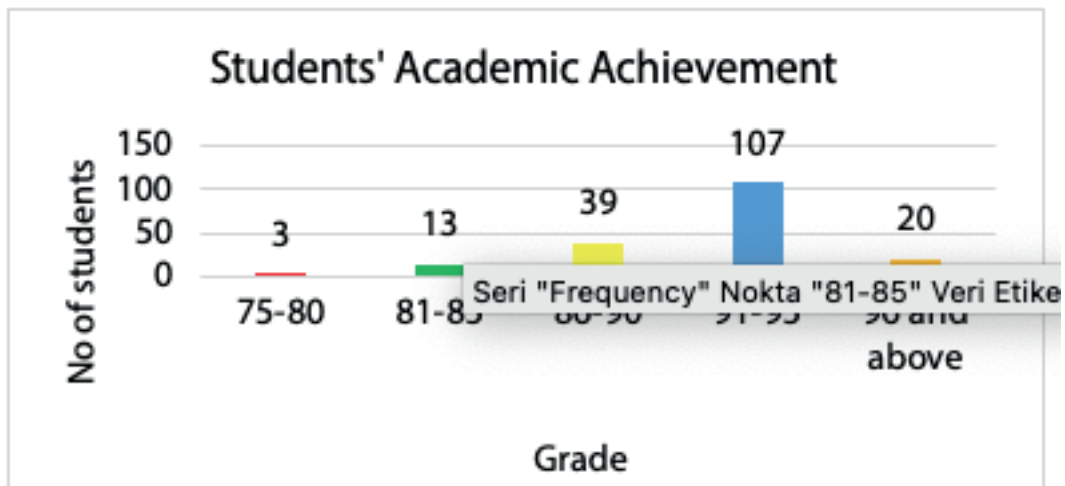


Figure 2. Students' Academic Achievement

The Extent of Implementation of Blended Learning and Students' Academic Achievement

The significant relationship between the extent of implementation of blended learning and the academic achievement of the students is presented in Table 6. Content ($r=0.45$, $p=0.04$) and assessment ($r=0.13$, $p=0.04$) was statistically significant towards the academic achievement of the students. Communication ($r=0.10$, $p=0.16$), technology ($r=0.10$, $p=0.20$), pedagogy ($r=0.11$, $p=0.14$) was statistically not significant. The results suggest that blended learning in terms of communication, technology, and pedagogy do not affect the academic achievement of the SHS students while blended learning in terms of content and assessment affects their academic achievement. These reveals that improvement must be done to achieve positive implementation of blended learning in SHS students in science.

Table 6. The extent of Implementation of Blended Learning and the Academic Achievement of the Students

Extent of Implementation	correlation coefficient	p-value	Remarks
Content	0.45	0.04	Significant
Communication	0.10	0.16	Not significant
Technology	0.10	0.20	Not significant
Pedagogy	0.11	0.14	Not significant
Assessment	0.13	0.04	Significant

Legend: p value < 0.05 Significant

DISCUSSIONS

The study investigates the extent of implementation of blended learning in SHS science education as to the content, communication, technology, pedagogy, and assessment. It determines the profile of the respondents, students' academic achievement in science after the implementation of blended learning, a significant difference in the extent of implementation of blended learning when grouped according to the respondents' profile, and a significant relationship between the extent of implementation of blended learning to the academic achievement of the students in science.

The quantitative analysis of the overall extent of implementation of blended learning to SHS students in science was perceived as moderately implemented by the students and teachers. Studies revealed challenges in the implementation of blending learning by students (Broadbent, 2017; Prasad et al., 2018) and teachers (Geveola et al., 2022; Medina, 2018; Ocak, 2011). According to Bamoallem & Altarteer (2021), the

teaching, cognitive and social presences constructs are predictors of acceptance of blended learning. With the implementation of blended learning in the new normal, several things should be considered for the extent of implementation.

The extent of implementation of blended learning when grouped according to student's profiles showed no significant difference in the extent of implementation of blended learning in terms of content, communication, technology, pedagogy, and assessment of the respondents' sex, grade level, track, strand, and parents' highest educational attainment. Kintu et al. (2017) listed that one of the significant challenges in blended learning is ensuring students can successfully use technology. System functioning can lead to success or failure, as low technology quality degrades user pleasure while high technology improves satisfaction. The user's continuing navigation through the technology of the learning management system is a measure of blended learning success. Another drawback of blended learning is the overloading of learners (Andrews, 2020) and perceived as more demanding and less appropriate regarding the required investments compared with more traditional learning (Spanjers et al., 2015). On the contrary, it was found that there was a statistically significant difference in the extent of implementation of blended learning in terms of technology when parents' monthly income grouped student-respondents. This finding is supported by the study by Rideout & Katz (2016) that parents feel primarily optimistic about the internet and digital technology. Its use of it helps their children learn essential skills, exposes them to new ideas and information and improves the quality of education.

Findings also showed that the extent of implementation of blended learning when grouped according to teacher's profile p-values was all greater than the 0.05 level of significance. These inferred that, as perceived by the teachers, the extent of implementation of blended learning in terms of content, communication, technology, pedagogy, and assessment did not statistically significantly differ across teachers' profiles. Andrews (2020) stated that teachers must adjust a face-to-face course to blend it with an online component. Some teachers were unsure about modifying their classes for the blended environment (Freeman & Tremblay, 2013). Purposeful design, including working with an instructional designer and transformation of teaching, is supported in research (Capra, 2014; Szeto & Cheng, 2016). Moreover, Koch and McAdory (2012) indicated that sometimes there is resistance to the teaching of blended instruction by teachers who feel classroom presence is what makes a difference in teaching. Thus, teachers need to consider designing and implementing this learning modality.

The implementation of the blended learning resulted in an outstanding rating of the students' academic achievement in science. This result is supported by Bazelais and Doleck's (2018a) study that the blended learning approach leads to more conceptual change, acquisition of more skills, and higher performance. Furthermore, many academics and educators support that blended learning has the potential to make education more appealing, accessible, and effective for students. Blended learning was beneficial to students juggling careers, families, school, and those who reside in rural locations or have special learning requirements. Students benefited from the reduced classroom contact hours provided by online study materials, tests, and coaching (Deschacht & Goeman, 2015; Mutya et al., 2022). A blended learning environment improves students' performance and achievement (Dickfos et al., 2014), elevates the learning experience, creates a conducive learning environment (Azizan, 2010; Wai & Seng, 2014), and allows experiencing a conceptual change Bazelais and Doleck (2018b).

Lastly, a significant relationship between the extent of implementation of blended learning and the students' academic achievement in terms of communication, technology, and pedagogy does not affect the academic achievement of the SHS students. In contrast, in terms of content and assessment, it affects their academic achievement. These reveal that improvement must be made to achieve positive implementation of blended learning in SHS students in science. Bazelais and Doleck (2018a) mentioned that the blended learning approach leads to higher achievement. In terms of assessment, the correlation coefficient $r=0.128$ signifies a low positive relationship between the extent of implementation of blended learning in terms of assessment and academic achievement. Low positive means that the connection between the said variables is that the improvement in the students' academic achievement is weakly connected to the extent of implementation of blended learning in terms of assessment. This result is supported by Umar (2018), that assessment is quite favorable for the subjects' academic achievement. On the contrary, there was no significant relationship between the extent of implementation of blended learning in terms of communication, technology, and

pedagogy. Khalid (2015) revealed that blended learning was beneficial in students learning endeavors in providing comfort during assessment and facilitating peer discussion. With online and modular assessment, students can balance their workloads and assess at their most convenient time or conducive to learning.

CONCLUSION AND RECOMMENDATION

In summary, this study has been conducted to investigate the extent of implementation of blended learning in SHS science education as to the content, communication, technology, pedagogy, and assessment vis-à-vis students' academic achievement. This study revealed that the extent of implementation of blended learning in SHS science education was perceived as moderately implemented by the students and teachers. As to the students' profiles, there was a significant relationship between the extent of implementation of blended learning in terms of technology to the parent's monthly income. There was no significant difference in the extent of implementation of blended learning across all variables as perceived by the teachers. After implementing blended learning, the student's academic achievement in science was outstanding, and a significant relationship between the extent of implementation of blended learning in terms of content and assessment to their academic achievement. The students successfully acquired the learning competencies in science classes despite the pandemic (Seage & Turegun; 2020; Suma et al., 2020). Several things should be considered in implementing blended learning in the new normal education. Students' and teachers' involvement in the implementation is essential for improving the modality. Researchers may use the results of this study as a springboard for related research works in the future.

In view of the study's findings, the school administrators may consider undertaking specific plans and activities such as the need for teachers to attend training, seminars, and workshops related to blended learning implementation in terms of content, communication, technology, pedagogy, and assessment. Teachers are encouraged to incorporate intervention strategies to meet the needs of each learner. They may enhance their effective teaching strategies and techniques by implementing the blending learning approach. Students may enhance their learning engagement and involvement with the aid of the blended learning modality implemented. Researchers may use the results of this study as a springboard for related research works in the future.

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FACTORS CONTRIBUTING TO VIETNAMESE UNIVERSITY LECTURERS' BURNOUT IN ONLINE EMERGENCY CLASSROOMS AMIDST THE COVID-19 PANDEMIC

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ABSTRACT

This large-scale study aimed to investigate the impacts of underlying factors on lecturers' burnout in emergency online classrooms during the outbreak of the Covid-19 pandemic. The study attracted the participation of 399 lecturers conducting online emergency classrooms from 30 universities and colleges across Vietnam. Data analyses with EFA, CFA, and SEM indicated that such factors as support resources, anxiety towards emergency online teaching and Coronavirus, lecturer's technological and pedagogical content, and knowledge significantly impacted their burnout levels. In contrast, no significant difference in burnout states was found between lecturers with different demographic features, genders, and residences. The results from this study also suggested critical pedagogical implications for higher education leaders and administrators to prepare emergency online classes for sustained education in times of crisis.

Keywords: Administrative support, Covid-19 anxiety, burnout, collegial support, emergency online classes, TPACK.

INTRODUCTION

The outbreak of the Covid-19 pandemic has dramatically affected all countries and territories globally. Governments have instigated different measures, including quarantine, social distancing, community lockdowns, travel restrictions, and closures of offices and educational institutions, in response to the profound impacts of the pandemic (Chinazzi et al., 2020; Viner et al., 2020). Such precautionary measures to prevent

the spread of the epidemic have strongly influenced all sectors of the nation, particularly education. According to the United Nations Educational, Scientific and Cultural Organization (UNESCO, 2020), more than 80 countries are continuously closing schools for social distancing procedures, thus affecting approximately 1.1 billion students worldwide in 2020.

Higher education institutions face significant challenges because of campus closing and social distancing procedures, which have significantly affected all learning and teaching activities (Alqahtani & Rajkhan, 2020; Turnbull et al., 2021). Consequently, universities and colleges must promptly transition from the traditional face-to-face classroom to various virtual teaching and learning forms to subdue the pandemic's unprecedented disruptions and far-reaching effects on students' learning attainment (Nguyen et al., 2022). Statistically, over 60% of students worldwide have studied and assessed online via different platforms adopted by their institutions (UNESCO, 2020).

While research strongly advocates online learning in developed nations (Santelli et al., 2020), there are still arguments about its challenges during implementation (Maatuk et al., 2021; Mishra, 2020; Tria, 2020; Toquero, 2020). Among other challenges posed by online teaching, teachers may find this mode of education negative and stressful because they usually have to experience a vast workload related to the changes in teaching modes (Baker et al., 2021; Klapproth et al., 2020). Consequently, severe stress from their excessive workload when changing from face-to-face classes to online classes, together with a lack of support and resources, can result in teachers' professional burnout whose dimensions include exhaustion of emotion, depersonalization, and inefficacy feeling (Maslach et al., 2001).

Although research has significantly contributed to the literature on teacher burnout insights and its effects on online learning (Herman et al., 2018), few have explored teacher burnout in emergencies, especially those resulting from online educational delivery during the pandemic crisis. When online learning and emergency learning are sometimes used as overlapping terms, the former is viewed as a well-established delivery model that helps bridge the physical space between the teachers and their students thanks to web-based systems (Singh & Thurman, 2019). In contrast, emergency learning is adopted as a temporary alternative for the delivery mode of teaching and learning in crises or emergencies such as health emergencies to sustain education (Ferri et al., 2020). Whittle et al. (2020) emphasized that emergency learning environments offer temporary instructional support to institutions without having pre-planned resources or infrastructures. In other words, emergency learning is provided circumstantially and provisionally to sustain the continuity of teaching and learning during the crisis. This teaching context means teachers are usually not as well-prepared in emergency learning and teaching as in regular online classes. Also, they are put under many emotional threats due to the instability of the technology and social crises during the Covid-19 pandemic.

Facing the crises many developing countries are experiencing, including Vietnam, the current study aimed to investigate extensively elements causing lecturers' burnout during this pandemic. The study proposed six hypotheses. First, we hypothesized that Vietnamese lecturers' demographic features, including gender, age, teaching experience, and location, correlate with their burnout in emergency online classes. Other hypotheses were that anxiety about the Coronavirus and emergency online classroom positively impacted the lecturers' burnout state. In contrast, this study also proposed that the lecturers' emergency teaching self-efficacy, technological and pedagogical competencies, and supportive resources would prevent their burnout in emergency online classes.

LITERATURE REVIEW

Teaching Faculty's Stress and Burnout In Online Teaching

The literature acknowledges various definitions of burnout, highlighting the significant role of research into burnout stages in education. Herbert Freudenberger first used the term burnout in 1974 to portray

a person's emotional exhaustion from work (McCann & Holt, 2009). Later, burnout was initially defined as 'a syndrome of emotional exhaustion and cynicism' that frequently occurs among individuals who do 'people-work of some kind' (Maslach & Jackson, 1981, p.99). Zhu et al. (2018, p.2) described burnout as 'a dysfunctional response to chronic emotional and interpersonal stressors at work' when one is enduring an overload of stress.

In an educational context, burnout is a 'lack of desire and motivation to balance professional responsibilities in teaching, scholarship, service, and student caregiving and peer relationships'(Minter, 2009). Also, Minter (2009) defined teacher or faculty burnout as a state in which an individual undergoes detachment (particularly from students, staff, peers, and clients) and a lack of job satisfaction or sense of achievement. Teacher burnout can also be viewed as 'a psychological syndrome emerging as a prolonged response to chronic interpersonal stressors on the job' (Maslach & Leiter, 2016, p.103). Burnout manifests itself in three aspects: exhaustion, cynicism, and professional inadequacy (Maslach & Jackson, 1981). Exhaustion is characterized by feelings of chronic fatigue, a lack of emotional energy, and emotional exhaustion at work (Maslach et al., 2001). Cynicism refers to the teachers' detached and distant attitudes toward their colleagues, parents, and students and their low commitment to the institution (Schaufeli & Buunk, 2003). As Brouwers and Tomic (2000) described, professional inadequacy correlates to teachers' incompetent or insufficient feeling in implementing tasks or performing work.

Compared with other academic-related professions, teaching has been even more challenging and stressful (Loonstra et al., 2009; Schaufeli & Enzmann, 1998; Travers & Cooper, 1993). Therefore, numerous studies have explored teacher burnout's consequences (Kokkinos, 2007; Peeters & Rutte, 2005; Retelsdorf et al., 2010; Skaalvik & Skaalvik, 2010; Stoeber & Rennert, 2008). The most recent studies conducted report correlations between job satisfaction, time and workload management, students' learning attainment, and adequate resources in online teaching facilitation with the rate of faculty burnout (Chen et al., 2020; Cordaro, 2020; Cross & Polk, 2018; Garcia-Gonzalez et al., 2020). However, these factors are highly related to physical and emotional aspects of burnout in online classrooms rather than psychological ones. Another study by Garcia-Gonzalez et al. (2020) investigated the relationships between mental overload, and time pressure, emotional exhaustion of female faculty members. However, this study is limited only to female teaching faculty and does not explore in depth what specific factors related to mental overload can lead to emotional exhaustion among female teaching faculty when they conduct online classrooms.

Previous studies have simultaneously contributed to investigating the effects of stress on employees, especially on teaching faculty in higher education. However, little has been done to explore the effects of stress and burnout on higher education teaching faculty regarding online teaching during the emergency crisis (Smith et al., 2015). Few studies failed to explore in-depth antecedents of university lecturers' burnout in online emergency classes, especially aspects that can lead to university lecturers' burnout in times of local, national, and global crises. This study, therefore, aimed to explore and identify multifaceted factors that may lead to lecturer burnout in online higher education during the pandemic. Findings from the study, hopefully, can contribute to the existing literature on lecturers' stress and burnout in the online classroom in emergency crisis while suggesting practical strategies and solutions for decision-makers, policymakers, educators, educational leaders, and academics in enhancing education quality and delimiting the impacts of stress and burnout on teaching and learning in general, and online classroom in particular.

Conceptual Framework: Burnout and its Antecedents

Demographic Features

Although studies have proven opposing results, many have investigated the correlations between lecturer burnout and demographic features, including experience, age, gender, and geographic location. Regarding the

participant's gender, Martin (2000) believed that gender differences have varying effects on burnout, taking the feminist perspective that even men and women in similar contexts may experience stress and burnout in inherently different manners. The initial assumption is that men traditionally dominate the university environment and that women must make tremendous efforts to succeed (Lackritz, 2004). Nevertheless, at the end of his study with 900 university teaching staff members in a West Coast state of the USA, Lackritz (2004) found that, although female lecturers had more profound and complex emotions than their male counterparts, the opposite was true for depersonalization, and no significant difference was found between the females' and males' sense of personal accomplishment. Likewise, female primary and secondary education teachers also showed a higher burnout level than their university counterparts (Antoniou et al., 2013).

On the contrary, in the online environment, there were only insignificant differences in some dimensions between men and women (Hogan & McKnight, 2007). It has been discovered that in addition to gender, biological age and years of experience are two other factors correlated with teacher burnout (Toker, 2012). Likewise, Lackritz (2004) and Whitehead et al. (2000) suggested that younger teaching faculty members are more vulnerable to emotional exhaustion. A survey carried out among 283 lecturers in Türkiye showed that, in particular, age has a significant relationship with all latent dimensions of burnout, except for depersonalization (Tümekaya, 2007). Lackritz (2004) also noted that burnout is a serious and cynical concern for teachers or lecturers who have worked for over ten years. Contradictorily, Antoniou et al. (2013) found that more experienced lecturers (16 years) are less likely to fall into a burnout state.

Due to the unprecedented occurrence of Covid-19 and its unpredictable influence on education, few research projects have been conducted yet to explore teacher burnout. Among all the studies that the authors could find when writing this article, a survey of 359 K-12 teachers who had just entered the 2020–2021 school year during the Covid-19 pandemic across the United States showed no correlation between teachers' demographic features (gender, years of experience, and location) and their burnout levels (Pressley, 2021). The same results were found in the intervention study of 67 teachers in Jerusalem, Israel, during the Covid-19 pandemic, as the researchers found no difference between the burnout level of teachers of different ages and genders (Zadok-Gurman et al., 2021). Despite the contradictory findings, during shutdowns and lockdowns, it is important to acknowledge in this article that most teachers are obliged to work from home. Thus, their location of residence may affect their teaching experience due to the diverse cultures and varied quality of teaching facilities. From the analysis of contemporary literature, the authors propose the first question about whether demographic features may correlate with lecturer burnout state.

Technical Aspects

As technology is increasingly incorporated into education, teachers are expected to adapt their teaching practice to utilize applications, software, and platforms to enhance the quality of their teaching. Simultaneously, the constant emergence and update of new technology may create a misfit between teachers' ability and the technological educational environment (Altinay-Gazi & Altinay-Aksal, 2017), which may create technostress (Al-Fudail & Mellar, 2008). Information technology needs to be customized before being applied to teaching, especially in emergencies that may create anxiety among teachers due to their concerns about the ability to exploit technical resources. When other severe problems related to the online platform also arise in system failures, such as system crashes or data loss (Yau et al., 2019), teachers may not possess adequate skills and knowledge to find sufficient and timely resolutions (Nguyen, 2022). Pressley (2021) stated that the anxiety from using technology and providing online instructions may exacerbate instructors' burnout. Although Pressley (2021) accommodated 359 US teachers, there is still limited research to consolidate his findings, especially in other contexts outside the USA.

Teacher confidence in their ability to teach with technology is also pivotal, reflecting their attitude toward integrating new software applications into their syllabus (Yeşilyurt et al., 2016). In their study, Yeşilyurt et al. (2016) surveyed 323 preservice teachers and concluded that computer self-efficacy is one of the fundamental factors that enhance the application of computer-enhanced education. In psychology, high computer self-efficacy and a sense of control can help reduce teachers' stress, fatigue, and anxiety (Estrada-Muñoz et al., 2020; Fagan et al., 2003; Shu et al., 2011), whereas the lack thereof may induce technology resistance.

Undeniably, although online instructors usually have adequate time to familiarize themselves with the virtual environment, instructors who hesitantly run emergency courses may be deprived of these rightful opportunities because of the intensity and urgency of crises. By and large, it often happens at short notice. This issue raises another question about a noticeable level of emergency teaching anxiety and a much lower level of emergency teaching self-efficacy. Ultimately, it is paramount to investigate the relationship between emergency teaching anxiety, emergency teaching self-efficacy, and lecturer burnout.

Technological Pedagogical Content Knowledge

The rise of technology in education has necessitated more knowledge aside from traditional pedagogical and subject-matter knowledge. Koehler and Mishra (2005) introduced the combination of pedagogical, content knowledge, and technological knowledge as technological content knowledge, technological pedagogical knowledge, and technological pedagogical content knowledge, or TCK, TPK, and TPCK/TPACK, respectively. TPACK is a comprehensive system of skills, knowledge, and ability teachers need to develop, which is identified in the teaching and learning curricula, in an organized and effective manner (Schmidt et al., 2009). Thus, technological integration in education would not be successful without teachers' knowledge of implementing online classes (Cooper et al., 2019), particularly with adequate TPACK. Since computer illiteracy may hinder teachers' application of technological tools, emergency teaching platforms can potentially increase teachers' stress, anxiety, and pressure. Dong et al. (2020) conducted a factor analysis with the data collected from 366 instructors in China and found that the level of TPACK can predict the instructors' technostress. This result aligns with the study by Joo et al. (2016) that examined the relationship between TPACK and technostress. It is believed that instructors with high TPACK have more intention and willingness to use technology. This article investigates whether lacking TPACK can create mental and physical exhaustion and a shared sense of achievement among lecturers. In other words, low TPACK may likely, in general, induce lecturer burnout. In contrast, if lecturers are knowledgeable about applying technological, content-related, and pedagogical skills to teaching, they may likely feel more successful and less anxious about the online emergency class, which reduces their burnout.

Support Resources

Institutional support is seminal in employee success (Hammond et al., 2018). This support can come from the management or colleagues in many different forms, such as technical, TPACK, or emotional support during the pandemic. Dong et al. (2020) concluded that support from school administrators and peers can help build up the instructor's TPACK, thus reducing their technostress. According to research conducted with 1278 Canadian teachers by Sokal et al. (2020), teachers are more likely to develop burnout when they do not receive adequate support resources from the administrators. Additionally, the anxiety about communicating with the administrators and the lack of school support may negatively affect the teaching process during the pandemic (Pressley, 2021). Intimate support from other colleagues, who are also friends, on social networking sites during lockdowns, can also provide sources of professional advice and help isolate teachers (Kelly & Antonio, 2016; Sokal et al., 2020). Besides institutional support, communication

with the learners' parents are also believed to be essential to help prevent teacher burnout (Pressley, 2021); however, as the scope of this research focuses on university and college students who are young adult and primarily independent learners, the authors would exclude parental responsibility from the support resources investigated in this study.

Coronavirus Anxiety

During the Covid-19 pandemic, lecturers are isolated due to lockdowns and shutdowns of their institutions, which constantly create many stressors at interpersonal and intrapersonal levels (Hidalgo-Andrade et al., 2021). The Covid-19 pandemic affects the education system, including lecturers and students, as it creates mood swings, changes in daily patterns, and negative behaviors (Fernandez-Castillo, 2021). The anxiety towards Covid-19 includes many symptoms ranging from fast heart rate, anxiety, panic, or depression (Silva et al., 2020). During these stressful moments, lecturers' distress and burnout can negatively affect all the stakeholders, including students, lecturers, and the academic institution. In times of isolation, lecturers may have negative coping strategies to manage their stress, which may not help release their heated emotions but instead heightens the level of burnout, such as avoidance or expressing anger violently. The problem worsens because social distancing policies prevent them from receiving help from occupational therapists, who play a fundamental role in providing support (Austin et al., 2005). According to Pressley (2021), Coronavirus anxiety is one of the significant factors contributing to lecturers' burnout in general. However, when writing this article, the authors found no research directly linking Coronavirus anxiety with lecturer burnout states other than Pressley (2021). Besides, there is still a shortage of literature and empirical research investigating how lecturer burnout is related to Coronavirus anxiety in an emergency learning classroom in developing countries that are not well-prepared to conduct online learning exclusively yet.

From reviews of factors related to burnout above, this article proposes the following theoretical framework to explain the possible underlying causes of burnout:

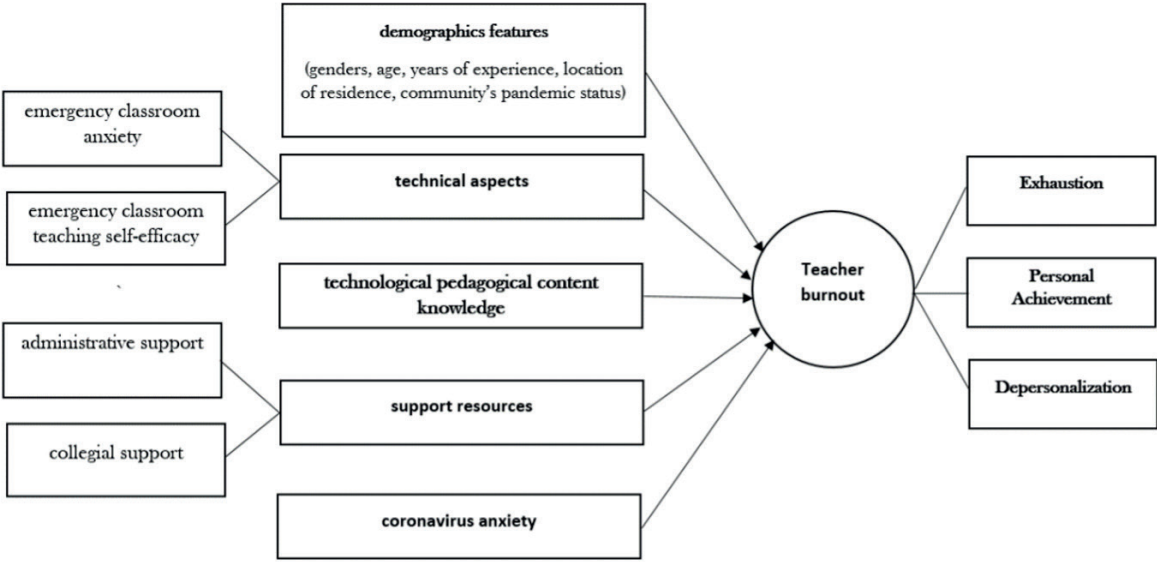


Figure 1. Factors contributing to teacher burnout in online emergency classrooms during the Covid-19 pandemic

Within this research, the authors aim to investigate the factors contributing to lecturer burnout during the Covid-19 pandemic to generalize the findings related to lecturer burnout and expand the knowledge about the causes of burnout. To fulfill this mission, the authors propose six hypotheses as follows:

- H1: demographics features (gender, age, years of experience, location of residence) correlate with lecturer burnout in emergency online classes.
- H2: emergency teaching anxiety positively impacts lecturer burnout in emergency online classes.
- H3: emergency teaching self-efficacy negatively impacts lecturer burnout in emergency online classes.
- H4: technological pedagogical content knowledge (TPACK) negatively impacts lecturer burnout in emergency online classes.
- H5: support resources (administrative and collegial support) negatively impact lecturer burnout in emergency online classes.
- H6: Coronavirus anxiety positively impacts lecturer burnout in emergency online classes.

METHODOLOGY

Participants and Sampling Techniques

The research included 399 lecturers from 29 departments of 30 universities and colleges around Vietnam, with 167 male lecturers (42%) and 232 female lecturers (58%). The most significant proportion of lecturers was aged 31-40 (n=157, 30,25%), while the 22-24 age group accounted for the smallest share of the total survey participant (n=14, 3,5%). Other age groups, including 25-30, 41-50, and over 50, constituted 17,75% (n=71), 32% (n=128), and 7,5% (n=30), respectively.

It is noted that a significant percentage of lecturers were teaching in the cities (n=362; 90,5%), although only 9,5% of the participant taking part in this survey were currently staying in the countryside. This discrepancy might stem from the unequal distribution of tertiary education institutes in Vietnam because most universities and colleges are in major cities. Besides, as the Covid-19 pandemic was heavily influencing Vietnam, a significant majority of the participants were staying in locations influenced by the social distancing policy (n=339, 85%) or quarantine zones (n=26,6.5%); on the other hand, only 8.5% of the participant were living in the “new normal” areas.

Regarding teaching experience, over one-half of the participants are experienced lecturers who had been teaching for more than ten years (n=219, 54,75%), and the other 103 lecturers had been teaching between 6-9 years (25,75%). Only 78 lecturers (19,5%) had less than five years of teaching experience. Concerning their familiarity with the teaching institutes, it is evident that most lecturers were quite familiar with their current institutes because 35% of lecturers (n=152) had been working at their institutions for more than ten years at the time this study took place, and 25,75% of them (n=111) had been working at their institutions for at least six years. The other participants who had less than five years at their institutions comprised 34% of the total lecturers (n=136).

Instruments

Questionnaire

The questionnaire included 68 scale questions adapted from both long-researched and up-to-date scales. Except for the first question exploring demographic features such as age, location, familiarity with teaching institutes, gender, and teaching experience, the others were all 5-item Likert scale questions. The burnout scale for emergency lecturers was adopted from Maslach and Leiter (2016, p.103) to measure the lecturers' stress, anxiety, and burnout level. The TPACK scale was adapted from Chai et al. (2011) to measure the lecturers' content, pedagogical, and technological knowledge. The authors adopted the emergency teaching technology anxiety from the computer anxiety scale when the emergency teaching efficacy scale was adopted and adjusted based on Woodrow (1991). On the other hand, administrative support and collegial support were measured with the scales introduced by Lam et al. (2010). Finally, the Coronavirus Anxiety Scale (Lee, 2020) was also used to measure the lecturers' anxiety due to the Covid-19 pandemic. The question taxonomy is provided in Table 1.

Table 1. Questionnaire taxonomy

Dimensions	Items
Demographical factors	1-6
Coronavirus anxiety	7-14
Emergency teaching self-efficacy	15-20
TPACK	21-36
Collegial support	37-41
Administrative support	42-48
Emergency teacher burnout	49-68

Because most participants in our study were Vietnamese who processed a large spectrum of English proficiency levels, the authors employed back-translation to enhance the return rate of the questionnaires. However, on acknowledging the potential inconsistency and translation flaws (Behr, 2017), the authors applied a procedure of quality assurance to minimize possible problems. First, all the questions were translated by all authors before both Vietnamese and English versions of the questionnaire were sent for peer review by two other experts in the field. The authors revised the questionnaires according to suggestions by the experts and conducted an online pilot test with a sample of 40 English university lecturers who are Vietnamese native speakers with English levels at C1-C2 CEFR. Finally, all the participants reported the problems with the questionnaires they encountered in the pilot test.

Pilot Test

The participants in the pilot test reported 20 problems with the 68 questions, which were punctuation (5), spelling (7), syntactic ambiguity (5), and translation accuracy (3). The authors tested the reliability of the Likert-scale questions in the questionnaire using Cronbach's alpha coefficient in SPSS, with the following results:

Table 2. Pilot test's post-modification Cronbach's alpha

Dimensions	Cronbach's alpha scores
Coronavirus anxiety	.836
Emergency teaching self-efficacy	.913 (after deleting item 16 with total correlation = -.019, item 20 with total correlation = -.116, and item 21 with total correlation = .016)
TPACK	.902 (after deleting item 22 with total correlation = -.345)
Collegial support	.889
Administrative support	.820 (after deleting item 49 with total correlation = .289)
Emergency teacher burnout	
Exhaustion	.891
Sense of achievement	.790
Depersonalization	.854

After deleting items 16, 20, 21, and 22, all the Cronbach's alpha values (.836, .913, .902, .889, .820, .891, .790, .854) were fairly high to excellent ($.7 \leq \alpha \leq .94$) (Taber, 2018), which guaranteed the reliability of this questionnaire for the official stage of large-scale data collection.

Procedure

After the research ethics board accepted the research at the authors' institutes, the researchers sent participants' recruitments to 30 universities and colleges in Vietnam. Due to the shutdowns and lockdowns in Vietnam, many institutions were difficult to contact. Therefore, the authors also invited lecturers via social networking sites to enhance the participation rate. The participants were also informed of the aims, goals, and contributions to the field, and the authors asked the participants to supply written consent for their voluntary participation in the research. After giving back their informed consent, the participants received an online questionnaire via a Google form link. All the data collected in the research are then encrypted and analyzed by SPSS 20 using structural equation modeling, independent t-test, and one-way ANOVA. After the data analysis was processed, all personal information was discarded with designated software to prevent uninformed information retrieval and personal data leakage.

Data Collection and Analysis

Before the analyses, regression was used to diagnose outliers, multicollinearity, and other assumption violations. The demographic features collected were then analyzed with SPSS 20's mean comparison tools. For dependent dimensions that include two factors, such as gender (male or female), or location (city or countryside), an independent t-test was applied. As for other dimensions that include more variables, ANOVA was used to analyze the statistic.

Regarding other dimensions, to reduce the number of redundant variables and discover the relationship between latent variables and their dimensions, the researchers analyze the Exploratory Factor Analysis (EFA) (Williams et al., 2010) first before moving to Confirmative Factor Analysis (CFA) and finally to the Structural Equation Modelling (SEM). The number of participants was 399, twice the required number to conduct factor analysis (Comrey & Lee, 1992). The Varimax rotation method was used for factor extraction (Eigenvalue >1). If the loadings of an item were below 0.04, that item would be suppressed. The Kaiser-Meyer-Olkin (KMO) value was 0.818 (higher than 0.6), thus reaffirming the sampling adequacy. To ensure the convergent and discriminant validity of the instrument, Average Variance Extracted (AVE) and Composite Reliability (CR) were analyzed (Appendix 1). The constructs are acceptable if AVE >.5 and CR>.7 (Fornell & Larcker, 1981). After the exploratory and confirmatory factor analyses, the model construct was visualized as a structural equation model in AMOS 20 (figure 2). The model fit was tested against the standard goodness of fit measures (Chi-square/df, GFI, CFI, RMSEA, p, TLI) (Appendix 2).

RESULTS

Demographic Factors (H1)

Independent T-Test

The independent t-tests were conducted to measure the differences between demographic data, including gender and place of residence in the study.

Table 3. Comparison of Male and Female lecturers on teacher burnout and factors contributing to teacher burnout during the Covid-19 pandemic (n = 232 females and 167 males)

Variable		<i>M</i>	<i>SD</i>	<i>t</i>	<i>df</i>	<i>p</i>	<i>d</i>
Coronavirus anxiety				1.66	333.56	0.10	0.18
	Females	2.37	0.70				
	Males	2.24	0.78				
Emergency teaching anxiety				2.21	397.00	0.03	0.22
	Females	2.45	0.67				
	Males	2.30	0.68				
Emergency teaching Efficacy				-1.24	397.00	0.22	0.13
	Females	3.28	0.84				
	Males	3.39	0.90				
TPACK				-2.91	397.00	0.00	0.29
	Females	3.86	0.39				
	Males	3.99	0.50				

Collegial support				-0.02	397.00	0.99	0.02
	Females	3.78	0.59				
	Males	3.79	0.66				
Administrative support				-0.82	397.00	0.41	0.08
	Females	3.39	0.59				
	Males	3.44	0.63				
Burnout				-0.56	397.00	0.57	0.50
	Females	2.91	0.39				
	Males	2.93	0.46				

Table 4. Comparison of the lecturers' places of residence on lecturer burnout and factors contributing to lecturer burnout during the Covid-19 pandemic
(n = 362 lecturers in the city and 37 lecturers in the countryside)

Variable		<i>M</i>	<i>SD</i>	<i>t</i>	<i>df</i>	<i>p</i>	<i>d</i>
Coronavirus anxiety				0.51	397.00	0.61	0.09
	City	2.32	0.75				
	Countryside	2.26	0.61				
Emergency teaching anxiety				-0.45	397.00	0.65	0.07
	City	2.39	0.67				
	Countryside	2.44	0.71				
Emergency teaching Efficacy				1.47	397.00	0.14	0.25
	City	3.34	0.86				
	Countryside	3.13	0.83				
TPACK				0.88	397.00	0.38	0.15
	City	3.92	0.44				
	Countryside	3.85	0.51				
Collegial support				0.96	397.00	0.34	0.17
	City	3.79	0.62				
	Countryside	3.69	0.59				
Administrative support				-1.36	397.00	0.18	0.28
	City	3.39	0.62				
	Countryside	3.54	0.44				
Burnout				1.13	49.67	0.26	0.16
	City	2.92	0.43				
	Countryside	2.86	0.33				

Table 3 and Table 4 describe differences between genders (male and female) and place of residence (city and countryside) of the lecturers teaching emergency online classes. As regards table 3, the Sig. (2-tailed) values indicate that, in general, there were no significant differences between the two genders in all aspects, except for emergency teaching anxiety ($p = .03$) and TPACK ($p = .00$). Female lecturers tended to show more anxiety towards teaching than their male counterparts, with the mean of 2.45 and 2.30, respectively. In sharp contrast, male lecturers registered slightly higher scores ($M = 3.99$) in their TPACK than the opposite sex ($M = 3.86$). However, this study recorded no difference between burnout levels of male and female lecturers. Regarding Table 4, the statistics also showed no significant differences in all survey aspects ($p > .05$); thus, there was no difference between the burnout level between the two residence locations.

Oneway Analysis of Variance (One-way ANOVA)

Table 5. One-way analysis of variance summary table of the significance levels comparing differences of the demographic factors, namely age, years of experience, institutional familiarity time, and community's pandemic status, on the lecturers' burnout states (N = 399)

	<i>p</i>			
	Age	Years of Experience	Institutional familiarity time	Community's pandemic status
Coronavirus anxiety	0.33	0.68	0.20	0.17
Emergency teaching anxiety	0.54	1.00	0.10	0.79
Emergency teaching efficacy	0.72	0.38	0.37	0.41
TPACK	0.51	0.99	0.93	0.19
Collegial support	0.99	0.87	0.63	0.51
Administrative support	0.71	0.42	0.69	0.07
Burnout	0.41	1.00	0.22	0.15

The researchers proceeded to the one-way ANOVA analysis because all the Levene statistics were higher than 0.05. As can be seen from Table 5, as all the significance values are higher than 0.05, the statistics indicate that there was no difference between lecturers of different age groups, time of experience, institutional familiarity time, and status of the pandemic at their place of residence in all researched respects.

Tables 3, 4, and 5 allow the researchers to conclude that different demographic features did not yield any discrepancies in the lecturers' burnout states. It is, however, noticeable that different genders may vary in their level of anxiety related to online teaching and their TPACK.

Hypothesis testing of other factors (H2-H6)

Measurement Model Validity, Reliability, and Correlation

Regression calculation reported no outlier, multicollinearity, and other violations of assumption. Besides, the AVE and CR values ensured the instrument's convergent and discriminant validity (Appendix 3). All fundamental goodness of fit indices were adequate for further structural equation model analysis (Appendix 2).

Table 6. Intercorrelations, means, and standard deviations for the seven lecturer burnout variables
(N = 399)

Variable	1	2	3	4	5	6	7	<i>M</i>	<i>SD</i>
1. Emergency teaching anxiety	1	--	--	--	--	--	--	2.39	0.68
2. Emergency teaching efficacy	-.76**	1	--	--	--	--	--	3.32	0.86
3. TPACK	-.45**	.35**	1	--	--	--	--	3.91	0.44
4. Collegial support	-.29**	.28**	.36**	1	--	--	--	3.78	0.62
5. Administrative support	-.39**	.22**	.33**	.39**	1	--	--	3.41	0.61
6. Burnout	.50**	-.30**	-.16**	-.24**	-.48**	1	--	2.92	0.42
7. Coronavirus anxiety	.43**	-.25**	-.21**	-.08	-.22**	.41**	1	2.32	0.73

** $p < .01$

Table 6 represents the correlations between the seven constructs used in the study. In general, constructs are correlated except for collegial support and Coronavirus anxiety with $r(397) = -.08, p = .13 > .001$. This result implies that collegial support and Coronavirus anxiety are unrelated and may change independently. The highest absolute value of correlations recorded is between emergency teaching efficacy and anxiety, $r(397) = -.76, p = .00$, implying an inverse correlation that the more confident the lecturers were, the less anxious they felt with online teaching. Other correlations are between -0.448 to 0.501. Notably, positive correlations are discovered between burnout and Coronavirus anxiety with $r(397) = .41, p = .00$, and second, between burnout and emergency teaching anxiety with $r(397) = .50, p = .00$, in turn. On the other hand, burnout is negatively correlated with the remaining variables, including TPACK, collegial support, administrative support, and emergency teaching efficacy. It is also worth noting that there are inverse correlations between emergency teaching anxiety and TPACK, emergency teaching anxiety and collegial support, emergency teaching anxiety and administrative support, Coronavirus anxiety and emergency teaching efficacy, Coronavirus anxiety and TPACK, Coronavirus anxiety and collegial support, Coronavirus anxiety, and administrative support. However, it is worth noting that while these constructs may be correlated, the linear regression analysis shows no multicollinearity happened among the constructs.

Hypothesis Testing Paths and Results

Besides the demographic factors analyzed in the previous part, the hypotheses initially aimed to investigate how Coronavirus anxiety, emergency teaching self-efficacy, TPACK, collegial support, and administrative support affect lecturers' burnout in online emergency classrooms. However, as presented in figure 2, the CFA and SEM analysis demonstrated that the suggested antecedents affected only two out of three latent dimensions of burnout (sense of achievement and exhaustion). Also, CFA analysis from SPSS excluded emergency teaching efficacy from the model constructs as it could not meet the convergent validity value (factor loadings $<.40$) (see Appendix 3). Following the factor analysis, the construct of the model is:

1. Coronavirus anxiety (5 items)
2. Collegial support (5 items)
3. TPACK (3 items)
4. Emergency teaching anxiety (2 items)
5. Administrative support (5 items)
6. Exhaustion (2 items)
7. Sense of achievement (2 items)

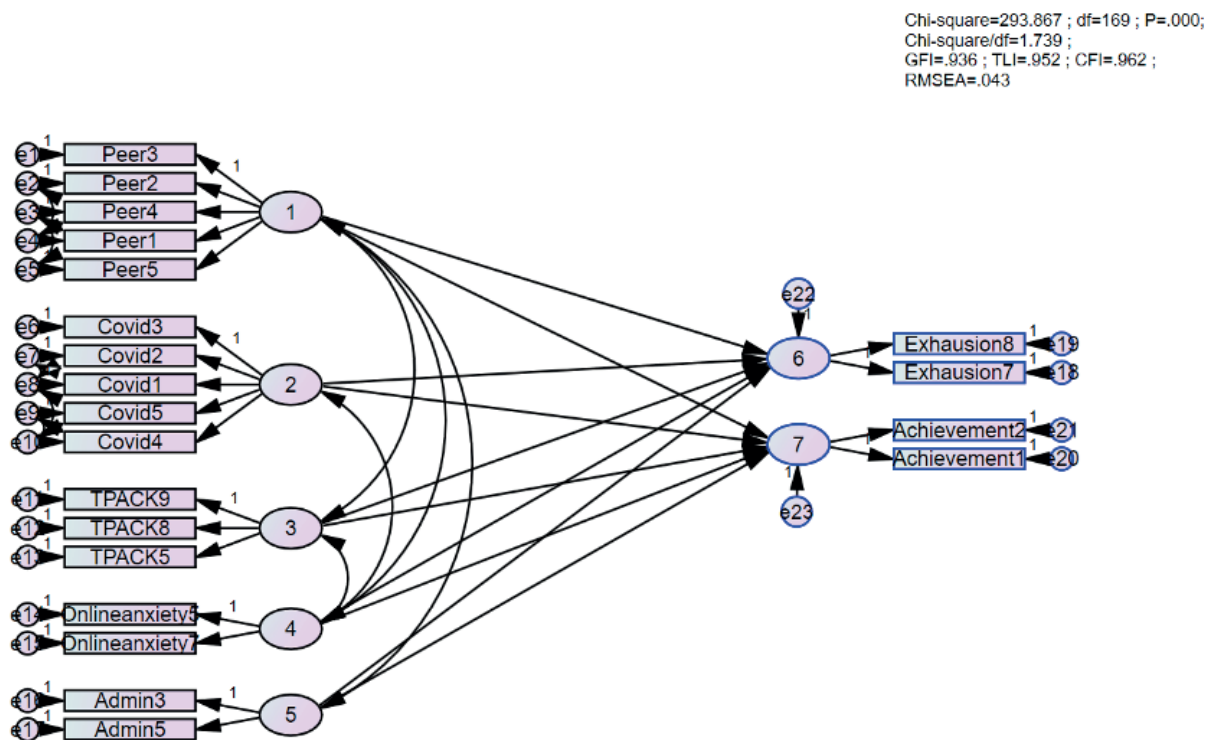


Figure 2. Constructs of lecturers' exhaustion in online emergency classrooms

Therefore, the hypotheses' paths are described as follows:

Table 7. Hypothesis paths and results

Path	β	Standardized Regression Weight	p (acceptable $p < .05$)	Results
H2 Emergency teaching anxiety → Exhaustion	-.290	-.266	***	SUPPORTED
Emergency teaching anxiety → Sense of achievement	-.018	-.026	.730	NOT SUPPORTED
H4 TPACK → Exhaustion	-.256	-.181	.009	SUPPORTED
TPACK → Sense of achievement	.388	.429	***	SUPPORTED
H5 Administrative support → Sense of achievement	.191	.270	.003	SUPPORTED
Administrative support → Exhaustion	.266	.240	.001	SUPPORTED
Collegial support → Exhaustion	-.165	-.138	.032	SUPPORTED
Collegial support → Sense of achievement	.038	.050	0.504	NOT SUPPORTED
H6 Coronavirus anxiety → Sense of achievement	-.010	-.015	.820	NOT SUPPORTED

The findings cannot point out the direct effects of seven antecedents on every latent dimension of burnout as the authors suggested in the hypotheses H1 – H6. However, the CFA and SEM analyses demonstrated how each antecedent affected two out of the dimensions of burnout state among emergency classes' lecturers. While no factor made lecturers depersonalize students, five out of the six non-demographical factors affected personal sense of achievement and exhaustion. Collegial support, Coronavirus anxiety, TPACK, administrative support, and emergency teaching anxiety significantly impacted the lecturer's exhaustion. Corona-related anxiety and emergency teaching anxiety positively impacted exhaustion, whereas TPACK, collegial support, and administrative support negatively affected exhaustion. On the other hand, only TPACK and administrative support positively affected how lecturers felt about their achievement ($p < 0.05$). Thus, the standardized regression equations are:

$$Exhaustion = -.138*(collegial support) + .279*(Coronavirus anxiety) - .181*(TPACK) + .240*(administrative support) - .266*(emergency teaching anxiety) + \epsilon_1$$

$$Sense\ of\ achievement = .429*(TPACK) + .270*(administrative support) + \epsilon_2$$

DISCUSSION

Regarding the continuance and expansion of Covid-19 globally, this study aimed to investigate essential elements causing lecturer burnout in online higher education during the pandemic in Vietnam. The study was conducted with six hypotheses. The first was that the lecturers' demographic features correlated with their burnout in an emergency online classroom. Second, it is hypothesized that the lecturers' anxiety about online classrooms and anxiety about the Coronavirus positively impact their burnout state. Furthermore, such factors as the lecturers' emergency teaching self-efficacy, technological and pedagogical competencies (TPACK),

collegial support, and administrative support are hypothesized to reduce the lecturers' burnout. Findings from the study reported that demographic features have no significant role in yielding lecturer burnout in emergency online education, except for the lecturers' gender differences in emergency teaching anxiety and TPACK. The study results also revealed that such suggested antecedents as Coronavirus anxiety, TPACK, emergency teaching self-efficacy, collegial support, and administrative support play no significant role in lecturer depersonalization of students, one reflective dimension of burnout in an emergency online classroom. However, except for emergency teaching efficacy, other non-demographic features have affected the two dimensions of burnout: the lecturers' personal sense of achievement and exhaustion (H2, H4, H5, H6).

The Effects of Demographic Features on Lecturer Burnout in The Emergency Online Classes (H1)

This study's findings are consistent with previous research (Hogan & McKnight, 2007; Lackritz, 2004; Zadok-Gurman et al., 2021), indicating that demographic features do not correlate with lecturer burnout levels. As reported from the study, demographic features, including lecturers' gender, age, years of working experience, and location of residence, do not significantly affect or cause lecturer burnout in emergency online classroom delivery.

These findings strongly support the results from Zadok-Gurman et al. (2021) that there is no significant difference between the two genders in all aspects and remarkably advocate the results from Lackritz (2004) that gender difference is not correlated with lecturers' sense of achievement during the delivery of online classroom in the pandemic. However, the study's findings contradict those of previous studies by Toker (2012) and Whitehead et al. (2000), indicating that lecturers' biological age and working experiences recorded no difference in burnout levels between lecturers. Although the lecturers may differ in age and experience, their familiarity with online education was virtually the same. This similarity was due to only a minority of institutes in Vietnam implemented the online learning system before Covid-19 broke out, and most lecturers in the survey were teaching face-to-face classes before the pandemic (Maheshwari, 2021), which means that, regardless of age, teaching experience, time at the institutions, the lecturers are similar in their experience with online teaching. The marginal discrepancies in familiarity and experience with online teaching, particularly emergency teaching, justify the burnout state's independence of age, working experience, and familiarity with the institution. Thus, all institutions need a relevant agency that supports all novice and expert lecturers to familiarize themselves with the new teaching context.

Significantly, while confirming that demographic features play an insignificant role in causing lecturer burnout, results obtained from the investigation reported that different genders yield different levels of anxiety related to online emergency teaching and TPACK. During the Covid-19 pandemic outbreak, female lecturers tended to be more anxious about online emergency teaching than their counterparts, whereas male lecturers have slightly more TPACK knowledge than female lecturers. However, these findings show no evidence that lower female TPACK resulted in less sufficient skills, knowledge, and ability for online teaching practice than males (Dong et al., 2020; Joo et al., 2016). This result, to some extent, has reflected more equality in education on the grounds of gender in Vietnam. Although female lecturers may tend to be more anxious about their teaching, with adequate support, they are indeed as competent in dealing with stressful teaching experiences as their male counterparts. On the other hand, male lecturers should not be excluded from psychological support when teaching online as they are as vulnerable to stress factors as female lecturers. If equitability in education is concerned, male and female lecturers should receive equal care for their interpersonal and intrapersonal tensions.

These results contradict the study's first hypothesis about the correlation between demographic features and lecturer burnout in emergency online classes. They also contradictorily clarify the previous assumption

from Le et al. (2021) that higher education institutions in provincial areas in Vietnam tend to have more limitations in online teaching delivery than those in the cities. However, the findings align with Le et al. (2021) that male lecturers tend to be more competent in TPACK than their female counterparts (Scherer et al., 2017). From our findings, the researchers would like to doubt the prejudice that technology is inherently unfair as lecturers in cities are more familiar with teaching online than those in the countryside or provinces. We believe that, with adequate training and well-preparation, lecturers from the countryside will not be more intimidated by teaching or stressed out than those from big cities.

The Effects of Other Related Factors on Lecturer Burnout in the Emergency Online Classes (H2-H6)

Besides demographic features, this study corroborated the effect of other factors on lecturer burnout in emergency online classroom practice. These factors include Coronavirus anxiety, emergency teaching self-efficacy, TPACK, collegial support, and administrative support. Analysis of the study findings reported that although emergency teaching efficacy does not impact lecturer burnout, the five suggested antecedents affected two latent dimensions of burnout: the sense of achievement and exhaustion.

The findings' analysis results are consistent with previous research results (Dong et al., 2020; Joo et al., 2016; Pressley, 2021; Sokal et al., 2020), which disclosed that factors of collegial and administrative support and anxiety towards Coronavirus pandemic and TPACK affect lecturer burnout. Specifically, the study's findings first demonstrated that Coronavirus anxiety and emergency teaching anxiety positively correlate with lecturers' exhaustion from emergency online teaching classrooms. This view aligns with previous researchers' views (Hidalgo-Andrade et al., 2021; Pressley, 2021), which confirmed that anxiety during the Coronavirus-induced pandemic could create lecturer's different stressors, and that Coronavirus anxiety is one of the significant factors causing lecturer burnout in general. Because most of the population may be anxious about the Coronavirus, the potential methods here may go beyond the reach of lecturers or institutions. On a grander scale, the government must consider a holistic system of measures to alleviate the severity of this pandemic through medical care, vaccination, and preventive implementations. If the lecturers and educational professionals feel protected from the pandemic, their burnout may be reduced.

Second, findings from the study indicated that TPACK, collegial support, and administrative support are negatively correlated with lecturers' exhaustion from online teaching practice during the pandemic. This is consistent with previous research identifying sources of lecturer exhaustion and anxiety in online teaching in crisis circumstances (Dong et al., 2020; Joo et al., 2016; Kelly & Antonio, 2016; Pressley, 2021; Sokal et al., 2020). Regarding support resources (administrative and collegial supports), the findings suggested that only administrative support and TPACK positively affected how lecturers felt about their sense of achievement in the delivery of emergency online teaching classes. In other words, findings from the study revealed that lecturer burnout in emergency online teaching is negatively affected by such factors as collegial support, administrative support, and TPACK. In contrast, Coronavirus and emergency online teaching anxiety positively affect the lecturer's burnout in emergency online classes. Regarding lecturers' sense of achievement in Emergency online teaching, findings also indicated that TPACK and administrative support could positively affect their achievement. Institutions shoulder a tremendous responsibility in establishing a caring and supportive environment in which lecturers can release their stress and curb their burnout.

The study's findings help substantiate our initial hypotheses (H2, H4, H5, H6) in confirming the roles of emergency teaching anxiety, Coronavirus anxiety, TPACK, and support resources in yielding lecturers' exhaustion and burnout in emergency online teaching. Specifically, the findings affirmed that Coronavirus anxiety exacerbates lecturer exhaustion and burnout in emergency online classrooms. However, the study

also concluded that TPACK and support resources could reduce the lecturers' exhaustion. In addition, it is also demonstrated that anxiety toward emergency online teaching can positively affect the lecturers' exhaustion during the pandemic.

Moving Forward

This study highlights theoretical and practical implications and issues in Vietnam's emergency online higher education practice. Theoretically, the study findings contribute to the existing literature about lecturer burnout in emergency circumstances and crises. Specifically, findings from this study provided new insights into the general belief about antecedents of emergency online lecturer burnout in higher education in Vietnam. That is, it is not only massive over workload and TPACK that affect lecturers' emergency online teaching exhaustion and burnout, but also other antecedents related to support resources, mainly administrative and collegial support, and anxiety toward Coronavirus pandemic that can significantly impact the lecturer burnout in online teaching practice in the crisis.

The study reveals several concerns about higher education practice when transitioning from the traditional face-to-face classroom to online mode due to the pandemic. At the institutional level, the findings first revealed a lack of psychological programs and services provided for lecturers within higher education institutions. These are crucial to lecturers and staff during this challenging pandemic when they must work at home due to campus closures and lockdowns. From the participants' answers, we admit that psychological and professional consultants are not readily available in many Vietnamese institutions. Therefore, the critical suggestion we would like to make through this article is that administrators should consider establishing consulting services or employing psychologists so that lecturers can turn to them when they need emotional and psychological support. These results call for higher education leaders and administrators to provide appropriate and effective physical and psychological support to the academic and teaching staff. Such support can help lecturers alleviate unexpected stressors at both interpersonal and intrapersonal levels due to the pandemic's policies of campus closures and lockdowns (Hidalgo-Andrade et al., 2021).

Second, results from the study also proved that online teaching and learning would be enhanced effectively when the lecturers are released from the anxiety of online teaching or when they are familiar and motivated with this new-normal teaching practice. Given the current circumstance of the Covid 19-pandemic outbreak across countries, it is essential that online teaching and learning be considered one of the crucial solutions for the sustainable development of education. Adequate investment in infrastructures and facilities for online teaching, professional development programs to help lecturers become familiar with the software, tools, and applications used in online education, and workshops for expertise and experience exchange among faculty in enhancing the effectiveness of online education are some examples that higher education leaders and administrators can take into consideration.

At the lecturers' level, results related to the effect of demographic features on lecturer exhaustion and burnout, which reveal an insignificant difference between the two gender groups in all aspects under investigation, indicated a significant change in the mindset of teaching faculty in online teaching among institutions as well as institution leaders in online educational investment in the crisis. One potential explanation is that higher education institutions in Vietnam have experienced several times of the Covid-19 pandemic outbreak, which helps them realize that online teaching and learning is the crucial option for sustaining educational activities and communication with students. Therefore, adequate preparations have been made for this period of the pandemic. However, knowledge about lecturer anxiety towards emergency online classes and TPACK suggests that more training on coping strategies in emergency online teaching must be provided to lecturers and supporting staff. These training sessions will help develop and strengthen

the lecturers' adaptive alternatives in teaching and alleviate their reliance on support resources from the institutions since they may work at home without having on-hand support resources that the institutions can provide. Helping lecturers develop coping strategies may be an effective strategy for them to self-address stressors during the online class delivery, thereby alleviating burnout during the pandemic.

By looking back on what factors have contributed to lecturer burnout, the researchers not only aim to retrospect what has been happening in Vietnam, but also call for a holistic consideration of the pros and cons of the education transition to move forward. In other words, this research should not be perceived from the perspective of storytellers but rather from radical educators. In the foreseeable future, reliving our days before this Covid-19 terror is virtually impossible. However, this research was not merely conducted to memorize what happened. Indeed, this study demonstrated the limitations and strengths of the whole education system in reaction to emergencies. All the stakeholders in developing nations should join hands and move forward by providing long-term measures to transform emergency distance learning into a rigorous online learning system. Also, training for lecturers should not stop by providing them with traditional teaching techniques. Instead, lecturer training should be able to prepare them for unpreparedness psychologically, pedagogically, and physically. Artificial intelligence and other asynchronous platforms should be well-prepared to assist lecturers in synchronous teaching sessions during pandemics. We believe good preparation for the unpredictable is the ultimate method for education to move forward from reactive emergency teaching and learning to proactive online teaching and learning.

Limitations and Suggestions for Future Studies

Despite significant findings obtained, this study has still had several limitations. First, since the study was quantitatively conducted using a questionnaire to explore answers to the hypotheses, it does not explore in-depth information from the target participants about their insights of stress, exhaustion, and burnout from online teaching in emergencies. Therefore, future studies about teacher burnout may consider combining quantitative and qualitative methods to explore the issues. Second, this study is limited in that, although participating in the study included both lecturers in the cities and provinces, no representative from disadvantaged areas of the country may have more challenges in online education. Second, female participants outnumbered males, which may bias the study results related to anxiety toward emergency online teaching and TPACK. Thus, future research on the effect of emergency online teaching on faculty burnout must consider involving representatives from various regions of the country and adequate numbers of the two gender groups.

Finally, when higher education is shifted from the traditional face-to-face classroom to online education practice during the pandemic, stress and burnout may not only happen among lecturers, but also among other target participants, including students, institutional leaders and administrators, and parents may face. However, this study was only focused on lecturers at the tertiary level and lacked different voices from other participant groups. To complete the overall picture of online teaching and learning burnout in crises and emergencies, perspectives and insights from other participants involved in online education in emergencies may be explored in future research.

CONCLUSION

Given the current outbreak of the Covid-19 pandemic across countries with its unexpected influence on institutions and faculty, stress and burnout in emergency online classes among faculty and academics will bring more challenges to higher education institutions in Vietnam. This study consolidated previous research on burnout in online teaching, particularly in emergency circumstances, which confirms burnout antecedents of online classes in higher education. Besides conventional factors introduced in the existing literature, this research has provided an indiscriminate perspective that genders, locations, or even teaching

age do not create more burnout among lecturers. The research also incorporated the novel Corona Virus Anxiety scale, which justified that, rather than a myth, the pandemic apprehension indeed induced lecturer burnout. Results from this study revealed that although there are significant correlations between lecturer exhaustion in emergency online teaching and such factors as emerging teaching anxiety, TPACK, administrative support, collegial support, and Coronavirus anxiety at both positive and negative levels, no significant difference is found between lecturers' demographic features, including different genders and their residence, and their burnout state. This finding may be thanks to measures to guarantee equality for lecturers based on gender, residence, and experience. Lecturers from our research still needed TPACK training and support from different stakeholders, including their colleagues, administrators, and the government. Institution leaders and administrators can use this study's knowledge to develop appropriate strategies for alleviating burnout among faculty in emergency online education and strengthening online education for sustainable development through an adequate investment of time, money, and facilities for preparatory training activities. Long-term acting agendas, including professional training and emotional support to facilitate teacher psychology, are the ultimate method to help education progress in times of difficulties and crises.

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APPENDIX 1

Constructs	AVE	CR
Coronavirus anxiety scale	0.561	0.864
Emergency teaching anxiety	0.581	0.735
TPACK	0.524	0.766
Collegial support	0.6	0.882
Administrative support	0.551	0.710
Burnout dimensions		
Exhaustion	0.573	0.77
Sense of achievement	0.552	0.712

Note. Acceptable AVE = 0.5; CR= 0.7

APPENDIX 2

Model of Fit Indices

Fit indices	Post-modification values	Acceptable values
GFI	.936	GFI>.90
CFI	.962	.95<CFI<1
TLI	.952	.95<TLI<1
RMSEA	.043	RMSEA <.06
Chi-square/df	1.739	Chi-square/df <3
p.	<.001	p. <.005

The index criteria are adapted from Ainur et al. (2017) whereas they are quite robust when data are not normal. Absolute measures (GFI, AGFI, RMSEA and Mesci (2020)).

APPENDIX 3

Loading Factors

	Factor						
	1	2	3	4	5	6	7
Peer3	.876						
Peer2	.837						
Peer4	.764						
Peer1	.737						
Peer5	.702						
Covid3		.820					
Covid2		.781					
Covid5		.731					
Covid4		.717					
Covid1		.701					
TPACK9			.855				
TPACK8			.689				
TPACK5			.582				
Onlineanxiety5				.783			
Onlineanxiety7				.727			
Admin3					.764		
Admin5					.728		
Exhaustion7						.802	
Exhaustion8						.745	
Achievement1							.688
Achievement2							.703

THE EFFECT OF KNOWLEDGE SHARING, ATTITUDE, AND SATISFACTION ON NOVICE UNIVERSITY STUDENTS' ONLINE LEARNING ACHIEVEMENT

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ABSTRACT

In the academic year 2020-2021, students who had been accepted onto a university in Turkiye began their studies with the use of emergency remote teaching (ERT). The aim of this study is to examine the causal relationship between academic achievement, online course satisfaction, attitudes towards online learning and knowledge sharing behaviors of these novice university students in terms of the emergency remote teaching process. This research was designed to make use of correlational research methods. The study group consisted of 437 freshmen students studying in the Faculty of Education at a public university in Turkiye. Research data were collected using the Knowledge Sharing Behavior scale, the Online Course Satisfaction scale, the Online Learning Attitude scale, and a learning achievement test. Research data were analyzed using descriptive statistics, Pearson correlation analysis, and path analysis. The results showed that general acceptance, knowledge receiving, individual awareness and perceived usefulness significantly affected online course satisfaction. On the other hand, knowledge giving and application effectiveness factors did not significantly affect online course satisfaction. It is noteworthy that individual awareness, which compares face-to-face teaching activities with ERT to identify the preferences and awareness of the students, had a negative impact on their satisfaction. Finally, it was determined that online course satisfaction had a significant but low-level effect on learning achievement. In order to increase student satisfaction with regard to the ERT process, it is recommended that the university makes the opportunities more visible and provide support for students' acceptance of the process. Future avenues and precautions about designing the ERT courses have been suggested in light of the research findings.

Keywords: Online learning, knowledge sharing, course satisfaction, online learning attitude, learning achievement, COVID-19 pandemic.

INTRODUCTION

The Covid-19 outbreak was declared a pandemic by the World Health Organization on March 11, 2020 (Cucinotta & Vanelli, 2020) after which almost all educational institutions in the world switched to Emergency Remote Teaching (ERT). ERT is a temporary and often limited educational activity that is used to continue the teaching process in extraordinary conditions such as pandemics and natural disasters (Keskin et al., 2022; Nicolai & Triplehorn, 2003; Sinclair, 2002). According to Isman (2011), Distance Education (DE) was used for different purposes in the period before the introduction of ERT. A number of countries have benefited from the advantageous aspects of DE, given their particular circumstances. In terms of the ERT process, DE technologies started to be used in all levels of education due to the circumstances pertaining. The DE technologies were used as a lifebuoy in this extraordinary process. The data to be obtained with the research to be done with regard to the ERT process may present different results from those of previous DE studies (Ferri et al., 2020; Shisley, 2020).

The instruction process can also be thought of as a communication process. In this process, the teacher is the source, and the student is the receiver of the message. The message is transmitted from the source to the receiver via a communication channel. The efficiency of the teaching process increases in proportion to the quality of these communication channels (Yalin, 2006). Information and Communication Technology (ICT) assumes the role of the channel. In the educational context, ICT is also called instructional technology (Seels & Richey, 2012). In terms of DE and ERT, the internet infrastructure, Learning Management Systems (LMS) and synchronous/asynchronous communication tools are used as channels (Keskin et al., 2022). Therefore, these tools are important with regard to the efficiency of the teaching process. To the extent that they increase the interaction of students, they can make positive contributions to the teaching process. One of the ways of providing interaction between students is knowledge sharing (KS) (Tseng & Kuo, 2014). In other words, social participation is an important indicator of the extent of KS. KS can simply be thought of as sharing the knowledge acquired or produced by an individual in a virtual community with others (Yu et al., 2010). KS is different from information sharing (IS). The former is expressed in terms of an exchange of ideas and sharing of experience among individuals rather than the sharing of raw information as in the case of IS (Tong et al., 2013).

In this study, the interactions of the learners using instructional technologies were handled in the context of KS. Many variables are likely to affect KS behavior. There are individual, organizational, and technological variables that can act as barriers to KS behavior (Sohail & Daud, 2009). In addition, there are also variables that positively affect KS behavior. For example, if there is a sense of community among students communicating in the virtual environment, the KS behavior also increases (Yilmaz, 2016). In other words, as the interaction between students increases, they exhibit KS behavior. Similarly, KS behavior increases student engagement to the extent that it is exhibited (Kapur & Kinzer, 2007; Mazzolini & Maddison, 2007; Rasheed et al., 2020). In addition, as academic self-efficacy, which is a variable associated with academic success, increases, so too does the tendency to exhibit KS behavior (Yilmaz, 2016). As a result, KS interactions emerge as a decisive variable for satisfaction (Liao 2006) and course outcomes (Ghadirian et al., 2014).

The concept of attitude, which constitutes a large part of the affective domain (Balaban-Sali, 2006), can be defined as the mental state that has a decisive role to play on the behavior of the individual in certain situations (Gagne, 1985). There is a close connection between affective learning and behaviors (Kratwohl et al., 1973). In other words, the more positive and stronger the attitude one has about a situation, this mental state is reflected in behaviors. In this study, students' attitudes towards online learning were discussed. Attitude is discussed about four dimensions: acceptance, awareness, usefulness, and effectiveness (Usta et al., 2016). We investigated whether students' attitudes toward online learning have an impact on student satisfaction and course achievement in terms of ERT.

Learner satisfaction is one of the important quality indicators of distance education (Bayrak et al., 2020; McQuillan & James, 2010; Parahoo et al., 2016). The experiences of the learners affect their satisfaction level. In the context of DE, interactions, the presence of an instructor, content, communication channels, attitudes, and technological competencies appear as important predictors of satisfaction (Baber, 2020; Harsasi, & Sutawijaya, 2018; Nortvig et al., 2018). Dinh and Nguyen (2020) revealed that technical difficulties such as connection experienced in the online learning process affect students' satisfaction and

learning modality preferences. Learner satisfaction also guides researchers and practitioners when it comes to improving distance education programs (Khiat, 2013) and determining teaching effectiveness (Merisotis & Olsen 2000). Some studies reveal that learner satisfaction has a significant effect on continuance intentions towards e-learning (Chow & Shi, 2014; M. C. Lee, 2010; Pham et al., 2019). This situation, which can also be thought of as the loyalty of the learners, increases the probability of successful completion of the relevant course. In his research during the Covid-19 pandemic, Baber (2020) revealed that interaction, motivation, the structure of the lesson, and facilitation influence learner satisfaction. Zeng and Wang (2021) concluded in their literature review study that the synchronous opportunities provided to learners during the Covid-19 process suit the students' demand for face-to-face communication, which had a direct impact on their satisfaction.

During the pandemic process, educational activities continued by using online learning opportunities. However, the effectiveness of the teaching activities involved in this process was a topic of interest (Baber, 2020; Bdair, 2021; Bojovic et al., 2020; Gandasari & Dwidienawati, 2020; Keskin et al., 2022; Stevanovic, Bozic, & Radovic, 2021). In the evaluation of effectiveness, in addition to the above-mentioned affective characteristics such as attitude and satisfaction, student achievement was also an important indicator. Tung Son et al. (2020) revealed that the DE provided during the Covid-19 pandemic did not affect learner success either positively or negatively. In other words, they determined that learning performance was similar to that found in traditional learning environments (Tung Son et al., 2020). According to equivalency theory (Simonson, 1999), if learners receive equal learning experiences, learning results will not differ, regardless of the teaching modality. Similarly, Baber (2020), who carried out research during the pandemic, stated that the perceived learning outcomes were affected by opportunities, interaction, and motivation. As a matter of fact, while some studies state that there is a relationship between learner satisfaction and academic achievement (Kamemera et al., 2003; Khiat, 2013; Kim & Park, 2021), others stated that satisfaction with regard to DE does not always result in success (Khan & Iqbal, 2016; Moore & Kearsley, 2011). In this study, in order to eliminate this uncertainty, the effect of satisfaction on achievement was tested.

PURPOSE OF THE STUDY

In this research, the effect of knowledge sharing and attitude structures on online course satisfaction was examined first. Revealing the causal relationship between satisfaction and learning achievement constituted the final problem dealt with by this study. In this context, the research questions are as follows:

- RQ1. What is the level of novice university students'
 - a) online course satisfaction,
 - b) knowledge sharing behavior in online learning environments,
 - c) attitude towards online learning?
- RQ2. Does knowledge sharing behavior in online learning environments and attitude towards online learning affect online course satisfaction?
- RQ3. Does online course satisfaction affect students' learning achievements?

METHOD

In this section, the study group, the instruction process, the data collection tools, and the data analysis method are explained. This study is based on correlational research methods. There are two basic purposes of correlational research, exploratory and predictive (Fraenkel et al., 2012). This research was conducted as a predictive correlational study, in which the effect of predictor variables on the dependent variable was tested. The patterns between the predictor and dependent variables were revealed using path analysis, which is a special type of structural equation modeling (Olobatuyi, 2006).

Study Group

The study group consisted of 553 freshmen students studying in the Faculty of Education of a public university located in the eastern region of Turkiye. The university has been in existence for more than 40 years and has an important position in its region. It provides an education to approximately 30,000 undergraduate students. The Faculty of Education is also one of the major faculties of the university. The participants came together during the ERT process and did not see each other face-to-face. Ninety-two students who did not regularly participate in DE activities, and 24 students who did not respond to the data collection tools were excluded from the study group. The research was carried out using the data obtained from the remaining 437 students. In terms of gender, 68.2% of the participants were female and 31.8% were male. The distribution of the participants according to their departments are presented in Table 1.

Table 1. Distribution of the participants according to their departments.

Department	f	%	Cumulative %
ELT	67	15.33	15
Science Education	30	6.86	22
Fine Arts Education	36	8.24	30
Primary Mathematics	42	9.61	40
Mathematics Education	21	4.81	45
Pre-school Education	56	12.81	58
Guidance and Psychological Counselling	56	12.81	70
Primary School Teaching	59	13.50	84
Social Sciences	35	8.01	92
Turkish Language and Literature	22	5.03	97
Turkish Language Education	13	2.97	100
Total	437	100.0	

Data Collection Tools

In this study, four data collection tools were used: (I) Online Course Satisfaction scale, (II) Online Learning Attitude scale, (III) Knowledge Sharing Behavior scale in online learning environments and (IV) a learning achievement test. The Online Course Satisfaction scale (Bayrak et al, 2020) is a single factor scale consisting of eight items. The scale was prepared as a five-point Likert form. CFA fit indexes are $\chi^2(17)= 61.272$; RMSEA=0.046; GFI=0.988; CFI=0.995; NNFI=0.992. The second data collection tool is the Online Learning Attitude scale (Usta et al., 2016) consisting of 20 items and a four-factor structure. The sub-dimensions of the scale were named as general acceptance, individual awareness, perceived usefulness, and application effectiveness. The scale was structured as a five-point Likert type. Factor loadings of the scale's vary between 0.811 to 4.27. The third data collection tool used in the research is the Knowledge Sharing Behavior scale in online learning environments developed by Tseng and Kuo (2014) and adapted into Turkish by Avci Yucel and Ergun (2015). The scale consists of a total of nine items under two factors. Scale factors are named as knowledge receiving and knowledge giving. The scale is structured as a seven-point Likert type. CFA fit indexes are RMSEA=0.07; S-RMR=0.036; NNFI=0.98; CFI=0.99; GFI=0.96; AGFI=0.92; IFI=0.99. Table 2 shows the original and recalculated Cronbach's alpha values for the scales.

Table 2. Cronbach's alpha values for the scales

Data Collection Tool	Original Cronbach's alpha	Calculate Cronbach's alpha
Online course satisfaction scale	0.95	0.90
Online learning attitude scale	0.90	0.93
Knowledge sharing behavior scale	0.90	0.89

When Table 2 is examined, it is understood that the Cronbach alpha internal consistency coefficients of the scales are quite high. Accordingly, it was decided that the measurements were reliable. The validity analysis (EFA, CFA, Barlett test, fit indices) results of the scales used in this study were examined in their original articles and it was decided that these tools were suitable for collecting research data. Finally, the achievement test used in the research was developed by the researchers. There are 25 items in total in the test. In order to ensure the content validity of the test, particular attention was paid to covering the topics dealt with in the Information Technologies course as shown in Table 3. Test items were prepared to measure each acquisition, and experts examined the test items.

Instruction Process

This research was conducted over the period of 14 weeks in the autumn semester of the academic year of 2020-2021 as part of an Information Technologies course. The lessons were conducted in a single 40-minute session on a weekly basis. Sessions mainly consisted of video presentations on the part of the lecturer in the form of video conferences, with the students participating in these sessions as listeners. Students could ask questions and interact through written communication whenever they wanted. In addition, students had the opportunity to communicate with the instructor through asynchronous communication channels such as e-mail and messaging.

Course contents were presented through the ALMS (Academic Learning Management System) which is widely used in Turkiye. There were nine groups in total and each group size was 60 people on average. The Turkish Council of Higher Education (CoHE, 2021) determines the course outline of undergraduate teacher training programs in Turkiye. The contents presented within the scope of the course are summarized in Table 3.

Table 3. Course content.

Week	Course content
1	Introduction of the LMS to be used within the course
2	Hardware, Software, Programming and Algorithm concepts
3	Operating system concept
4	Internet, Browser, Search Engine concepts
5	use of e-mail
6	safe internet use
7	IT ethics and copyrights
8	word processor
9	word processor
10	spreadsheets
11	spreadsheets
12	presentations
13	cloud technologies
14	basic website design tools

Data Collection and Analysis

This research was conducted at a time when education was delivered via ERT due to the COVID-19 pandemic. Participants normally enrolled in a face-to-face education program. The data were collected in the last week of the term. The Information Technologies course aimed to both increase students' general information technology skills, and to enable them to recognize and use distance education technologies effectively. Since the participants of the research were in their first year of their university education, and the education process was carried out remotely, they had not previously met face-to-face on the university campus. Students undertook a 14-week distance learning experience via ERT. A local LMS environment was

used as the online learning environment. Virtual classroom, asynchronous video recordings, presentations, online quizzes, forums, and messaging tools were used in the lessons. Research data was analyzed using descriptive statistics, Pearson correlation analysis, and path analysis. Path analysis, which is a type of structural equation modeling, was used to show causal relationships between variables (Olobatuyi, 2006, p. 4).

FINDINGS

Students' Online Course Satisfaction, Knowledge Sharing Behaviors, Attitudes toward Online Learning and Achievement Levels (Findings related to RQ1)

The first research question of this study aims to reveal the current extent of students' online course satisfaction, knowledge sharing, attitude, and achievement variables. The descriptive statistics relating to the first research question are given in Table 4.

Table 4. Descriptive statistics.

Construct	Factors	N	Min.	Max.	Mean	Category	Sd
Knowledge sharing	Knowledge receiving	437	1	7	5.06	↑	1.40
	Knowledge giving	437	1	7	3.42	↓	1.50
	General acceptance	437	1	5	2.96	↓	0.89
Attitude towards online learning	Individual awareness	437	1	5	2.42	↓	1.21
	Perceived usefulness	437	1	5	3.58	↑	1.23
	Application effectiveness	437	1	5	3.35	o	0.95
Online course satisfaction	Satisfaction	437	1	5	3.71	↑	0.89
Learning Achievement	-	432	36	100	79.17		11.94

↑ Above Moderate o Moderate ↓ Below Moderate

The minimum, maximum, mean, and standard deviation calculated for the variables are as shown in Table 4. The mean scores were interpreted in three categories as high, low, and moderate. Accordingly, when the mean scores with regard to the knowledge sharing behavior in online learning environments were examined, the factor of knowledge receiving ($\bar{x}=5.06$) was above the moderate, while the factor of knowledge giving ($\bar{x}=3.42$) was below the moderate. When the mean scores of the sub-dimension of the attitude towards online learning were examined, the perceived usefulness ($\bar{x}=3.58$) factor was above the moderate, the application effectiveness ($\bar{x}=3.35$) was moderate, and the general acceptance ($\bar{x}=2.96$) and individual awareness ($\bar{x}=2.42$) factors were below moderate. Considering the mean scores regarding online course satisfaction ($\bar{x}=3.71$), it was above the moderate level. When the standard deviation values were examined, the highest value were calculated to exist for the knowledge giving factor ($SD=1.50$). The standard deviation values of the general acceptance and application effectiveness sub-factors of the online course satisfaction measurement and the attitude scale towards online learning were relatively low. Accordingly, the students showed a more homogeneous distribution in these dimensions. In terms of academic achievement, the mean scores of the students were generally high ($\bar{x}=79.17$; $Sd=11.94$).

Examining the Model of Attitude towards Online Learning, Knowledge Sharing Behavior, Course Satisfaction, and Learning Achievement (Findings of RQ2 and RQ3)

Within the scope of the second and third research questions of this study, a model was created by using path analysis. First, the findings on data-model fit were examined. The effect of knowledge sharing behavior in online learning environments and the attitude towards online learning on online course satisfaction were then investigated. Finally, the effect of online course satisfaction structure on learning achievement was presented. The fit indices of the model (χ^2 / df , RMSEA, S-RMR, GFI, NNFI, CFI and IFI) were examined and summarized in Table 5.

Table 5. The research model fit indices.

	χ^2 / df	RMSEA	S-RMR	GFI	NNFI	CFI	IFI
Model Results	1.98	0.048	0.021	0.99	0.99	0.99	0.99
Acceptable fit	<3	<.080	<.080	>.90	>.90	>.90	>.90
Perfect fit	<2	<.050	<.050	>.95	>.95	>.95	>.95

$\chi^2 = 11.91, df = 6$

In Table 5, acceptable and perfect fit values were given (Tabachnick & Fidell, 2007; West et al., 2012). When the calculated values were examined according to these values, our structural model fit perfectly. Table 6 shows the Pearson correlation coefficients and significance values calculated to explore the correlation between the variables.

Table 6. Pearson correlations.

Variable	Correlations							
	1	2	3	4	5	6	7	8
Knowledge receiving [1]	1	,532(r)	,262(r)	,170(r)	,321(r)	,317(r)	,466(r)	,086(r)
Knowledge giving [2]	0.00(p)	1	,345(r)	,267(r)	,200(r)	,335(r)	,371(r)	,075(r)
General acceptance [3]	0.00(p)	0.00(p)	1	,764(r)	,572(r)	,604(r)	,537(r)	,068(r)
Individual awareness [4]	0.00(p)	0.00(p)	0.00(p)	1	,620	,601(r)	,355(r)	,102(r)
Perceived usefulness [5]	0.00(p)	0.00(p)	0.00(p)	0.00(p)	1	,599(r)	,449(r)	,184(r)
Application effectiveness [6]	0.00(p)	0.00(p)	0.00(p)	0.00(p)	0.00(p)	1	,421(r)	,084(r)
Satisfaction [7]	0.00(p)	0.00(p)	0.00(p)	0.00(p)	0.00(p)	0.00(p)	1	,160(r)
Learning achievement [8]	0.07(p)	0.12(p)	0.16(p)	0.03(p)	0.00(p)	0.08(p)	0.00(p)	1

When Table 6 was examined, there was only a significant relationship between learning achievement and individual awareness, application effectiveness, and satisfaction ($p < 0.05$). Learning achievement was not correlated with other constructs. Apart from this, all other structures were interrelated ($p < 0.05$). In addition, the lowest correlation coefficients were mostly calculated for the learning achievement structure. The hypothesized model with standard coefficients is given in Figure 1.

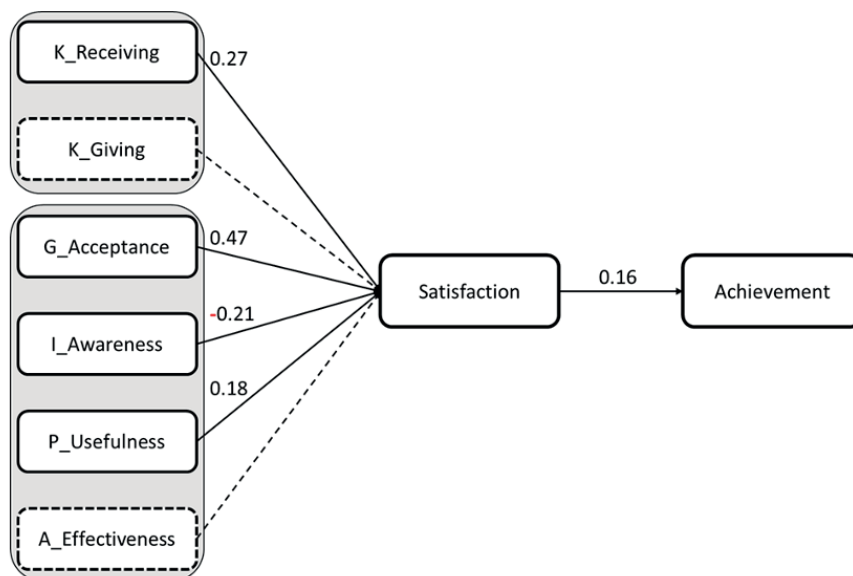


Figure 1. The hypothesized model with standard coefficients

The research model and the path coefficients showing the relationships between structures is given in Figure 1. T-values were calculated to test the significance of the path coefficients. According to these values, the factors of knowledge giving ($t=1.58$) and application effectiveness ($t=0.86$) did not significantly predict online course satisfaction ($p<.05$). The paths related to these variables are shown with dashed lines. The general acceptance ($\beta=0.47$, $t=7.84$), knowledge receiving ($\beta=0.27$, $t=5.89$), individual awareness ($\beta=-0.21$, $t=-3.42$) and perceived usefulness ($\beta=0.18$, $t=3.56$) factors significantly predicted online course satisfaction. The individual awareness factor had a negative effect. These factors explained 43% of the variance in the satisfaction variable. The online course satisfaction variable had a significant effect on learning achievement ($\beta=0.16$, $t=3.36$). This was the lowest coefficient in the model. Satisfaction explained only 3% of the variance in the achievement variable.

DISCUSSION AND CONCLUSIONS

This study aimed to examine the causal relationship between academic achievement, online course satisfaction, attitudes towards online learning, and the knowledge sharing behaviors of university students in the ERT process. The most important limitation and strength of this study was that it was conducted in the context of ERT under the unique circumstances of the pandemic. Therefore, it is not appropriate to evaluate the results obtained from this research in the general context of the DE. In this research, firstly, descriptive statistics were calculated for variables. While the mean scores of the knowledge receiving, the perceived usefulness, and online course satisfaction were above moderate; knowledge giving, general acceptance and individual awareness were found to have averages below moderate. Students had a moderate mean score with regard to the application effectiveness. Class sizes within the scope of the course were around 60 students. In this process, a domestic LMS which is widely accepted within higher education in Turkiye was used. The teaching process was mainly carried out through virtual classrooms, video recordings and presentations. In the applied ERT process, a teaching approach that could be described as traditional was used. In other words, the students went through a learning process where they rarely engaged in online social interaction and became the recipient of information on the screen. Therefore, it was considered that the students' predominantly one-way knowledge-sharing behaviors influenced knowledge receiving mean scores which were above the moderate level and that knowledge giving was low. According to Gandasari and Dwidienawati (2020), although the teaching methods applied in the Covid-19 process vary, most of the methods applied were not learner-centered. In addition, it was stated that the weakness observed in the quality of communication between stakeholders might be due to weak communication networks, low usage of two-way communication tools, insufficient infrastructure, and insufficient financing (Bdair, 2021; Bojovic et al., 2020; Gandasari & Dwidienawati, 2020; Keskin et al., 2022). Knowledge sharing is an important structure that is closely related to online learning interaction (Chao et al., 2011). The result of this research showed that the ERT offered during the pandemic period was insufficient to create a learning community with a high level of interaction and a full exchange of knowledge.

The lack of encouragement for social connection, the technological divide, and the technical and socio-economic difficulties students face when participating in ERT have all resulted in lower general acceptance and individual-awareness levels. In addition, it was thought that the students' learning through DE for the first time, and their unsatisfactory experience resulted in the low individual awareness scores. The individual awareness component in this study contains remarks concerning the differences between online education and face-to-face learning (Usta et al., 2016). The students' lack of experience, along with the fact that ERT was an obligatory, non-optional process, may have had a negative impact on their awareness. The course satisfaction of the students was above the moderate level and could have been associated with the fact that the lecturers conducting the course were subject area experts, the teaching process was supported with different types and quality of materials, the quality of support service and the university's DE infrastructure (J. W. Lee, 2010; Pham et al., 2019). In the Covid-19 situation, instructor knowledge and interaction elements were positively reflected in the satisfaction of the learners (Baber, 2020). In their research, Al-Hawari and Mouakket (2010) determined that design features, perceived usefulness, and enjoyment, had a decisive role to play with regard to learner satisfaction with the e-learning process. The faculty members who delivered the course with regard to which this research data was collected are competent both in the subject area dealt with by the course and in DE and instructional design. Although there were various limitations

(technical, financial, etc.) related to the pandemic situation, it could be said that they had a relatively good DE experience within the scope of the course under consideration. It was thought that this situation reflected positively when it came to learner satisfaction.

When the averages related to the perceived usefulness were examined, it was seen that student perception was at a good level. As a matter of fact, when the literature was examined, it was seen that learner self-efficacy, ease of use, experiences and skills had a positive effect on perceived usefulness (Irani, 2000; Landrum, 2020; Venkatesh & Davis, 2000; Yucel & Gulbahar, 2013). It can be thought that the ease of use and low complexity of LMS had a positive effect on the perception of usefulness.

Application effectiveness, which is a component of the attitude towards online learning, refers to the active participation of stakeholders (Tseng & Kuo, 2014). As a result of this research, it was determined that the students were similar to each other in terms of active participation and they participated to ERT activities at moderate level. The fact that students were receivers in an online learning environment and that they had only a low level of knowledge sharing behaviors, was another sign of their moderate participation in the environment. Although online learning offers advantages such as easy access to materials, independence in terms of time and place, and the ability to learn at one's own pace, this situation did not create enough perception of effectiveness on the part of the learners. Charissi et al. (2020) noted that the lack of experience, lack of interaction, and feelings of social isolation were the most important disadvantages associated with the ERT process. It is thought that these disadvantages influenced the active participation of the learners.

In this study, a path model was created to answer the second and third research questions. The model had perfect fit values. The variables of knowledge sharing behaviors and attitudes towards online learning significantly predict online course satisfaction and explain 43% of the variance with regard to online course satisfaction. The main findings from the model are discussed below in order of importance.

The most important predictor of online course satisfaction was the general acceptance dimension of the attitude towards online learning. It can be said that the satisfaction of the students who accepted the online learning environment was also high. The general acceptance structure contains statements about the learners' finding the environment effective, their intention to use it, and their perception of it as productive (Usta et al., 2016). Saxena et al. (2021) found that educational opportunities provided during the Covid-19 epidemic had a positive impact on students' perceptions of quality and satisfaction. As technology adoption advances, students might find it easier to adapt to the learning process. Ghazal et al. (2018) stated that there was a significant relationship between technology acceptance and learner satisfaction with regard to the use of learning environments. The temporal and spatial autonomy advantages of e-learning also positively affected learners' perception of acceptance and satisfaction (Al-Hawari & Mouakket, 2010). It can be thought that these advantages offered in this challenging period facilitate the student's acceptance and satisfaction.

The second important predictor of online course satisfaction was the knowledge receiving dimension. On the other hand, the dimension of knowledge giving didn't have a significant effect on satisfaction. Knowledge sharing behavior, which has a complex structure, could be associated with many variables (Ghadirian, Ayub, Silong, Bakar & Zadeh, 2014). For example, while variables such as trust among team members (Pangil & Chan, 2014; Kipkosgei et al., 2020), self-efficacy (Alajmi, 2011; Nguyen & Malik, 2020), perceived enjoyment (Lin et al., 2020), and sense of spirituality (Rahman, Fattah, Hassan & Haque, 2020), could affect this behavior positively. On the other hand, individual, organizational, and technological barriers (Sohail & Daud, 2009) could affect behavior negatively. The role of the instructor also appeared as an important variable (Ghadirian, Ayub, Silong, Bakar & Zadeh, 2014). Knowledge giving in online environments can operate in two ways: The first is the way in which experts share knowledge directly through the use of multimedia, and the second is the ways in which people come together to solve a problem (Jadin, Gnams & Batinic, 2013). Within the scope of this study, it was mainly the case that instructors shared knowledge. In this process, even if the students had the opportunity to communicate with the lecturers and other students, they participated as passive listeners in general. Knowledge sharing behaviors effects learning performance positively (Eid & Al-Jabri, 2016). A similar finding was obtained in the current study. Knowledge receiving positively affected students' satisfaction, which indirectly reflected on learning achievement. Finally, one-way communication within the ERT process could be attributed to the low mean scores in terms of knowledge giving and application effectiveness.

Individual awareness had a significant and negative effect on online course satisfaction. The individual awareness structure is related to the awareness of the extent to which the learning service received by the individual is effective (Usta et al., 2016). The result of this research may be due to the inability of the ERT process to meet the expectations of students. The disruptions in social, organizational, and personal time management brought on by the pandemic had a negative impact on learners' views of the learning process (Charissi et al., 2020). In addition, the low interaction in the ERT process, the limited distance education activities, the technical problems, and other limitations were thought to be the reason why the expectations of the students with a high level of awareness could not be met.

Student satisfaction was favorably influenced by students' perceptions of the online learning environment as being useful, or favorable in terms of efficiency. Various studies found perceived usefulness to be an important predictor of learner satisfaction in the e-learning environment (Ghazal et al., 2018; Jo et al., 2018; Lwoga, 2016; Park & Kim, 2012; Saxena et al., 2021). As the system's functionality grows, so would the learners' productivity, learning performance, and control over the system and the learning process, all of which contribute indirectly to learning satisfaction (Lwoga, 2016). Learners' flexibility with regard to conveniently accessing learning resources, being independent in terms of time and place, being autonomous in the learning process, managing the learning process, and working in an effective and efficient atmosphere all contribute to their satisfaction (Al-Hawari & Mouakket, 2010). On the other hand, the technology acceptance model (Davis, 1989) reminds us how perceived usefulness was an important determinant of the users' intention and behavior when it comes to using the e-learning environment. i

Learning achievement was explained by the online course satisfaction variable, which had a significant but small effect. In their research conducted during the pandemic process, Kim and Park (2021) revealed that distance e-learning satisfaction affects learning outcomes. On the other hand, although student satisfaction with regard to DE was an indicator of the quality of the educational services provided, Khan and Iqbal (2016) reported that there was no significant correlation between learning achievement and learner satisfaction. Similarly, Moore and Kearsley (2011) state that satisfaction with DE may not be correlated with learning achievement. Moreover, according to the findings of this study, learner satisfaction resulting from resources provided during the ERT process had little impact on learning achievement.

Suggestions

This study has noteworthy implications in terms of addressing students' knowledge sharing, attitudes, satisfaction, and academic achievement during the Covid19 pandemic. It reveals the role of satisfaction in the ERT in many ways. The findings provide important indicators for a comparison of the pre-pandemic and post-pandemic periods. So here are a few suggestions in this particular respect:

- (1) When the individual awareness factor score was examined, it was understood that the students did not find ERT particularly advantageous compared to face-to-face learning. An in-depth examination of the underlying causes of this situation is recommended.
- (2) In order to increase student satisfaction in the ERT process, it was recommended that there was a need to make the opportunities more visible, and to provide support for students' acceptance of the process.
- (3) Another major indicator of satisfaction was that students find the ERT process informative, and benefit from the e-learning environment. Therefore, it is thought that the richness of the material and the contents in this environment will contribute to the level of satisfaction.
- (4) Being aware of the negative aspects and challenges encountered had a detrimental impact on satisfaction. In this context, it is obvious that there is a need for interventions that will positively affect individual awareness.
- (5) In future studies, existing variables can be retested in courses in which bidirectional knowledge sharing is carried out. Thanks to subsequent studies to be carried out in this way, it will be possible to retest whether or not the sub-measures of knowledge giving, application effectiveness, and individual awareness alter results.
- (6) An established DE process might be subjected to research similar to that which is now being done with regard to the ERT process. Thus, a comparison can be made between ERT and DE approaches.

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DISHONESTY IN ONLINE LEARNING: DISTANCE LEARNING PERSPECTIVES DURING PANDEMIC

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ABSTRACT

Academic dishonesty has become a serious concern, particularly during the Covid-19 pandemic era, where online learning is left as a single option in almost all academic activities. Lack of graduate ethics has an impact on attitudes in the workplace. Therefore, it is important to introduce academic integrity to students in higher education to foster an attitude of honesty in the world of work, especially ethics. Online lectures encourage students to violate academic integrity due to the lack of direct interaction and administration. This study aims to see the level of academic dishonesty that occurs during online lectures. The research was conducted by the Faculty of Economics and Business, public and private universities. The number of samples is 431 students of economics and business. We examine the effect of lecture administration, lecturer-student interaction, and learning satisfaction on the impact of academic dishonesty. The results showed that clear administration and good interaction between lecturers and students would increase student learning satisfaction and reduce academic dishonesty. But the satisfaction that students want to achieve does not have a significant effect on the level of academic dishonesty. Implications for practice are discussed and future research directions are offered.

Keywords: Academic dishonesty, administration, lecturer-student interaction, learning satisfaction, distance learning.

INTRODUCTION

The importance of behavioral education in higher education aims as a basis for inculcating an attitude of academic integrity in students. The academic scandal has become a public concern because it is related to ethics and academic norms. Research conducted Brown & Choong (2005) shows that ethics and behavior have an impact on academic integrity. Lack of academic integrity causes academic cheating which has an impact on cheating in the workplace (Iberahim et al., 2013). The problem of academic dishonesty is serious in the world of education and is a concern at the world level (Bashir & Bala, 2018; Grijalva et al., 2006; Iberahim et al., 2013; Krishnamurthi & Rhode, 2018). In 2018, cases of plagiarism were found in the academic environment, namely the copying of academic manuscripts in the form of dissertations and scientific articles

where academics did not include the source of writing. In some developed countries themselves, almost 70% of students commit academic violations (Benson et al., 2019; McCabe, 2005; Stephens et al., 2010). This attitude results in academic dishonesty to the detriment of others. The importance of academic integrity is to create a good image in universities and avoid cheating in the workplace.

The phenomenon of online learning has raised concern in all academic institutions significantly (Alvarez, 2020; Dhawan, 2020). Besides the pandemic, which has caused many countries to require their students to study online, the development of technology, especially learning facilities and infrastructure, is also a challenge for universities (Krishnamurthi & Rhode, 2018; Lim & Wang, 2017; Rodchua, 2017; Spaulding, 2009) prepare the right method so that online learning has the same benefits as face-to-face learning. There are advantages and disadvantages to online learning. The advantage is that online learning can reach more remote areas including rural areas and has a lower cost, while the disadvantage is that the lack of supervision and interaction between teachers and students as well as between students causes ethical violations in the form of academic dishonesty (Sileo & Sileo, 2008). This is the biggest challenge for universities in maintaining academic integrity to avoid academic dishonesty which ultimately affects attitudes and behavior in the world of work (Bashir & Bala, 2018; Ellahi et al., 2013; Iberahim et al., 2013; Krishnamurthi & Rhode, 2018; Nazir & Aslam, 2010; Poorian et al., 2013; Spaulding, 2009; Yankelovich & Furth, 2005).

There are still many universities or teachers who consider academic dishonesty as not a serious problem for students, but they are not aware that this attitude will have an impact on the work environment (Iberahim et al., 2013; Monahan et al., 2018) thus failing to provide ethical knowledge to participants. students (Coalter et al., 2007). There are reasons why students take acts of academic dishonesty such as lack of academic sanctions given, an excessive number of students, technological developments, unlimited learning resources and lack of supervision and interaction between teacher-students and students and students, peer pressure, lecture policies unclear learning outcomes, anxiety about learning outcomes, and lack of understanding of the material received (Burton et al., 2011; Grijalva et al., 2006; Krishnamurthi & Rhode, 2018; Sileo & Sileo, 2008). Therefore, this has set an important concern for all parties, both teachers, students, and universities, regarding to overcome the negative effect on the occurrence of academic dishonesty.

The research conducted by Grijalva et al. (2006) shows that the lack of interaction in online learning indicates greater cheating than in traditional classrooms. This is in line with research Krsak, (2007) which states that the lack of direct interaction provides opportunities for students to commit fraud.

In addition, institutions play an important role in preventing fraud where regulations provide limits for students not to commit academic dishonesty. Research conducted Krishnamurthi & Rhode, (2018), Krsak, (2007), Mahabeer & Pirtheepal, (2019) shows that institutions have an important role in preventing fraud and plagiarism by providing supervision and sanctions against ethical violators.

Another factor that influences someone to commit academic fraud is the satisfaction to be achieved in the form of better learning outcomes or competition (Higbee & Thomas, 2002). However, research conducted Pino & Smith, (2003) shows that students who want to have high average grade satisfaction through learning satisfaction and generic satisfaction will have more academic ethical attitudes and tend not to cheat. This study aims to examine the role of lecture administration, interaction in the classroom, satisfaction in the learning process, and the generic impact on students' academic dishonesty. The results of this study are expected to provide input to all parties, both institutions, teachers, and students in maintaining academic integrity and avoiding academic dishonesty.

RESEARCH METHOD

Participant and Context

The main objective of this study is to analyze the relationship among academic dishonesty, interaction and learning satisfaction of accounting university students in Indonesia. As mentioned in the earlier section, the major learning-related activities are conducted online, promoting a lack of supervision and social interactions among most university students, lecturers, and academic staff. Subsequently, we developed a survey instrument elaborating the abovementioned concerns into a set of online questionnaires that were further distributed to the accounting undergraduate students of state and private universities in the North Sumatera Province, the third-largest province in Indonesia.

Instrumentation and Scale

A Likert scale is used consisting of 4 questions is set to direct respondents answering each question provided in the survey instrument (K. T. Jones & Chen, 2008; Marks et al., 2005). The respondents perceptions of generic ability and learning satisfaction were detailed into 9 individual questions modifying the instrument of Chen & Jones (2007) study. Academic dishonesty shows cheating committed by students in the learning process such as plagiarism. All question items use 4 Likert scale measurements where one is disagree, two disagree, three agree, and four strongly agree following Iberahim et al. (2013) study's setting.

Data Collection and Analysis Methods

The first stage of data collection is to set question items for each variable. The question items are then arranged in the form of a google form. Previously, the validity and reliability tests were carried out on 30 respondents outside the research sample. After passing the validity and reliability test, the google form was given to the respondents. The data collection method uses probability sampling. The number of respondents who answered the question was 431 people. This research was conducted on online-based learning, highlighting that academic fraud is more significant than the conventional face-to-face class. Hypothesis testing using Structural Equation Modeling (SEM). Specifically, SEM analyzes the relationship between administration and interactions during the learning process that affects academic dishonesty through perceptions of generic abilities and learning satisfaction. The tools used are SPSS and Smart-PLS.

FINDINGS

Academic dishonesty is a serious concern for all academicians in universities across the globe. This has something to do with fraud in the workplace (Iberahim et al., 2013). The importance of building academic integrity so that the graduates produced have ethics and loyalty (Coalter et al., 2007) and is a big challenge for universities and the social environment (Spaulding, 2009; Witherspoon et al., 2012). Therefore, it is important to build academic integrity to produce academic ethics in the world of education and work. Table 1 shows the Pearson Correlation matrix between variables. The results show that all variables are inversely proportional to academic dishonesty. Table 2 shows the feasibility test of the research model. Based on the examine shows that this research model is declared feasible. Table 3 shows hypothesis testing where all variables have a negative effect on academic dishonesty except for learning satisfaction. Finally, table 4 shows the strong or weak influence of each variable on academic dishonesty.

The number of samples in this study was 431 people. The research was conducted at private and public universities in the Province of North Sumatra. In this study, respondents consisted of 87 (20%) men and 344 women (20%). Respondents who participated in this study consisted of a minimum of 17 years, a maximum of 46 years, and the average age of respondents was 20 years. The origin of domiciles from outside the city is 250 people (58%) and within the city, 181 people (42%) so more students come from outside the city. Besides that, most of the respondents who took part in this study were from undergraduate level, namely as many as 405 people, then 22 people for masters and 4 people from doctoral programs. The 42 respondents came from private universities and 389 people came from state universities. The GPA of the respondents in this study consisted of 27 people from 2.5 to 3, a GPA of 3.01 to 3.5 consisted of 276 respondents, and above 3.5 consisted of 128 people. In this online learning, the lecturer still gives daily assignments so that students can repeat the material that has been delivered. The results of the questionnaire given showed that there was 1 person who did not repeat the task every day, 29 people repeated/worked on the task less than 1 hour per day, for 1 hour to 2 hours consisting of 141 people, 2 to 3 hours consisted of 131 people and the last over 3 hours 129 people. The E-Learning media used in online learning consists of 150 LMS students, 257 Google Classroom students, 16 WhatsApp members, 1 YouTube student, and 7 others, so it can be concluded that the majority of online learning uses e-Learning media. Google classroom. Based on interviews conducted, the use of Google Classroom is because it is easier to use than other e-learning. The following are the results of categories on research variables.

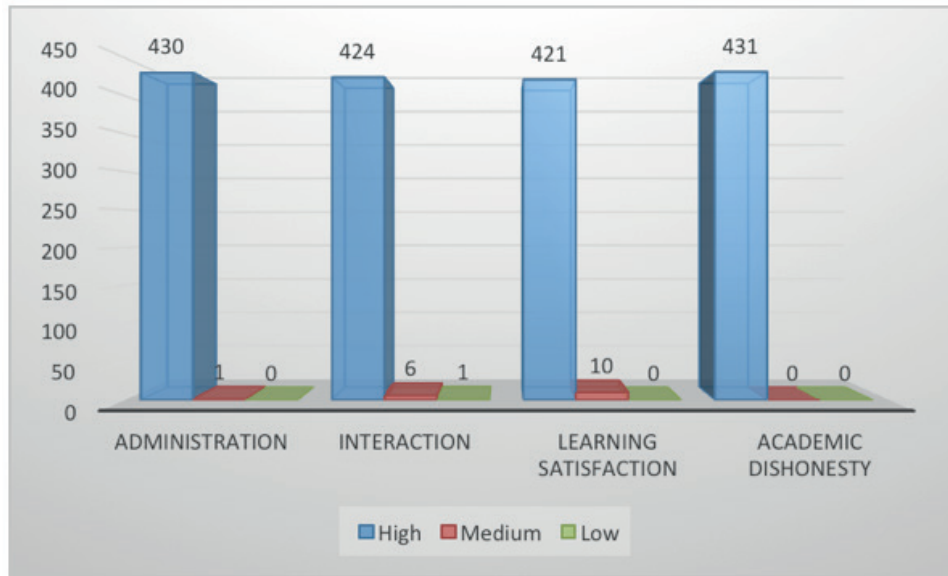


Figure 1. The Distribution of Responses of Research Variables

Figure 1 shows the administrative variable as many as 430 respondents answered agree so that it is included in the high category. Likewise, interaction variables are included in the high category where as many as 424 respondents answered agree, indicating that there is high interaction between students and lecturers during online learning. Learning satisfaction shows that there is high satisfaction felt by students during online learning where the learning process and the use of good methods provide a good understanding to produce learning satisfaction. But the academic dishonesty variable shows high dishonesty where all respondents give high respondents to questions related to academic dishonesty. These results indicate that despite high administration, high interaction, and high learning satisfaction, the academic dishonesty of students is also high.

Respondents were given questions related to academic integrity projected against academic dishonesty where the exogenous variables in this study were the administration of lectures given by lecturers at the beginning and during lectures, interactions during lectures between lecturers-students and students, and perceptions related to learning satisfaction where this study seen in the perception of online learning during this pandemic. The following are the results of testing the Pearson correlation coefficient.

Table 1. Correlation Coefficient of Research Variables

		Administration	Interaction	Learning Satisfaction	Academic Dishonesty
Administration	Pearson Correlation	1	.574 **	.587 **	-.185 **
Interaction	Pearson Correlation	.574 **	1	.505 **	-.218 **
Learning Satisfaction	Pearson Correlation	.587 **	.505 **	1	-.208 **
Academic Dishonesty	Pearson Correlation	-.185 **	-.218 **	-.208 **	1

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

Based on the table above, the results show that all variables have a strong relationship because they have a significant value less than 5% or a value greater than the r product moment value of 0.098. Based on these tests all variables show a strong relationship. But the correlation can be in the form of a positive correlation and a negative correlation where a positive correlation indicates a stronger relationship between a variable, while a negative correlation between one variable will strengthen and weaken the other variables.

The next examine is to test whether the research model is said to be feasible or not. The test is by looking at the values of Cronbach's Alpha, ρ_A , Composite Reliability, Average Variance Extracted (AVE). The following are the results of the model's feasibility test.

Table 2. Model Feasibility Test

	Cronbach's Alpha	rho_A	Composite Reliability	Average Variance Extracted (AVE)
Academic Dishonesty	0.740	0.805	0.831	0.554
Administration	0.720	0.728	0.819	0.532
Interaction	0.716	0.739	0.826	0.547
Learning Satisfaction	0.733	0.746	0.849	0.653

According to Thorndike, (1995), Vinzi et al., (2010) it is said that a model is good if the Cronbach's Alpha value is greater than 0.7. Based on these tests, it can be seen that the value of Cronbach's Alpha is greater than 0.7. In addition, when viewed from the value of rho_A which according to Vinzi et al., (2010) must have a value greater than 0.7, it also shows a result greater than 0.7. The next examining is to see the feasibility of the model by examining composite reliability. According to Bagozzi & Yi, (1988), Chin & Dibbern, (2010) that a model is feasible if the composite reliability value is greater than 0.6. The conclusion of the test shows a result greater than 0.6. The next model feasibility test is examining average variance extracted according to Bagozzi & Yi, (1988), Chin & Dibbern, (2010), Fornell & Larcker, (1981) that the model is feasible if the AVE value is greater than 0.5. In Table 2 above, the AVE value for all variables is greater than 0.5.

Hypothesis Test

We examine using the Structure Equation Model (SEM) to see academic integrity during online learning. As for examine academic integrity by looking at how academic dishonesty is committed by students during distance learning such as cheating, plagiarism, cheating, and others. As for this study, examine was conducted on academic dishonesty through lecture administration, interaction, and learning satisfaction. The following are the examine results using the SEM model.

Table 3. Hypothesis Testing

Variable		Direct Influence	Indirect Influence	Total Influence
Administration -> Academic Dishonesty	Path Coefficient	-0.134	-0.016	-0.149
	t statistic	2.164	0.472	2,538
	p value	0.031	0.637	0.011
Administration -> Learning Satisfaction	Path Coefficient	0.490		0.490
	t statistic	11.191		11.191
	p value	0.000		0.000
Interaction -> Academic Dishonesty	Path Coefficient	-0.136	-0.009	-0.145
	t statistic	2.157	0.476	2.475
	p value	0.031	0.635	0.014
Interaction -> Learning Satisfaction	Path Coefficient	0.271	-	0.271
	t statistic	5.524	-	5.524
	p value	0.000	-	0.000
Learning Satisfaction -> Academic Dishonesty	Path Coefficient	-0.032	-	-0.032
	t statistic	0.478	-	0.478
	p value	0.633	-	0.633

Based on table 3 above, shows that the administrative variable directly affects academic dishonesty (p-value = 0.031) while indirectly having an insignificant effect on academic dishonesty (p-value = 0.637) so that in total it shows that administration has a significant negative effect on academic dishonesty. The next examine administration has a direct effect on learning satisfaction. The results show that the administration

directly has a significant positive effect on the level of student learning satisfaction (with the results of each p-value = 0.000). Examining the interaction directly on academic dishonesty showed a significant negative effect (p-value = 0.031) while indirectly through learning satisfaction showed a negative insignificant. But overall showed a significant negative effect (p-value = 0.014). The interaction has a significant positive effect on learning satisfaction (p-value = 0.000). Meanwhile, satisfaction shows an insignificant negative towards academic dishonesty (p-value 0.633). Table 4 shows how much influence exogenous variables have on endogenous variables. The following are the results of the R square test.

Table 4. Value of R Square

	R Square	Conclusion
Academic Dishonesty	0.062	Weak
Learning Satisfaction	0.423	Currently

Based on table 4 above, shows that the variables of administration, interaction, and learning satisfaction have a weak influence on academic dishonesty, which is 6.2% and the rest is influenced by other variables outside the study. While the variable of student learning satisfaction shows that administration and interaction affect learning satisfaction by 0.423 or 42.3 % including moderate effect and the rest is influenced by other variables outside the study.

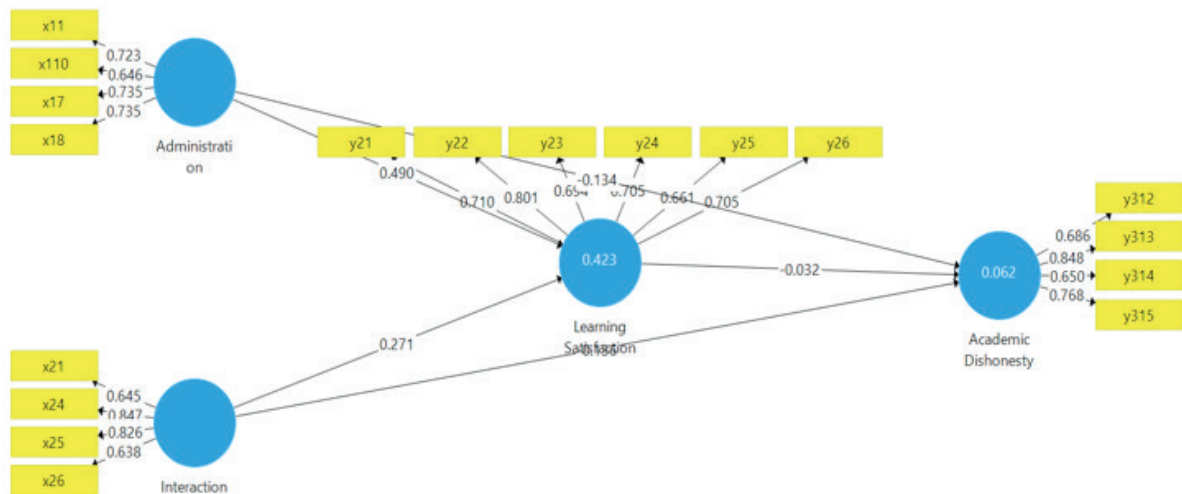


Figure 2. Analysis of Partial Least Square

DISCUSSIONS AND CONCLUSION

This study was conducted to examine the effect of lecture administration, interaction, and learning satisfaction on academic dishonesty. The existence of a clear administrative provides student satisfaction in achieving the learning outcomes to be achieved and through clear regulations will avoid academic dishonesty. The role of lecturers in online learning will encourage critical thinking to increase critical thinking (Huynh, 2005). Therefore, lecturers must be clear in delivering administration and instructions at the beginning of the lecture and be consistent in their implementation in online learning. In the future, it is important to develop a curriculum that emphasizes education management, curriculum, and the role of teachers to avoid academic cheating (Ibrahim & Nat, 2019).

The interaction in this study shows a reciprocal relationship during the lecture process, both among students and with lecturers. Online learning that is currently taking place causes a lack of direct interaction making it difficult to measure the level of satisfaction obtained as well as acts of academic cheating. With the traditional method, interaction is easy to do where teachers and students can directly interact starting

from giving statements or answers. However, online learning causes teachers and students to not be able to interact directly, causing students not to gain knowledge and satisfaction as well as using the face-to-face method. The importance of lecturer's role in developing the right method in interacting remotely will have an impact on academic satisfaction and dishonesty. Lecturers who can create effective ways to increase learning interactions while using online methods and foster student satisfaction will increase knowledge. In the end, students will be more motivated in increasing their knowledge and being honest during online learning to avoid academic cheating. The results of this study indicate that good interactions during online learning will increase learning satisfaction and reduce academic dishonesty. These results are consistent with Alqurashi, (2019), Baber, (2020), Gray & DiLoreto, (2016), S. Jones, (2006), Maloshonok & Shmeleva, (2019) where interactions during online learning have a significant effect on satisfaction (Ku et al., 2013). The flexibility of learning through learning interactions will have an impact on the satisfaction obtained through learning outcomes (Muthuprasad et al., 2020). In addition, the creativity generated during online learning will encourage increased satisfaction during online learning (Fortin et al., 2019).

The variable of learning satisfaction shows the experience gained by students during online learning. This satisfaction shows that students are more motivated in participating in learning using online methods. These results are consistent with previous studies Herrador-Alcaide et al., (2019). But the satisfaction obtained by students does not indicate that the learning process is carried out honestly. Satisfaction in obtaining good results will encourage students to commit academic fraud. The results of this study indicate that the satisfaction obtained by students in participating in online learning does not affect reducing academic cheating, thus indicating that the satisfaction obtained by students has other goals. In addition, during online learning, student satisfaction is very low (Page & Kulick, 2016; Vamosi et al., 2004). Based on the above discussion, it can be seen the importance of clear administration, good interaction so that it will have an impact on satisfaction and reduce academic dishonesty. This statement is by research conducted Bickle et al., (2019) that good interaction, attractive administration will increase student satisfaction.

Conclusion and Implication

The current pandemic period forces the learning process to be conducted remotely (online). This study aims to examine the effect of administration of learning provided by lecturers, the interactions between students and lecturers and fellow students on learning satisfaction, and subsequently affecting academic dishonesty. The result of this study confirms that there is a direct influence of both administration of e-learning activities and interaction among students and lecturers on learning satisfaction and academic dishonesty. In contrast, satisfaction in e-learning shows zero effect in mediating the influence of administration of e-learning activities and interaction among students and lecturers on the academic dishonesty of accounting undergraduate students in Indonesia. These findings support the study of Iberahim et al. (2013) and Grijalva et al. (2006) to the extent that the strength level of e-learning administration and interactions of students with lecturers and students to their peers affects their satisfaction in the e-learning activities and academic dishonesty practice individually. Accordingly, greater satisfaction in e-learning indicates a decrease in the academic dishonesty level among accounting university students. The results of this study indicate that administration is not directly inversely proportional to academic dishonesty, which shows that clarity in administration delivered by lecturers at the beginning of the lecture will reduce academic cheating. Structured learning will provide students with better understanding and satisfaction during online learning (Gray & DiLoreto, 2016; Richardson & Swan, 2003). Interactions made by students with lecturers or fellow students also increase satisfaction during the distance learning process. Although learning is not done face-to-face, frequent interactions in learning will increase satisfaction, increase academic integrity, and reduce academic dishonesty (Alqurashi, 2019; Ku et al., 2013). Learning satisfaction obtained by students during academic learning will not significantly affect academic dishonesty. Students only pursue satisfaction to get good grades without paying attention to academic dishonesty. In the end, using technology will improve student learning and knowledge (Ebrecht & Ku, 2014).

The decrease in academic integrity is also relevant where technology is used in the contemporary e-learning era. Technology impacts the learning process and shifts the learning paradigm (Kumar et al., 2019; Phutela & Dwivedi, 2019). It also provides a more significant gap of the lack of supervision during e-learning that further leads to violations of academics such as academic dishonesty, cheating in the administration of exams, and other academic violations. In addition, preparing the curriculum and management of higher education plays a vital role in reducing academic cheating (Ibrahim & Nat, 2019).

Implication

The main insight of this study points the social interaction between students-lecturers must be kept maintaining during the commencement of e-learning. Although this learning is challenging to monitor, the existence of these factors will reduce academic cheating. The importance of using technology in education will increase the broad insight of students (Alismail & McGuire, 2015; Shafieiosgouei et al., 2019) so that, in the end, it will encourage the development of higher-order thinking skills (Kurt, 2010). Future research is expected to examine the impact of academic dishonesty on human resource development and loyalty to the company. This is related to the responsibilities of higher education institutions that shape character as long as students carry out the learning process on campus (Coalter et al., 2007). In addition, appropriate learning strategies in online learning to avoid academic cheating.

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DISTANCE LEARNERS' EMOTIONAL INTELLIGENCE AND PERCEPTIONS OF THEIR SITUATIONAL BARRIERS IN LEARNING ENGLISH

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ABSTRACT

Students face various barriers in learning English via distance education. The purpose of this explanatory mixed methods study was to collect quantitative and qualitative data regarding students' emotional intelligence (EI) and the situational barriers (SB) they faced in learning English via distance education. In phase one, 238 students voluntarily submitted their questionnaires containing Schutte's Self-Report Inventory Emotional Intelligence scale. The mean EI score of the distance learners was 130. Based on the EI scores, three subgroups of respondents; HighEI, MidEI, and LowEI were identified. In phase two, 18 participants chosen based on their EI scores were interviewed. The interviews were transcribed and analyzed using content analysis. The qualitative data revealed eight major situational barriers. Out of these, SB1 Job, SB2 Family and Home, and SB4 Time were most frequently cited. The study also found that distance learners' EI was significantly related to their perceptions of the situational barriers to learning English through distance education. Studies affirmed higher EI students are better at moderating the negative effects of challenging circumstances and achieving their goals. Thus, it is crucial to fortify students' EI through training, mentoring, and counselling programs to empower them to moderate their barriers, persevere, communicate with others, and make informed decisions to achieve academic success.

Keywords: Distance learning, English, emotional intelligence, situational barriers.

INTRODUCTION

Studies show that students often face difficulties learning English through distance education (Bouhnik & Marcus, 2006; Hazaymeh, 2021; Homayouni et al., 2020; Kulusakli, 2022; Oxford, 2015; Rivaldo, Noldy & Tirya, 2022). Unlike students who learn English in traditional (or face-to-face) language classroom settings, distance learners' learning experiences may not be as organized. The remoteness of the distance learning environment may result in the students' difficulties to communicate with their lecturers which might lead to isolation among the language students (White, 2003). Additionally, Kulusakli (2021) reiterated that learning a language from a distance is more problematic than other subjects because of the lack of opportunity for interaction. These barriers to adult learning can be tough and can result in emotional distress (Cross, 1992). Oxford, 2015 stated that English language learners have encountered nervousness, humiliation, fury, vulnerability, gloom, and perplexity which may affect accomplishment. It is important to address these problems so that the distance learners' progress in English language learning is not impeded.

Correspondingly, in Malaysia, distance learners at the School of Distance Education (SDE), Universiti Sains Malaysia (USM), also encounter “a variety of academic-related challenges, as well as personal, professional, and social duties that come from the complexities of their adult life circumstances” (Dass, 2001, p.17). Dass highlighted that the participants in her study had difficulties with their English language classes. The purpose of this explanatory mixed methods case study was to collect both quantitative and qualitative data regarding students’ EI and the situational barriers they faced in learning English via distance education at the School of Distance Education (SDE), Universiti Sains Malaysia (USM). It has been fifty years since SDE pioneered distance education by offering working adults in Malaysia a chance to pursue higher education through distance learning. The programs aim to provide adults in the workforce with a degree qualification to benefit the country. SDE now uses a hybrid distance education mode to deliver SDE’s courses, it includes print, multi-media materials, and ICT. SDE offers four undergraduate courses: Bachelor of Arts, Bachelor of Science, Bachelor of Social Science, and Bachelor of Management. Students must devote at least four years to their studies. Most of the classes are taught in Malay. However, the distance learners at the SDE, USM must obtain the required four English credit units to graduate. Based on their English results prior to entering SDE, many students enroll in the English Level II and English Level III courses. The courses emphasize the four language skills of listening, speaking, reading, and writing to provide the students with better communication abilities. These courses are worth two units of credit each. To pass the course, students must obtain a ‘C’ grade and above. The students are provided e-learning modules, references, recorded lectures via the e-learning portal, and synchronous lectures during an intensive course spanning two weeks during the semester break for the full-time students at USM. The students get the opportunity to meet their specific course teachers, course mates, and complete certain coursework assignments and continuous evaluations during the intensive course. Course evaluation includes coursework, continuous assessment, and the final examination. At times, students who have completed all their major and minor courses were unable to graduate because they have not successfully obtained a passing grade for their English course/s. This made learning English a painful process.

THE ROLE OF EMOTIONAL INTELLIGENCE IN ADULTS’ SECOND LANGUAGE LEARNING

Knowles (1973,1984) stressed that to teach adults effectively, educators must grasp the characteristics of adult learners and adult learning principles. In andragogy, instructors must understand that adult learners demand practical, relevant content, materials, and activities that are tailored to their needs and interests. Based on this, it can be said that students’ attitudes and views regarding learning English may become exacerbated because they are learning English as a requirement and not due to their own desire to learn. The challenges to learn English can become heightened as the students are working adults who are returning to formal education on a part-time basis. When these working individuals participate in distance education, they might face multiple challenges as they deal with the numerous responsibilities that they bring on board (Saw et al., 1999). Meanwhile, Azli et al. (2000) highlighted gender differences and found that due to female adult students’ responsibilities as wives and mothers they had less social interaction. Bok (2021) shared that:

“Adult learners spent the most hours in the day on their work, estimated to be eight to nine hours. Following this, they spent six to seven hours on family-related tasks and another six to seven hours for rest and sleep. This left about three to four hours of studying time for adult learners” (pp. 24-25).

Invariably, distance learners face a variety of barriers that cause emotional turmoil, affecting their participation and achievement (Cross, 1992; Hurd, 2000). Situational barriers (SB) refer to hurdles such as occupation, family, monetary, communication, location, English language challenges, and insufficient social aid. Sugilar (2021, p. 177) identified the “lack of support services for students, lack of student motivation, lack of information regarding online tutorials, and technological problems linked to online tutorials” as obstacles to learning for distance learners. Addressing these barriers to student learning that can cause emotional distress is vital to ensure that distance learners succeed in their language learning effort and distance education goal.

Researchers generally agreed that learning a second language is challenging and emotionally draining (Arnold, 1999, as cited in Oxford, 2015). Language learners are confronted with a deeply uncomfortable psychological notion (Guiora, 1983), which is emotionally draining, stressful, and hard, particularly for

distance learners. Anxiety, embarrassment, wrath, uncertainty, despair, and perplexity have all been observed in language learners (Oxford, 2015). Such impaired concentration and attention in the target language can lower the student's learning ability, thus reducing the learner's potential to attain academic performance and success (Horowitz, Horowitz & Koop, 1986, as cited in Homayouni et al., 2020, p. 143).

According to Ellis (1994), second language learning and acquisition is a complex process involving many connected components. Affective criteria for acquisition, according to Ellis, include a good attitude toward language speakers. McGroarty (1996) explains that attitude involves three components: cognitive, affective, and conative. The cognitive component focuses on cognition and thinking, the affective component on emotions, and the conative component on how an individual acts on those thoughts and feelings. Krashen's (1994) Monitor theory's Affective Filter Hypothesis clarifies why some people can learn a second language while others cannot. Due to attitude, worry, a lack of self-confidence, and motivation, some learners may not acquire adequate input. If a learner is frightened, lacks motivation, or has low self-esteem, the affective filter will be high, preventing language acquisition. If the situation is reversed, the affective filter will be low, and this facilitates language acquisition. Hurd (2007) and Oxford (2015) equally underscored that emotions play an important part in English language learning.

Scholars have long recognized the importance of emotions in shaping people's reasoning, decision-making, and behaviour (Hewstone & Stroebe, 2001; Lewis & Haviland-Jones, 2000). The inability to relate to one's emotions has an impact on the individual's ability to formulate appropriate judgments as emotional cues are essential for making decisions. Having too little emotion has profoundly negative consequences for decision-making and may be just as harmful as excessive emotion has long been thought to be (Bechara et al., 2000). LeBlanc et al. (2015) asserted that "It is now recognized that emotion and cognition processing are integrated in the brain and therefore jointly contribute to behavior, particularly memory, attention and decision-making" (cited in Hutchinson et al., 2018, p. 607). Hutchinson et al. (2018) opined, "Given the improvements that have happened in understanding the function of emotion in neuropsychology and cognition, we suggest that those researchers devote more emphasis to examining in greater depth the role and relevance of emotion" (p. 608).

Hence, there is a need to study the role of EI in the distance language learning environment. Proponents of EI argue that the EI construct is "a type of social intelligence that involves the ability to monitor one's own and others' emotions, to discriminate among them, and to use the information to guide one's thinking and actions" (Mayer & Salovey, 1993, p. 433) that is essential for success in various areas of life (Goleman, 1995; Salovey & Mayer, 1990; Schutte et al., 1998). EI was popularized by Goleman in 1995. Mayer and Salovey (1997) further defined EI as "abilities to perceive accurately, appraise, and express emotion; to access and/or generate feelings when they facilitate thought; to understand emotion and emotional knowledge; to regulate emotions to promote emotional and intellectual growth" (p. 10).

Research has demonstrated that EI is related to successful educational outcomes of students (Bar-On & Parker, 2000; Salovey & Mayer, 1990; Schutte et al., 1998). Researching EI and students' motivation, resilience, and intention to engage in physical activities, Trigueros et al. (2019) discovered that "emotional intelligence is favorably related to happy emotions and negatively related to negative emotions" (p. 7)". Maguire et al. (2017), documented that EI is reliable in predicting cognitive and affective engagement in higher education. A study of medical students found that EI was associated with exam and clinical success (Chew et al., 2013). Similarly, MacCann et al. (2020) discovered favorable associations between EI and academic performance. Zeidner and Matthews (2018) asserted that EI can effectively regulate negative emotions such as fear, envy, and unhappiness that might affect students' ability and motivation to focus on their schoolwork. Overall, high EI students are more adept at regulating both their own and others' emotions to foster positive interactions with their classmates, which results in better academic performance.

Several studies have investigated the impact of EI on distance and online learning. Berenson et al. (2008) looked at resilience, which is considered a feature of EI that is subsumed under the larger construct of effective self-awareness as a predictor of performance in online learning environments. It was found that successful students demonstrated high resilience in and have "the persistence to work through difficult situations with self-confidence" (Kemp, 2002, as cited in Berenson et al., 2008, p. 3). Zahed-Babelan and Moenikiab (2010) explored the role of EI in predicting students' academic achievement in distance

education. Their findings backed up previous research showing remote learners relied on independent learning and intrapersonal qualities to maintain self-control in a distance learning program. They controlled negative emotions such as fear, worry, and annoyance to promote positive emotions such as enthusiasm and a sense of success to succeed in distance learning. Engin's (2017) study revealed that students with higher EI showed more online learning readiness. Furthermore, the self-control dimension of EI predicted students' readiness for online learning more accurately than the other EI aspects. Students with high EI social skills demonstrated successful self-directed learning behaviors such as implementing own study plans, seeking help when learning challenges emerge, good time management, choosing their own learning targets, and having high learning expectations. Valizadeh (2016) reported that distance learners' autonomy, defined as "the ability to manage one's own social surroundings and activities" (p. 22), was associated with their EI. There was a strong link between learner autonomy and the EI component of independence that is linked to their language learning experience, in which they demonstrated devoted effort, activity, and active involvement in distance learning. Buzdar et al. (2016) found that the distance learners' readiness and success with online learning were significantly connected to their EI abilities such as self-emotions assessment, others-emotions appraisal, emotion usage, and emotion regulation.

Numerous studies have investigated the effect of EI on English language learning. Pishghadam (2009) concluded that acquiring a second language was highly linked to numerous aspects of EI. Emotional regulation and stress management improved reading skills; a high level of EI and intrapersonal talents improved listening skills; while interpersonal and intrapersonal competence improved speaking skills, and good adaptability improved writing skills. These findings corresponded with Zarezadeh's (2013) results showing that EI had a good influence on Iranian students' English language development. Intrapersonal intelligence, interpersonal intelligence, and overall mood were discovered to influence speaking skills because the mutual performance characteristics required for speaking rely on these facilities. Students' EI in terms of stress management, maintaining a positive mood, and adapting to the context of a text aided them in reading skills. Students with higher levels of emotional awareness, self-esteem, and self-confidence were found to be better listeners. In Guven's (2016) study, university students who were able to understand their own and others' emotions were more inclined to use ICT and media resources to learn English. Guven clarified that learning a language is a social process that requires intrapersonal and interpersonal communication, as well as collaborative engagement, all of which are components of EI that lead to the use of ICT to improve English language acquisition.

Ebrahimi, et al. (2018) study found that the learners in the treatment group who received EI reinforcement improved their speaking significantly. The control group's speaking skills improved, but not as much as the treatment group's speaking abilities. These findings corroborated those of Soodmand Afshar and Rahimi's (2014) study, which found that learners with a high EI score had strong speaking ability. They concluded that learners who are better able to control their own and others' emotions may be deemed better English communicators than those who think critically. Soodmand Afshar et al. (2016) discovered that strategy use and EI were major predictors of second language accomplishment. They found that EI and language learning practices were substantially connected to second language achievement where higher EI students are better at regulating negative emotions. Correspondingly, "less emotionally intelligent learners are likely to succumb in the face of intricate and ill-defined situations and are unable to control destructive emotions" (p. 647). Aliasin & Abbasi (2020) stated that "the EI scales of general mood and interpersonal skills significantly contributed to the prediction of the use of metacognitive reading strategies by EFL learners" (p. 31). The results revealed a moderate and positive correlation between a) emotional intelligence and the use of metacognitive reading strategies; b) intrapersonal skills, interpersonal skills, adaptability, and general mood and global metacognitive strategies; c) intrapersonal skills, interpersonal skills, and general mood and problem-solving metacognitive strategies; and d) intrapersonal skills, interpersonal skills, and general mood that support metacognitive strategies. Hamdzah's (2020) study showed that Malaysian students' EI showed a substantial relationship with their Malaysian Institution English Test performance and even predict their performance. A study by Homayouni et al. (2020), indicated that EI had an impact on English language acquisition both directly and indirectly through the respondents' English language anxiety.

Overall, studies have investigated the impact of EI on distance learning and English language learning (Aliasin & Abbasi, 2020; Hamdzah, 2020; Homayouni et al., 2020; Valizadeh, 2016) but their data have

largely been quantitative in nature, with little qualitative data reported. The quantitative findings were insightful but did not include qualitative information about the distance English language learners. The purpose of this study was to fill the gap in the literature, by collecting both quantitative and qualitative data to address the following research question.

What do distance learners with various EI scores perceive as the major situational barriers in undertaking the English Level III course at the SDE, USM?

METHOD

In this study, an explanatory sequential mixed methods study was used. Firstly, a quantitative approach using a questionnaire survey was employed in phase one to obtain quantitative data from the participants. Next, a qualitative approach using semi-structured interviews was used in phase two to obtain a fuller picture of the issue being studied (Creswell, 2012). Students in the English Level III course were told about the project after receiving consent from SDE USM. A ten-minute briefing explained the study, emphasized the importance of the students' feedback for the improvement of the teaching and learning environment as well as reminded them to respond as honestly as possible. Students who volunteered to participate were informed of their rights and that their information would be anonymized to protect their privacy. They were informed that their participation would not earn them any extra points. The students were debriefed to avoid any negative consequences.

Participants

In phase one, 238 distance learners submitted their composite questionnaire, which had been piloted on 10% of the students who were omitted from the main study. The participants took between 50 minutes to 65 minutes to complete the questionnaire and informed consent. There were 118 males and 120 females among the participants. Their ages ranged from 28 to 52 years. A total of 182 participants (76.5%) out of the 238 participants reported they had never failed in their English courses at SDE, USM. However, 23.5% of the participants in the study had previously failed.

Data Collection and Analysis

The participants' EI scores were obtained using Schutte's Self-Report Inventory (SSRI, Schutte et al., 1998) (please refer to Appendix A). It is an instrument widely used in the largest number of studies (Bru-luna et al, 2021). According to Schutte et al. (1998), the SSRI consists of "appraisal and expression of emotion in the self and others, regulation of emotion in the self and others, and usage of emotions in addressing issues" (p. 175) and has been established to produce reliable EI scores for adolescents and adults. The SSRI has high reliability, with an internal consistency of .82 (Schutte et al., 1998). In addition, confirmatory factor analysis for the four-factor EI construct of perceiving emotions, understanding emotions, facilitating emotions, and managing emotions indicated a good fit for measuring EI in Malaysia (Hussein et al., 2019). Thus, it was deemed suitable for this study. Also, it was easy to obtain free of charge provided due recognition is given during dissemination. 238 distance learners took part in the survey for phase one of the study. In phase two, six high, six medium, and six low EI students were purposively chosen based on their EI scores in phase one for the one-to-one interview. The semi-structured interviews were conducted informally. The interviews that lasted 60 to 80 minutes were conducted in a non-intimidating manner so as not to induce undue tension and anxiety for the respondents using the protocol as shown in Appendix B. SPSS Statistics for Windows (Version 26) was used to analyze the study's quantitative data from the survey questionnaire. The SSRI presented a Cronbach's alpha of .90 in this investigation, indicating a good level of internal consistency (Pallant, 2011). The mean of the EI scores was 130. The mode was 124 and the standard deviation was 12.96. Figure 1 shows the participants' EI categories and frequencies. Three subgroups of students were categorised based on calculations using the mean EI score and the standard deviation (12.96 was rounded to 13) of the sample. There were 43 students (17.9%) in the High EI group. This refers to students with EI scores of 143 and above (i.e., 1 SD above the mean EI score of the sample). There were 157 students (66.3%)

categorized as the Mid EI group, referring to students who scored more than 117 and below 143. Finally, 38 students (15.8%) were grouped into the Low EI group, which refers to students who obtained EI scores of 117 and below (i.e., 1 SD below the mean EI score of the sample.)

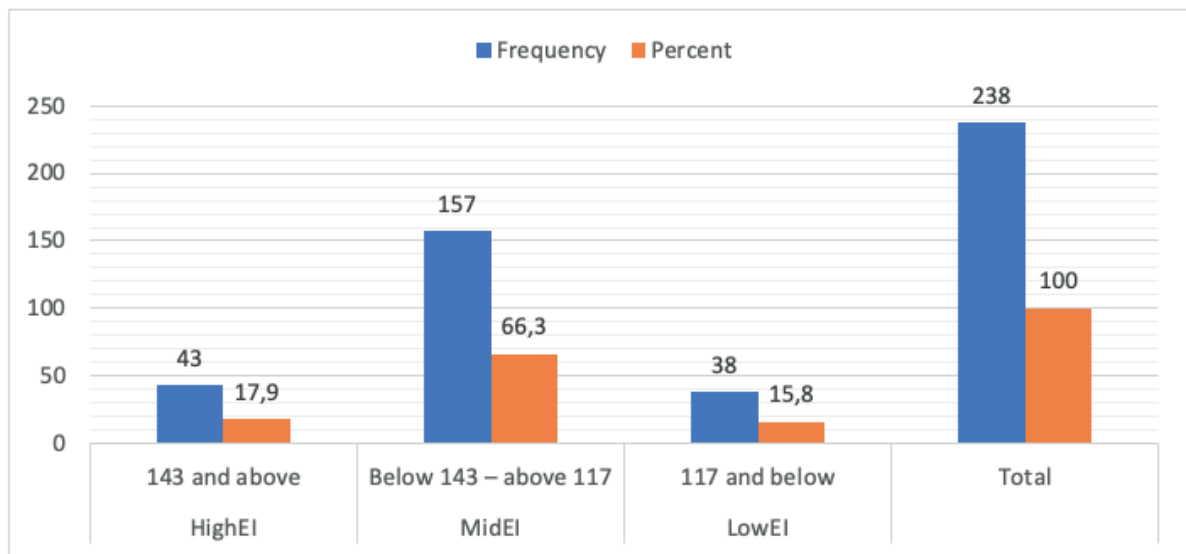


Figure 1. Participants' EI categories and frequencies

The audio recordings from the interviews were transcribed and analysed using content analysis. The codes for each study topic were obtained by close reading, leading to the initial open coding of relevant words to address the research question. It entailed reading and rereading the interview transcripts until familiarity was achieved. These codes were then subjected to refinement, and they were compared, contrasted, and categorized into major themes according to their saliency in relation to the study (Bryman, 2004). For instance, in the first level of 'open' coding for 'Situational Barriers', some initial codes such as, 'work responsibilities', 'collegial relationships', 'training at work', 'work environment' and 'additional work activities' were derived. These codes then underwent a second level of 'axial' coding and were grouped under a more general conceptual heading namely, 'SB Job'. The codes were verified for reliability and refined till saturation in an iterative process. The secondary researcher acted as the co-rater. Inter-rater discussion and validation confirmed the consistency and reliability of the codes and themes. The inter-rater reliability for the 'Situational Barriers' codes was determined to be Kappa = 0.9, indicating that there was a good coding agreement based on the coding done on 10% of the transcripts (McHugh, 2012). To avoid confusion with other codes, all the situational barriers codes were given the letters SB and numbered. This coding process resulted in the classification of eight major Situational Barriers (SB1 – SB 8). The frequencies of the codes were counted and tabulated accordingly, and some statistical tests were conducted on the data obtained. Next, appropriate statistical tests were conducted to check for the significance of the frequencies. Non-parametric statistical tests were used at this stage because the "sample size for each group was small and the assumption of normality could not be verified" (Elliott and Woodward, 2007, p. 204). The differences between all the 18 distance learners' perceived situational barriers were tested using Friedman's test. As there might be differences in these opinions among the students based on their level of emotional intelligence, the Kruskal-Wallis test was conducted for comparison between the EI groups. Results are shown below.

FINDINGS

The major situational barriers reported by the 18 distance learners of various EI groups, and their frequencies are shown in Figure 2.

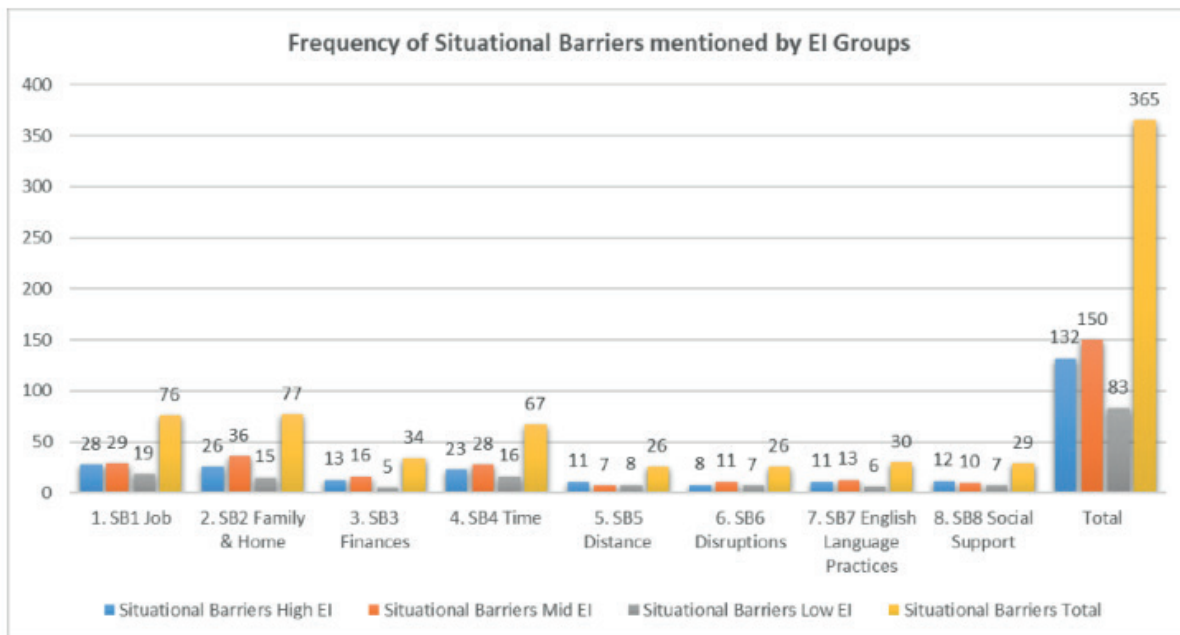


Figure 2. Frequency of situational barriers reported by students of various EI groups

SB2 Family and Home

The most frequently mentioned situational barrier was SB2 Family and Home (77 statements, 21.1%). The following are some of the respondents' statements.

"I have to care for my five children – eleven, ten, nine, eight years old and a seven-month-old baby."

Similarly, another respondent also shared that, *"Everyone is healthy, but my special child needs more attention. I have got to feed him otherwise he will not eat. Sometimes he goes to sleep without his food. I feel guilty. He could only walk at the age of 3. He's better now. He had some problems with his heart. I had to bring him to the hospital."*

Moreover, another respondent mentioned, *"I need to give care to my aged parents who have diabetes. I bring them to see the doctor. My mother also suffers from knee injuries. My siblings live far away so I have to take responsibility."*

SB1 Job

SB1 Job (76 statements, 20.8%) proved to be the second most significant obstacle mentioned by the 18 respondents. Some comments included:

"As a part-time distance learner, I felt most pressure from my job."

Furthermore, another student commented, *"Very busy, sometimes busy with official work, and doing part-time computer sale. Sometimes very tensed with work and studies. Of course, packed schedule."*

Likewise, another respondent disclosed, *"I have heard that my colleagues complained about my absence from work due to my studies, like when I attended the intensive course at USM or during exams. They had to cover for me and had to handle more tasks. I just kept quiet."*

SB4 Time

The next obstacle was SB4 Time (67 times, 18.4%). These are some comments from the students:

“I can’t find time for my studies.”

In addition, a student explained, “I concentrated on my major and minor subjects more.”

Besides that, another distance learner shared, “Throughout the year I was pressured with my work and also with my assignments for my major and minor courses, so I had little time for my English course.”

SB3 Finances

There were altogether 34 statements (9.3%) of SB3 Finances mentioned by the students. Here are some excerpts.

“My wife is not working, so I have to take an extra job to supplement the family income.”

Interestingly, a student revealed, *“Actually, let me be honest. My income with the government is only about RM 500 per month. I need to pay the instalments of the car RM 800 and house RM 900. My wife has her own savings, I don’t trouble her, her savings is for her own use. In addition, USM fees and I need to travel for classes, travelling expenses here and there.”*

Also, a respondent divulged, *“If I were to make an account, it’ll be negative. In addition, there’s the credit card, RM 300-400 a month. On top of that, moving into this new house. It costs a lot of money - credit card again.”*

SB8 Social Support

The lack of SB8 Social Support (29 statements, 8.0%) was also reported by the respondents as difficulties to concentrate on their studies. These are some of the students’ statements.

“I don’t have many friends and peers doing the same course because I am repeating the English course.”

Relatedly, one student lamented, *“I don’t have any friends left. They have all graduated. I am all alone. I am very disappointed that I have invested so much time here.”*

Another respondent reflected, *“Sometimes my wife sees other families going for outings, but we can’t. I explained that I need her to support me, not to do my assignments, just to be around me.”*

SB7 English Language Practices

The students also conveyed that SB7 English Language Practices (30 statements, 8.2%) affected their studies. Some examples are indicated below.

“It is difficult for a Malay to talk to another Malay in English. It feels funny, and people will say that you are showing off.”

In the same way, another respondent clarified that *“I don’t get much exposure to English in my daily interactions.”*

Additionally, a student explicated, *“At college level, the English language is not given any emphasis, we only need to pass, and the lecturers do not emphasise the importance of English.”*

SB5 Distance

There were 26 statements (7.1%) where students highlighted SB5 Distance as a situational barrier. Some instances are depicted below.

“The regional centre for the teleconferences is far from my home.”

Another respondent illuminated, “I live in a remote area in East Malaysia which is isolated. It is difficult for me to get resources.”

Also, another student complained, “It is difficult for me because I live up in the highlands far away from most people.”

SB6 Disruptions

The respondents recounted 26 statements (7.1%) of SB Disruptions as a situational barrier. The following are some examples.

“A few of us formed a study group but one by one dropped out. The plan was disrupted.”

Another respondent recalled, *“I was planning to have a baby. I did my laparoscopy. The doctor operated on my womb. The doctor carried out ARH Artificial insemination with my husband’s sperm, 3 times. But failed. I feel down. The disruption to my plans affected my studies.”*

Likewise, another distance learner shared, *“I had an unplanned pregnancy. Although I was happy, it was difficult during the intensive course, I was left behind when others have gone on with their tasks and studies.”*

These statements exemplify the various situational barriers (SB1 – SB8) that distance learners encountered in learning English.

Comparison of Perceived Situational Barriers for All 18 Students

Table 1 shows Friedman’s test results regarding the differences among the 18 respondents’ perceived situational barriers.

Table 1. Comparison of perceived situational barriers across all 18 students using the Friedman’s test

Situational Barriers	Frequencies	Mean Rank	χ^2	df	p
SB1 Job	76	7.08	79.487	7	0.000***
SB2 Family and Home	77	6.72			
SB3 Finances	34	3.56			
SB4 Time	67	6.28			
SB5 Distance	26	3.11			
SB6 Disruptions	26	2.83			
SB7 English Language Practices	30	3.11			
SB8 Social Support	29	3.31			

Note. * $p < .05$, ** $p < .01$, *** $p < .001$.

The situational barriers reported most significantly were ‘SB1 Job’ (mean rank 7.06), ‘SB2 Family and Home’ (mean rank 6.72) and ‘SB4 Time’ (mean rank 6.28) respectively. The least reported situational barrier was ‘SB6 Disruptions’ (mean rank 2.83).

Comparison of Situational Barriers among Students in Various EI Groups

Table 2 shows the Kruskal-Wallis test results comparing the perceived situational barriers across the High EI, Mid EI, and Low EI groups of students.

Table 2. Comparison of situational barriers between EI groups using the Kruskal-Wallis test

Situational Barriers	EI Grouping	N	Frequencies	Mean Rank	χ^2	df	p
SB1 Job	High EI	6	28	11.17	6.184	2	0.045*
	Mid EI	6	29	11.85			
	Low EI	6	19	5.50			
	Total	18	76				
SB2 Family and Home	High EI	6	26	10.83	6.813	2	0.033*
	Mid EI	6	36	12.58			
	Low EI	6	15	5.08			
	Total	18	77				
SB3 Finances	High EI	6	13	11.75	6.183	2	0.045*
	Mid EI	6	16	11.50			
	Low EI	6	5	5.25			
	Total	18	34				
SB4 Time	High EI	6	23	10.75	6.554	2	0.038*
	Mid EI	6	28	12.50			
	Low EI	6	16	5.25			
	Total	18	67				
SB5 Distance	High EI	6	11	11.67	1.652	2	0.438
	Mid EI	6	7	8.17			
	Low EI	6	8	8.67			
	Total	18	26				
SB6 Disruptions	High EI	6	8	9.08	0.655	2	0.721
	Mid EI	6	11	10.83			
	Low EI	6	7	8.58			
	Total	18	26				
SB7 English Language Practices	High EI	6	11	10.92	2.846	2	0.241
	Mid EI	6	13	11.00			
	Low EI	6	6	6.58			
	Total	18	30				
SB8 Social Support	High EI	6	12	11.67	2.970	2	0.226
	Mid EI	6	10	10.00			
	Low EI	6	7	6.83			
	Total	18	29				

Note. * $p < .05$, ** $p < .01$, *** $p < .001$.

The MidEI (mean rank 11.85) and HighEI (mean rank 11.17) groups significantly viewed 'SB1 Job' ($p = 0.045^*$) more of a barrier than the LowEI group (mean rank 5.50). The MidEI (mean rank 12.58) and HighEI (mean rank 10.83) groups also significantly perceived 'SB2 Family and Home' ($p = 0.033^*$) as a greater situational barrier as compared to the LowEI group (mean rank 5.08). The HighEI (mean rank 11.75) and MidEI (mean rank 11.50) groups again significantly perceived 'SB3 Finances' ($p = 0.045^*$) as a greater situational barrier compared to the LowEI group (mean rank 5.25). The MidEI (mean rank 12.50) and HighEI (mean rank 10.75) groups again viewed 'SB4 Time' ($p = 0.038^*$) as a greater situational barrier compared to the LowEI group (mean rank 5.25).

DISCUSSIONS AND CONCLUSION

This study revealed eight major situational barriers reported by distance learners of when undertaking their English course at SDE USM. Some of the barriers mentioned in this study were like the barriers cited in Cross's (1992) survey of returning students. Cross documented that situational barriers were the most pressing worry, with up to 50% of her participants reporting insufficient time or money and roughly 10% indicating a lack of childcare or transportation due to the distance. The SB reported most significantly by the 18 respondents were SB1 Job, SB2 Family and Home, and SB4 Time respectively. The findings supported Rind's (2021) assertion that "learning a second language is a complex process in which several individuals and social factors play vital roles in shaping students' ESL learning experiences" (p. 219). The most frequently reported situational barrier was SB2 Family and Home which included childbirth, childcare, children's welfare, administering to spouse, parents'-in-law, and relatives, and household chores. This is possibly due to the socio-cultural milieu of these Malaysian students that still emphasizes obligations to the spouse and family. Interestingly, Azli et al. (2000) also reported significant gender differences denoting female students at SDE, USM had less social interaction because of their responsibilities as wives and mothers. Kulusakli (2021) equally noted that this lack of interaction makes learning a language from a distance more challenging than other subjects.

The second most common situational barrier was SB1 Job as the students were working adults pursuing their tertiary education part-time while still holding jobs with various responsibilities. Other studies have also documented the challenges that distance learners faced with the numerous responsibilities that they have taken on and the social responsibilities arising from the complexities of the adult learners' lives (Bok 2021; Dass, 2001; Hazaymeh, 2021; Saw et al., 1999). In comparison, Arifin's study at the Indonesian Open University highlighted barriers such as workloads (42.9%), lack of university support (20.4%), financial problems (14.3%), delivering or caring for infants (8.2%), family problems (4.1%), time management (4.1%), health challenges (2%), and other factors (2%). Likewise, most of the participants found it difficult to set aside time for their studies and relied on the support of their employers to study. Next, students cited SB4 Time as a stumbling block to learning English. Time is a limited resource, and it is difficult for working adults who have multiple responsibilities which demanded their time and priority hindering them from spending enough time on their English course. Bok (2021) also noted that students' limited time was divided into preparing for lessons, revisions, research, and assessments for six or seven courses. Likewise, Kulusakli, (2021) highlighted that distance learners could not manage their time efficiently in online English courses due to other activities. The students' situational barriers in terms of SB3 Finances were evidenced in statements regarding the cost of fees, additional expenditure due to the distance education program, and taking on the extra job due to supplement the family income. The students also cited SB8 Social Support with reference to insufficient support from spouses, peers, colleagues, and employers.

The respondents also mentioned SB7 English Language Practices referring to inadequate exposure to English, little emphasis on learning English, and being accustomed to using the Malay language which hampered their learning of English. In Dass's (2001) study, she explained that this is because the Malay language is used as the medium of instruction in the Malaysian public education system. The students also pointed out SB5 Distance, referring to the distance required to reach the regional centers for teleconferences or the main campus at USM for activities and the distance to access resources such as tuition or peer group assistance. It is important that instructors reduce the separation by maintaining a good online transactional presence so that the distance learners can easily communicate with them if they faced any difficulties. Students must also

be guided to fully utilize the PPPJJ online learning management system so that they can keep abreast with the courses, self-instructional media, and posts, and keep in touch with their coursemates via online forums. Instructors must adopt andragogical principles when teaching adult learners and facilitate collaborative work to enhance student engagement. Accordingly, Kulusakli (2021) asserted that distance learners need to have the ability to do environmental structuring of their learning to achieve better focus and attainment.

Finally, the respondents highlighted SB Disruptions; citing unforeseen circumstances like unplanned pregnancy, miscarriage, illness, failed study group, the demise of immediate family members, group members withdrawing from the program, and attending social obligations like weddings as well as religious activities that disrupted the students' planned schedules. Bok (2021) emphasized this disruption, "It is pertinent to note that adult learners' daily routine does not stay invariable, as it is highly changeable depending on their multiple roles and this is particularly true for those that are involved in essential services" (p. 31). Equally, Hazaymeh (2021) reported that disruptions caused by technological problems and internet connections troubled students from going online to attend classes; causing them to have difficulties in learning English language skills. Similarly, Rivaldo, Noldy, & Tirya (2022) found that bad internet coverage, unequal access to the internet, inadequate equipment like smartphones, laptops, and computers to fully participate in online learning as well as the lack of positive interaction between students and teachers as barriers in learning English via distance learning system. These barriers that students face in learning their English courses can disrupt their emotions, learning experience, and achievement. According to Homayouni et al. (2020), a student's capacity to acquire a second language is harmed when his or her concentration and pervasive attention are impaired. The negative emotions from having to deal with the obstacles can potentially distract the students from their efforts to learn by obstructing their capacity to focus on the work at hand. This affects the student's potential to accomplish scholastic achievement, thus enhancing students' EI "can reduce language anxiety, and consequently, increase language learning" (p. 137).

Additionally, the outcome of this study discovered that the distance learners' EI was linked to their perceptions of the barriers to learning English. The Mid EI and High EI groups significantly perceived SB1 Job, SB2 Family and Home, SB3 Finances, and SB4 Time as greater situational barriers than the Low EI group. In contrast, the Low EI students did not perceive these as major situational barriers. They were generally more reticent and reluctant to express their thoughts. These findings corroborated with Thomas et al.'s (2017) conclusion that a student's EI impacts the way the student reacts, understands, and cognizes his/her encounters, coping strategies, and academic achievement. The accounts of the students in this study can be viewed as evidence of EI expression that influenced the emotions and thoughts of the High EI and Mid EI groups more than the Low EI groups in terms of perception of their learning barriers. These findings corresponded with other studies documenting that students with higher EI were better at moderating the negative effects of challenging circumstances and achieving academic success (MacCann et al., 2020; Trigueros et al., 2019; Zeidner & Matthews, 2018).

To ensure that distance learners succeed in their learning, continuous effort should be taken to remove the barriers to learning (Sugilar, 2021). Additionally, affective support should be improved as it plays a vital role in providing a supportive environment in improving students' motivation, self-commitment, self-esteem, and self-efficacy in remote learning and can contribute to better retention of students in distance education (Arifin, 2018). Inculcating students' EI is important to reduce student attrition, as Parker et al. (2004) highlighted "The rate of dropout or continuing education in students is significantly related to the level of emotional and social competence of students and emotional intelligence can lead to positive changes in learners" (as cited in Homayouni et al., 2020, p. 139). Norboevich (2020, p. 103) concurred affirming that "People with a high level of development of emotional intelligence have expressed abilities to understand their own emotions and the emotions of other people, they can control their emotional sphere, which determines their higher adaptability." At the School of Distance Education, USM, Malaysia, the enhancement of students' EI can help them manage the emotional challenges resulting from the barriers they face so that their progress in their English language learning is not impeded. This would be beneficial as many studies have shown that students who are emotionally intelligent are more adept at integrating socially and academically in the distance learning environment and can persevere through the challenges to achieve better academic outcomes (Aliasin & Abbasi, 2020; Buzdar et al., 2016; Engin, 2017; Hamdzah, 2020).

This study found that distance learners' EI was significantly related to their perceptions of the situational barriers to learning English through distance education. EI can help distance learners identify, assess, express, and manage emotions effectively to moderate their barriers, communicate with others, and make better decisions to achieve success in English and distance learning. Thus, this study implicates that is crucial to improve students' EI through training, mentoring, and counselling programs to empower them to persevere through the challenges and emotional upheavals of learning English via distance learning. It is equally vital to instill EI in distance education providers so that they can empathetically address the needs, concerns, and emotions of the distance learners to ensure effective and successful distance learning.

Although this study offers interesting information, it has limited generalizability and may not be completely applicable to other cohorts. The study only comprised selected distance learners at the SDE, USM in Malaysia and hence may not be generalizable to other distance learning programs. There is the possibility of social desirability bias as the respondents' EI scores were collected by a self-report instrument. Additionally, the students came from various states all over Malaysia with varying urban versus rural environments; this could alter the students' barriers. Future research can utilize other EI instruments to obtain the EI scores of the respondents and investigate the effect of EI training on students' engagement and achievement in the unprecedented remote teaching and learning scenarios caused by the Covid-19 pandemic. It would also be interesting to conduct this research on distance learners from other universities in Malaysia and elsewhere. Also, research can be carried out to explore the coping strategies employed by distance learners to succeed.

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APPENDIX A

Composite Questionnaire

Exploring the Role of Distance Learners' Emotional Intelligence in Learning English

Participant's Written Consent

I, _____, hereby grant George Boon Sai Teoh to record/audio-record/video-record and use the data from the survey/interview/records for research purposes; for the purposes of written publication, public talks and lectures relating to that research, providing that confidentiality is respected in all cases.

Signed Date

Section 1: Perception of your English Course

Directions: Each of the following items asks you about your perceptions concerning your English Course. After deciding whether a statement is generally true for you, use the 5-point scale to respond to the statement. Please circle 1 if this is totally true, 2 if this is partly true, 3 if this is neither true nor untrue, 4 if this is partly untrue, and 5 if this is totally untrue. There are no right or wrong answers.

Please give the response that best describes you and your perceptions.

For example,

0. I would like to pass the English course.

Scale for item 0: 1 (circled) Totally true, 2 Partly true, 3 Neither true nor untrue, 4 Partly untrue, 5 Totally untrue

1. I always have positive emotions regarding the English Course.

Scale for item 1: 1 Totally true, 2 Partly true, 3 Neither true nor untrue, 4 Partly untrue, 5 Totally untrue

2. The English Course does not bring about any benefit towards my progress in learning the language.

Scale for item 2: 1 Totally true, 2 Partly true, 3 Neither true nor untrue, 4 Partly untrue, 5 Totally untrue

3. The English modules are suitable for my learning level.

Scale for item 3: 1 Totally true, 2 Partly true, 3 Neither true nor untrue, 4 Partly untrue, 5 Totally untrue

4. The information provided by the English Language Course Planner is very useful.

Scale for item 4: 1 Totally true, 2 Partly true, 3 Neither true nor untrue, 4 Partly untrue, 5 Totally untrue

5. The teleconference for the English Course is effective in reducing my learning problems.

1	2	3	4	5
Totally true	Partly true	Neither true nor untrue	Partly untrue	Totally untrue

6. The English Course lectures during the Intensive Course are effective in preparing me to achieve the learning objectives.

1	2	3	4	5
Totally true	Partly true	Neither true nor untrue	Partly untrue	Totally untrue

7. I support the evaluation structure of the English Course of the course that I am undertaking.

1	2	3	4	5
Totally true	Partly true	Neither true nor untrue	Partly untrue	Totally untrue

8. I experience similar challenges for my other courses as I do for my English Course.

1	2	3	4	5
Totally true	Partly true	Neither true nor untrue	Partly untrue	Totally untrue

9. Please state the barriers/difficulties you experienced concerning your English Course.

10. Please provide other comments concerning your English Course which could contribute to the improvement of this research.

Section 2: Schutte's Self-Report Inventory (SSRI) (Schutte et al., 1998)

Directions: Each of the following items asks you about your emotions or reactions associated with emotions. After deciding whether a statement is generally true for you, use the 5-point scale to respond to the statement. Please circle the 1 if this is totally true, the 2 if this is partly true, the 3 if this is neither true or untrue, the 4 if this is partly untrue, and the 5 if this is totally untrue. There are no right or wrong answers. Please give the response that best describes you.

For example,

0. I know what I like.

1	2	3	4	5
Totally true	Partly true	Neither true nor untrue	Partly untrue	Totally untrue

1. I know when to speak about my personal problems to others.

1	2	3	4	5
Totally true	Partly true	Neither true nor untrue	Partly untrue	Totally untrue

2. When I am faced with problems, I remember times I faced similar problems and overcame them.

1	2	3	4	5
Totally true	Partly true	Neither true nor untrue	Partly untrue	Totally untrue

3. I expect that I will do well on most things I try.

1	2	3	4	5
Totally true	Partly true	Neither true nor untrue	Partly untrue	Totally untrue

4. Other people find it easy to talk to me about their problems.

1	2	3	4	5
Totally true	Partly true	Neither true nor untrue	Partly untrue	Totally untrue

5. I find it hard to understand the non-verbal messages (e.g. facial expressions) of other people.

1	2	3	4	5
Totally true	Partly true	Neither true nor untrue	Partly untrue	Totally untrue

6. Some of the major events of my life have led me to re-evaluate what is important and not important.

1	2	3	4	5
Totally true	Partly true	Neither true nor untrue	Partly untrue	Totally untrue

7. When my mood changes, I see new possibilities.

1	2	3	4	5
Totally true	Partly true	Neither true nor untrue	Partly untrue	Totally untrue

8. Emotions are one of the things that make my life worth living.

1	2	3	4	5
Totally true	Partly true	Neither true nor untrue	Partly untrue	Totally untrue

9. I am aware of my emotions as I experience them.

1	2	3	4	5
Totally true	Partly true	Neither true nor untrue	Partly untrue	Totally untrue

10. I expect good things to happen.

1	2	3	4	5
Totally true	Partly true	Neither true nor untrue	Partly untrue	Totally untrue

11. I like to share my emotions with others.

1	2	3	4	5
Totally true	Partly true	Neither true nor untrue	Partly untrue	Totally untrue

12. When I experience a positive emotion, I know how to make it last.

1	2	3	4	5
Totally true	Partly true	Neither true nor untrue	Partly untrue	Totally untrue

13. I arrange events others enjoy.

1	2	3	4	5
Totally true	Partly true	Neither true nor untrue	Partly untrue	Totally untrue

14. I seek out activities that make me happy.

1	2	3	4	5
Totally true	Partly true	Neither true nor untrue	Partly untrue	Totally untrue

15. I am aware of the non-verbal messages I send to others.

1	2	3	4	5
Totally true	Partly true	Neither true nor untrue	Partly untrue	Totally untrue

16. I present myself in a way that makes a good impression on others.

1	2	3	4	5
Totally true	Partly true	Neither true nor untrue	Partly untrue	Totally untrue

17. When I am in a positive mood, solving problems is easy for me.

1	2	3	4	5
Totally true	Partly true	Neither true nor untrue	Partly untrue	Totally untrue

18. By looking at their facial expressions, I recognize the emotions people are experiencing.

1	2	3	4	5
Totally true	Partly true	Neither true nor untrue	Partly untrue	Totally untrue

19. I know why my emotions change.

1	2	3	4	5
Totally true	Partly true	Neither true nor untrue	Partly untrue	Totally untrue

20. When I am in a positive mood, I am able to come up with new ideas.

1	2	3	4	5
Totally true	Partly true	Neither true nor untrue	Partly untrue	Totally untrue

21. I have control over my emotions.

1	2	3	4	5
Totally true	Partly true	Neither true nor untrue	Partly untrue	Totally untrue

22. I easily recognize my emotions as I experience them.

1	2	3	4	5
Totally true	Partly true	Neither true nor untrue	Partly untrue	Totally untrue

23. I motivate myself by imagining a good outcome to the tasks I take on.

1	2	3	4	5
Totally true	Partly true	Neither true nor untrue	Partly untrue	Totally untrue

24. I compliment others when they have done something well.

1	2	3	4	5
Totally true	Partly true	Neither true nor untrue	Partly untrue	Totally untrue

25. I am aware of the non-verbal messages other people send.

1	2	3	4	5
Totally true	Partly true	Neither true nor untrue	Partly untrue	Totally untrue

26. When another person tells me about an important event in his or her life, I almost feel as though I have experienced this event myself.

1	2	3	4	5
Totally true	Partly true	Neither true nor untrue	Partly untrue	Totally untrue

27. When I feel a change in emotions, I tend to come up with new ideas.

1	2	3	4	5
Totally true	Partly true	Neither true nor untrue	Partly untrue	Totally untrue

28. When I am faced with a challenge, I give up because I believe I will fail.

1	2	3	4	5
Totally true	Partly true	Neither true nor untrue	Partly untrue	Totally untrue

29. I know what other people are feeling just by looking at them.

1	2	3	4	5
Totally true	Partly true	Neither true nor untrue	Partly untrue	Totally untrue

30. I help other people feel better when they are down.

1	2	3	4	5
Totally true	Partly true	Neither true nor untrue	Partly untrue	Totally untrue

31. I use good moods to help myself keep trying in the face of obstacles.

1	2	3	4	5
Totally true	Partly true	Neither true nor untrue	Partly untrue	Totally untrue

32. I can tell how people are feeling by listening to the tone of their voice.

1	2	3	4	5
Totally true	Partly true	Neither true nor untrue	Partly untrue	Totally untrue

33. It is difficult for me to understand why people feel the way they do.

1	2	3	4	5
Totally true	Partly true	Neither true nor untrue	Partly true	Totally untrue

Section 3: Demographic Information

Directions: For the following items, please indicate your answer with a tick (/) in the appropriate spaces provided or write in the spaces provided.

Matric Number: _____ Regional Centre: _____

Gender: [] Male [] Female Age: _____ years old

Ethnicity: [] Malay [] Chinese [] Indian [] Others: _____

State of origin: _____

Marital Status: [] Single [] Married [] Divorced [] Others

How many children do you have? (if applicable) _____

What are their ages? First child: _____ Second child: _____

Third child: _____ Fourth child: _____

Fifth child: _____ Sixth child: _____

If Yes, please explain the cause. _____

(Please be reassured that your participation in this survey will be kept confidential and will not have any consequence on your grades.)

Thank you very much for your kind cooperation and contribution!

APPENDIX B

Interview Protocol

Section 1: Preliminaries

1. Welcome, create rapport, and thank the participant for consenting to participate.
2. Assure confidentiality and explain that participation will not have any consequence on the student's results.
3. Explain the purpose of the interview with regard to the study.
4. Answer any queries participants may have about the interview.

Section 2:

What have you been doing for your English Course?

How is your progress?

What are your perceptions about your English Course? How do you feel?

What are the major situational challenges that you face in your English Course?

LIFE SATISFACTION OF OPEN EDUCATION HIGH SCHOOL STUDENTS REGARDING VARIOUS DEMOGRAPHIC

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ABSTRACT

In the present study, the descriptive demographic characteristics, life satisfaction levels, and differentiation status of open education high school students according to various variables were revealed. The research was carried out with a sample of five hundred open education high school students via a survey model by means of convenience sampling. The findings obtained indicate that the life satisfaction levels of open education high school students were low. In addition, life satisfaction differed according to the variables age, families' monthly income, and the reason for choosing open education high school. When the demographic characteristics of the open education high school students were examined, it was seen that the following information applied to the majority of them: (1) Most were female students, (2) between the ages of 15 and 20, (3) whose parents had primary school level or below education, (4) whose parents mostly did not work or only their fathers worked, (5) with an average monthly family income of five thousand TRY and below, (6) had mostly migrated from the Black Sea and Eastern Anatolia Regions to Istanbul, and (7) they chose open education high school mostly because of job requirements.

Keywords: Open education, open high school, life satisfaction, distance learning.

INTRODUCTION

With the internationalization of new developments in technology and more generally the internationalization of education processes and their further integration with the labor market, open education processes are also enriched with new forms and applications. These developments have a pervasive impact on current forms of education delivery. At this point, open education processes show an increasing effect on the effectiveness of education and training processes at every education level on an economic and social basis (Orr et al., 2015).

Open education is a way of facilitating learning, often using digital technologies. Its aim is to make learning accessible to everyone by providing various means of access to formal and non-formal education and integrating the two (Inamorato Dos Santos et al., 2016). Open education activities carried out within the scope of lifelong learning, by making access to information flexible with personalized education opportunities, pave the way for different segments of society to be included in the education processes and ensure that the learning experience through education becomes possible for everyone (Krelja Kurelovic, 2016).

Educational openness is a process that began with free software and open resource in the mid-1980s and is linked to the philosophical foundations of modern education with commitments to freedom, citizenship,

knowledge for all, social progress, and individual transformation that date back to the Enlightenment (Peters & Britz, 2008). Feeding off of a number of intertwined fields such as using open resources, open access, and open science, open education is also a form of education that, as an element of the global digital economy, stands at the intersection of the broader political, social, and economic context, which directly affects social production (Peters, 2008). Open education, which is based on the use of open resources, has a structure that allows these open resources to be used by educators, students, self-learners, and researchers and includes sharing in the digital environment. These open resources include planning, implementation, and learning content such as online courses, modules, various online journals, online learning communities, and various software programs (Orr et al., 2015). Open education systematically integrates several interrelated elements to make education and training resources more inclusive by making student services more effective. These elements, shaped within the context of strategy, technology, quality, and management, consist of content, pedagogy, access, research, cooperation, and recognition (Inamorato Dos Santos, 2019). Open education practices, which include the elements listed above, link the fields related to teaching, learning, technology, and social justice, and present a field with high potential that enriches educational practices through new approaches (DeRosa & Jhangiani, 2017).

It is seen that open education practices are preferred by adults at higher education level, high school, and secondary school level as well as students at formal education age in many countries around the world as well as in this country (Aytekin, 2020). Open education, which started to be discussed with the establishment of the Republic, began to be implemented within the scope of distance education at the secondary education level in the 1970s. After 1980, it started to be implemented at higher education level through Anadolu University. With the technological developments, distance education applications diversified both in the private and public sectors in the 2000s and reached the present day (Bozkurt, 2017).

Before COVID-19, with global education technology investments reaching US\$18.66 billion in 2019 and the overall market for online education projected to reach US\$350 billion by 2025, open education practices, which are already used frequently in education technology, such as virtual lectures, teleconferences, and online environments, gained momentum with COVID-19 (Li & Lalani, 2020).

RELATED WORKS AND MOTIVATION

Various research studies were carried out on different topics related to open education and distance education practices including descriptive studies and statistical studies. While Zhu and Chikwa (2021) demonstrated that the determining factors in the shaping of open and distance education practices were political, technological, and socio-cultural and that international cooperation will strengthen open and distance education practices and contribute to overcoming possible uncertainties, Vrana (2021) stated that open education practices made education accessible to many people around the world in a way that had never been possible before, facilitating access to educational resources without any barriers, including cost.

In addition to the research on the factors affecting open and distance education practices, it was seen in the literature that studies on how education and training processes can be made more effective were carried out as well. These studies focused on student satisfaction. For example, Nevin et al. (2021) examined students' satisfaction with open education practices in terms of course materials and contents. In that research, it was revealed that the students were not satisfied with the educational materials and practices such as e-books, e-seminars, e-exams, e-learning and were only satisfied with the face-to-face practice. In another study, by Karadag et al. (2021), students' attitudes towards the question types applied in open education were examined and it was concluded that the students had a negative point of view towards open-ended questions. In Eric and Williams' (2021) study, it was shown that open education practices increased students' self-regulation skills and provided intrinsic motivation in teaching and education processes. However, **Ibileme** et al. (2021), in their study on student satisfaction with homework given to learners in open and distance education practices, concluded that although there were differences in satisfaction levels among students in terms of demographic variables, most of them were satisfied. In the study conducted by Aytekin (2020), the satisfaction levels were high. Again, in another study, conducted by Belen et al. (2021), the reasons open education students chose an open high school were examined and it was concluded that psychological reasons were influential as well as familial and social reasons.

Another issue that needs to be addressed in the open education system is the life satisfaction of students. Life satisfaction is the extent to which a person finds life rich, meaningful, full, or of high quality (American Psychological Association [APA] Dictionary of Psychology, 2022). At the same time, life satisfaction can be evaluated as being satisfied with life and conditions, accepting them, or having all the wishes and needs of the person fulfilled as a whole. In short, life satisfaction is a subjective evaluation of a person's quality of life (Sousa & Lyubomirsky, 2001). In addition, life satisfaction is a concept related to the subjective well-being of the individual and includes the individual's emotional reactions, the life satisfaction areas shaped by the social context, and the criteria that show how well-being is defined in general (Diener et al., 1999).

Life satisfaction also includes subjective well-being, which incorporates the connection with life, emotional states, and the search for meaning, as well as the level of satisfaction of individuals in areas such as health, economy, and education (OECD, 2013). In this context, life satisfaction includes the level of realization of life goals, the degree of perfection of life conditions, the level of satisfaction with life, and the quality and quantity of what is desired to change in one's life (Diener et al., 1985). As is apparent, life satisfaction has a subjective aspect inherent in the individual. In this respect, life satisfaction can be considered an immanent situation. External factors such as work, education, and family life determine the intrinsic life satisfaction and form a basis for the individual's level of making sense of life. In recent years, an increase has been observed in the number of students enrolled in open education high schools in Türkiye. As a matter of fact, when we examine the statistics of the Ministry of National Education, the number of students enrolled in open education high schools in the 2014-2015 academic year was 1,137,110 (Ministry of National Education Strategy Development Department, 2015), this number increased to 1,452,331 in the 2020-2021 academic year (Ministry of National Education Strategy Development Department, 2021). Since this increase has reached a remarkable rate, a problem situation has arisen for this research.

In the present study, which was conducted within this framework, attempts were made to reveal the descriptive demographic characteristics, life satisfaction levels, and differentiation status of open education high school students according to various demographic variables. In this context, answers to the following questions were sought:

1. What are the descriptive demographic characteristics of open education high school students?
2. What is the life satisfaction level of open education high school students?
3. Does the life satisfaction of open education high school students differ regarding various demographic variables?

RESEARCH METHODOLOGY

Study Design

The general survey model, which is one of various survey models, was used in order to determine whether the life satisfaction of open education high school students differs depending on various variables. These variables were determined in line with the opinions and recommendations of the assistant principals responsible for the records and affairs of open education high schools in public education centers. In this model, in order to obtain a general idea about the population, attempts are made to learn the characteristics and attitudes of people about a particular subject, based on the sample selected from the population (Gurbuz & Sahin, 2018).

Population and Sample

The population of the research consisted of students enrolled in open education high school in the two districts of Istanbul in the 2021-2022 academic year. Although these two districts selected as the population are close to each other, they are at different socio-economic levels (middle and lower). Convenience sampling method was chosen to determine the sample. Convenience sampling, which is a non-probability sampling method, was used to determine the research sample. In this method, the individuals that can be easily reached are included in the sample (Saunders, Lewis, & Thornhill, 2012) and the data collection process continues until the sample size targeted by the researcher is reached (Gurbuz & Sahin, 2018). In this context, until the sample of 500 open education high school students was reached by the researchers, a message was sent to

approximately fifteen thousand open education high school students and they were asked to fill in the online survey. Therefore, the sample of the research consisted of 500 students enrolled in open education high schools in the Sancaktepe and **Cekmekoy** districts in the 2021-2022 academic year. Detailed demographic data of the participating students are presented in the results section.

Data Collection Tools

The Satisfaction with Life Scale developed by Diener et al. (1985) and adapted into Turkish by Dagli and Baysal (2016) and the demographic information form prepared by the researcher were used.

The Satisfaction with Life Scale consists of one dimension and five items prepared in a five-point Likert scale structure. In the exploratory factor analysis performed to determine the construct validity of the scale, the Kaiser–Meyer–Olkin value was 0.869 and the Barlett’s test value was 528,329 ($p < 0.001$). The total variance explained by the scale was 68.389%. According to the confirmatory factor analysis results (χ^2/df : 1.17; RMSEA: 0.030; GFI: 0.99; CFI: 1.00; NFI: 0.99) performed to verify the factor structure of the scale, the model fit was good and was confirmed. When the reliability results of the scale were examined, it was seen that the Cronbach’s alpha coefficient was 0.88 and test–retest reliability was 0.97. Thus, it was seen that the scale had a valid and reliable structure.

In the demographic information form prepared by the researcher, the participants were asked about gender, age, parental relationship status, education level of the parents, employment status of the parents, monthly average income of the family, profession/sector, migration region, and their reasons for enrolling in an open education high school.

Data Collection

In order to collect data within the scope of the research, an online form that included the relevant scale and demographic information was prepared, and then said online form was sent to open education high school students via SMS, after the necessary permissions were obtained from the Sancaktepe and **Cekmekoy** District Directorates of National Education.

Data Analysis

SPSS 21 was used to analyze the data that were collected in the research. After the relevant data were made suitable for data analysis, firstly the descriptive frequency and percentage distributions of the obtained demographic data were calculated; then the arithmetic mean, standard deviation, standard error, skewness, and kurtosis values were calculated for the total scores of the Satisfaction with Life Scale. In addition, parametric ($n > 30$) and non-parametric ($n < 30$) techniques were used to determine whether the life satisfaction of open education high school students differs according to demographic variables (groups) (Altunisik et al., 2010; Buyukozturk, 2018).

RESULTS

In this section, the demographic information of the open education high school students participating in the research, and whether their life satisfaction differed according to demographic variables (gender, age, parental relationship status, education and employment status of parents, monthly average family income, migration region, and reason for choosing open high school) were analyzed.

Results and Interpretation of the Demographic Information of Open Education High School Students

As seen in Table 1, 238 of the open education high school students were male and 262 were female. This shows that women choose open education high school more. Moreover, 180 of the students were 15-20 years old, 70 were 21-25 years old, 50 were 26-30 years old, 72 were 31-35 years old, 57 were 36-40 years

old, 47 were 41-45 years old, 19 were 46-50 years old, and 5 were 51 and above. Examination of the age ranges reveals that the group under the age of 30 constituted approximately 60% of the participants, and so it is clear that young people constitute the majority of open education high school students. The parental relationship status shows that the majority (343; 68.6%) had parents that live together.

Table 1. Demographic Composition of Open Education High School Students Regarding Gender, Age, and Parental Relationship Status

Variable Groups		<i>f</i>	%	% _{val}	% _{ten}
<i>Gender</i>	Male	238	47.6	47.6	47.6
	Female	262	52.4	52.4	100.0
	Total	500	100.0	100.0	
<i>Age</i>	15-20	180	36.0	36.0	36.0
	21-25	70	14.0	14.0	50.0
	26-30	50	10.0	10.0	60.0
	31-35	72	14.4	14.4	74.4
	36-40	57	11.4	11.4	85.8
	41-45	47	9.4	9.4	95.2
	46-50	19	3.8	3.8	99.0
	51 and above	5	1.0	1.0	100.0
	Total	500	100.0	100.0	
<i>Parental Relationship Status</i>	Parents are together	343	68.6	68.6	68.6
	Parents are separated	54	10.8	10.8	79.4
	Mother is deceased	21	4.2	4.2	83.6
	Father is deceased	63	12.6	12.6	96.2
	Both parents deceased	19	3.8	3.8	100.0
	Total	500	100.0	100.0	

As seen in Table 2, 131 participants' mothers were illiterate, 56 were just literate, 205 had primary school education, 62 had secondary school education, 35 had high school education, 5 had an associate degree, another 5 had a bachelor's degree, and one of them had a postgraduate degree. Regarding the educational status of the fathers, 36 were illiterate, 65 were just literate, 244 had primary school education, 83 had secondary school education, 54 had high school education, 2 had an associate degree, 13 had a bachelor's degree, and 3 had a postgraduate degree. Examination of the educational status of the parents reveals that approximately 78% of the mothers and 69% of the fathers of the open education high school students were primary school graduates or had a lower education level. At the same time, fathers were at the forefront in terms of frequency at secondary school and higher education levels. This situation provides remarkable results showing that low parental education level has an effect on the education life of the child. On the other hand, according to the parental employment status of the open education high school students, both parents of 51 students were working, only the fathers of 217 were working, only the mothers of 16 were working, and 216 students' parents were unemployed. Considering these results, it was seen that the majority of open education high school students (86.6%) did not have both their parents working or only their fathers were working, and it can be inferred that especially low family income may drive these students to work and therefore they prefer open education.

Table 2. Demographic Composition Concerning the Educational and Employment Status of Open Education High School Students' Parents

Variable Groups		<i>f</i>	%	% _{val}	% _{ten}
<i>Mother's Educational Background</i>	Illiterate	131	26.2	26.2	26.2
	Just literate	56	11.2	11.2	37.4
	Primary School	205	41.0	41.0	78.4
	Middle School	62	12.4	12.4	90.8
	High School	35	7.0	7.0	97.8
	Associate Degree	5	1.0	1.0	98.8
	Bachelor's Degree	5	1.0	1.0	99.8
	Postgraduate Degree	1	.2	.2	100.0
	Total	500	100.0	100.0	
<i>Father's Educational Background</i>	Illiterate	36	7.2	7.2	7.2
	Just literate	65	13.0	13.0	20.2
	Primary School	244	48.8	48.8	69.0
	Middle School	83	16.6	16.6	85.6
	High School	54	10.8	10.8	96.4
	Associate Degree	2	.4	.4	96.8
	Bachelor's Degree	13	2.6	2.6	99.4
	Postgraduate Degree	3	.6	.6	100.0
	Total	500	100.0	100.0	
<i>Parents' Employment Status</i>	Both parents are employed	51	10.2	10.2	10.2
	Just the father is employed	217	43.4	43.4	53.6
	Just the mother is employed	16	3.2	3.2	56.8
	Both parents are unemployed	216	43.2	43.2	100.0
	Total	500	100.0	100.0	

As seen in Table 3, regarding the average family monthly income of open education high school students, 198 of them had 4000 TRY and below, 130 had 4001-5000 TRY, 64 had 5001-6000 TRY, 34 had 6001-7000 TRY, and 74 had 7001 TRY and above. When these data were compared with the starvation line (4,552.56 for February 2022) (Confederation of Turkish Trade Unions, 2022), it was concluded that the vast majority of open education high school students and their families (65.6%) did not have financial stability and therefore they had to work. When the profession/sector of the students was examined, it was seen that 135 were only students and 109 were not working, and the remaining 256 open education high school students were primarily working in various sectors such as construction/real estate, trade (sales/marketing), transportation, food, textile, automotive, and self-employment. When the migration situation of open education high school students or their families coming from any region was examined, it was determined that 95 of them were from the Black Sea Region, 114 were from the Eastern Anatolia Region, 15 were from the Southeastern Anatolia Region, 11 were from the Mediterranean Region, 10 were from the Aegean Region, 40 were from the Central Anatolia Region, and that 11 of them came to Istanbul from the Central Anatolia Region and 11 of them came to Istanbul via external migration, and 204 of them had not experienced migration. In this context, it can be thought that the majority of them (296 students) migrated to Istanbul, and the expectation of finding a job, employment, and also the desire to continue their education through open education.

Table 3. Demographic Composition of Open Education High School Students' Family Average Monthly Income, Profession/Sector, and Migration Region

Variable Groups	<i>f</i>	%	% _{val}	% _{ten}	
<i>Family Average Monthly Income</i>	4000 TRY or lower	198	39.6	39.6	39.6
	4001-5000 TRY	130	26.0	26.0	65.6
	5001-6000 TRY	64	12.8	12.8	78.4
	6001-7000 TRY	34	6.8	6.8	85.2
	7001 TRY or higher	74	14.8	14.8	100.0
	Total	500	100.0	100.0	
<i>Profession/Sector</i>	Student	135	27.0	27.0	27.0
	Construction/Real Estate	13	2.6	2.6	29.6
	Commerce (Sales and Marketing)	16	3.2	3.2	32.8
	Education Sector	7	1.4	1.4	34.2
	Electrical/Electronics	9	1.8	1.8	36.0
	Chemical, Oil, Rubber, and Plastic	5	1.0	1.0	37.0
	Transportation, Logistics, and Communication	10	2.0	2.0	39.0
	Food	42	8.4	8.4	47.4
	Self-employed	27	5.4	5.4	52.8
	Glass, Cement, and Soil	2	.4	.4	53.2
	Textile, Garment, Leather	13	2.6	2.6	55.8
	Automotive	12	2.4	2.4	58.2
	Media, Communication, and Publishing	1	.2	.2	58.4
	Health and Social Services	5	1.0	1.0	59.4
	Tourism, Accommodation, Catering Services	7	1.4	1.4	60.8
	Social and Personal Services	4	.8	.8	61.6
	Sports and Recreation	1	.2	.2	61.8
	Metal	6	1.2	1.2	63.0
	Business and Administration	2	.4	.4	63.4
	Wood Technology	3	.6	.6	64.0
	Culture, Art and Design	1	.2	.2	64.2
	Finance	1	.2	.2	100.0
	Other	69	13.8	13.8	78.0
	Unemployed	109	21.8	21.8	99.8
Total	500	100.0	100.0		
<i>Migration Region</i>	Black Sea Region	95	19.0	19.0	19.0
	Eastern Anatolia Region	114	22.8	22.8	41.8
	Southeastern Anatolia Region	15	3.0	3.0	44.8
	Mediterranean Region	11	2.2	2.2	47.0
	Aegean Region	10	2.0	2.0	49.0
	Central Anatolia Region	40	8.0	8.0	57.0
	External Migration	11	2.2	2.2	59.2
	No Migration	204	40.8	40.8	100.0
	Total	500	100.0	100.0	

Table 4. Results Regarding the Reasons the Participants Chose Open Education High School

Variable Groups		<i>f</i>	%	% _{val}	% _{ten}
<i>Reason for Choosing Open Education High School</i>	Due to Job Requirements	132	26.4	26.4	26.4
	Health Reasons	10	2.0	2.0	28.4
	Parental Pressure	4	.8	.8	29.2
	Religious Reasons	7	1.4	1.4	30.6
	Reasons Arising from Being a Woman	18	3.6	3.6	34.2
	Career Reasons	34	6.8	6.8	41.0
	Preparing for the YKS / University Exam	63	12.6	12.6	53.6
	Realizing the Dream of Going to University	73	14.6	14.6	68.2
	Leisure	8	1.6	1.6	69.8
	Personal Growth Reasons	39	7.8	7.8	77.6
	To Access the Social Opportunities It Provides	5	1.0	1.0	78.6
	Due to Opposition to Formal Education	5	1.0	1.0	79.6
	Psychological Reasons	4	.8	.8	80.4
	Due to Education Difference with Spouse or Social Circle	8	1.6	1.6	82.0
	Due to Migration	2	.4	.4	82.4
	Due to Parents' Divorce	1	.2	.2	82.6
	Private Reasons	36	7.2	7.2	89.8
Other	51	10.2	10.2	100.0	
Total	500	100.0	100.0		

As seen in Table 4, according to the reasons for choosing open education high school, for the majority it was due to job requirements (132), and for a great deal of them in order to realize their dream of university (73), preparing for the YKS/university exam (63), and due to career (34), personal growth (39), reasons arising from being a woman (18), health (10), and private reasons (36). It is significant that individuals who want to obtain better positions in business life or who have career goals need higher education. In addition, it is also significant that students who leave formal education in the last year of secondary education and enroll in open education high school with the intention to prepare for the university exam (YKS) regard this process as a means of preparing for the exam. At the same time, the determination towards this goal of individuals who want to study at university and those who face obstacles due to being a woman is an important result. Moreover, the desire of individuals who have poor health conditions or special conditions that hinder their education and leads them to be educated through open education high school which represents a significant amount of people in terms of the results.

Results and Interpretation of the Differences in Life Satisfaction Levels of Open Education High School Students and Their Life Satisfaction according to Demographic Variables

Table 5. Statistical Results for the Life Satisfaction Levels of Open Education High School Students

Scale and Subdimensions	N	\bar{x}	<i>sd</i>	Skewness	Kurtosis
<i>Satisfaction with Life Scale</i>	500	2.37	.897	.408	-.288

As seen in Table 5, the life satisfaction levels of open education high school students are low according to the total scores of the scale (\bar{x} : 2.37). Nevertheless, when the skewness (.408) and kurtosis (-.288) values, which predict whether the data are close to the normal distribution or not, were below the +1.0 -1.0 values determined as the threshold value in the normality assumptions described by Hair et al. (2013) and thus the distribution was normal. Therefore, parametric tests were used when the demographic variable groups were $n > 30$ and non-parametric tests were used when $n < 30$ (Buyukozturk, 2018).

Table 6. The Results of the Independent Group T-Test Performed to Determine the Differences in the Life Satisfaction Levels of Open Education High School Students According to Gender

Score	Groups	N	\bar{x}	sd	Sh _x	tTest		
						t	Df	p
Life Satisfaction	Male	238	2.36	.9433	.0611	-.373	480	.70
	Female	262	2.39	.8562	.0529			

As seen in Table 6, the life satisfaction scores of open education high school students did not differ according to gender ($t=-.373$; $p>.05$). The high rate of female students can be explained as the reflection of the sexist perspective towards women in education within the framework of the cultural dynamics of the society.

Table 7. Results of the Kruskal–Wallis H Test Performed to Determine Whether the Life Satisfaction of Open Education High School Students Differs Regarding the Age

Score	Groups	N	X_{order}	χ^2	df	p
Life Satisfaction	15-20	180	261.76	15.087	7	.035
	21-25	70	192.34			
	26-30	50	237.46			
	31-35	72	256.12			
	36-40	57	264.60			
	41-45	47	270.61			
	46-50	19	275.29			
	51 and above	5	265.20			
	Total	500				

As seen in Table 7, the life satisfaction scores of open education high school students differed according to age ($X^2=15.087$; $p<.05$). In this context, in order to determine between which groups the differences occurred, the groups were compared in pairs using the Mann–Whitney U test, and the results are presented in Table 8 below.

Table 8. Results of the Mann–Whitney U Test Performed to Determine Which Groups Differ in the Life Satisfaction Scores of Open Education High School Students Regarding the Age

Groups	15-20	21-25	26-30	31-35	36-40	41-45	46-50	51 and above
15-20	261.76	p<.01	p>.05	p>.05	p>.05	p>.05	p>.05	p>.05
21-25		192.34	p>.05	p<.01	p<.01	p<.01	p<.05	p>.05
26-30			237.46	p>.05	p>.05	p>.05	p>.05	p>.05
31-35				256.12	p>.05	p>.05	p>.05	p>.05
36-40					264.60	p>.05	p>.05	p>.05
41-45						270.61	p>.05	p>.05
46-50							275.29	p>.05
51 and above								265.20

As seen in Table 8, the life satisfaction of open education high school students according to age significantly differed with $p<.05$ as follows: $p<.01$ in favor of those aged 15-20 against 21-25, $p<.01$ in favor of those aged 31-35 against 21-25, $p<.01$ in favor of those aged 36-40 against 21-25, $p<.01$ in favor of those aged 41-45 against 21-25, and $p<.01$ in favor of those aged 46-50 against 21-25. There is a significant decrease in the life

satisfaction levels of open education high school students, especially between the ages of 21-25. It is thought that finding a job and future anxiety, which occupies the mind of the individual at these ages, are effective in the emergence of this situation. However, when the results are examined, it is thought that the life satisfaction of students over the age of 25 is gradually increasing and this anxiety is replaced by a calm life process.

Table 9. Results of the Kruskal–Wallis H Test Performed to Determine Whether the Life Satisfaction of Open Education High School Students Differs Regarding the Parental Relationship Status

Score	Groups	N	X_{order}	χ^2	df	p
<i>Life Satisfaction</i>	Parents are together	343	254.99	5.685	4	.224
	Parents are separated	54	250.11			
	Mother is deceased	21	199.60			
	Father is deceased	63	230.87			
	Both parents deceased	19	291.84			
	Total	500				

As seen in Table 9, the life satisfaction of open education high school students did not differ according to parental relationship status ($X^2=5.685$; $p>.05$).

Table 10. Results of the Kruskal–Wallis H Test Performed to Determine Whether the Life Satisfaction of Open Education High School Students Differs Regarding the Mother’s Educational Background

Score	Groups	N	X_{order}	χ^2	df	p
<i>Life Satisfaction</i>	Illiterate	131	235.15	6.916	7	.438
	Just literate	56	243.76			
	Primary School	205	260.63			
	Middle School	62	246.69			
	High School	35	256.44			
	Associate Degree	5	302.60			
	Bachelor’s Degree	5	312.90			
	Postgraduate Degree	1	18.00			
Total	500					

As seen in Table 10, the life satisfaction of open education high school students did not differ according to mother’s educational background ($X^2=6.916$; $p>.05$).

Table 11. Results of the Kruskal–Wallis H Test Performed to Determine Whether the Life Satisfaction of Open Education High School Students Differs Regarding The Father’s Educational Background

Score	Groups	N	X_{order}	χ^2	df	p
<i>Life Satisfaction</i>	Illiterate	36	237.93	6.592	7	.473
	Just literate	65	227.66			
	Primary School	244	252.34			
	Middle School	83	268.45			
	High School	54	241.26			
	Associate Degree	2	397.50			
	Bachelor’s Degree	13	280.00			
	Postgraduate Degree	3	190.83			
Total	500					

As seen in Table 11, the life satisfaction of open education high school students did not differ according to father's educational background ($\chi^2=6.916$; $p>.05$).

Table 12. Results of the Kruskal–Wallis H Test Performed to Determine Whether the Life Satisfaction of Open Education High School Students Differs Regarding the Parents' Employment Status

Score	Groups	N	χ^2	χ^2	df	p
<i>Life Satisfaction</i>	Both parents are employed	51	275.38			
	Just the father is employed	217	256.89			
	Just the mother is employed	16	286.31	5.257	3	.154
	Both parents are unemployed	216	235.55			
	Total	500				

As seen in Table 12, the life satisfaction of open education high school students did not differ according to parents' employment status ($\chi^2=6.916$; $p>.05$).

Table 13. Results of One-Way Analysis of Variance (ANOVA) Performed to Determine Whether the Life Satisfaction of Open Education High School Students Differs Regarding the Family Monthly Average Income

<i>f. x and sd Values</i>					ANOVA Results					
Score	Group	N	x	sd	Var. S.	SS	Df	MS	F	p
<i>Life Satisfaction</i>	4000 TRY or lower	198	2.23	.84294	Intr. Grp.	14.945	4	3.736		
	4001-5000 TRY	130	2.36	.92894	In-Grp.	387.413	495	.783		
	5001-6000 TRY	64	2.34	.87013	Total	402.358	499	4.774		.001
	6001-7000 TRY	34	2.54	.99612						
	7001 TRY or higher	74	2.73	.87330						
Total	500	2.37	.89796							

As seen in Table 13, the life satisfaction of open education high school students differs according to family monthly average income ($F=4.774$; $p<.01$). Post-hoc analysis was performed to determine which groups the differentiation originated from. Since the variances were homogeneous ($LF=.724$; $p>.05$), the LSD test was used and the comparison results are presented in Table 14 below.

Table 14. Results of the LSD Test Performed to Determine Between Which Groups the Life Satisfaction Scores of Open Education High School Students Differ Regarding the Family Monthly Average Income

Groups (i)	Groups (j)	$x_i - x_j$	Sh_x	p
4000 TRY or lower	4001-5000 TRY	-.13893	.09987	.165
	5001-6000 TRY	-.11657	.12721	.360
	6001-7000 TRY	-.31676	.16423	.054
	7001 TRY or higher	-.50753*	.12054	.000
4001-5000 TRY	4000 TRY or lower	.13893	.09987	.165
	5001-6000 TRY	.02236	.13509	.869
	6001-7000 TRY	-.17783	.17041	.297
	7001 TRY or higher	-.36861*	.12883	.004
5001-6000 TRY	4000 TRY or lower	.11657	.12721	.360
	4001-5000 TRY	-.02236	.13509	.869
	6001-7000 TRY	-.20018	.18774	.287
	7001 TRY or higher	-.39096*	.15101	.010
6001-7000 TRY	4000 TRY or lower	.31676	.16423	.054
	4001-5000 TRY	.17783	.17041	.297
	5001-6000 TRY	.20018	.18774	.287
	7001 TRY or higher	-.19078	.18329	.298
7001 TRY or higher	4000 TRY or lower	.50753*	.12054	.000
	4001-5000 TRY	.36861*	.12883	.004
	5001-6000 TRY	.39096*	.15101	.010
	6001-7000 TRY	.19078	.18329	.298

As seen in Table 14, the LSD test results performed to determine between which groups the life satisfaction of open education high school students differ according to the family monthly average income variable were as follows. Significant differences were found between 4000 TRY and below and 7001 TRY and above family monthly income, in favor of 7001 TRY and above at $p < .001$ level; between 4001-5000 TRY and 7001 TRY and above, in favor of 7001 TRY and above at $p < .01$ level; and between 5001-6000 TRY and 7001 TRY and above, in favor of 7001 TRY and above at $p < .05$ level. It is noteworthy that the life satisfaction of open education high school students in the upper family monthly income group (7001 TRY and above) was higher. This can be explained with the effect of a financially comfortable lifestyle on individual happiness.

Table 15. Results of the Kruskal–Wallis H Test Performed to Determine Whether the Life Satisfaction of Open Education High School Students Differs Regarding the Migration Region

Score	Groups	N	X_{order}	χ^2	df	p
Life Satisfaction	Black Sea Region	95	245.44	13.077	7	.070
	Eastern Anatolia Region	114	216.54			
	Southeastern Anatolia Region	15	224.07			
	Mediterranean Region	11	312.95			
	Aegean Region	10	291.10			
	Central Anatolia Region	40	267.20			
	External Migration	11	228.09			
	No Migration	204	266.35			
	Total	500				

As seen in Table 15, the life satisfaction of open education high school students did not differ according to migration region ($X^2=13.077$; $p>.05$).

Table 16. Results of the Kruskal–Wallis H Test Performed to Determine Whether the Life Satisfaction of Open Education High School Students Differs Regarding the Reason for Choosing Open Education High School

Score	Groups	N	X_{order}	χ^2	df	p
Life Satisfaction	Due to Job Requirements	132	223.90	33.477	17	.010
	Health Reasons	10	298.90			
	Parental Pressure	4	205.25			
	Religious Reasons	7	340.93			
	Reasons Arising from Being a Woman	18	167.08			
	Career Reasons	34	304.66			
	Preparing for the YKS / University Exam	63	258.06			
	Realizing the Dream of Going to University	73	245.44			
	Leisure	8	364.38			
	Personal Growth Reasons	39	264.14			
	To Access the Social Opportunities It Provides	5	275.80			
	Due to Opposition to Formal Education	5	210.00			
	Psychological Reasons	4	150.25			
	Due to Education Difference with Spouse or Social Circle	8	300.88			
	Due to Migration	2	101.00			
	Due to Parents' Divorce	1	341.00			
	Private Reasons	36	237.31			
Other	51	278.78				
	Total	500				

As seen in Table 16, the life satisfaction of open education high school students differed according to reason for choosing open education high school ($x^2=33.477$; $p<.05$). In this context, in order to determine between which groups the differences occurred, the groups were compared in pairs using the Mann–Whitney U test, and the results are presented in Table 17 below.

Table 17. Results of the Mann–Whitney U Test Performed to Determine Which Groups Differ in Life Satisfaction Scores of Open Education High School Students Regarding the Reason for Choosing Open Education High School

Score	Groups	^x <i>order</i>	<i>p</i>	
	1-Due to Job Requirements	223.90	4>1	p<.05
	2-Health Reasons	298.90	6>1	p<.01
	3-Parental Pressure	205.25	9>1	p<.05
	4-Religious Reasons	340.93	18>1	p<.05
	5-Reasons Arising from Being a Woman	167.08	2>5	p<.05
	6-Career Reasons	304.66	4>5	p<.05
	7-Preparing for the YKS / University Exam	258.06	6>5	p<.01
	8-Realizing the Dream of Going to University	245.44	7>5	p<.01
	9-Leisure	364.38	8>5	p<.05
	10-Personal Growth Reasons	264.14	9>5	p<.01
<i>Life Satisfaction</i>	11-To Access The Social Opportunities It Provides	275.80	10>5	p<.05
	12-Due to Opposition to Formal Education	210.00	14>5	p<.05
	13-Psychological Reasons	150.25	18>5	p<.05
	14-Due to Education Difference with Spouse or Social Circle	300.88	6>8	p<.05
	15-Due to Migration	101.00	6>13	p<.05
	16-Due to Parents' Divorce	341.00	9>7	p<.05
	17-Private Reasons	237.31	9>8	p<.05
	18-Other	278.78	9>13	p<.05
	Total		9>17	p<.05

As seen in Table 17, the life satisfaction of open education high school students showed significant differences according to reason for choosing open education high school and these results were as follows: p<.05 level in favor of religious reasons between work requirements and religious reasons, p<.01 in favor of career between job requirements and career, p<.05 in favor of leisure between job requirements and leisure, p<.05 in favor of other reasons between job requirements and other reasons, p<.05 level in favor of health reasons between health reasons and reasons arising from being a woman, p<.05 in favor of religious reasons between religious reasons and reasons arising from being a woman, p<.01 in favor of career reasons between career reasons and reasons arising from being a woman, p<.01 in favor of preparing for the YKS/university exam between preparing for the YKS/university exam and reasons arising from being a woman, p<.05 in favor of realizing the dream of going to university between realizing the dream of going to university and reasons arising from being a woman, p<.01 in favor of leisure between leisure and reasons arising from being a woman, p<.05 in favor of personal growth between personal growth and reasons arising from being a woman, p<.05 in favor of education difference with spouse or social circle between education difference with spouse or social circle and reasons arising from being a woman, p<.05 in favor of other reasons between other reasons and reasons arising from being a woman, p<.05 in favor of career reasons between career reasons and realizing the dream of going to university, p<.05 in favor of career reasons between career reasons and psychological reasons, p<.05 in favor of leisure between leisure and preparing for the YKS/university exam, p<.05 in favor of leisure between leisure and realizing the dream of going to university, p<.05 in favor of leisure between leisure and

psychological reasons, and $p > .05$ in favor of leisure between leisure and special reasons. As seen in Table 17, reasons such as career, leisure time, health, religious reasons, preparation for the YKS/university exam, realizing the dream of university, accessing social opportunities provided by education, personal development and reducing the educational gap with spouse or social environment are more common.

DISCUSSION

The findings of the study indicated that the majority of the participants were aged 15-20. This reveals that the open education high school consists of individuals who are of formal education age. This is inconsistent with the objectives stated in the Ministry of National Education [MEB] Open Education High School Regulation (1993). In the relevant regulation, the following article states the purpose of the open education high school: "To provide education opportunities by giving the opportunity to study in different fields to those who completed their primary education but did not continue with secondary education, and those who left or graduated from secondary education, and those who left or graduated from higher education." With this article, open education high school is regarded as an exceptional circumstance and it is emphasized that it creates equal opportunity. In other words, it is emphasized in this regulation that it is a system developed not for individuals who have access to formal education but for individuals who did not use this opportunity for various reasons. The findings of the present study showed that the majority of the participants were of formal education age, yet they turned to open education despite having the opportunity to access formal education institutions, which transforms the open education high school from an exceptional practice into a common one.

The findings showed that the majority of open education high school students were female. Females are more likely to encounter problems in accessing traditional education due to social, economic, and cultural barriers. Therefore, open and distance education programs can create an opportunity for them to access education (Ningakun, 2013). In this context, the fact that the proportion of female students is predominant shows that they choose the open education system as a platform where women can overcome the obstacles in accessing education.

The parental education status of open education high school students showed that the rate of those who were illiterate, just literate, and had completed only the primary school education constituted approximately 3/4 of the whole population, for both mothers and fathers. The rate of parents who had completed higher education was around only 1-2%. These results show that students are members of families with low education levels. Moreover, the findings on family monthly income showed that most of the students had a family monthly income at the minimum wage level. In this framework, as Bourdieu (2015) states, education represents cultural capital, while income represents financial capital. When considered in this context, it is seen that the students that enrolled in open education consist of individuals from low-level families in terms of both cultural capital and financial capital.

According to Davis-Kean et al. (2020), the education level of parents determines the school life and types of children by influencing their beliefs and expectations through the cognitive stimulation shaped by the cultural and social context provided by the parents in and outside the home environment. Bourdieu (2016) explains the context (including the family) that directs individuals and determines their actions and lifestyles with the concept of habitus. This concept is a mechanism that it is born into, grows in, and determines its actions and ways of thinking through dispositions. This mechanism manifests itself when the individual internalizes the imaginations of the society in which he/she lives. Thus, it is the habitus in which the individual grows up, which is shaped depending on the cultural and financial capital that determines his/her expectations, orientations, and achievements in the education system, as in all other structures. In the study by Passeron & Bourdieu (2014), which revealed the effect of habitus on school orientation, it was shown that the education life of the children of families with high parental graduation level, in other words, high cultural capital and financial capital, led to university, while the children of families deprived of these two types of capital left the formal education system at an early age. This situation also explains the tendency of open education high school students to choose open education, which should be implemented as an exceptional practice, within the framework of the low parental education level revealed in the present study.

According to the findings we obtained, when the circumstances regarding the open education high school students or their families coming from any region through migration were examined, it was determined that the majority (60%) had come to Istanbul through migration from various regions of Türkiye. Many of the students or their families had migrated to Istanbul from the Black Sea and Eastern Anatolia regions (approximately 42%). It is thought that the high rate of migration of participants to Istanbul for the purpose of finding a job from the abovementioned regions is due to the fact that these regions are disadvantaged especially in terms of the socio-economic development index and gross domestic product (Dincer, Ozaslan, & Kavasoglu, 2003; Kulaksiz, 2008). In this context, individuals who are interested in finding a job and working can only continue their education through open education.

In the present study, when the reason for students to choose open education high school was questioned, it was seen that nearly 2/5 of them chose open education due to job requirements and career reasons. Apart from these, the reason of preparing for university entrance exams was also frequently mentioned. The rate of individuals who identified themselves as students in the present study (27%) proves this point. Similarly, when the data of the research conducted by Firat (2017) were examined, it was seen that reasons such as career, a better job, and preparation for university were expressed as reasons for choosing open education. The temporal and spatial flexibility of open education makes open education high school preferable in terms of both employment purposes and preparation for university. Especially in recent years, the number of students who leave during the last year of formal secondary education to enroll in open education high school with the purpose of preparing for the university exam (YKS) has been increasing (Ulkar, 2018), and this is also reflected in the results of the present study. In this context, as expressed by Gaba et al. (2021), open and distance education using digital media offer a fast and flexible environment suitable for the needs of students regarding their future.

The findings related to the level of life satisfaction of open education high school students were also important outcomes of the present study. According to the findings, the life satisfaction levels of the participating open education high school students were quite low and below the average ($\bar{x}= 2.37$). In the study conducted by Dogan and Celik (2014), the life satisfaction of students decreased as the grade level increased, especially at the high school level. At this point, the fact that the level of life satisfaction, which decreases even in formal education as age and school grade increases, decreases for individuals who have left formal education can be considered a result of anxiety for the future.

On the other hand, when the life satisfaction levels of the open education high school students were examined in the context of the age variable, it was seen that the life satisfaction of the students aged 21-25 was lower than that of the other groups, whereas the life satisfaction of the individuals aged 41 and over was higher than that of the other groups. In the study conducted by Blanchflower and Oswald (2017), life satisfaction was high in the first years of youth, decreased over time, hit the bottom at the beginning of the 40s, and increased again with the 50s, which contradicts the results obtained in the present study. In this context, the fact that the life satisfaction of open education high school students, which was low in their 20s contrary to the general pattern, increased in the following years can be explained by future uncertainties. At this point, the period of 21-25 years of age is one in which anxiety about finding a job and having a profession is intense (Murat, 1995; Tayfun & Korkmaz, 2016), so the decrease in life satisfaction at these ages can be attributed to this factor. Individuals progress and see an increase in their life satisfaction with the convenience of finding a job and having a profession at an older age. In this context, accessing opportunities for work experiences, finding a supportive environment for career development, finding professional development opportunities, and decreasing future uncertainties and worries create an area of influence that contributes to young people's life satisfaction (Hirschi, 2009).

There was no significant difference among open education students whose life satisfaction was examined on the basis of gender. A similar result was found in the study conducted by Giusta et al. (2011). However, studies examining the factors affecting life satisfaction revealed that the life satisfaction of women and men depends on different variables. Schafer, Mustillo, and Ferraro (2013) revealed that while men's life satisfaction is more related to financial satisfaction, women's life satisfaction develops within a wider network of relationships and depends on variables such as relationships with children, sexual life, work conditions, and contribution to others. However, factors such as unemployment and being excluded from work life, diseases, and lack of income affect life satisfaction equally negatively for both genders (Giusta et al., 2011).

When the effect of the educational level of the parents, parental relationship status, and parental employment status on the life satisfaction of open education high school students was examined according to the findings of the present study, it was seen that those variables did not constitute a significant difference. Contrary to these findings, Crede et al. (2015) revealed that parental education status had a different effect on students' life satisfaction in terms of mother and father roles. In Crede et al.'s study, it was concluded that while fathers' educational status did not have a positive or negative effect on students' life satisfaction, there was a positive correlation between the education levels of mothers and students' life satisfaction. Unlike the results of the present study, it was revealed in the study conducted by Salgado et al. (2021) that the life satisfaction of young people living in divorced families was lower than those who lived with their parents. Furthermore, according to Salgado et al. (2021), young people with divorced parents experience more loneliness, feel less powerful to overcome uncertainties, and look at life more suspiciously. However, it was revealed in the study conducted by Walsh and Murphy (2021) that there was a negative correlation between working parents and the life satisfaction of children, and this relationship became particularly evident when the mother is working. In this context, it is seen that the findings reported by Crede et al. (2015), Salgado et al. (2021), and Walsh and Murphy (2021) differ from the results of the present study.

The results obtained in the present study showed that the life satisfaction of open education high school students who had a high family monthly income (7001 TRY and above) was higher than the life satisfaction those with lower income. This can be explained by the fact that the income situation, which improves living conditions, provides individuals with commitment to life and happiness (Akman, 2021). In addition, the social and economic structure of the family and the individual's psychosocial well-being also directly affect the life satisfaction of children (Pollmann-Schult, 2017).

The findings further show that the life satisfaction of the students who chose open education high school, especially due to job requirements or being a woman, was lower. Being involved in the education process within the framework required by the profession or job and carrying out the two at the same time can create reluctance, strain, and conflict in individuals (Demirel & Canat, 2001). In addition, it is thought that the aforementioned results emerged in the context of the exclusion of women from education processes due to social traditions, the workload of family responsibilities, being left behind in education processes, and the regrets caused by this, which may cause a decrease in women's life satisfaction (Ozaydinlik, 2014). This situation can also be explained by the fact that women are more exposed to the problems generated by the social, cultural, and economic context than men and therefore are more sensitive (Becchetti & Conzo, 2022). This situation is directly related to gender inequality. In general, in a more egalitarian society, the life satisfaction of both men and women is positively affected. However, regardless of all other variables, in societies where the social, cultural, and economic problems that women experience due to being a woman decrease, their life satisfaction levels increase more significantly than those of men (Bjornskov et al., 2017). Another result obtained in the present study was that those who chose open education high school as leisure had higher life satisfaction. At this point, it is noteworthy that Stenseng and Phelps (2013) revealed that the activity chosen voluntarily in the evaluation of leisure time was positively related to life satisfaction, and it supports the present study's result. Carrying out educational activities as a means of leisure by individuals naturally causes a positive and comfortable mood in them.

CONCLUSION

Open education emerges as an alternative education model that is applied not only at the higher education level but also at the secondary education level, especially in extraordinary situations such as pandemics. In the present study, it was seen that the open education system turned into a model used by young people especially at the ages of formal education. This transforms open education from being an exceptional practice to a widespread one, causing students in formal education age to move away from formal education institutions. At this point, practitioners may impose limiting criteria for individuals in formal education age at the point of application to open education. Demographic variables in the research findings showed that open education as a non-formal education institution was functional in terms of accessibility to education for disadvantaged groups. In this context, it was seen that those who chose open education high school were mostly people in lower income groups, people with low parental education level, and women. Here, especially for

individuals including disadvantaged groups, the development of an open education system as a flexible space in terms of time and space that overlaps with purposes such as personal growth and career in the context of access to education and lifelong education may yield beneficial results. In terms of life satisfaction, it was seen that the level of life satisfaction of individuals in their early youth was lower than that of other age groups. It appears that this is related to uncertainties about the future such as finding a job. In this context, in order to eliminate the anxiety of uncertainty, open education high school activities can be restructured by associating them with processes that help people acquire a profession. On the other hand, it was seen that the life satisfaction levels of individuals who enrolled in open education as leisure for personal growth were higher than those of other groups. In this context, open education activities can be enriched with personal growth content on the basis of courses, programs, and modules, and widespread individual development can be achieved through certification.

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CONDUCTING REMOTE ELECTRONIC EXAMINATIONS IN DISTANCE HIGHER EDUCATION: STUDENTS' PERCEPTIONS

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ABSTRACT

The COVID-19 pandemic forced Higher Education Institutes (HEIs) to adopt alternative approaches to the delivery of their learning activities, including examinations. Many HEIs choose Remote Electronic Examinations (REEs) as a one-way solution due to physical presence restriction measures imposed by governments around the world. The present study aimed to record and analyze students' perceptions of the implementation of remote electronic examinations by the Hellenic Open University (HOU). A number of 5412 students participated voluntarily and filled out a questionnaire. Both qualitative and quantitative analyses were employed. Results revealed that students were satisfied in general with the examination process. Regarding integrity assurance issues, students were also satisfied. Furthermore, they expressed their desire to be examined remotely again. Avoiding traveling and saving money were the main benefits of remote electronic examinations. Regarding the examination topics and the duration of the examination sessions, some issues were reported. Finally, students suggested the provision of more time length.

Keywords: Remote electronic examinations, COVID-19, examination evaluation, challenges, suggestions.

INTRODUCTION

COVID-19 has affected healthcare systems and economies around the world. Measures imposed by governments, such as lockdown, social distancing, and remote working, have entered into citizens' daily routines around the world and created a new normality. Higher Education was also impacted by the pandemic. The closure of universities and colleges' campuses, in order to slow down the spread of the virus, forced the majority of their academic activities (e.g., teaching, assessment, research, etc.) and management services to be delivered online (Marinoni, van't Land, & Jensen, 2020).

During the pandemic, students' examinations with a physical presence were not permitted in many countries. Ministries of Education around the world have encouraged a shift toward alternative examination methods. As a result, many HEIs adopted remote examinations (OECD, 2020). Admittedly, over the last years, there has been an increasing interest in HEIs to move from paper-and-pencil to computer-based examinations (Hillier & Grant 2018). Electronic examinations should be flexible enough, taking into account the requirements and the expectations of multiple stakeholders. To this end, faculty members, with the respective heads, should provide a flexible examination process so as not to put students at a disadvantage (Bothwell, 2020). Electronic examinations allow a range of assessment types and can frame questions that require very complex responses which can not be supported by the traditional examination approach (Fluck & Hillier, 2016). However, electronic examinations may face challenges that should be addressed by HEIs, such as dishonest behavior (e.g., cheating), difficulty in assessing courses with practical orientation, difficulty in fair treatment of test-takers, technical failure risks, etc. (Hillier, Kumar, & Wijenayake, 2020; Sahu, 2020).

Research Aim

HOU is a public university founded in 1992 and fully operational since 1997. It is the sole university offering exclusively open distance education in our country with approximately 45.000 active undergraduate and postgraduate students. HOU supports the learning process by using special educational materials and teaching methods. Traditionally, the meetings between tutors and students took place in physical classrooms on the university premises. Since 2016, the university has gradually shifted from face-to-face to online meetings. Regarding online learning, research has shown that it can also be delivered in high quality (Ahmed et al. 2021). However, students' participation in final examinations was done by physical presence in predefined examination venues throughout the country.

During the pandemic outbreak, HOU was the first university in our country which officially announced that students' examinations will be conducted remotely via electronic means (e.g., personal computers, tablets, smartphones, etc.). Although REEs are increasingly implemented by HEIs around the world, students' perceptions remain rather unexplored. Students' perceptions could reveal important and useful aspects for the effective design and implementation of REEs. In response to this transition, the present study aimed to record and analyze students' perceptions of the implementation of REEs. The contribution of the present study is twofold: a) to support the decision -making authorities of the HOU about the effective employment of REE in the future, and b) to present findings to the academic community about the benefits and drawbacks of REEs in Distance Higher Education Environments. More specifically, the following research questions were stated:

1. To what extent students are satisfied with REEs?
2. What are students' perceptions about the positive and negative aspects of REEs?
3. What are students' suggestions for the improvement of REEs?

LITERATURE REVIEW

Assessment is the process of collecting and analyzing data about learners' performance and it can be formative or summative. Formative assessment focuses on improving a learner's performance during a course, while summative assessment focuses on grading the learner either at the end of a course or at specific periods (Ilgaz & Afacan Adanir, 2020). The term electronic assessment (e-assessment) describes assessment procedures and activities that are carried out electronically with the use of information and communication technology

(ICT) (Alruwais, 2018). The term electronic evaluation (e-evaluation) refers to the summative assessment that is conducted using ICTs (Fluck et al., 2017). Finally, the term REEs describes examinations that are conducted electronically at a remote location apart from the examination venue (Thomas et al., 2002).

Literature has shown several advantages of electronic assessments and examinations, such as speed up testing and immediate (automated or semi-automated) student feedback (Betlej, 2013; Nguyen et al., 2017; Osuji, 2012; Shraim, 2019). Electronic assessments/examinations can provide automated question generation (Sindre & Chirumamilla 2015), question banks (Washburn, Herman, & Stewart, 2017), a variety of question styles, multimedia types (e.g., text, image, video), and virtual environments (James, 2016; Kuikka, Kitola, & Laakso 2014; Pagram et al., 2018) as well as automated records of learning analytics (Ilgaz & Afacan Adanir, 2020; Washburn et al., 2017) and secure data storage (Ilgaz & Afacan Adanir, 2020). Also, they reduce the possibility of cheating (Farzin, 2017), they are flexible regarding location and time (Alruwais, 2018; Datsenka, Stankov, & Kurbel, 2012), and adaptable regarding students' characteristics (e.g., people with special needs or people located far away from examination venues) (Sindre & Chirumamilla, 2015). Additionally, they are conducted in a comfortable, relaxed, and friendly environment, reducing anxiety (James, 2016; Thomas et al., 2002), and they save time, effort and cost for students, tutors, and universities (Ilgaz & Afacan Adanir, 2020). In particular, tutors save time and effort from correcting and grading written tests, and have the time to provide essential student feedback (Shraim, 2019).

Nevertheless, literature has shown up several challenges of electronic assessments and examinations such as reliability and usability issues of the assessment/examination systems (e.g., login issues, overloading, complex and challenging environments, answer submission problems, etc.) (Dammam, 2016; Hillier, Grant, & Coleman, 2018; Khan & Khan, 2019; Kuikka et al., 2014; Snodgrass et al., 2014; Wibowo et al., 2016), poor network quality, speed or internet connectivity issues, (Bashitialshaaer, Alhendawi, & Lassoued, 2021; Ilgaz & Afacan Adanir, 2020; Pagram et al., 2018), unreliable devices or infrastructures, power cuts, (Bashitialshaaer et al., 2021), authentication and security issues (Adebayo & Abdulhamid, 2014; Dammam, 2016), little defense against cheating (Sindre & Chirumamilla, 2015).

Furthermore, students consider that reading the screen and typing are quite demanding and tiring tasks (Bayazit & Askar, 2012; Nardi & Ranieri, 2019) since they are often inexperienced with the assessment/examination process and spend more time due to the lack of typing skills (Betlej, 2013; Khan & Khan, 2019; Osuji, 2012). Factors like slow typing, periodically saving answers, (Thomas et al., 2002), paper -and -pencil and computer tasks jointly (Ilgaz & Afacan Adanir, 2020), are major issues that might result in a loss of time. Disturbing noises/interruptions during an examination (e.g., typing noises, scrolling noises, or other environmental sounds) can burden the whole process (Bayazit & Askar, 2012; Thomas et al., 2002). Student anxiety during remote examinations is related to factors like inexperience with online format (Khan & Khan, 2019), unsatisfying technical or tutor support (James, 2016; Khan & Khan, 2019), time duration (Elsalem et al., 2020), inadequate information (Bashitialshaaer et al., 2021), fear of losing data due to the technical failure of the examination system or due to poor internet connection (Gotlib et al., 2015; Ilgaz & Afacan Adanir, 2020; Pagram et al., 2018).

Also, electronic assessments/examinations are not always representative of students' way of thinking (Betlej, 2013), they don't show students' real level of skills and knowledge (Bashitialshaaer et al., 2021) and they tend to downplay the evaluation of students' high order competencies and critical thinking skills due to an orientation mostly to close-ended formats (e.g., Multiple Choice Quizzes, [MCQs], true-false, matching, etc.) (Hodgson & Pang, 2012). Gotlib et al. (2015) mention in their survey that students disagreed to a considerable degree that electronic examinations were better for testing their knowledge, compared to traditional pen-and-paper examinations. Shraim (2019) reports that almost half of the participants in her survey stated that electronic examinations were not appropriate for any subject area and also not always appropriate to test students' level of knowledge. Responders considered as an aspect of the effectiveness of electronic examinations the presence of different question types. Iannone and Simpson (2017) mention in their research that students of education studies tend to prefer methods like projects and dissertations in comparison to mathematics students who tend to prefer closed-book exams. Both groups of students considered these preferences to be more appropriate for discriminating between their abilities than the MCQ method. MCQs have been proved as an effective and fair mode of e-assessment and examination in general (Babo et al., 2020; Ranganth, Rajalakshmi, & Simon, 2017). Nevertheless, MCQs have been charged

with drawbacks such as the testing only of factual knowledge and not of understanding (Shraim, 2019) and higher-order cognitive abilities (Hodgson & Pang, 2012). Khan and Khan (2019) state that participants in their research complained that MCQs did not truly test their abilities on the course and suggested that a variety of question forms should be incorporated into their assessment (e.g., long or short answers).

Besides the type of format, Walker and Handley (2016) mention the issue of balance and volume of questions per allotted time, and Jimoh et al. (2012) point out that erroneous questions are one of the major causes of students' failure with the Computer Based Test (CBT) mode of assessment.

Literature has shown the need for elements that contribute to students' better examination preparation, such as clearer instructions (Hillier, 2015), more training and practice (Washburn et al., 2017), more digital skills (Adegbija, 2012; Walker & Handley, 2016), more resources and facilitating procedures (Shraim, 2019). Improvements in the affordances of examination softwares are also considered important (James, 2016; Pagram et al., 2018; Wibowo et al., 2016).

CONTEXT OF REMOTE EXAMINATIONS IN THE HOU

HOU has been working towards addressing most of the challenges of REEs. More specifically, ten days before the scheduled examination date, students were given instructions regarding the submission procedures as well as demos to perform simulations in the examination environment and get themselves familiarized with the REEs process. Regarding the examination platform, Moodle was used to support the REEs process (Figure 1 – part 1). Considering proctoring, it was decided to avoid using certain software solutions (e.g., ProctorExam, 2022; Proctortrack, 2022). Instead of that, Skype for Business (SfB) was used for student monitoring and authentication (Figure 1 - part 2). Furthermore, tutors were further supported by administration staff – one staff member per tutor- during the examination session (Figure 1 – part 3).

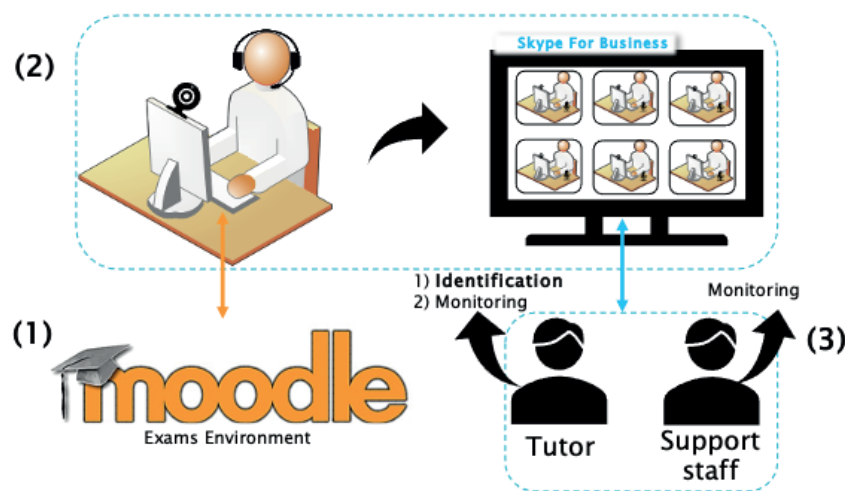


Figure 1. REEs' monitoring process

Examinations were conducted using the following methods:

- Written examination with open questions
- Written examination with MCQs
- Written examination with MCQs and open questions
- Oral examination
- Final written assignment-project
- Final written assignment with potential oral presentation
- Written examination with oral presentation

Depending on the examination method, students could submit their answers directly to the platform (e.g., in the case of written examinations with MCQs) or upload files with their written answers (e.g., in the case of written assignment projects). In the case of a possible oral presentation, tutors, after having graded the students' answers, had the opportunity - if necessary - to invite someone for an oral presentation. The oral examination was synchronous and took place exclusively in the SfB environment.

METHOD

Research Design and Participants

This paper presents a survey study, which is a cross-sectional design where data are collected from subjects at a single point in time through a questionnaire (Bryman, 2014). A survey is a relatively quick and rigorous research approach and can be employed by researchers in order to explain trends or reveal characteristics of large groups (Straits, 2005), such as in our case. The survey was conducted by the Internal Evaluation Unit (IEU) of the HOU. A total of 5412 (36.03%) students (out of 25744) participated in the research voluntarily and anonymously. More specifically, 2040 students from the School of Humanities, 1059 students from the School of Sciences and Technology, 2252 students from the School of Social Sciences, and 61 students from the School of Applied Arts participated.

Data Collection and Analysis

Students were asked to fill out a questionnaire consisting of 11 questions (8 closed-ended Likert-type and 3 open-ended). Regarding closed-ended questions, 6 Likert-type questions were used to record students' satisfaction with each dimension of the examination process (figure 3). One Likert-type question was used to record students' opinions about integrity assurance and 1 Likert-type question was used to record students' desire to be remotely examined in the future. The scale of each question ranges from 1 (not at all) to 5 (very much). In order to record students' positive/negative comments and suggestions, 3 open-ended questions were also provided at the end of the questionnaire.

Before the main study, the questionnaire was pilot-tested with a group of 100 students in order to check reliability issues. What is more, face validity (Bryman, 2014) was checked by three experts on educational assessment and evaluation. To minimize any bias or memory recall issues, the survey was conducted exactly after the end of the examinations. The survey lasted one month (from August 4th, 2020 to September 4th, 2020).

With regard to the collected quantitative data, descriptive and inferential analyses were applied. Violations of the sphericity and homogeneity assumptions led to the use of non-parametric tests. More specifically, the Friedman and Kruskal-Wallis tests were used. A thematic analysis (Guest, MacQueen, & Namey, 2012), supported by hierarchical text clustering (Zhai and Massung 2016), was applied to the analysis of open-ended questions. Figure 2 depicts the process of open-ended data analysis. More specifically, the process consisted of 4 steps: a) students' answers (N=4344) were automatically segmented into sentences, then word tokens per sentence were replaced by their lemmas and frequently common words were removed, b) sentences were transformed into vectors and the pairwise distances among them were calculated with the cosine similarity measure, c) distance matrix data were used for hierarchical text clustering according to Ward's method (Ward, 1963) and d) the proposed clusters were checked for their content quality (e.g., silhouette scores) and, where necessary, they were manually grouped into related themes.

The above analysis resulted in a total of 9894 classified sentences (positive = 3348, negative = 4165 and improvements = 2381). Open-ended data preprocessing was performed using the R statistical environment and hierarchical text clustering was performed using Orange Data Mining Software.

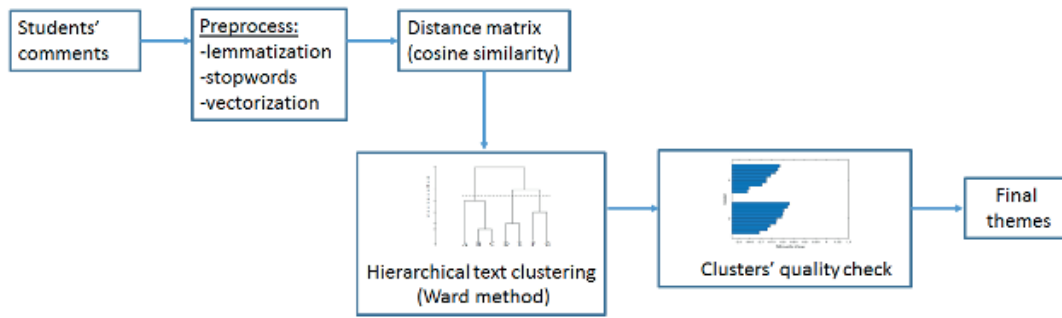


Figure 2. The text mining process applied for the thematic analysis

FINDINGS

Regarding satisfaction from each dimension of the REEs' process, students stated satisfied (Mean score > 3 – see Figure 3). Weak statistically significant differences resulted between dimensions (Friedman Test: $\chi^2(5) = 5025.95$, $p < 0.01$, $W = 0.114$). More specifically, the Dunn-Bonferroni correction for multiple pairwise tests showed that students were more satisfied with the examination platform, the examination methods, and the briefing of the examination procedure. Students were less satisfied with the available examination time.

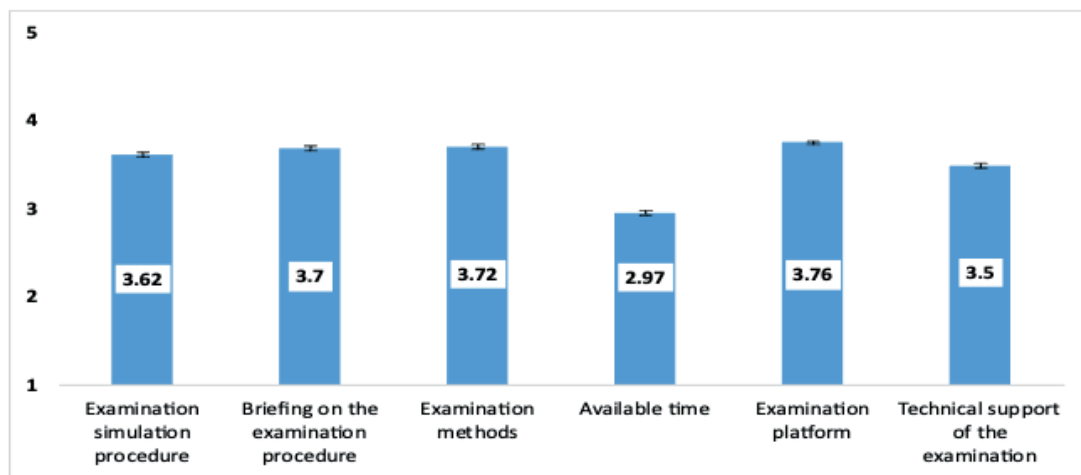


Figure 3. Means and 95% CI of student satisfaction per dimension of the REEs' process

The variable Overall Satisfaction (Cronbach's $\alpha = 0.90$) was constructed from the dimensions of REEs and showed that students were satisfied with REEs in total (Figure 4). Respondents also considered that the integrity assurance of REEs was ensured and they were positive to be examined remotely in the future (Figure 4). A moderate positive correlation was found between students' overall satisfaction with REEs and their desire to be examined remotely in the future ($r_s = 0.62$, $p < 0.01$).

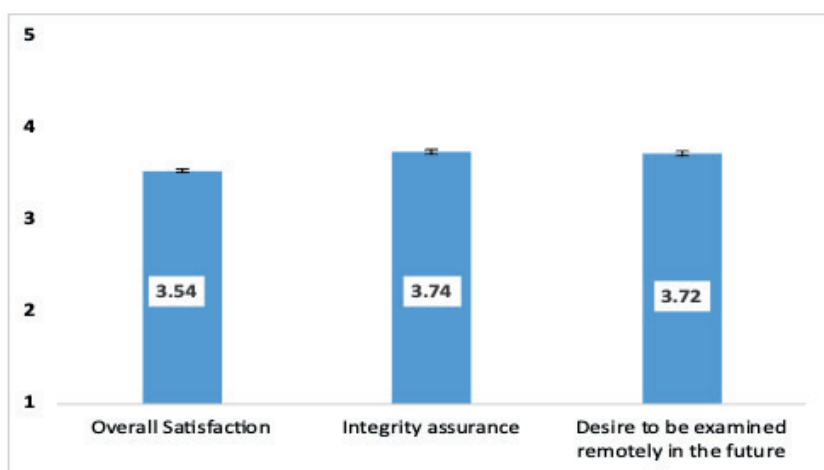


Figure 4. Means and 95% CI of student overall satisfaction, integrity assurance, and desire to be examined remotely in the future

Considering satisfaction per examination method, weak statistically significant differences were found (Kruskal-Wallis test: $\chi^2(6) = 127.66$, $p < 0.01$, $\eta^2 = 0.014$). More specifically, the Dunn-Bonferroni correction for multiple pairwise tests showed that students were more satisfied with: a) written examination with MCQs, b) final written assignment-project, c) final written assignment with potential oral presentation and less satisfied with: a) written examination with MCQs and open questions, and b) oral examination (Figure 5).

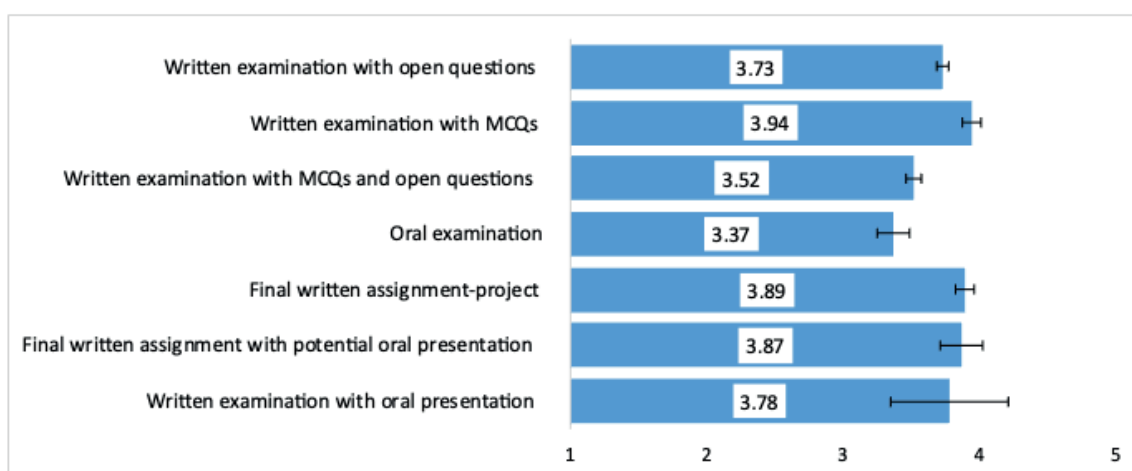


Figure 5. Means and 95% CI of students' satisfaction per examination method

Students' perceptions of the positive and negative aspects of REEs were grouped into nine themes (Figure 6). Students considered that a great benefit of REEs was the fact that they did not have to travel to any examination venue, and as a result, they saved time and money.

Regarding the examination topics, students mainly complained about ambiguities or errors in wording, ambiguities in the grading criteria, the number of questions, and the level of difficulty compared to the examination duration (which was judged to be limited). Students also reported issues with topics' modes of presentation. More specifically, for topics that were examined in the MCQs format, students complained about the lack of a backward navigation option. Students could not check or answer previous questions. However, a small portion of comments reports that examination topics were considered clear, comprehensible,

logical in number, passable, were given on time, and promoted critical thinking. Students reported that the available examination time was not enough. The issue of the limited examination time, although less frequent, runs through students' comments regarding examination topics and methods. Comments about technical issues and anxiety were also reported.

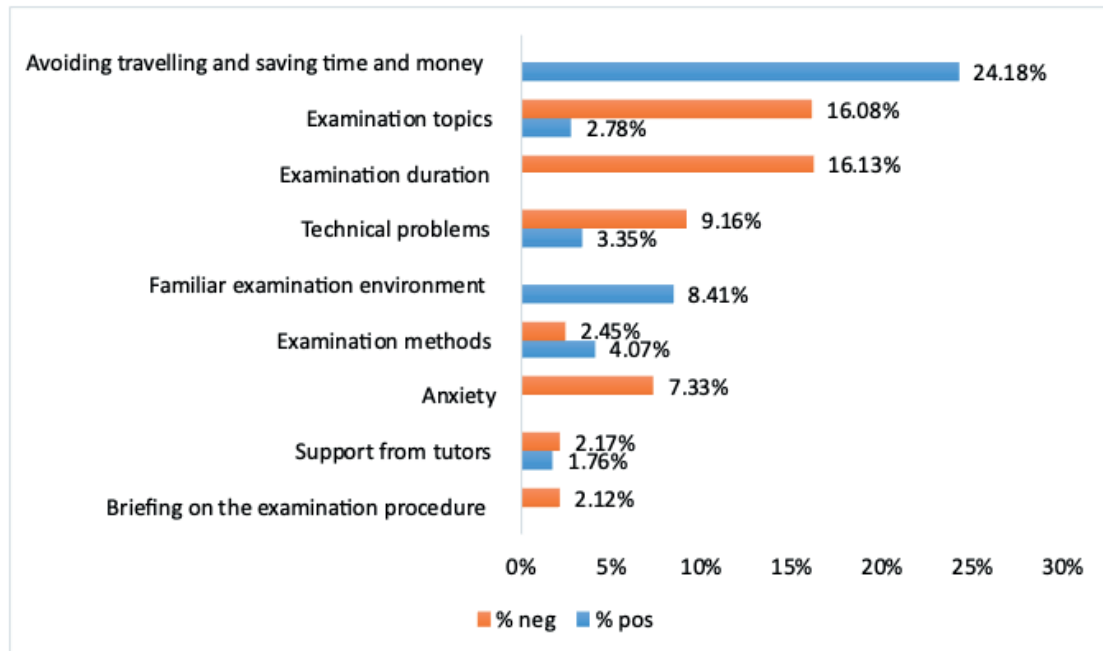


Figure 6. Distribution of Students' positive and negative aspects of the REEs ($N_{\text{pos} + \text{neg}} = 7513$)

Negative comments were made regarding technical problems with the examination platform (mostly answer submission problems or difficulty to use) and with SfB (image freezing and poor audio/video quality). However, a small portion of positive comments referred either to the absence of technical problems during the REEs or to their timely treatment. According to students' comments, the fact that they were allowed to be examined in a familiar environment (e.g., home or office) contributed to a less stressful condition. Nevertheless, 7.33% of students' comments showed that during the examination they were very anxious due to the fear of technical problems and connection loss, limited available time, and the unprecedented character of the examination process. Most of the students reported that the examination methods were ideal or suitable for their course; easy, fast, transparent, and fair. A portion of comments concerned the written assignment-project and the written examination with open questions, highlighting mostly that these two examination methods were appropriate or ideal for the module. However, they did not lack, albeit to a lesser extent, comments where the examination methods were considered inappropriate, unacceptable, unclear, not satisfactory, not representative of students' learning process, stressful and limited in time.

Students' comments, positive and negative, about their support by tutors were balanced. Students highlighted the fact that tutors during the examination were cooperative, supportive, organizing, well prepared, and provided ongoing information. Comments where tutors were distant, strict, disorganized, not at all properly informed about the examination process, unable to impose order during the examination and deficient regarding the use of information technologies, were also reported. Finally, students stated that they were not completely or timely informed about the examination process (e.g., types of questions, starting time of the examination, available time, etc.)

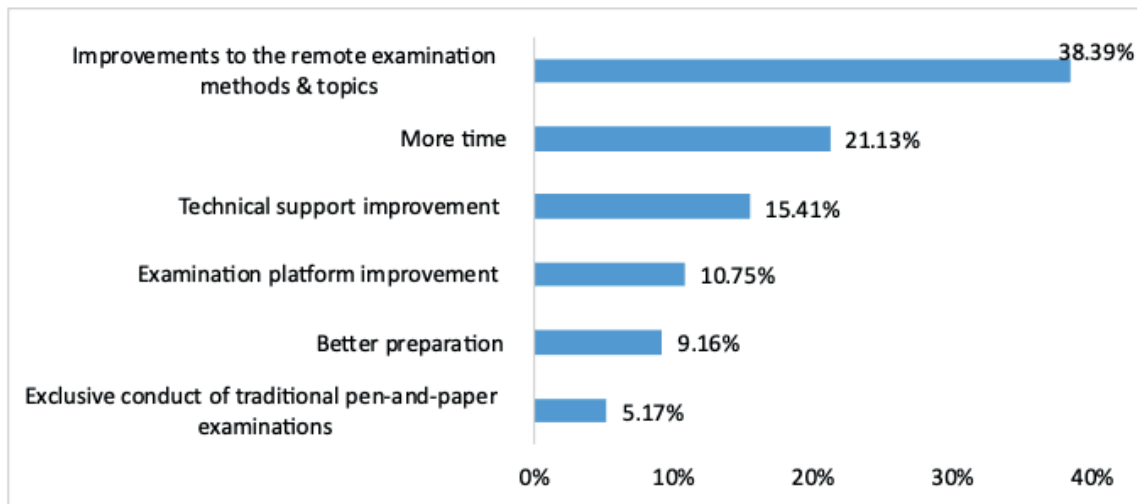


Figure 7. Suggestions for the improvement of remote examinations (N=2381)

Six themes of students' suggestions on the improvement of REEs resulted from the thematic analysis (Figure 7). First of all, students suggested a variety of improvements to the examination methods and topics. More specifically, they want fewer examination topics, a sensible distribution of available examination time among examination topics, and the simultaneous display of all examination topics during the examination. Students want to be examined either with a combination of methods or with a sole method only (mostly with MCQs or with final written assignment-project).

Students also want the examination duration to be longer, the providence on behalf of the university for better technical support, the improvement of the examination platform features (e.g., data recovery after disconnection or appropriate notification before the expiration of the examination, and simplification of the submission process). Regarding the preparation procedure of REEs, students want to receive timely and complete information. Regarding the simulations of REEs, students want them to be implemented on time, adapted to more realistic scenarios, or customized to each examination method. Finally, a small student portion wants the option to be able to exclusively participate in traditional examinations.

DISCUSSION AND CONCLUSIONS

The purpose of the present research was to present student's perceptions on the implementation of the REEs' process that was adopted by the HOU during the health crisis of COVID-19 so as to inform decision-making about the future of remote examinations at the largest distance education institute in our country. The research was conducted by the Internal Evaluation Unit of the HOU. Regarding quantitative data, a set of 9276 students' responses were recorded. A total of 9894 classified sentences (positives = 3348, negatives = 4165 and improvements = 2381) were used for the qualitative analysis session.

Results revealed that students were satisfied with most of REEs' dimensions (see Figure 2) and they expressed their desire to be examined remotely in the future (see Figure 3). Students' open-ended responses showed that avoiding traveling to examination venues and saving money were the most prevailing positive comments. These findings are following studies in which students show acceptance and positive attitudes towards online assessment/examination (Alrways, 2018; Joshi et al., 2020; Senel & Senel, 2021). Such findings suggest that REEs were conducted in an effective context and HOU authorities should encourage REEs' adoption in the future.

Regarding the available examination topics, most comments related to issues such as difficulties in comprehension, presentation errors, and an imbalance between the number of examination topics and the available time. Such issues should be addressed by the HOU administration through appropriate workshops where best practices of producing examination topics of different types and delivery modes will be presented. After all, the quality of examination topics partly reflects the quality of the examination process, and students tend to adopt positive attitudes towards the latter when they feel that it fairly helps to improve their learning and understanding of the curriculum instead of lowering their academic performance (Alsalhi et al., 2022; Khan & Khan, 2019; Shraim, 2019).

Students' comments varied in their preferences to be examined with particular methods in the future. This variation seems to depend rather on the subject of each module (Iannone & Simpson, 2017). Furthermore, it is related to students who complained about the inadequacy of some examination methods to be representative of either the course's nature or their skills. Workshops for faculty members should be provided regarding the advantages and disadvantages of the available examination methods as well as best practices for their implementation under each discipline's requirements. This will guarantee an assessment of both lower and higher-order cognitive skills (Sharadgah & Sa'di, 2020).

Examinations' duration was a prevailing issue pointed out by students, a finding which is in alignment with the literature review (Adanir, 2020; Jimoh et al. 2012; Khan & Khan, 2019). On the one hand, provision should be made for a reasonable treatment of the examinations' duration so that students can complete their examinations within the predefined time limits, always taking into account the examination method and the type of topics. On the other hand, it should be stressed that any restriction on the duration of examinations may prove to be an effective way of reducing cheating behaviors, but provisions should be made for time adequacy regarding students with special needs (ElSalem, 2021). Complaints of students regarding their difficulty in typing or their lack of digital skills, which are related to personal time management during the examination, should be addressed through online workshops that will help students improve their ICT skills (Adewale, 2011). Several technical problems during the examination process, such as poor connection, submission failures, and usability issues were reported and charged as responsible for causing anxiety to students. It is suggested that the HOU administration should exploit its highly skilled technical personnel better in order to improve the examination platform's affordances and adequately address students' requests in the future.

LIMITATIONS AND FUTURE WORK

The sample size was large enough. Nevertheless, the analysis was conducted without further investigating possible differences in students' perceptions, based on demographic characteristics such as age, gender, and school of study. However, university policymakers could get insight on how to improve REEs and increase students' academic performance in an open distance education context. The study was conducted in the first year of the pandemic outbreak, so all students had their first-time experience with REEs, which was not always captured with clarity in their short-written comments (Popping, 2015). In future work, semi-structured interviews with students should be conducted in order to investigate in depth their experience of the REEs' process. Also, the study explored only students' perceptions. Faculty members' perceptions should also be explored through a similar study. Findings should be compared in order to help the HOU to shape a complete image of REEs through convergences and divergences between these groups. Correlations between students' technological competencies and perceived satisfaction from REEs could also be investigated.

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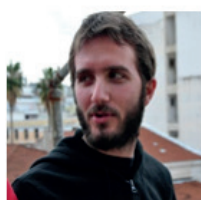
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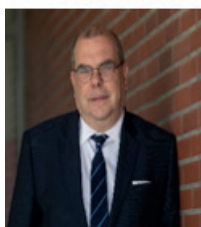
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A MODEL OF REMOTE TEACHING AND LEARNING UNDER EMERGENCY AND SUSTAINED CRISIS CONDITIONS: A DESCRIPTION OF NOVEL DISTANCE EDUCATION CONTEXTS AND MANIFESTATIONS

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ABSTRACT

Humans have been learning at a distance for millennia. Modern information and communications technology has enabled formal distance education to be conducted online, though significant variation exists in purpose, course format, delivery methods, etc. Under duress of COVID-19, educators and students alike have been forced to engage in their courses remotely. These courses, however, are not equivalent to formal distance education and to date have broadly been referred to as Emergency Remote Teaching (ERT). Nevertheless, ERT courses are no longer unexpected and have become plannable; many are being sustained indefinitely due to the prolonged nature of the pandemic. Despite this paradox, current ERT literature typically conceptualizes the ongoing practice monolithically. This conceptual paper discusses key differences between formal distance education, emergency remote teaching, and the evolving practice of Sustained Remote Teaching (SRT). We suggest a descriptive contextual model as a research analytic for discussion in the field of distance education.

Keywords: Distance education, COVID-19, emergency remote teaching, sustained remote teaching, distance learning.

INTRODUCTION

With social distancing as the primary countermeasure against spreading and contracting the novel coronavirus from the start of the COVID-19 pandemic, Emergency Remote Teaching (ERT) has been a lifeline all over the world for schools, educators, and students. This previously obscure subset of distance education became (and has been) the primary tool/method of choice for maintaining educational continuity throughout the pandemic (Hodges et al., 2020) for the billions of students and millions of educators whose schools/campuses have closed their classrooms (UNESCO, n.d.). Nevertheless, the rush to enable educational continuity in this manner has also included difficulties and significant negative outcomes (Hodges et al.,

2020; Stewart, 2021; Williamson et al., 2020). Educators, most without formal or extensive experience in distance education, have been tasked with teaching remotely without the necessary support, requisite training, or technological skills and expertise (Gyampoh et al., 2020). These remote teaching and learning experiences are, understandably, new for large portions of the population (Stewart & Lowenthal, 2021, Stewart et al., 2022). As a result, many educators have instinctually relied on trying to recreate familiar face-to-face teaching methods in virtual/distance learning environments (Bozkurt et al., 2020; Chatziralli et al., 2020; Van Heuvelen et al., 2020). This practice, however, typically translates poorly to distance learning settings (Simonson, 1999). In simpler terms, the proverbial cart has been put before the horse though this is not the first time that such a paradox has emerged in distance education.

In the 1990s, many universities sought to capture the emerging online distance education market and tasked educators to work without any particular distance education background, training, or support (Shattuck, 2021). Unsurprisingly, stakeholders brought up numerous concerns about the quality of education under these circumstances, and both distance education learning outcomes and perceptions of online courses were mixed (Bach et al., 2006; Blair & Monske, 2003). Even to this day, perceptions and beliefs that online courses are inferior to their face-to-face counterparts persist (Protopsaltis & Baum, 2019) despite decades of empirical research providing evidence to the contrary when course conditions (e.g., proper course design, experienced faculty, student support, etc.) are equivalent (see Hastings & Tracey, 2005; Jhang et al., 2007; Johnson et al., 2000; Means et al., 2014; Schlesselman, 2020; Shattuck, 2021; Yen et al., 2018). These views also persist despite the practice of formal distance education being more than 200 years old (Bower & Hardy, 2004; Casey, 2008). Even prior to COVID-19, millions of students annually chose to take courses online (Allen et al., 2016; Seaman et al., 2018; Stewart, 2019). While the context and motivations to offer courses online in the 1990s and its consequent mistakes (and growing pains) and the current COVID-19 pandemic are clearly different, the lessons that went unlearned then are continuing to go unlearned now (Shattuck, 2021).

Although the conditions educators and students worldwide are working under are far from normal (Stewart, 2021), they are making reactionary (versus proactive) decisions in response to the pandemic. More problematic is that from administrators, educators, and students to parents, policy makers, and politicians, there is an unfortunate conflation of formal distance education with the phenomenon of ERT (Hodges et al., 2020; Shattuck, 2021; Williamson et al., 2020). For example, the factors traditionally associated with online course retention/attrition (e.g., traditional vs. non-traditional students, generational status, prior online course experience, socio-economic status, etc. - see Aragon & Johnson, 2008; Dumais et al., 2013; Hachey et al., 2012, 2013; Kauffman, 2015; Liu et al., 2009; Packham et al., 2004; Roblyer & Davis, 2008; Xu & Jaggars, 2013) will not necessarily manifest the same way in response to and throughout the pandemic (Wladis et al., 2021). Further, multiple terms have emerged to refer to this phenomenon, ranging from Emergency Remote Teaching (ERT) (Hodges et al., 2020), Emergency Remote Learning (ERL) (Doornbos, 2020), Emergency Remote Teaching Environment (ERTE) (Whittle et al., 2020), and even Emergency Remote Teaching and Learning (ERTL) (Shin & Hickey, 2020). The multiplicity of terms, combined with a lack of a theoretical or descriptive framework, also compounds the difficulty of investigating a phenomenon occurring and evolving in real-time. In this paper, we present and discuss key differences between formal distance education and ERT, in addition to describing a third distinct yet related practice: Sustained Remote Teaching (SRT).

Education and Learning at a Distance

Learning at a distance is described as when learners are separated by time and/or space from an instructional source (Bower & Hardy, 2004). In this sense, learning at a distance occurs daily to varying degrees through books, newspapers, television, music, street signs, etc. Further, learning at a distance has been occurring for millennia through media such as architecture, pottery, imagery/paintings, music/songs, clay tablets, oral traditions and narratives, and other written texts that illustrate, describe, or comprise a historical record (Westera, 2015). Heydenrych and Prinsloo (2010) have even argued that distance education dates back at least 40,000 years with cave paintings serving as some of the earliest examples of instructional information transmitted over both time and space. There is debate, however, whether this kind of incidental and/or

informal learning (which clearly can and does occur at a distance) is the same as education (Means et al., 2014); education is typically considered to be a far more systematic and structured learning experience (Gunawardena & McLissac, 2013; Means et al., 2014). This type of conflation has similarly been made in more recent educational technology literature discussing distance education, e-learning, and other modern manifestations of informal, self-driven internet-based learning (Guri-Rosenblit, 2005; Lowenthal et al., 2009; Means et al., 2014). Today, distance education generally refers to an organization offering a standardized course of study and credentials upon completion (e.g., diploma, degree and/or certificate programs) in a non-residential manner (Gunawardena & McLissac, 2013).

Formal Distance Education

Formal distance education dates back to the development of the printing press and ability to mass produce instructional/learning materials, which were then sent and delivered between instructors and students by postal correspondence over trains and rail networks (Bower & Hardy, 2004; Casey, 2008; Lee, 2017; Peters, 1994). Since that time, distance education (and learning) has evolved with each new technological advancement, including radio, TV, computer networking, satellite broadcasting, the internet, and sophisticated computer applications (such as globally networked virtual worlds) (Casey, 2008; Harasim, 2000; Moore & Kearsley, 2012). As a result, there are nearly an infinite number of variations of distance education today (Lowenthal et al., 2009). This had led some to argue for a medium-agnostic understanding of distance education such as the United States Distance Learning Association's description of distance education as "the acquisition of knowledge and skills through mediated information and instruction, encompassing all technologies and other forms of learning at a distance" (Bower & Hardy, 2004, p. 5). In the literature, we find that three key traits consistently characterize distance education: a) geographical and temporal separation between learners and educators; b) two-way communication between them; and c) ultimately a medium to connect each other across time and space (Garrison & Shale, 1987; Holmberg, 1986; Keegan, 1988; Perraton, 1988; Rumble, 1989; Schlosser & Anderson, 1994). Nevertheless, despite calls for taking a medium-agnostic understanding of distance education, online distance education—largely due to its growth—has dominated the way people have thought about distance education for the past two decades. However, during this time, no single type of online distance education course has ever really existed.

Online Distance Course Modes

Linda Harasim (1986) is often attributed with teaching the first online course. However, by 2000, Harasim (2000) tried to differentiate between adjunct, mixed, and totally online courses. Later, the Online Learning Consortium made similar distinctions between web facilitated, blended/hybrid, fully online courses, which are based on an arbitrary range of activities that occur on and/or offline (see Allen et al., 2016). With greater access to computers and digital technologies, K-12 schools developed variations of blended learning courses (i.e., rotation, flex, self-blend, enhanced virtual), differentiated by when, where, and how they occur (Horn & Staker, 2014; Sethy, 2008). Thus, the lines between residential/distance, home/school, and virtual/digital environments have become increasingly blurred (Sethy, 2008). In the case of ERT, novel/uncommon modes of distance courses (such as the mandatory synchronous viewing of pre-recorded lectures) have been documented in emerging literature (Stewart & Lowenthal, 2021, 2022). Nevertheless, distance education course modes are still absent of numerous important characteristics that are both situational and contextual (Lowenthal et al., 2009). ERT, for example, is situated in a crisis and bound to the involuntary nature of teaching and learning remotely (Hodges et al., 2020). This is not normally the case in formal distance education.

Course Contexts

Distance education is not a monolithic practice and speaking singularly about distance courses is highly problematic (Lowenthal et al., 2009; Means et al., 2014). While there are an infinite number of possible features that can define an online course; research in particular has shown that certain features influence learning outcomes, making certain ones more relevant than others (Means et al., 2014). Further, there are

often numerous stated and unstated assumptions about courses that can exacerbate the inherent difficulties with learning at a distance. For example, Means et al. (2014) noted that “online pedagogies assume a level of independence, motivation, and self-regulation on the part of learners” (p. 140), in addition to the assumption of “skilled” technology use. Distance education is often marketed and sold as flexible, any time, any place learning yet the reality is often far more rigid (Selwyn, 2011) or complex (Veletsianos & Houlden, 2019). When classrooms are comprised of students and educators from different socio-cultural backgrounds, there is often an “underlying tendency to colonize and import dominant paradigms into contexts that are either unfriendly to those paradigms or that can be harmed by those solutions” on the part of educators (Gunawardena & LaPointe, 2008, p. 52) or to alienate or other those that might differ (Phirangee & Malec, 2017). In the case of distance education, technologies imported from one particular context are not value neutral (Bali & Meier, 2014; Feenberg, 2003) and can amplify such pre-existing biases (Gunawardena & LaPointe, 2008). While distance education is often a local or regional enterprise (Allen et al., 2016; Seaman et al., 2018), it can become vastly more complicated in international and transnational contexts. For example, ERT forced many international students into remote learning in residence (e.g., Stewart & Lowenthal, 2021; Stewart et al., 2022), in addition to requiring students to stay home due to lock downs and trying to attend their courses from abroad (Perets et al., 2020). All of this illustrates that the landscape of distance education is ultimately one that is far more varied than a cursory glance reveals, but it is one which is often not acknowledged (Lowenthal et al., 2009). Both Lowenthal et al. (2009) and Means et al. (2014) identified numerous characteristics that can manifest in distance courses in terms of context. These are illustrated below in Figure 1. While there are numerous overlapping items between these two contextual models, crisis/pandemic contexts are absent since such conditions would not normally have been considered in relation to distance education. Moreover, this is not a research condition that would intentionally be created, thus performance and practice in these contexts do not have reference points for analysis. Nevertheless, the circumstances of COVID-19 highlight the lack of planning for courses delivered at a distance in an emergency, as well as the lack of support structures, facilitator expertise, etc., to name but a few examples of novel contexts and their manifestations (Stewart, 2021).

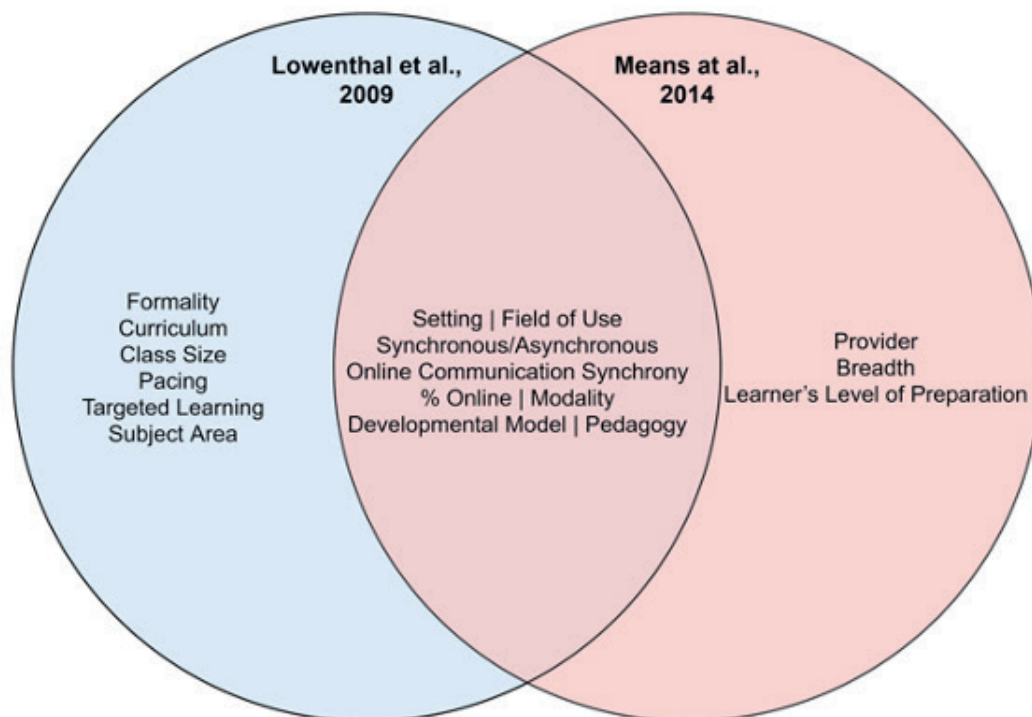


Figure 1. Online Learning Context Scholarship

DIFFERENTIATING REMOTE TEACHING UNDER CRISIS CONDITIONS

Emergency Remote Teaching (ERT)

When compared to the characteristics of formal distance education, ERT is without question a form of distance education, however, there are numerous key differences distinguishing ERT from formal distance (and residential) education (Hodges et al., 2020). First, ERT is meant to be temporary as it is directly related to an emergency or crisis event. Second, as a result of being situated in an emergency or crisis context, ERT courses are unplanned, under-developed, under-supported, rapidly delivered, and likely of lower quality (Doornbos, 2020; Hodges et al., 2020; Whittle et al., 2020; Williamson et al., 2020). To date, studies have shown that ERT is often viewed as a major shock to students, educators, and schools (Jyoti et al., 2021; Peters et al., 2020; Rapanta et al., 2020). Third, as a crisis response, ERT courses are involuntary and the educators (and institutions) facilitating ERT courses often overwhelmingly lack distance education teaching/learning experience and related technological expertise. While formal distance education and ERT are clearly different, teaching at a distance and teaching in person are also not identical to one another.

Prior research has shown that teaching at a distance is different from teaching in a formal face-to-face classroom (Palloff & Pratt, 1999; Ragan, 1999; Salmon, 2003); this difference has been similarly experienced/reported throughout the pandemic (Buttler et al., 2021; Gyampoh et al., 2020). Experiences with ERT by both educators and students have often been reported as negative (Bond, 2021; Bond et al., 2021; Stewart, 2021). For example, students have often reported not knowing assignment requirements (Alqurshi, 2020; Buttler et al., 2021). Teaching strategies have also often copied face-to-face instructional practices that have tended to result in feelings of isolation in a distance learning setting (Bozkurt et al., 2020; Buttler et al., 2021; Chatziralli et al., 2020; Van Heuvelen et al., 2020). Interaction with peers and educators has been largely absent (Alqurshi, 2020; Buttler et al., 2021; Stewart & Lowenthal, 2021; Stewart et al., 2022). Students have been taking full course loads (i.e., five to six courses) online (Stewart & Lowenthal, 2022) and both educators and students have found themselves sitting for six to eight hours a day in front of computers or mobile devices (Jyoti et al., 2021; Sundarasan et al., 2020). Makeshift learning spaces can be uncomfortable or easily prone to distractions (Budhrani et al., 2021; Sepulveda-Escobar & Morrison, 2020). Working adults, whether educators or students, have also had to take on additional or prolonged care-giving roles during stay-at-home orders (Budhrani et al., 2021; Sethi et al., 2020). Further complicating matters, however, is the fact that the temporary nature of ERT has extended beyond a single academic semester for the vast majority of the world. Thus, the courses being conducted after the onset of the pandemic can, in fact, be planned for and educators and schools do have some degree of experience in facilitating a certain type of online course. Thus, Stewart et al. (2022) argued that the current courses being conducted should be differentiated as Sustained Remote Teaching (SRT).

Sustained Remote Teaching (SRT)

The enduring nature of the COVID-19 pandemic now raises more questions for distance education/remote teaching under these circumstances as the practice of ERT continues. More than a billion students and millions of educators have experience with remote teaching and learning (see UNESCO, n.d.). Schools and universities are continuing to deliver instruction remotely with many institutions continuing to prioritize health and safety via social distancing throughout 2021 (Jandric et al., 2021; Schlesselman, 2020; Stewart et al., 2022), and this practice is likely to remain into the first academic semester of 2022. However, the original ERT crutch that the world relied upon should evolve into a more deliberate systematic practice that takes this shifting context into account (Shim & Lee, 2020). Given the enduring nature of the pandemic and the repeated extensions of ERT, it is not, arguably, appropriate to characterize subsequent courses as “emergency” remote teaching when they can, in fact, be planned for. The transition is not sudden, unexpected, or temporary; the delivery context has changed and thus it is no longer ERT. However, these courses still do not coincide with the characteristics of formal distance education (Stewart et al., 2022). For example, Jandric et al. (2021) noted how images of educators’ remote workspaces changed from the onset of the pandemic and their working environments one year later. They saw a shift away from chaotic and ill-prepared ERT-based working conditions to more dedicated and sophisticated distance teaching preparation and organization. In short, a shift in remote education praxis emerged from one that was done in haste to one that was planned for in advance.

Given the continued reliance on remote teaching, many students' first experiences with higher education have coincided with the onset of the pandemic and ERT (i.e., first semester/year students). In other cases, SRT may be the only (or dominant) mode of operation for the entire length of shorter programs (e.g., master's programs, graduate certificates) depending on course loads and scheduling. Despite these rather obvious differences between both formal distance education and ERT, the mistake of conflating either of these practices with SRT continues; certain lessons are still going unlearned (Shattuck, 2021). Thus, given the shifting contexts of the pandemic, it becomes crucially important to recognize both obvious and subtle differences in praxis so that balanced approaches and standards of teaching and learning can be achieved (Alqurshi, 2020; Jandric et al., 2021; Schlesselman, 2020; Shim & Lee, 2020; Stewart et al., 2022).

CONTEXTUALIZING REMOTE TEACHING UNDER CRISIS CONDITIONS

While the differences between formal distance education and emergency remote teaching are fairly large, the characteristics differentiating emergency remote teaching and sustained remote teaching are far subtler and paradoxical in certain ways (Apostolidou, 2020; Stewart, 2021). Nevertheless, recognizing the differences across these three distinct practices is key to understanding the evolution of ERT when crises are not quickly overcome. We provide a summary of these key contexts and their characteristics under distance education, ERT, and SRT. They are presented (in no particular order) in Table 1 and discussed in detail below. Further, the differences (and similarities) between these novel contexts across formal distance education (FDE), ERT, and SRT are illustrated in Figure 2.

Table 1. Key Distinct Remote Teaching Practices and Context Manifestations

Crisis Contexts	Formal Distance Education (FDE)	Emergency Remote Teaching (ERT)	Sustained Remote Teaching (SRT)
Delivery Medium	Text-based Postal Delivery, Online Delivery	Exclusively Delivered Online	Exclusively Delivered Online
Delivery Purpose	Permanent Replacement of Residential Education	Temporary Replacement of Residential Education	Indefinite Replacement of Residential Education
Delivery Readiness and Capacity	Planned Delivery and Pre-existing Capacity	Unplanned Delivery and Limited/No Capacity	Plannable Delivery and Limited/Some Capacity
Stakeholder Volition	Voluntary Participation	Involuntary Participation	Involuntary Participation
Program Duration	Entire Program conducted Remotely	Program Temporarily conducted Remotely	Program Indefinitely conducted Remotely
Student Course Loads	Small to Medium	Medium to Full	Medium to Full
Prior Teacher and Student Experience	Formal Distance Education Training and Credentials	No Prior Distance Teaching/Learning Experience	Crisis-based Remote Teaching/Learning Experience
Dominant Course Modality	Asynchronous Mode Dominant	Synchronous Mode Dominant	Synchronous Mode Dominant
Course Development	Formal Iterative Development Process	Emergency Transition Process	Informal Temporary Development Process
Delivery Tools and Platforms	Centralized and Standardized Tools and Platforms	Random and Non-standardized Tools and Platforms	Pre-determined but Non-standardized Tools and Platforms

Delivery Medium

The delivery of modern, formal distance education courses is overwhelmingly done through digital platforms that are hosted online (Moore & Kearsley, 2012). Nevertheless, formal distance courses in various parts of the world are still delivered via print materials and postal service where modern internet-related information and communications technology is inadequate or non-existent (Simonson et al., 2012). By contrast, the extant literature describing the delivery medium for ERT and SRT courses has been characterized as being exclusively online across K-12 (Bond, 2021) and higher education (Bond et al., 2021; Stewart, 2021).

Delivery Purpose

The purpose of ERT is very different from that of formal distance education; it is a sudden but temporary practice meant to maintain education through a crisis (Hodges et al., 2020; Jandric et al., 2020; Williamson et al., 2020). While ERT has become a prevalent worldwide experience as a result of the COVID-19 pandemic (UNESCO, n.d.), it is not the first time that ERT has in fact been implemented. For example, ERT was used to enable and maintain girls' access to education in Afghanistan due to Taliban attacks on international and all-girl schools in the late 1990s (Davies & Bentrovato, 2011). Nevertheless, because the implementation is sudden, the quality of courses delivered in this manner have numerous (and significant) shortcomings ranging from curriculum design to technological problems to name but two examples (see Alqurshi, 2020; Bozkurt et al., 2020; Chatziralli et al., 2020; Gao, 2020; Kapasia et al., 2020; Rahiem, 2020; Stewart et al., 2022; Sundarasan et al., 2020; Van Heuvelen et al., 2020). Where this practice starts to diverge from the emergency nature is when courses are continually delivered in this manner after the onset of an emergency and resumption of semi-normal course operations (Jandric et al., 2021; Schlesselman, 2020; Stewart et al., 2022).

Institutional Readiness and Capacity

Since the use of ERT is sudden, it comes as no surprise that institutions were generally not prepared for implementation. While this is understandable, there is a variability in institutional readiness that has been documented in studies to date. In Saudi Arabia, for example, Abdulrahim and Mabrouk (2020) found that student learning outcomes actually improved compared to previous semesters, though this was due in part to having both resilient instructors, a robust ICT infrastructure, and subject matter (i.e., humanities) that were not considered difficult to facilitate online on short notice. This was similarly the case for computer science students in the United Kingdom who experienced little disruption due to the digital nature of the work involved (Crick et al., 2020). Most institutions, however, lacked the readiness or capacity to easily facilitate ERT (MacIntyre et al., 2020; Osman, 2020; Peters et al., 2020). Nevertheless, when this practice continues beyond a single semester, a certain degree of institutional readiness and capacity exists (Jandric et al., 2021; Schlesselman, 2020; Stewart et al., 2022).

Stakeholder Volition

In general, institutions decide to offer distance education programs and create dedicated support structures and systems (Means et al., 2014). Students similarly decide to enroll in distance courses of their own volition. While there are instances when student enrollment in a distance course can be considered involuntary to a certain degree (e.g., the lack of face-to-face course offerings or inaccessibility by time/place) (Selwyn, 2011), the overall context is one where distance education is predominantly voluntary. ERT and SRT, by contrast, are involuntary by schools, educators, and students alike (Hodges et al., 2020). Under normal distance education conditions, Means et al. (2014) noted that some of the students who would benefit the most from distance education can be the most ill-suited for the practice in terms of intrinsic motivation and self-directedness. However, under extraordinary crisis conditions, involuntary online learning is paradoxical; student suitability for distance learning has likely not been an immediate concern (Apostolidou, 2020; Perez, 2021; Stewart, 2021).

Program Duration

While traditional campus students often complement their in-person face-to-face course loads with an online course or two (see Allen et al., 2016), the vast majority of their courses are conducted and completed in residence. With the introduction of ERT, entire course loads of residential and face-to-face programs were (and still are) being conducted remotely (Stewart & Lowenthal, 2022; Stewart et al., 2022). For students in short programs (i.e., certificates, master's degrees), ERT and SRT may coincide with the completion of an entire program. This likelihood has only increased as many colleges and universities around the world continue to operate courses remotely as a health and safety measure (Jyoti et al., 2021). Yet, these courses are not equivalent to formal distance education programs that were designed to be delivered online from start to finish. The quality of ERT may not necessarily improve even as it evolves into SRT (Jandric et al., 2021; Schlesselman, 2020; Stewart et al., 2022).

Student Course Loads

It is not uncommon for residential programs to allow students to take online courses to complement regular semester residential course loads (Allen et al., 2016; Seaman et al., 2018). It is uncommon, however, for students in residential programs to conduct their entire course loads online as experienced with ERT and SRT courses (Seaman et al., 2018; Stewart & Lowenthal, 2022; Stewart et al., 2022). One result of this has been an even more sedentary experience in front of a computer or mobile device in makeshift learning spaces for six to eight hours per day for educators and students alike (Sepulveda-Escobar & Morrison, 2020; Sundarasan et al., 2020). Stewart et al. (2022) also noticed that ERT course loads lightened semester over semester among exchange students at a university in Korea, suggesting that students were adapting to the increased workloads of their remote courses. In other countries, such as the United States, regulations for international students had to be modified due to visa stipulations that previously only allowed them to take a single online course per semester (Lim, 2021; Martel, 2020). International students, however, are more prone to difficulties in digital learning environments (Habib et al., 2014), in addition to related mental health issues due to more isolation which can be compounded in online learning environments (Erichsen & Bolliger, 2011). This is potentially highly problematic due to having entire course loads online for certain student populations under already adverse conditions (Stewart & Lowenthal, 2021; Stewart et al., 2022).

Prior Teacher/Student Experience

Face-to-face and online teaching are different (Palloff & Pratt, 1999; Ragan, 1999; Salmon, 2003). Thus, it is no surprise that the lack of experience by educators and students with teaching and learning online has resulted in sub-par learning conditions and outcomes (Ulla & Perales, 2021). However, at the same time when enrolling in online courses voluntarily, course success as well as student retention/attrition are closely linked to prior online course experience and student GPA (Aragon & Johnson, 2008; Dumais et al., 2013; Hachey et al., 2012, 2013; Kauffman, 2015; Liu et al., 2009; Packham et al., 2004; Roblyer & Davis, 2008; Xu & Jaggars, 2013). Under the duress of ERT and SRT, some scholars (see Azorin, 2020; Saito, 2021) are now concerned with the potentially significantly increased attrition rates as many students who would not otherwise be candidates for formal distance education programs had no other option outside of taking a leave of absence for an indefinite period of time. Attrition rates and gap years are occurring in addition to the learning losses occurring as a result of pandemic educational conditions (Ardington et al., 2021; Azevedo et al., 2021; Kaffenberger, 2021; Khomera, 2020).

Dominant Course Modality

There is no single type of course modality for face-to-face or online courses, though there is more variety when courses are delivered online (Lowenthal et al., 2009; Stewart & Lowenthal, 2021). Often non-

traditional adult students are attracted to courses that are delivered asynchronously to flexibly accommodate work and family responsibilities (Selwyn, 2011). Even when courses are designated as being 100% online or totally asynchronous, there can be some obligatory/voluntary synchronous components such as office hours or group discussions. However, studies on ERT have largely documented that course modality has been overwhelming synchronous or, has at the very least, relied disproportionately on synchronous course activities such as live lectures (see Iglesias-Prads et al., 2021; Jandric' et al., 2020; Mohammed et al., 2020; Perets et al., 2020; Shamir-Inbal & Blau, 2021; Shim & Lee, 2020; Stewart & Lowenthal, 2021; Stewart et al., 2022). The dominance of one mode over others is a reflection of the pandemic where a simple solution (i.e., synchronous remote teaching, live lectures) mimicking traditional face-to-face teaching practices was the most practical for an emergency (Stewart & Lowenthal, 2022). The effectiveness of this pragmatic solution, however, is questionable (Simonson, 1999), especially when sustained over multiple consecutive semesters (Jandric et al., 2021; Schlesselman, 2020; Stewart et al., 2022). Students and educators often described fatigue and discomfort (Bedenlier et al., 2021) from extended synchronous video sessions as the de facto course mode of operation.

Course Development

Formal online courses generally can take anywhere from six to nine months to develop, which is often done in conjunction with an instructional designer (Lowenthal et al., 2009; Means et al., 2014; Stewart & Lowenthal, 2021). ERT courses by contrast were “converted” within days of schools being closed. While this rapid transition is logical and courses could not be properly developed given the health and safety constraints of the pandemic, iteration and development of distance education courses is possible when extending beyond a single academic semester. Thus, while emergency transitions were expected during the Spring of 2020 and which resulted in unplanned and undeveloped ERT courses, subsequent semesters (i.e., Summer 2020, Fall 2020, Spring 2021, Fall 2021, etc.), can, in fact, see some degree of development. Remote delivery is anticipated, and courses can be prepared for, iterated upon, and modified given both prior experience and foreknowledge of the delivery conditions. These differences contrast sustained practice with one born out of emergency.

Delivery Tools and Platforms

Formal distance education programs typically have courses delivered through a standard course management system (CMS) and use a set of common tools designed to meet the needs or features of a particular curriculum and students (Lane, 2009; Means et al., 2014). The educational process, then, can be facilitated more efficiently and the resources and tools that students or educators have access to (and have expertise and experience with) is known; standardization allows for more effective support and integration. In the case of ERT, this type of centralized/standardized process was lacking for many. Educators turned to using various educational and non-educational tools such as Facebook, numerous video conferencing services like Zoom or WebEx, and other platforms such as blogs, wikis, etc. (Moghadam & Shamshi, 2021). Given the sudden transition, tools could be used superficially (Chang, 2020), which is a pre-existing problem in distance education more generally (Lane, 2009). The effect on students, however, is one where numerous different tools might have been needed for each of students' courses in order to accomplish the same tasks in worst case scenarios (Stewart & Lowenthal, 2021; Stewart et al., 2022). While students and teachers could perceive these tools both positively (Amin & Sundari, 2020) and negatively (Chang, 2020), the results were often simply frustrating, overwhelming, or stressful (Chang, 2020; Shamir-Inbal & Blau, 2021; Stewart, 2021). It could also be a source of trepidation for educators when forced to work differently at a moment's notice and being evaluated on their teaching performance (Choi et al., 2021). While these practices may have simplified over time as ERT has transitioned into SRT and faculty and students have gained more experience and comfort, there is no clear consensus in scholarship to date.

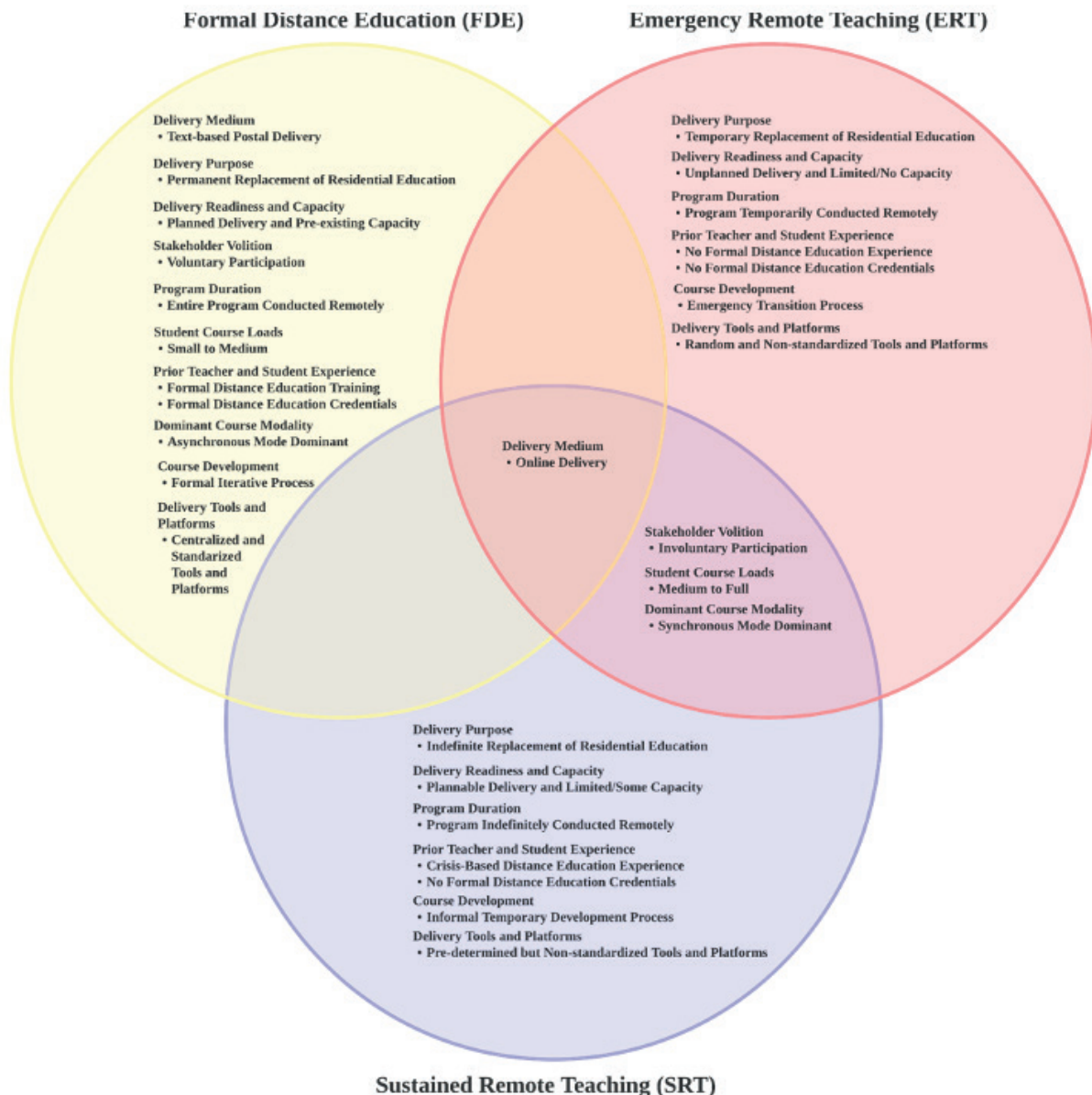


Figure 2. Emergency and Crisis Contexts: Similarities and Differences among FDE, ERT, and SRT

DISCUSSION AND CONCLUSION

The COVID-19 pandemic has exposed the absence of crucial technological and pedagogical skill sets in modern education for the vast majority of institutions and their educators. Further, the emergence of (and reliance on) ERT has highlighted certain contextual limits in our understanding of not only distance education, but the phenomenon of ERT as well. The extraordinary circumstances of a global disease pandemic and the sudden change in normal educational delivery conditions is an impetus to rethink previous (perhaps unquestioned) assumptions of the praxis. While this is not the first time such a revision has occurred (i.e., 40,000-year-old cave paintings as potentially asynchronous instruction) or the first-time educators have been asked to teach remotely without experience or expertise (as seen in the 1990s), it is the first involuntary global exercise in distance education in history to date, and likely not the last.

While many institutions, educators, and students were no doubt hopeful that ERT would be short-lived, the complexities of (and differences in) the human and governmental responses to the pandemic have forced the hands of many institutions and educators to sustain the practice; remote teaching and learning continue to be necessary as a health and safety measure. This raises numerous issues and questions about remote teaching under crisis conditions when crises are not short- but long-term. Further, certain practices that have emerged as

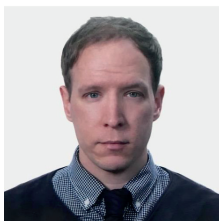
dominant teaching/learning methodologies (e.g., synchronous meetings/lectures) are likely to not only continue, but become increasingly commonplace in both formal face-to-face and asynchronous online courses moving forward. This, we posit, is due in large part due to faculty experience and comfort with ERT and SRT as a result of its implementation over a nearly three-year period of crisis situated teaching. The lines between formal distance education, traditional residential education, and ERT/SRT are likely going to become even more blurred.

Further, given increasingly globalized teaching and increasing numbers of international students enrolled at universities worldwide who relied on remote teaching and learning due to travel restrictions and/or inability to enter the host-countries where their universities were located, distance programs may likely remain as additional revenue sources once the pandemic subsides. Nevertheless, administrators, faculty, and students require the commensurate support and infrastructure for these programs to be both qualitatively and financially successful, not just providing the limited enterprise that ERT/SRT have been. Integrating distance education programs and practices into mainstream educational programs (from teacher-training programs to ongoing professional development) would benefit all university stakeholders.

The introduction of COVID-19 vaccines, accessible PCR and rapid antigen testing, improved public health and safety measures, and treatments for the disease have started to reduce the scale of SRT at schools around the world. This outcome, however, is highly variable and is not uniform across all countries and/or regions. Thus, SRT is likely a necessary educational delivery method for many at present due to the now endemic nature of the SARS-CoV2 virus, and lack of uniform herd immunity across the globe. Despite this reality, much of the literature to date has focused in large part on the transitions to ERT and initial remote teaching manifestations; there are only hints at what involuntary remote teaching and learning look like when COVID-19 continues to be widely prevalent, impeding or limiting face-to-face instruction. Given this lack of refinement in current ERT scholarship, we must be cautious in how the practice is conceptualized and consequently used as a research analytic. Thus, in this paper, we present several novel contextual characteristics to differentiate not only formal distance education with ERT, but to also delineate it from SRT. Further, this list is not meant to be exhaustive since it is impossible to completely capture a moving landscape. Nevertheless, this list of key novel contexts (and manifestations of these contexts) is intended to be a starting point for analytical consistency since many of the ways that crisis-based remote teaching and learning are being spoken about are simply inadequate.

Thus, we hope to move towards a model of describing and better understanding the contextual manifestations of remote teaching and learning under emergency and sustained crisis conditions not only for present challenges, but for future ERT/SRT scenarios (e.g., natural disasters, social and political unrest, wars, disease epidemics and pandemics, etc.) if, and likely when, they occur again. The descriptive model we provide offers a conceptual framework to systematically ground empirical research in this domain. The lessons we learn now can prepare us for more effective educational delivery under duress of future crises both short and long.

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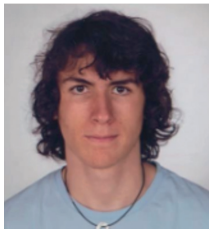
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THE WHATSAPP APPLICATION USE AS A SUPPORT SERVICE IN DISTANCE EDUCATION: A CASE ANALYSIS

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ABSTRACT

This study aims to reveal the strengths and limitations of the WhatsApp application as a support service in distance education, conducted through a learning management system during the Covid-19 pandemic, and make suggestions on improving its use in this capacity. Despite the lack of readiness on the part of the students and the lack of sufficient knowledge regarding distance education during the pandemic, many universities had to revert to emergency remote teaching. This situation necessitated the intensive use of various support services for the students to get the most out of their emergency remote teaching. However, their lack of experience with distance education prevented them from using the support services offered by learning management systems. Due to the increasingly widespread use of mobile technologies, one of the support services used by course instructors became the WhatsApp application. The following research is a qualitative case study. The sample for the study was determined through purposive sampling. The data was analyzed using the content analysis method. Nvivo qualitative data analysis software was used to contribute to the detailed and versatile data analysis. The most important results of the study were that the application supported and strengthened distance learning by allowing instant communication, but that the absence of a moderator caused various limitations in this communication. In addition, it was concluded that incorporating natural language processing techniques into learning management systems and clearly stated rules by course instructors improved the use of such instant communication applications as a support service for distance education.

Keywords: Distance education, Emergency Remote Teaching, Whatsapp, support services, digital communication technologies, Covid-19.

INTRODUCTION

Many universities have had to maintain their curriculum with emergency remote teaching (ERT) because education is interrupted within the scope of precautions taken all around the world during Covid-19 pandemic. ERT, outside the scope of distance education, is the activities that include distance education activities without preliminary preparation from institutions in order to continue basic education within the

framework of emergency precautions taken because of the rapid spread of the epidemic all over the world (Bozkurt, 2020). It has been needed to use support services intensively in ERT activities because learners have not enough readiness and knowledge on distance education.

The main objective of support services in distance education is to provide an opportunity of individual study to learners or of independent study among distance learners in the absence of face-to-face learning (Paier, 2007). It is proven by many studies that the success of attracting, serving, and keeping learners in open and distance education depends on very effective support services. On the other hand, ease of use, usefulness, and convenience are the features that have a positive effect on learners' desire to learn with technological devices (Pilcher, 2010). In this context, it is an inevitable fact that the creation of educational and technical support opportunities in open and distance learning environments is effective on the success of learners (Yuksekdag, 2017). Further, Kenny (2002) states that technical support is significant for learners who experience feelings of anxiety, fear, and inhibition in distance learning environments due to having less computer experience. Also, Kenny (2002) suggests that the learners who have no experience in distance learning need to be continually supported instructively in terms of learning activities as well.

It is mentioned in the studies on support services that insufficiency or absence of instructors, academic planners and programmers, and technical assistants who provide technical support and serve cause anxiety in learners and complicate the learning process (Yuksekdag, 2017). Learners take charge of their own learning more in open and distance education since they have more freedom and opportunities. Nevertheless, each learner may need assistance at some point because he is not able to succeed, and learners can recede from the system when they cannot get the necessary assistance. In that case, it is inevitable that learners leave the system if the learners cannot be contacted, and/or help and guidance demands cannot be provided (Zawacki, 2004). At this point, it can be concluded that the absence of educational and technical support affects learners' motivation for computer technology use.

Distance education support services that have a great deal of importance in regular processes have been necessitated a lot in applications in ERT specifically during the Covid-19 pandemic. Lots of learning management systems which include different support services have been activated in ERT activities carried out during pandemic; however, the fact that the learners did not have previous learning experience in distance education prevented them from using the support services of the learning management systems offered to them in order to continue their teaching activities. That's why instructors, too, have needed to develop various support services. Specifically, the frequency of mobile technology use and learners' usage habits regarding these technologies have caused unplanned usage of mobile applications as support services. One of the support services used by instructors during this period has been the WhatsApp application due to its usage intensity. WhatsApp is a cross-platform instant textual, voice, and visual messaging and calling application developed for smartphones (Manan, 2017). Its unplanned use has also brought some limitations as it also causes the sharing of personal data such as phone number, status and location features although it has often solved the problems in ERT implementations.

Despite the fact that there are plenty of studies on the use of the WhatsApp application in education, there is no detailed research based on the use of it as a support service in distance education. The limited number of studies on the subject adds unique value to the study and makes it important to investigate the use of the application as a support service during the pandemic even though it is used by many instructors within the scope of ERT during the Covid-19 pandemic.

Moreover, the value of different applications that offer simultaneous instant support to learners is understood considering that the digital transformation realized within the framework of distance education will continue during the Covid-19 pandemic, which is called the new normal. In this context, it is expected to contribute to the subject field with analyzing use of the application as a support service, but also to learning with increasing the interaction degree between instructors and learners conducting analysis of a different application provided simultaneous support.

The subject matter of this study is to reveal strengths and limitations of the WhatsApp application use as a support service in distance education. The scope of this study is to investigate the dynamics of the WhatsApp application use as a support service in ERT applications during the Covid-19 global pandemic in a Higher Education Institution, and to make suggestions for the development of its use.

PURPOSE OF THE STUDY

In this research, it is targeted to reveal the strengths and limitations of the WhatsApp application use as a support service in the classes via a learning management system and to make suggestions in order to improve the use of it as a support service in the ERT during Covid-19 pandemic.

To reach this aim, the following research questions are addressed:

1. In which subjects has the WhatsApp application been used as a support service in ERT activities carried out during the Covid-19 pandemic?
2. How has the WhatsApp application been used as a support service in ERT activities carried out during Covid-19 pandemic?
3. What limitations have been encountered in using the WhatsApp application as a support service in ERT activities carried out during the Covid-19 pandemic?
4. What kinds of strengths have appeared in using the WhatsApp application as a support service in ERT activities carried out during the Covid-19 pandemic?
5. What changes can be made to improve the use of the WhatsApp application as a support service in ERT activities carried out during Covid-19 pandemic?

In order to reach the aim of the study, firstly, support services have been examined in detail in the literature in order to support the revealing of the existing situation.

LITERATURE REVIEW

Support Services

In general, support services have an important role in educational institutions, but also, they consist of one of the unavoidable and significant components in distance education, and are defined as creating learning communities and the whole of services given in order to provide maintenance of them (Kumtepe et. al., 2019, p.42). Support services which refer to many activities assisting to achieve high quality in education include the creation of administrative processes and suitable conditions in addition to pedagogical support (Moser, 2007, p. 23- 24), and except access to information on any subject, non-technical support types such as technical support, carrier assistance, and emotional support (Porter, 2004, p. 223), or fundamental academic (definition, explanation, evaluation, improvement track, skill development, discovery, enrichment) and non-academic (consultant, evaluation in non-academic areas, advocacy etc.) categories towards learners' needs (Simpson, 2002, p. 6- 7; Mutlu, Beyaz & Iseri, 2004, p.1).

In terms of groups that support systems serve, there are two main categories: a) instructors and b) distance learners (Kumtepe et. al., 2019, p. 44). Instructors' need for support services is connected to their professional development and related to the expectation of changing and improving different areas such as technology, curriculum, and teaching methods they have been taught and they use currently (Burns, 2011, p. 198). The most significant expected characteristics of an instructor in distance learning are self-confidence, efficient use of equipment, high level of interaction with learners and media use. By this way, with the support offered to learners (Sherry, 1995, p. 343), instructors are considered as the critical component regarding learners' academic success (Roddy et. al., 2017). Learner support expresses the whole activities and elements designed for helping cognitive, affective, and systematic fields towards a learner or a group of learners in education and covers information and management systems with guidance and counseling (Brindley, Walti, & Zawacki-Ritcher, 2003, p. 205).

The Importance and Function of Support Services in Distance Learning

Support services in distance learning provide important opportunities to be able to solve problems encountered in line with the current needs of instructors and institutions and to minimize limitations. The studies show that the factors affecting the increase in the need for support systems in distance learning consist of a) being learners away each other (Ludwig-Harman& Dunlap, 2003, p.1), b) learners' responsibility of managing their own learning, c) different competence levels of stakeholders in the system (Kumtepe et. al., 2019, p.

42), d) decreasing interaction because flexibility of time and place, which is the strongest side of distance learning at the same time, is fragile, e) low motivation caused by deficiency of guidance and management that may arise from, and f) negative effects on general quality of classes (Abrami & Bures, 1996; Moore, 2016, p. 405; Dhawan, 2020, p. 14- 15). To add, that ability and self-confidence level of each learner differs and insufficiency of customization of learning process might affect teaching process and create imbalance in learning environment (Dhawan, 2020, p. 14- 15).

Use of support services has qualifications of enhancing the quality of academic career and individual learning skills, and strengthening bonds with institutions, so it influences learners' success level positively (Ludwig-Harman & Dunlap, 2003, p. 11). From this point, support systems in distance education are needed in terms of ensuring that objectives of education are realized by learners, having the improving effect on learning experiences of learners, offering the support they need to inadequate learners, and providing counseling services to learners who have individual difficulties (Picciano, 2001, cited in Durak, 2007, p.162). Besides these, support systems have a function of providing support in personal issues such as empowering learners and embracing differences in addition to academic issues (Gunawerdana & LaPointe Deborah, 2007, p. 603). As indicated, support services have positive influences on dealing with technical difficulties encountered by users in distance education because academic, pedagogical and psychological needs, and also technical needs are at the forefront of distance education (Favalea et. al. 2020; Dhawan, 2020).

Covid-19 and Support Services

With the worldwide Covid-19 pandemic, closure and restriction conditions have made it necessary to carry out education that previously conducted face-to-face in the virtual environment all over the world and to switch to ERT. ERT refers to the compulsory switch to distance education completely of the classes designed as face-to-face, mixed or blended during the crisis, opposed to planned experiences at the beginning distantly (Hodges, Moore, Lockee, Trust & Bond, 2020). With Covid-19 crisis, education activities have been needed to switch urgently to learning management systems, real-time/ recorded web conferences or the other Internet-based tools and many learners, instructors and institutions have had to switch distance learning without enough knowledge about current technology, software, services and distance education relating with learning virtually (Ahadi, Bower, Singh & Garrett, 2021, p. 30).

As there is a necessity of support services in every field during natural disasters or crisis periods except routine situations, support services have been one of the prior necessities in also ERT activities. During this period, support and guidance services have carried a vital role in switching learners from the traditional classroom environment to self-controlled learning. Learners have needed in many different issues while switching (Sherry, 1995, p. 52). First, the emergence of a health problem that has no solution for everyone involved in every stage of education and the sudden curfews applied all over the world have created negative psychological effects on learners and instructors. Besides, a pedagogical anxiety has emerged on both learners and instructors and administrators of institutions due to the absence of readiness because learners have had no information about how they continue education and institutions have faced this crisis suddenly. Next, academic worries have appeared with initiating ERT activities. Particularly, the tools which assist to access education activities, to follow learning improvement, and to receive feedback on time have become essential. At this point, it has been revealed that having access to distance education tools, and having experience in technology literacy and technology use affect the levels of success and the learners who experience distance education for the first time have struggled rather than experienced learners (Hannafin et. al., 2007, p. 125). Academic, psychological, pedagogical, and technical support has become a must in ERT systems carried out to continue education activities in Covid-19 crisis for these reasons. Even though there are numberless studies based on support services in the discipline of distance learning and many learning management systems include support services integrated themselves, these support services have not been used effectively because of learners' and instructors' technological limitations or lack of readiness. Smith (2005) indicates that there are three main goals related to support services in distance learning. These are 1) determining learners' needs 2) providing services at the time when learners need, not at the time determined by institutions 3) making distance support services as effective as face-to-face support services at least. If these three goals cannot be accomplished, it does not matter how support services are technically well-equipped. In this perspective, different support services use has emerged

because needs analysis is inconvenient to conduct in ERT activities created in Covid-19 pandemic owing to time limit. One of those is the WhatsApp application, an instant messaging application, which provides communication with the feature of synchronous and asynchronous use.

WhatsApp Use as a Support Service in Distance Education

An efficient communication process must be run for support services to be successful in crisis periods. Thus, to scrutinize key trends in support services, communication and technology are the basic fields that determine the direction of trends. Creating a distance learning community for a successful distance learning experience and the importance of sustainability of this community, in other words, requires a communication process for each education process. Integration of digital communication technologies to distance education supplies communication and bonding ways developed with digital technologies (Porter, 2004, p. 162; Veytia-Bucheli, Gomez-Galan & Vergara, 2020, p. 2- 3).

Development of digital technologies and especially smartphones and usage intensity have advanced interaction forms in synchronous and asynchronous ways in formal and informal areas. As one of the applications included in these developments is instant messaging applications, the WhatsApp application is heavily used (Veytia-Bucheli, Gomez-Galan & Vergara, 2020). It is defined that WhatsApp is a smartphone instant messaging application that enables to be sent different formats of messages such as image, voice, and picture in various platforms worked with the Internet data (Wijaya, 2018, p. 47). It is indicated that the reasons for general use are its low cost, unlimited message sending, convenience for informal communication, need of adaptation to the others because of its popularity, its social side, convenience for mutual dialogs, suitability of talk with a community, allowance of synchronous, dynamic and fluent messaging, and provision of confidence that messages reach the intended person (Church & de Oliveira, 2013, p. 357- 340).

Applications for mobile devices developed with digital communication technologies take a place in trends in the field of support services of open and distance education institutions (Durak, 2007, p. 167). As one of these applications, WhatsApp has been adopted by the whole world and has been preferred as an application providing ease of use in ERT activities carried out in the Covid-19 period, as well as. In case of use in education, WhatsApp provides academic information sharing between learners and instructors with its characteristics of allowance of mutual and fluent talk, creation of sense of belonging, accessible and low cost, easily use for communication purpose (Ujakpa, Heulkelman, Lazarus, Neiss & Rukanda, 2018, p.2). Additionally, instant messaging facilitates learning and supports problem solving and it solves learning difficulties linked to learning content, information sharing etc. delivered via learning process or WhatsApp simultaneously (Amry, 2014, p. 132).

In addition to use in education, WhatsApp is also regarded as an important support service for meeting educational needs of university-level learners and it is concluded that WhatsApp is found as preferable because it is a mobile platform used in light and portable tools by learners, it supplies possibility of reachable and easy use, and also it includes both social and academic messages (Reeves, Alkharaf & Amasha, 2019, p. 400). According to results of the study carried out in 2018 (Wijaya, p. 47), it is found out that WhatsApp use for communication and learning support increases interaction and intimacy between learner-learner and learner-instructor. On the other hand, it is stated that the use of the feature of creating a group on the WhatsApp application in the field of education provides interaction among all learners. Results of another study conducted in 2018 support the result that the WhatsApp application increases interaction between learners-learners and learners-instructors and they demonstrate that learners' level of interest rises when humor is included to messages and it plays a very significant role in education in the case of absence of a structured learning management system (Ujakpa, Heulkman, Lazarus, Neiss & Rukanda, 2018, p. 5). Also, it stands out as an appropriate tool since learners in distance learning psychologically need to know that someone cares about them and that they can help them during the class (Porter, 2004, p. 162).

The WhatsApp application has been frequently used as a support system in distance education by many learners and instructors (Al Fadda, Osman & Metwally, 2020, p. 1024). It is appropriate for providing coordination by learners, opportunities of document sharing with groups, educational organization and information sharing (Reeves, Alkharaf & Amasha, 2019, p. 400). In the study aiming to investigate the WhatsApp effect of improving learning and teaching in Covid-19 restrictions, it is revealed that learners have positive thoughts on

using WhatsApp as a support system with the other distance tools, that the application is efficient to increase the success of teaching and learning process, that it is needed to be encouraged as a supportive tool (Al Fadda, Osman & Metwally, 2020, p. 1024). A study carried out before Covid-19 pandemic (Susilo, 2014) concludes that WhatsApp has high potential in use as complementary of distance education because it offers pedagogical, social, and technological opportunities that enable to post announcements, to share ideas and sources, and to implement discussions distantly and this situation has been experienced during Covid-19. Nevertheless, it has been experienced that it includes diverse limitations in addition to its benefits.

In this context, it is important to make suggestions for in-depth research and development of the use of WhatsApp as a support service in distance education.

METHOD

This study is a qualitative designed case study for its suitability of the research aim. Case study is defined as an empirical research method (1) that studies a current phenomenon within the framework of its real-life context, (2) that the boundaries between phenomenon and its content are not clearly defined, (3) that is used where multiple sources of evidence and data are available (Yin, 2003). In a more summative definition, case study aims to analyze one or a few cases within its boundaries holistically. In general, four case study designs are accepted. They are (1) holistic single-case design, (2) embedded single-case design, (3) holistic multiple-case design, and (4) embedded multiple-case design. In this study, holistic single-case design is selected. This design can be used in the existence of three cases:

1. Confirming or falsifying a theory,
2. Studying idiosyncratic situations that do not fit well with general standards,
3. Study of previously unstudied cases.

Examining such situations is significant in terms of exploring a subject that has not been studied before, creating a source for future studies and being a guide.

Since the phenomenon of use of instant messaging applications as a support service in distance education which is the subject of this research is needed to examine within the framework of its real content and real-life context and is an idiosyncratic implementation that does not fit well with general standards, the research is determined as a case study in holistic single-case design. The limitation of the research is that this research is designed with holistic single-case design and it is framed by examining the messages of an instant messaging application that serves a specific purpose in only a part of education given with a single group. However, it is expected that the research contributes to the literature in terms of being source research carried out later for support services with larger groups for a longer time because the messages shared in the application are numerically high. Further, in order to increase the validity and reliability of the research, the method of data diversity with sharing the basic results with the participants selected from the sample group taking part in the research and obtaining their opinions, and of seeking opinions in the literature of different researchers studying in this field while interpreting the findings (Merriam, 1988) is used.

Participants

Sampling of the study is selected through purposive sampling. From a Higher Education Institution, Schools of Foreign Languages, preparatory class education has a considerably higher rate compared to semester department classes in terms of class hours. Moreover, to think that learners gain the right to pass their departments with a single language proficiency exam of which they are responsible at the end of the term or that they repeat preparatory class education, it is a significant factor for learners to receive support in both face-to-face and distance education especially before, during and after the proficiency exam for their success and managing the process. For this, the research sampling consists of the messages shared in the WhatsApp group called "Technical Support" before the proficiency exam of all learners in preparatory class who continue their education in School of Foreign Languages at a foundation higher education institution and of 4 instructors and 4 learners who send messages most. The ethical approvals required for the examination of the messages in terms of the use of personal data are obtained before the study.

Data Collection and Analysis

Data which are analyzed through content analysis are collected in two phases. In the first phase of data collection process, qualitative data are obtained by examining descriptively the messages shared in the WhatsApp group in terms of group active and uptime, messages in the group, the number of learners and instructors, and also reply time to messages. Also, the first part of qualitative data is collected by decoding the messages shared in the group and dividing into the categories of class support, technical support, informative messages, in-group communication, and simultaneous call. In the second phase of data collection, in order to increase the validity and reliability of the findings, semi-structured interviews are conducted online with two learners and two instructors who share most. Semi-structured interview questions are prepared based on the purpose of the study, the research questions, and information obtained from the literature and then the questions are checked by two experts in this field.

It is aimed to conduct in-depth and multi-directional analysis of all qualitative data in the data pool by the means of Nvivo 12 Qualitative Data Analysis Software, and to increase the validity and reliability of the study with the use of the software.

Data analysis is carried out through content analysis. The main objective of content analysis is to reach the concepts and relations that can explain data collected. For this aim, it is required to conceptualize data collected first and then to organize them logically according to these concepts emerged (Yildirim, Simsek, 2013, p. 242). So, the basic function in content analysis is to bring similar data together within the framework of definite concepts and themes and to organize and interpret them intelligibly (Strauss, Corbin, 1990).

FINDINGS

Findings on Descriptive Data

Firstly, descriptive analysis of the messages shared in the WhatsApp group is conducted to analyze the data obtained from content analysis in a multi-directional and in-depth way. In addition, descriptive analysis of the messages is also conducted to interpret data determining the general framework of the instant messaging group, and to increase the validity and reliability of the study. To do this, the messages are examined in terms of group active and uptime, messages in the group, the number of learners, group administrators, and instructors, and reply time to messages.

Table 1. Descriptive data

Group Usage Time	Number of Learners	Number of Administrators	Number of Instructors	Number of Messages	Reply Time
22 Days (May 20- June 12, 2020)	53	2	6	2063 (1148 learners' messages, 915 administrators' messages)	Average 1 minute 20 seconds

**These messages include voicemails, visual posts, documents sent by instructors. The messages of joining and leaving the group are not added to the number.*

The group for technical support and instant communication during preparatory class proficiency exam of the higher education institution which the study is carried out was opened on May 20, 2020 when is the starting date of "Proficiency Mockup Exams" and was closed June 12, 2020 when the results of proficiency exam announced. There are seven instructors in total who teach in preparatory classes and in charge of School of Foreign Languages administration. Two of the instructors are also WhatsApp group administrators. These two WhatsApp group administrators interact mostly with the 53 learners in the group. The administrator of a School of Foreign Languages, who is also a group administrator, gives information and the other instructor provides technical communication. Other instructors, who are invigilators in the exam, only make learner calls during the speaking skills exam taken simultaneously and do not communicate learners one-to-one.

2063 messages are shared in total between these dates in the WhatsApp group. In this context, 915 of the messages are sent for information by invigilators and administration during the examination. These messages include files related to the exam such as voicemails, visual posts and exam rules. In this way, learners were able to reach technical and academic support simultaneously that they needed before, during and after the exam. 1143 messages are shared by the learners during group uptime. Sharing times of the WhatsApp group messages are especially concentrated during the exam. The average reply time to the group messages is 1 minute 20 seconds. To consider, the shortening of the reply time becomes an important finding, especially when it is regarded that the learners who log in to the learning management system, where distance education is taken, experience technical problems such as connection problems, and cannot simultaneously benefit from the support services on the learning management system. The findings on the contents of messages are scrutinized in detail in content analysis.

Findings on the Contents of Messages

Content analysis is carried out for the messages described numerically above via Nvivo 12 Qualitative Data Analysis Software. The use of the software supports the validity and reliability of the study providing multi-directional and in-depth analysis. First, data are coded with the help of the software, themes are emerged, codes and themes are organized, the findings are defined and interpreted. There are five main categories in the result of thematic coding of totally 2043 messages. These categories are conceptualized as followings:

1. Academic support,
2. Technical support,
3. Informative messages,
4. In-group communication,
5. Simultaneous call

Table 2 shows the numerical data on these main categories.

Table 2. The number of messages based on categories

Categories	Academic Support	Technical Support	Informative Messages	In-group Communication	Simultaneous Call
The number of messages	95	828	510	353	257

As stated in the literature section, WhatsApp provides group messaging and file sharing among group members such as text, voice recordings, still images, GIFs, different document types such as Word, Excel, PowerPoint, PDF, and videos in different codecs. The WhatsApp platform can be used by mobile devices and desktop computers so that it allows groups members to share instant media and have feedback simultaneously. Therefore, in ERT WhatsApp is a strong support tool to discuss any technical problems such as connection issues or etc. while other members of the group can immediately find a solution and share in a short period of time. This allows online learning activities to be held more easily.

In ERT the interaction between learners, instructors, and professionals responsible for Learning Management System are crucial since the learning environments carries most of the information between learners and the instructors. In this context, the fast response to the learners and instructors for technical support has important role on the success of the learning environment. WhatsApp allows users to share documents and multimedia such as photos and videos that disambiguate the technical issues. For instance, instead of sending text messages on the LMS or emailing the technical support team, any participant can immediately send a screenshot or a photo of the technical issue they are facing. This demystifies the issue investigation by the support team.

The findings of this research also showed us that, Learners used the group when they mostly needed technical support in line with the purpose of the group while they use WhatsApp as a support service. Administrators and instructors communicated in the group for responding to demands of both technical and academic

support and informing learners. Furthermore, it is detected that voicemails instead of text messages are used according to the urgency of the problems from learners and it is drawn attention that in this way, interaction between learners, administrators and instructors' increases. Moreover, it is found that sharing images constantly for both technical issues from learners and informative messages benefits to disappear the ambiguity caused by textual communication when explaining a technical problem or providing guidance on solving a problem.

Thus, these data prove the argument in the literature that 'WhatsApp provides academic information sharing between learners and instructors with its characteristics of allowance of mutual and fluent talk, creation of sense of belonging, accessible and low cost, easily use for communication purpose (Ujakpa, Heulkelman, Lazarus, Neiss & Rukanda, 2018, p. 2)' and that 'instant messaging facilitates learning and supports problem solving and it solves learning difficulties linked to learning content, information sharing etc. delivered via learning process or WhatsApp in a synchronous/ asynchronous way (Amry, 2014, p. 132).'

Additionally, it is indicated that some learners use the group for academic support; however, group administrators lead the students to the related group directly with the messages reminding the group's purpose. Similarly, it is detected that learners communicate among themselves within the group and in this way, administrators also obtain information about learners' psychological status and their motivation for the exam, in this respect, this in-group communication supplies advantages for instructors. At this point, the fact that it stands out as an appropriate tool since learners in distance learning psychologically need to know that someone cares about them and that they can help them during the course (Porter, 2004, p. 162) advances the meaning of this finding. Group administrators are involved in communication during in-group communication mentioned before when learners use informal language while communicating and they remind the group's purpose to learners.

In contrary to this, using WhatsApp as a support tool for the LMS in emergency online teaching status can also have limitations. The learners and instructors might not use the WhatsApp for individual reasons and can be outcast from the community in the online learning environment by this means. In addition to this there could be privacy issues in the WhatsApp group unseen by the group creators. The messages and contents can easily be carried out of the group and shared with the third party, or anybody can be joining the group by a mistake. WhatsApp mainly provides informal communication between users; therefore, language and the attitude of the group members can lacerate others in the group. The media and text shared in the group can discriminate against anybody. Our findings in this research didn't show any discrimination issues or negative comments against anybody.

We found out that, the WhatsApp group in this study is also used as the 'waiting room' for learners during the simultaneous examination of speaking skills and invigilators involve learners in the exam with the method of simultaneous call from the group. In this way, it is found that learners and invigilators gain an advantage in terms of time. All these data support foresights that 'it is appropriate for providing coordination by learners, opportunities of document sharing with groups, educational organization and information sharing (Reeves, Alkharaf & Amasha, 2019, p. 400). in the previous studies based on the WhatsApp application use as a support service in distance education.

Findings on Semi-Structured Interviews

In order to increase the validity and reliability of the research, data is diversified by sharing the basic results with the participants selected from the sample group taking part in the research and obtaining their opinions. To achieve it, semi-structured interviews are conducted with four learners who share most in the group examined and four instructors who are group administrators. In the interviews, the research sub-questions are asked. Data obtained from these interviews are analyzed through content analysis by means of Nvivo 12 Qualitative Data Analysis Software. For analyze the data of interviews, as in the part of "content of the message", data are coded with the help of the software, themes are emerged, codes and themes are organized and the findings are defined and interpreted. There are six main categories in the result of thematic coding of interviews. These categories are conceptualized as followings:

1. Synchronism,
2. Technical support,
3. Informative,
4. Count among/group consciousness,
5. Continuity,
6. Irrelevant speech/flippant

The findings gathered analyzing the data collected from the interviews show compatibility with the findings in the analysis of the contents of the messages. Learners especially emphasized that the application provides support in eliminating the feeling of loneliness that arises in distance education through its continuity. Some of the learners explain that with the sentences.

Learner 1: Taking an exam alone at home by the computer is very boring and unsettling. Being able to communicate constantly with the WhatsApp, which I am used to talking to my friends with made me feel more comfortable. Learner 4 also shared the same opinion: Being able to ask any questions about the course content and the examinations lowered my level of stress of course... I felt that I was together with my schoolmates like in the classroom when I talked over WhatsApp group

And the discourses of the interviewed instructors also support this judgment.

Instructor 1: In the LMS, learners often have difficulty participating in discussions or avoid asking questions individually, while being more comfortable in conversations over Whatsapp. And they can unite with their friends on the issues they agree with. In this way, we could see their general comments more easily on the education.

Instructor 3: Using WhatsApp group motivated the learners and increased their social presence on the LMS. Knowing that other classmates are on a conversation on the WhatsApp group, learners shared their comments on different issues more easily and freely. Instructor 2 also emphasized that having WhatsApp as an easy-accessible tool for communicating with students have eased their job: "The application was a fast, simple and easily accessible tool for us and our students. Because we all were not familiar with distance education, we needed to communicate easily and sometimes spontaneously. That's why speed and simplicity was significant in our situation."

In all meetings it was emphasized that, the importance of being able to receive simultaneous support for technical problems, which is the most frequently encountered problem. Likewise, it is mentioned that the sending and receiving instant informative messages simultaneously supports the process. Learner 2 explained it as follows; *"It was reassuring to know that I could get information on all subject simultaneously and to know that if there was a problem in the LMS system, I would instantly learn from WhatsApp."* Instructor 4 underlined that the WhatsApp group was almost about technical issues, and it maintained instant support for students: *"The application has been used specifically for technical issues as a support service. Because the concept of distance education was new for both students and instructors, and the system was not fully ready for education, it was necessary to provide instant support to students. So, the application assisted students and instructors for mostly technical issues."*

Learner 2 stated that continuity of information flow on the WhatsApp support group led more success in his/her studies in the School of Foreign Languages: *"I had all the information I needed about the courses I took and exams from the WhatsApp group, the information flow was continuous so besides technical issues I got information about other issues even the COVID restrictions at the university..."*. Learner 4: *"There was an information flow on the group that I followed for exams preparation and course content. If there was a technical issue on the LMS somebody was sharing it and therefore I knew that that was not only me who couldn't join the classes because of technical difficulties..."*

On the other hand, the benefits of WhatsApp in the ensuring continuity in the communication between learners and instructors have been mentioned very often. At the same time some disadvantages of continuity and simultaneity stand out from the answers given.

Learner 2: *“We could reach our instructors whenever we wanted, we could know whether they received our message or not. In this way we could get answers to our questions faster.”*

Instructor 3: *Learners can constantly share their thoughts, questions, and problems, this allows us to have information about their motivation. But sometimes it can happen in the conversations that don't follow the rules of netiket or irrelevant conversations may take place. This can cause different problems. Instructor 4 also agreed about some unnecessary topics and it was hard to have control on this matter: “Firstly, it was hard to control students' speech in the WhatsApp group. Sometimes students talked each others about irrelevant topics apart from technical issues. Also, we had to share personal numbers with the students before the institution gave a mobile phone to the unit. So, it allowed students to have our numbers and reach us whenever they wanted.” Instructor 1 had a opinion for overcoming this is issue: “... The feature of blocking students' messages can be used sometimes to manage talk in Whatsapp...”*

The group administrators agree with these opinions, and they draw attention to the necessity of existing a moderator in the group, especially because of informal language of communication that can occur, and it is beneficial to explain group rules precisely and clearly beforehand if the application is used as a support service.

In this respect qualitative data also tells us the reasons why WhatsApp is preferred for general use are, its low cost, unlimited message sending, convenience for informal communication, need of adaptation to the others because of its popularity, its social side, convenience for mutual dialogs, suitability of talk with a community, allowance of synchronous, dynamic and fluent messaging, and provision of confidence that messages reach the intended person (Church & de Oliveira, 2013, p. 357- 340) and it is interpreted that these components mentioned above are also valid for WhatsApp use in distance education. On the other hand, the necessity of formality insistence in the learning environment is among the prominent findings.

CONCLUSION

Within the framework of the findings obtained as the result of the research, it is concluded that the WhatsApp application as a support tool for LMS, strengthens learning during ERT because it allows instant communication, and that it increases the motivation of the learners for learning because they can receive continuous support. It is found out that when learners get support through a system that they are familiar with, learners' commitment to learning materials increases due to intense use of support in terms of frequency of use. Nevertheless, the lack of a moderator in the group during the use of instant messaging applications as a support system causes the group deviate from the aim, which emerges as a limitation. In addition, the use of informal language in communication shows itself as a different limitation due to the learners' habits of use and the feeling that they are not in a formal support system. Another limitation of the use of instant messaging applications as a support system is that learners have access to learning materials by means of learning management systems, but they have to switch to a different environment for the instant messaging application.

While integration of WhatsApp, an instant messaging application, into learning management systems provides an opportunity to use the application in the same environment simultaneously, it is able to support the formal nature of the learning environment while using the application. In this way, it allows to use the rules prepared for learning management systems at the same time for communication language in the application. As for the implementation of these rules and the development of support services, it is concluded that natural language processing techniques which are more difficult to be integrated into instant messaging applications in a customized way but can be integrated into learning management systems and presence of a digital moderator in the system can improve the use of instant communication applications as a support service in distance education.

Considering that the digital transformation within the framework of distance education will continue during the Covid-19 pandemic in the so-called new normal process, the value of different applications that can offer instant simultaneous support to learners is noticed. Beside the analysis of the application use as a support service contributes to the literature, it is stated that analyzing a different application that can offer support simultaneously contributes to learning by increasing the level of interaction between learners and teachers. It is recommended for future studies to research strengths and limitations of the instant messaging applications in distance education by integrating instant messaging applications supported with natural language processing techniques into learning management systems.

The research showed that integrating common instant message applications may result increase in the motivation of the learners and helps reducing anxiety about online exams and social presence of the learners on a e-learning environment. Further empirical studies with an instant messages service embedded LMS or e-learning environment will be useful to figure out learner support systems efficiency and contribution to e-learning in the future.

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A QUALITATIVE ANALYSIS OF THE FACTORS INFLUENCING THE ADOPTION OF MOOC IN HIGHER EDUCATION

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ABSTRACT

The purpose of this research is to highlight the factors influencing the adoption of MOOCs in the Malaysian context. This qualitative study was designed using focus group discussions (FGs) with fifty postgraduate students from two Malaysian Universities. The thematic analysis revealed two major themes, opportunities, and challenges. The findings revealed 12 sub-factors influencing the adoption of MOOCs, seven sub-factors for the opportunities for using MOOC, namely, improve the higher education system, support lifelong learning, the accessibility, interactivity, flexibility, individualized instructions, and the positive attitude toward using MOOC. The challenges included 5 sub-factors, namely, lack of openness feature, lack of knowledge and skills, poor technology infrastructure, low self-regulated learning skills, and lack of instructor' support. Such findings are important for improving the implementation of MOOCs in the Malaysian higher education system for MOOC learners and related stakeholders.

Keywords: Focus group discussion, higher education, MOOCs, thematic analysis.

INTRODUCTION

Massive Open Online Course (MOOC) is a new trend for modern higher education, designed to provide opportunities for the enormous number of participants around the world to attend free online courses without any admission requirements, its open up learning offer a wide range of choices in different disciplines (Abu-Shanab & Musleh, 2018). MOOC is a platform for communication and collaboration where the participants have the ability to exchange information and improve their knowledge (Zhang, Gao, & Zhang, 2021). MOOC aims to offer high-quality education to interested learners all over the world (Azevedo & Marques, 2017).

MOOC has received significant attention in the higher education literature (e.g., Duncan, 2022). Many studies suggested that MOOCs have the capability to increase the accessibility to high-quality education and decrease higher education costs (Al-Adwan, 2020). MOOC consider the best development in higher education in decades; it provides free and high-quality classes to students anywhere in the world (Meet & Kala, 2021).

Despite these potential benefits, there are some problems with the learners' acceptance of MOOC. It is found that the dropout rate of MOOCs is very high (Al-Adwan, 2020). For instance, Fu, Gao, Zhou, and Zheng (2021) indicated that the completion rates in MOOCs courses are below 10%. The completion rate is a measure used to describe the people who passed the course or got a certificate (Albelbisi & Yusop, 2020). Zhang et al. (2021) studied the reasons why learners drop the MOOC courses. They noted that lack of incentive, failure to understand the content material, and having no one to turn to for help were the main causes for not completed MOOC courses. Thus, to realize the full potential of MOOCs as new learning opportunities, it is necessary to figure out why many students do not complete MOOCs courses. Understanding the factors that encourage learners to adopt MOOCs is a critical issue in the MOOC environment (Al-Adwan et al., 2020). Exploring such significant factors that influencing the adoption of MOOC offer insights for MOOCs providers into the possible solutions for improving their services in order to increase learners' satisfaction, engagement, motivation, as well as completion rate (Fu et al., 2021).

Background of the Study

MOOC has been growing quickly, many famous universities and institutions supported this initiative. In 2016, over 23 million learners signed up for at least one MOOC, making the total number of learners 58 million and the total number of MOOC courses 6,850 from over 700 universities (Shah, 2016). Today, MOOC is attracting millions of learners and covering huge regions around the world.

Literature indicated that MOOC is a recent initiative in Southeast Asia, and participation in MOOCs from developing world regions such as Africa and Asia are relatively few compared with the vast participation from North America or Europe (Albelbisi, Al-Adwan, & Habibi, 2022).

In the Malaysian context, the Malaysian Ministry of Education paid serious attention to the MOOC initiative. MOOC increasingly achieved attraction among higher educational institutions, and many Malaysian universities have joined the MOOC movement by creating their own MOOC courses (Ayub, & Leong, 2017) to meet the domestic learning demand.

Though due to the recent introduction of the MOOC in Malaysia, MOOC is still in its growing phase and it is clear that there are many issues to identify and gaps to close (Albelbisi, Al-Adwan, & Habibi, 2021). Currently, gaps in the Malaysia MOOC initiative indicate that there is still an area for development (Mansor, Latifah, & Amina, 2015). Malaysia MOOC is still struggling between what it should have been and what it actually is, particularly when it is in the presence of the traditional-prone educational system.

Significance of the Study

The current study tries to identify the factors affecting the adoption of MOOC in the Malaysian context from two Malaysian Universities. Recognizing the factors' affecting MOOC is significant to realize how best to leverage on MOOC and to maximize the gains of this innovation in the Malaysian higher education context.

This paper describes an effort to document the factors affecting the adoption of MOOC in the Malaysian context to guide educators, researchers, and instructional designers to develop effective MOOC environments. The results of this study could provide a comprehensive picture for the parties concerned to develop strategies to guide the adoption of MOOCs in the Malaysia context and other countries sharing a similar interest in institutionalizing their MOOC.

LITERATURE REVIEW

Adoption of MOOC

Students have a growing need for flexible ways of learning in which the use of modern technologies in teaching and learning can be provided (Abu-Shanab & Musleh, 2018). Institutions and universities are looking into the possibilities of moving from traditional teaching methodologies to more innovative student-centered,

self-directed learning by learners. Practices and research have shown that adopting MOOCs offers great opportunities for improving higher education by providing high-quality learning (Azevedo & Marques, 2017).

The millions of learners around the world appreciate the MOOC's ability to provide learning for everyone without worries about their gender, ethnicity, or financial background. MOOC has the view to offer free and accessible education to anyone, particularly to people from developing countries (Alhazzani, 2020). Using MOOC allow a learner to improve their knowledge without being on campus regularly, they can join MOOC and keep their employment or even seek employment while studying (Duncan, 2022).

Albelbisi et al. (2021) indicated that the adoption of MOOCs covering a national curriculum can be seen as a contribution in solving the educational challenges in countries with a lower level of formal education or countries that need a rapid educational enhancement.

Despite the potential of MOOCs, there have been some critical considerations. For example, Fu et al. (2021) indicated that a huge number of learners had enrolled in MOOC, however, only a few of them complete the course successfully and get certificates. Abu-Shanab and Musleh (2018) also noted that accreditation, MOOC quality, and sustainability are some limitations of MOOC. Alhazzani (2020) indicated that investigating MOOC restrictions is needed to understand the factors that responsible for the implementation of MOOC successfully. Thus, this research tries to provide a better understanding of the factors affecting the adoption of MOOCs in the Malaysian context.

MOOC Adoption Studies

Most previous studies have focused on understanding the factors influencing the adoption of MOOCs by using quantitative methods. For instance, Gao and Yang (2015) examined learners' adoption of MOOCs by applying the TAM model with additional factors. They found that ease of use, perceived usefulness, and mimetic pressures were significantly associated with learners' intention of adoption. Ma and Lee (2019) investigated the influential factors underlying learners' adoption of MOOC by integrating innovation resistance theory (IRT) and indicated the main barriers to adoption of MOOC are usage barrier, value barrier, and tradition barrier. Yet, investigating learners' adoption of MOOCs using qualitative methods is surprisingly rare (Al-Adwan, 2020). Thus, understanding the adoption of MOOCs using qualitative methods such as focus group discussion would provide in-depth data that will give a better understanding of this issue.

MOOC in Malaysia

The Ministry of Education Malaysia (MOE) released a Malaysian Education Blueprint for Higher Education (2015 to 2025) that involves MOOC as a crucial initiative in the Malaysian educational system. It declared that Malaysia's intention to take advantage of MOOCs by improving the quality of the higher education system and providing free and flexible learning to interested learners to obtain the best education (Ministry of Education Malaysia, 2015).

In October 2014, the Second Education Minister, Datuk Seri Idris Jusoh had been declared launching Malaysia MOOC in all public universities in Malaysia. Thus, Malaysia becomes the first country in the world that implement MOOC for credit in their universities and the only country where MOOC is implemented on a national scale through government initiative (Ministry of Education Malaysia, 2015). To support this initiative, the government proposed a budget of 500 million MYR (138.6 million USD) for the upcoming 11th Malaysia Plan (2016-2020) (Albelbisi, 2019).

The first stage of the MOOC initiative in Malaysia began with four MOOC courses developed successfully in the MOOC platform OpenLearning, namely (i) Islamic and Asian Civilisations (developed by University Putra Malaysia- UPM) (ii) Ethnic Relations (developed by Universiti Kebangsaan Malaysia- UKM) (iii) Entrepreneurship (developed by Universiti Teknologi Mara -UiTM), and ICT Competence (developed by Universiti Malaysia Sarawak- UNIMAS) these courses were launched for first-year undergraduate students.

In the next stage, six higher education institutions in Malaysia were engaged in MOOC development. One of them is Open University Malaysia (OUM), one is a private university (Taylor’s University), and four are public universities (i.e., UPM, UKM, UiTM, and UNIMAS). In this stage, the total of MOOC courses offered by the six universities in Malaysia increased to 36 MOOC courses (Mansor et al., 2015). All of these 36 MOOC courses are presented via “OpenLearning” a MOOC platform established in Sydney, Australia. A majority of participants in these MOOC courses are students from public and private institutions in Malaysia.

In September 2014 the Malaysia MOOC OpenLearning (<https://www.openlearning.com/>) was launched officially and considered the MOOC platform for all institutions of higher education in Malaysia.

So far, OpenLearning includes over 681 courses (OpenLearning, 2017). The number of participants is varied significantly from one course to another, and it could reach up to tens of thousands for some courses such as *Tamadun Islam dan Tamadun Asia* (TITAS) course which is successfully attracted 67,702 learners. Table 1 displays the progress of OpenLearning.

Table 1. Progress of OpenLearning

Progress	Number
Micro-credentials issued globally	700 thousand
Enrollments in courses around the world	1.8 million
Peer interactions between students	20 million

Source: <https://www.openlearning.com/> Nov 2018

Typically, OpenLearning courses are divided into modules. Each module involves theoretical materials, interactive activities, assignments and quizzes, and the final project. The participants are collaborated through using the built-in galleries, wikis, and blog pages. OpenLearning is a MOOC platform that allows any interested lecturer around the world to create, run, and teach a free course. It provides a tool for creating MOOC courses that allow lecturers to generate their own learning community.

METHOD

Based on the research purpose and to understand the factors affecting the adoption of MOOCs in the Malaysian context, a qualitative design was applied. Qualitative method is the best way to explore more thoroughly the participants’ attitudes, belief, and experiences (Creswell, 2014). The research methodology has been designed based on two main steps. In the first step, collecting data has been conducted based on a focus group discussions method. In the second step, thematic analysis for identifying and classifying the factors influencing the adoption of MOOC was applied.

The justification for choosing the focus group discussions approach was to highlight the differences in perspective between groups of individuals as well as provide information about a range of ideas and feelings that individuals have about certain issues (Klimova, Pikhart, Cierniak-Emerych, & Dziuba, 2021). The questions of this focus group were shaped based on the research objectives. The focus group discussions consisted of three main questions. The interviewees were asked to answer the following three questions: (1) What are the main opportunities that encourage the adoption of MOOCs in Malaysian universities? (2), What are the main challenges that hinder the adoption of MOOCs in Malaysian universities? and (3) What are the main factors that could lead to the successful implementation of MOOCs in Malaysian universities?

The goal of thematic analysis is to identify patterns(themes) in the data that are important or interesting and use these themes to address the research. This technique is commonly applied for qualitative studies because it allows for inductive discovery and subsequent interpretation of themes and subthemes (Braun & Clarke, 2014).

Participants

The number of participants in the qualitative research is not definite, they can be one or more (Creswell, 2014). The sampling (n=62) was done based on a convenience sampling process to select group of students for this study by taking into account some criteria such as gender, willingness to participate, and complete as a minimum one MOOC course from OpenLearning, the MOOC platform in Malaysia.

We contacted the participants via email. An e-mail with an invitation to participate in the study was sent to sixty-two postgraduate students from two public universities in Malaysia (University A, University B). Ten postgraduate students did not respond to the invitation while two postgraduate students were not able to attend due to some conditions such as health problems. Accordingly, fifty postgraduate students finally attended the focus group discussions (FGs).

Data Collection

The presented qualitative data were collected in July and October 2018. The FGs started with the designing phase, developing theories, and setting discussion with four Malaysian educational technology experts. The consent forms have been distributed and filled by the participants. For the places, rooms from the head of research centers of University A and B had been borrowed to conduct the FGs. We divided the FGs into two groups (Instructional Technology (IT), Educational Management (EM)). The discussions lasted for 1 to 1:30 hours. Table 2 displays information on the FGs, the majors, participant initial, university, and length of the FGs' time.

Table 2. Information on the FG

FG	Majors	Participant initial	University	Length
1	Instructional Technology	IT1, IT2, IT3, IT4, IT5, IT6, IT7, IT8, IT9, IT10, IT11, IT12, IT13, IT14, IT15. (15)	A	1: 27: 10
2	Educational Management	EM1, EM2, EM3, EM4, EM5, EM6, EM7, EM8, EM9, EM10, EM11, EM12, EM13, EM14, EM15. (15)	B	1: 29: 40
3	Instructional Technology	IT16, IT17, IT18, IT19, IT20, IT21, IT22, IT23, IT24, IT25, IT26. (11)	A	1: 25: 30
4	Educational Management	EM16, EM17, EM18, EM19, EM20, EM21, EM22, EM23, EM24. (9)	B	1: 22: 20

DATA ANALYSIS

Thematic analysis is a process for analyzing texts and transforming diverse data into rich and detailed information. It is one of the efficient methods and common forms of qualitative analysis ((Braun, & Clarke, 2014) used for classifying, analyzing, and reporting patterns in qualitative data. Thematic analysis is believed to be one of the most common methods of content analysis, where the coding scheme is based on categories designed to capture the dominant themes existing in the text (Albelbisi, Yusop, & Salleh, 2018). Thus, thematic analysis was used in this study as the classification technique for the factors influencing the adoption of MOOCs in several dimensions.

Development of Themes

After doing the FGs (four sessions), the data was transcribed. The transcription of the recording was done manually using Microsoft word. Pseudonyms were given to the participants when quoting them in the analysis.

Each FG of this study that lasted around one to one and half hours resulted in more than 100 pages of transcripts. Therefore, an efficient way to analyze the data was a good investment. Researchers informed

specific programs that can be utilized in qualitative data analysis, and finally, we decided to use Macros in Microsoft Word software due to its efficiency and functionality. The Macros created a new document and extracted all comments; minor adjustments were made to the styles used.

For this study, after we coded the transcription using the “new comment” feature in Microsoft word, we extracted the comments. The extracted comments included a header within some information; full name of the document, date of creation, and name of the document creator. We filed the metadata and comments into tables. For each comment, the table informs the page number, comments, and text.

The process of development the themes was conducted based on three steps. First, by reviewing the literature, the general and primary concepts of MOOC were extracted. Then, new and detailed concepts were identified. Utilizing the Macros allowed put the items into groups based on conceptual similarity.

Second, the researcher identified the concepts based on his perception and understanding of the issue, expert opinions and guidelines were also considered. Then, the concepts were classified as themes and sub-themes. This process continued until all the concepts were allocated. This step has been done based on understanding the studies domain and using existing MOOC classification by Abdel-Maksoud (2019); Ma and Lee (2019) as references to test reliability. For instance, Abdel-Maksoud (2019) classified the factors affecting MOOC adoption into benefits and barriers to use MOOCs. The sub-factors of benefits of MOOCs were: the material of MOOCs was valuable, the MOOCs’ structure was flexible, and participating in MOOCs developed the technological competency. The barriers to use MOOCs were: unreliable internet connection cause problems to access MOOCs materials, lacking the proficiency to use different tools in MOOCs, and the instructor was not there to help.

Finally, the themes and sub-themes were refined several times, and some were combined, separated, added, or deleted. This process continued until the outline of the thematic network was obtained. The thematic network in this study consisted of 2 main themes and 12 sub-themes as shown in Figure 1.

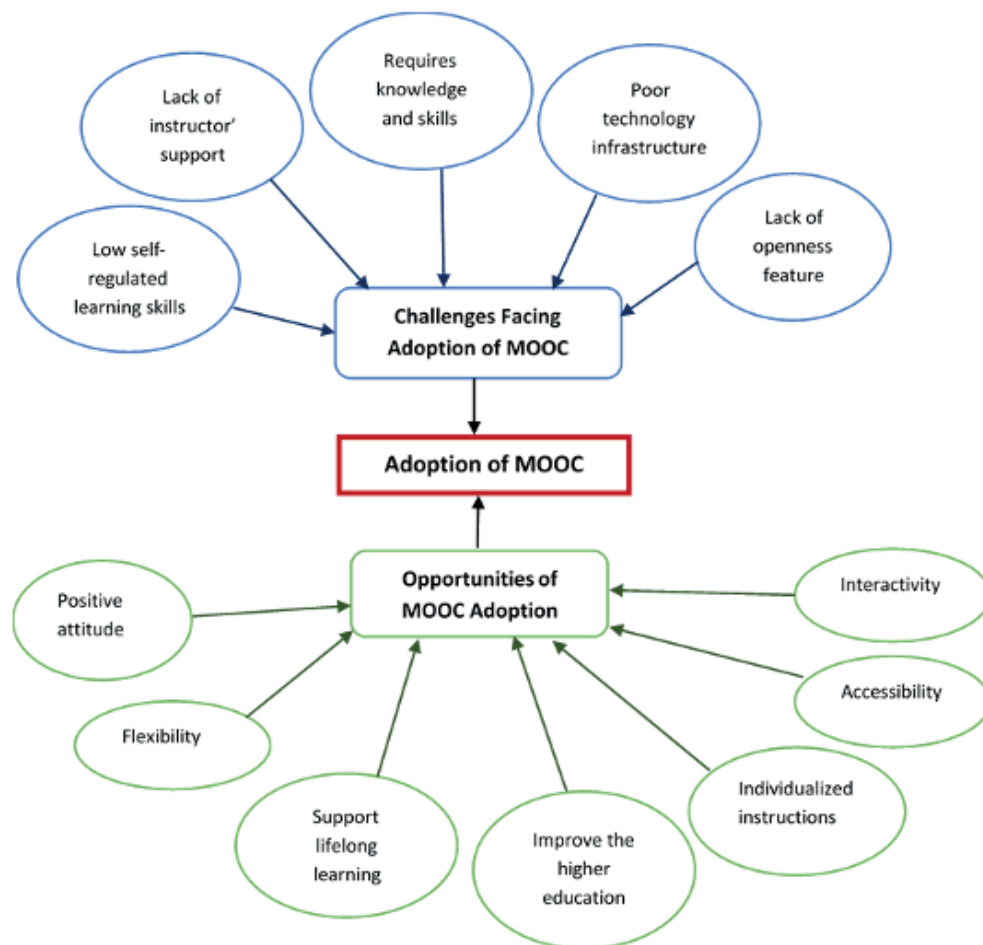


Figure 1. Outline of the thematic network

Trustworthiness

To establish trustworthiness and to verify the accuracy of the data, findings, and interpretations, several measures have been conducted (Creswell, 2014). First, after transcribing the data in the data analysis, the transcription gave back to the participants of the FGs to ensure what they said is right, as a system of checks of the data or member checking. Second, we conducted a reflexivity to strengthen the trustworthiness. Through reflexivity, we became more self-aware to control the biases such as hid the names of the participants to keep their confidentially (Miles, Huberman, & Saldana, 2018). In addition, we conducted a three round of inter-rater reliability (IRR) (Garcia-Loro, Martin, Ruiperez-Valiente, Sancristobal & Castro, 2020). The transcripts were distributed to two independent researchers from the Malaysian university. The calculation of the initial capability was conducted through percentages. The method of the negotiated agreement in order to reconcile the disagreement was applied.

FINDINGS

The findings of this study include two major themes, opportunities and challenges, as factors affecting the adoption of MOOC in Malaysia.

Findings Related to Opportunities of MOOC

Opportunities in this study are defined as factors that support the adoption of MOOCs in Malaysia. The findings indicated that there were seven categories (subthemes) developed through the data analysis regarding the opportunities of MOOCs in Malaysia. Table 3 showed a definition of each subtheme.

Table 3. Subthemes of opportunities and their definition

Subthemes	Definition
Improve the higher education system	<ul style="list-style-type: none">- Students find that using MOOC has a positive effect on their studies.- Students find that MOOCs allow them to improve their learning by getting advanced courses.
Support lifelong learning	<ul style="list-style-type: none">- Students find that MOOCs help them to catch up with their study progress.- Students prepare for class by reading up on relevant learning materials available in MOOC.
Accessibility	<ul style="list-style-type: none">- Students find that they would enhance their studies when e-resources are readily available via MOOC.
Interactivity	<ul style="list-style-type: none">- Students actively participate in MOOC activities.- Students interact with teachers and peers while learning via MOOC.
Individualized instructions	<ul style="list-style-type: none">- Students find that MOOCs provide a desirable learning environment.- Students find that learning via MOOCs meets their individual needs.
Flexibility	<ul style="list-style-type: none">- Students review the recorded lecture videos and study the course materials during their own time.- Students manage their assignments, tasks, and assessment deadlines with different tools.
Positive attitude	<ul style="list-style-type: none">- Students adopt a positive and proactive approach toward learning via MOOC.

The seven categories (subthemes) revealed from the data analysis are:

- Category one was “Improve the higher education system,” which represented when the learners indicated that MOOC brings a positive effect on the educational system in Malaysia. Many respondents noted that MOOC offers courses from top universities of the world for free. For example, IT5 stated that “MOOC enables us to acquire knowledge from the best professors and scholars of the modern era.” IT16 also stated that “I registered in MOOC because I wanted to get knowledge from best lecturers in my learning field.”
- “Support lifelong learning” was another category and counted anytime the learners mentioned that MOOC provides the self-motivated pursuit of knowledge. For instance, EM2 stated that “MOOC offers the chance to develop my knowledge and enhance my learning experience.”
- Category “Accessibility” was marked anytime a learner responds that they enjoyed being able to access all the MOOC course materials easily. EM17 and IT20 stated that “MOOC could be helpful for graduates as they do not have to go back to their universities to continue their educations.” EM3 also stated that “anyone can access MOOC courses if the internet connection is available.”
- Category “Interactivity” was counted any time the learners respond that they become more engaged and involved in the learning via MOOC. For instance, EM16 pointed out that “MOOC offers social media tools such as wikis, blog pages, and forums to discuss topics and ideas among learners.” IT10 also stated “OpenLearning has an interesting feature called “Kudos” or karma points that are obtained when positive comments from peers or when a specific goal is achieved. This means you can receive badges automatically.”
- Category “Flexibility” was calculated at any time the learners answered that they were able to study and review MOOC course materials during their own time. For example, EM13 and IT19 mentioned that “I can download MOOC videos and show it as many times as I want, which is difficult to do through normal on-campus lectures.”
- Category “Individualized instructions” was marked when a learner reported that content and pace of learning via MOOC is supported different learning styles and needs. For instance, EM18 stated, “MOOCs offer me the courses that could be beneficial for me.” IT14 mentioned, “I registered in MOOCs just because I am curious about MOOCs courses.” EM8 also pointed out “I’m interested in collecting certificates, that’s why I join to MOOC.”
- The last category was coded as” Positive attitude “ counted when a learner mentioned that they expect favorable results when they are using MOOC. For example, EM11 pointed out that “I plan to join MOOC courses as much as I can.” IT8 stated, “I enjoy using MOOCs for my studies.”

Findings Related to Challenges of MOOC

Challenges in this study are defined as barriers or obstacles, which prevent or inhibit the adoption of MOOCs in Malaysia. The finding revealed that there were five categories (subthemes) developed through the data analysis regarding the challenges of MOOCs in Malaysia. Table 4 showed a definition of each subtheme.

Table 4. Subthemes of challenges and their definition

Subthemes	Definition
Lack of openness feature	<ul style="list-style-type: none">- Students find it difficult to sign up for the MOOC course when some lecturers would only upload the lecture materials for specific students.
Poor technology infrastructure	<ul style="list-style-type: none">- Students do not have the appropriate or enough electronic devices for learning via MOOC.- Students experience connection problems with MOOC platforms due to poor internet.
Requires knowledge and skills	<ul style="list-style-type: none">- Students find that they would delay their studies as they require more skills to access MOOC materials.- Students are troubled by a lack of clear instructions for MOOC tasks and assignments.
Low self-regulated learning skills	<ul style="list-style-type: none">- Students find it rather impossible to complete all MOOC tasks by their own selves.- Students find it difficult for me to manage all MOOC course activities and tasks.
Lack of instructor' support	<ul style="list-style-type: none">- Students find it hard to receive immediate feedback in learning by MOOC.- Students find it hard to consult their teachers while studying via MOOC.- Students find it hard to engage in discussions with teachers and peers in learning via MOOC.

DISCUSSION

As a result of this study that investigated the factors affecting the adoption of MOOC from two Malaysian Universities. Two themes that emerged from the analysis of the data are the opportunities, challenges with 12 sub-themes.

Opportunities for MOOC in Malaysia

Introducing Malaysia MOOC considers one of the modern and useful tools used to offer free and high-quality education in the country. The findings of this study revealed that MOOC provides an interesting transformation in the teaching and learning pathway in the higher education system. MOOC has the ability to change the traditional classroom by providing high-quality learning to a huge number of learners. This finding is consistent with Zalli, Nordin, and Hashim (2019); Mansor et al. (2015) reported that MOOC brings a positive impact in the educational system in Malaysia through enhancing the educational institution branding, increasing institutional collaboration, and promoting educational development. MOOCs enables participants to engage in intellectual activities, such as making connections with previous knowledge, exploring knowledge actively, and develop critical thinking (Goh, Wong, & Ayub, 2018).

Further, many MOOC learners of this study noted the opportunity of MOOC to support lifelong learning. This result is supported by MOOC studies revealed that students and instructors in Malaysia positively accepted MOOC as a means of lifelong learning (Zalli et al., 2019). This finding is also consistent by Albelbisi et al. (2018) suggested four categories for learner motivations toward using MOOC (1) the learners interested in supporting lifelong learning, (2) they register in MOOCs courses for fun and enjoyment, (3) they find MOOCs courses convenience, and (4) they join MOOC for exploring as a new style of online learning.

The MOOC learners who participated in this study reported that they can get access to courses available in Malaysia MOOC by overpassing all barriers of time, place, and distance. The information in MOOC has been always available whenever the learners need to use it. MOOC learners can access educational content anytime and at anyplace. Abdel-Maksoud (2019) indicated that learners are able to access knowledge through MOOC on condition availability of the internet connection.

The results of this study also revealed that one of the MOOC opportunities is that MOOC learners can also interact with peers effectively and efficiently. MOOC provides interactive learning materials such as wiki, forum discussions, and blog pages to learners who are not physically present in the classroom. This finding is supported by MOOC literature. For example, Gameel (2017) noted that the success in the MOOCs environment is rely on participants' interaction in MOOCs activities. Ma and Lee (2018) also indicated that interactivity in MOOCs enhance learner's engagement in the topic.

Individualized instruction is another opportunity of MOOC adoption. The survey results indicated that MOOC provides learning methods that suitable to the need, abilities, learning styles, and interests of the learners that lead to self-learning. MOOCs have the opportunities to make the learning opportunities adaptable to the learners' requirements. This finding is supported by Al-Adwan (2020) indicated that the common reasons for the motivation to register and enroll in MOOC is that the learners are interested in the specific topic or discipline; they would like to get free learning opportunities, they desire for updating their knowledge, they would like to get the opportunity to enroll and take a class from a famous university, or they are interested to collect certifications.

The flexibility of MOOC demonstrates another beneficial for the learners. Learners do not have to spend much time listening to the lecture as in the traditional classrooms; they can learn from short-duration videos that promote active learning. MOOC provides the flexibility of delivery media (such as Tablets, Laptops and Mobile Phones) and flexibility of type of courses available. This finding is supported by Alhazzani (2020) indicated that the major features that motivate the learners to participate in MOOCs are the flexibility and the openness of MOOC.

Thirty students out of 50 indicated that their attitude regarding using MOOC is positive. This finding is consistent with MOOC studies such as Zalli et al. (2019) indicated that most Malaysian learners perceived positive attitude toward MOOCs as they indicated that learning via MOOCs makes the learning more interesting and easier for them. Albelbisi and Yusop (2019) proposed a model to examine the factors that have a significant impact on the success of MOOC in Malaysia context. The findings exposed that the student attitudes and course quality were the most important factors influencing the success of MOOC.

Challenges of MOOC in Malaysia

The findings of the study highlighted many challenges of MOOC in Malaysia. One of these challenges is lack of openness feature. Openness is offering a learning experience for any interested participants without worries about any restrictions such as time, geographic location, or financial hardship. The Malaysia MOOC that already in operation are not fully open, as many of these MOOCs are designed as complementary resources for existing on-campus courses in Malaysian universities, thus these MOOC courses are relevant to and of interest to Malaysian students. This indicates that the MOOC is targeted at a narrow group of learners and not the general public (Mansor et al., 2015).

Twenty students who participated in this study noted that they faced poor technology infrastructure. Technology ownership and bandwidth is considered additional challenges especially for learners from poor or rural areas. The internet access in remote and rural areas in Malaysia is still insufficient (Albelbisi et al., 2018) which will likely be a critical infrastructural obstacle for opportunities MOOC in these areas in Malaysia. Thus, it is suggested to establish a dedicated independent infrastructure network and any technology necessary for delivering MOOC especially in a rural area to confirm that all people have the same opportunities to participate in MOOC initiative in Malaysia. It is also significant to decrease the burden on MOOC learners who use their devices to view MOOC lecture videos that would consume a huge Internet data. Instead, it is recommended to permit them to download the MOOC's lecture videos and allow them to show it later at their convenience.

The finding of this study revealed that using MOOC requires knowledge and skills that maybe not all the learners have. Learning via MOOC require different knowledge and skills for the use of the features and services provided by MOOC (Al-Rahmi et al., 2019). Lack of knowledge and skills may cause an unsuccessful in taking advantage of the valuable services of MOOCs. This finding is consistent with Zhang, Chen, and Phang (2018) indicated that the inadequate learners' background knowledge and skills are a key factor of the

low completion rate in MOOC. Abeer and Miri (2014) also highlighted that learning skills such as learners' linguistic skills in English, communication skills, prior knowledge in the subject matter, open-mindedness, self-efficacy, and self-regulation have a significant effect on learners' participation and motivation in learning via MOOC. So, it is recommended that universities have to ensure that learners have practical skills by providing guidelines and training courses to learners on how to use MOOC effectively. Higher education institutions should also offer the required assistance for learners to overcome any difficulties facing them during learning via MOOC (Ma & Lee, 2018).

The results of this study revealed that low of students' self-regulated learning skills is one critical barrier that prevent the opportunities of MOOC in Malaysia. Self-regulated learning (SRGL) represents the way that the learners participate in the activities and make decisions about their learning in MOOC. MOOC learners have to be self-motivated and acquire the ability to regulate their own learning process (Zalli et al., 2019). However, many MOOCs learners are struggling for managing and regulating their learning while using MOOCs (Zhang et al., 2018) and not all of them have the motivation to control their learning effectively in an online learning context. Consequently, to achieve MOOCs' success, a high level of SRGL skills is required. Albelbisi (2019) revealed a strong relationship between self-regulation learning and success MOOC environments. Al-Adwan (2020) also indicated that low level of SRGL decreases learners' behavior intention to adopt MOOC.

Therefore, it is suggested to strengthen the learner's abilities to participate in MOOC and improve their SRGL skills. MOOCs learners should have the ability to engage in learning by setting learning objectives individually, identifying the effective techniques to learn, and monitoring the process of their objectives, all these factors are important in the online learning atmosphere especially in the MOOC environment (Zhang et al., 2018).

Lack of instructors' support demonstrates another challenge for the learners to use MOOC. MOOCs instructors have an active role in the processing of teaching and learning and encouraging collaborative learning (Zhang et al., 2018). Al-Rahmi et al. (2019) emphasized the importance of instructors' experiences in MOOCs environment and highlighted the influence of instructor in improving learners' engagement in MOOCs activities. MOOC instructors have to manage all the enormous numbers of participants, cope with diverse cultures, deal with technical difficulties such as lacking technologies in some areas and improving learners' interaction by using a variety of teaching methods (Garcia-Loro et al., 2020).

Yet, to improve instructors' support, MOOC instructors have to ensure that they can provide instant feedback for the learning-related matter and offer on-time assistance for any technical issue for MOOC learners (Meet & Kala, 2021). It is also suggested to develop training programs for lecturers that encourage using of MOOC efficiency (Ayub, & Leong, 2017). Training will help lecturers to implement more effective and meaningful MOOC-based learning for learners (Gameel, 2017). Moreover, provide a guideline for lecturers that inspire them to develop a high-quality MOOC at the national level. This guideline may include topics such as planned for MOOC, producing high-quality videos for MOOC and optimizing existing features in the MOOC platform.

CONCLUSION

The fast development of MOOCs can be noticed through the increasing number of MOOC platforms and the huge numbers of learners involved in the MOOC courses from every part around the world.

At the moment, MOOCs in Malaysia still in its growing phase and it is clear that there are many issues to recognize and gaps to close. Thus, the study indented to shed light on the adoption of MOOCs by highlighting the factors affecting the adoption of MOOC in the Malaysian context from two Malaysian Universities. The study has identified and discussed the factors that positively or negatively affect MOOC adoption. The two themes that emerged from the analysis of the data are the opportunities and challenges.

This study can be valuable to higher education administrators and instructors who are interested in making sense of the MOOC initiative in Malaysia and other countries sharing a similar interest in institutionalizing their MOOCs to increase the acceptance of MOOCs in their higher education system. The results of this study can also be leveraged to increase learners' enrolment rates and enable the effective design of MOOC platforms.

Based on our findings, there are many suggestions for future research. First, it would be interesting to investigate the factors affecting adoption of MOOC in other countries and compare the findings with the findings of this study. Second, a further study could validate the technology acceptance theories within the context of MOOC. Third, it is suggested that the correlation between learners' self-regulated learning and course completion is investigated in future studies. Finally, further investigation into influence of motivation on the learners' intention to accept MOOC is recommended. We expect that this research enables researchers to understand the related literature on the factors influencing adoption of MOOC from learners' perspectives and its directions and restrictions.

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DEVELOPMENT OF LEARNING MODELS IN WEB PROGRAMMING COURSES WITH COMPUTER-BASED LEARNING TUTORIALS

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ABSTRACT

Web programming courses are practical courses that can only run with the help of computer devices. The content or learning content in web programming courses is in program code directly created with a computer. The models developed include conceptual models, procedural models, and physical models. The research method used is Research and Development (R&D) using the Dick & Carey instructional system design model combined with the Hannafin & Peck model. The learning model was tested for feasibility and effectiveness before being implemented. The learning model developed has four components: syntax, reaction principle, social system, and support system. The feasibility of the model is seen from the percentage of the results of the one-to-one evaluation, which is 91.47%, the small group evaluation is 94.88% and the field trial evaluation is 92%. The effectiveness test results can be seen from the increase in the post-test score with the pre-test reaching 68.7% and the percentage of the success rate of student studies who have carried out learning with the tutorial learning model reaching 83%. The result of this research is a web programming learning model computer-based learning tutorial that is effective for improving student learning outcomes in web programming courses.

Keywords: Instructional design, learning model, CBL, web programming, tutorial learning.

INTRODUCTION

The web programming course at the Mataram University of Technology is a practicum course that students must take for several study programs, namely Informatics Engineering, Software Engineering, and Information Systems. Prerequisite courses that must be taken before taking web programming courses are web design, algorithms and programming, and database systems. The expected competence of this course is that students can build web-based computer applications. Competence to develop or create software is a

cognitive competence level 6 (C6) or the highest competence in Bloom's taxonomy. The final competence of this course is also the learning achievement of the web programming course.

In the 2018/2019 and 2019/2020 academic years, students' final grades in web programming courses with grades A and B were 57%, and grades C, D, and E were 43%. This can be interpreted that the achievement of study success has not been optimal. The minimum standard of study success is 75% of students get an A or B grade from the total students who take web programming courses.

If you look at the results of preliminary research, based on a questionnaire filled out by 39 students, 33% of them are less able to understand and memorize programming syntax, and 25.6% of them answered that there was no mentor. Hence, they had to learn to be self-taught, and 20.5% had problems understanding logic and algorithm. This means that the main problem faced by students is the ability to memorize and understand web programming syntax, so this results in a lack of student ability to create web applications. In addition, the role of lecturers as mentors is considered insufficient if they only teach during lecture hours. They need a guide who has the function of a mentor who guides them in every practice.

In overcoming the problem of learning difficulties, based on the answers in the student survey, 48.7% chose the option to find the answer themselves on the internet through a search engine, and 43.6% chose the opportunity to ask people they considered more experts as lecturers or top-level students. This means that most of the students are trying to learn independently. But because they are looking for solutions to problems encountered in programming code, they have difficulties. They still need a learning system that can provide solutions to their challenges.

From the results of this survey, it is also known what media students like the most to learn web programming. From the students' answers collected, 74.4% chose to use video tutorial media to learn web programming. Only 15.4% used the lecture module given by the lecturer. This indicates that they find it easier to understand video tutorials than lecture modules. However, another problem faced is that so many video tutorials are available on the internet and not necessarily by the material discussed. They need a video tutorial model that fits their needs according to the learning objectives and is structured and easy to understand.

Web programming courses are practical courses that can only run with the help of computer devices. The content or learning content in web programming courses is in program code (syntax) directly created with a computer. In this course, the computer finds teaching materials or open learning media and tasks in carrying out learning content. To improve understanding in this course, visualization using tutorials or simulations can help students understand. Research has proven that computer-based learning (CBL) through visualization of computer programs can improve students' understanding of complex processes in learning programming, increase their involvement in education, and improve their achievement (Belsam, 2017, p. 377).

A computer-based tutorial learning model is needed with the complete text, images, or videos to overcome the obstacles described above. Video tutorials are expected to provide a learning experience for students as they learn face to face, directly guided by the lecturer. Based on the study results, online videos allow teachers to build their online social presence because they can more easily talk with emotions and communicate with students. Students will also create a sense of closeness with their teachers (Borup et al., 2015, p. 249)

Several previous studies that are relevant to computer-based learning and have relevance to this research include research with the title: 1) A Computer-Based Game that Promotes Mathematics Learning More than a Conventional Approach conducted in 2017 by Bruce M. McLaren, et al (McLaren et al., 2017, p. 36); 2) Learning Application of Multimedia-Based-Computer Network Using Computer Assisted Instruction Method conducted in 2018 Janner Simarmata et al (Simarmata et al., 2018, p. 344); 3) Visualizing Computer Programming in a Computer-based Simulated Environment conducted in 2017 by Dr. Belsam Attallah (Belsam, 2017, p. 369); 4) Using a visualization-based and progressive learning environment as a cognitive tool for learning computer programming conducted in 2019 by Jun Peng et. Al (Peng et al., 2019, p. 52); 5) Designing and Developing Video Lessons for Online Learning: A Seven-Principle Model conducted in 2019 by Chaohua Oud et al (Ou et al., 2019, p. 82); 6) A Web-based Approach for Teaching and Learning Programming Concepts at Middle School Level conducted in 2019 by Sania Bhatti et al (Bhatti S et al., 2019, p. 46); 7) The Effect Of Animation In Multimedia Computer-Based Learning And Learning Style To The Learning Results conducted in 2017 by Rusli and M. Rinarta (Rusli & Rinarta, 2017, p. 177).

From the results of relevant research that has been done previously, it can be seen that the topic of research on computer-based learning is still feasible and even more interesting to research. The development of learning models carried out with structured plans, and integrated with the use of information technology so that they can be accessed online from anywhere and anytime, are the latest research themes since the COVID-19 pandemic until the post-pandemic. Including in this case, the learning model in practical courses such as web programming, from the development to implementation aspects, needs to be researched.

Based on the results of the analysis of relevant research, the novelty of the study (state of the art) of the research to be carried out is compared with the existing one, namely the learning model developed, namely the web programming learning model based on computer-based learning tutorials. The models developed include conceptual models, procedural models, and physical models. The research method used is Research and Development (R&D) using the Dick & Carey instructional system design model combined with the Hannafin & Peck model. The learning model will be tested for feasibility and effectiveness before being implemented. The learning model developed has 4 (four) components: syntax, reaction principle, social system, and support system. The learning model will be applied to practicum courses, namely web programming practicum, through the Online Tutorial Learning Information System (OTLIS). In OTLIS, tutorial learning will be equipped with modules, video tutorials, and interactive exercises.

MODEL DEVELOPMENT CONCEPT

Learning is a lasting change in behavior or the capacity to behave in a certain way, resulting from practice or other experience forms (Schunk, 2012, p. 3). Another definition is that learning develops new knowledge, skills, or attitudes when interacting with information and the environment (Smaldino et al., 2014, p. 31). From the two definitions, it can be concluded that learning consists of changing behavior, learning to survive for a long time, and learning gained from interaction or experience. Learning is defined as a change in one's abilities, attitudes, beliefs, knowledge, and skills (Spector, 2012, p. 27). Learning is a series of events that affect students or learners so that changes in a behavior called learning outcomes are facilitated. According to Gagne in Suparman, learning is a set of events that affect students to facilitate learning (Suparman, 2014, p. 9). Learning activities are influenced by the theory of learning psychology, which is the basis for learning development. Five schools are considered significant and dominant in influencing learning practices: humanism, behaviorism, cognitivism, constructivism, and cybernetic (Suparman, 2014, p. 14).

The model reflects reality or a temporary substitute for something more specific and accurate. Models are beneficial in explaining things that may be difficult to explain. A model can describe similarities among several items; a model can illustrate a process, and a model may represent something (Brown, 2015, p. 8). The model represents the reality presented with a level of structure and regularity, and the model is usually an idealized and simplified view of reality (Richey R, Klein J, 2011, p. 8). A model represents the reality that describes the structure and order and displays the following four forms: verbal or conceptual description, steps of activities or procedures, physical or visual replicas, equations, or formulas (Suparman, 2014, p. 107).

Harre in Richey identifies two types of models: micromorphs and paramorphs. Micromorphs are physical, visual replicas, such as computer simulations or scale models of large objects. On the other hand, Paramorphs are symbolic models, usually using verbal descriptions. As Harre notes, the simplest example of a paramorph is a verbal analogy. More general paramorphs can be categorized as conceptual, procedural, and mathematical models (Richey R, Klein J, 2011, p. 8).

The learning model consists of 4 (four) components: syntax, social systems, reaction principles, and support systems. Each model has a different syntax or model structure. Syntax, namely the steps, phases, or sequence of learning activities. The social system, namely the various roles of teachers and students in each stage of learning activities. In different learning models, it will be possible for teachers and students to be diverse or varied. The principle of reaction, namely the teacher's reactions to the activities of students. The support system, namely all the facilities, materials, and tools needed to implement a learning model (Joyce et al., 2009, pp. 89–93). The Applied Research Laboratory at Penn State University developed the definition of Instructional Design or instructional design in 4 related sections (Brown, 2015, p. 6), namely instructional design as a process, instructional design as a discipline, instructional design as a science, and instructional design as a reality.

According to Smith and Ragan in Richey, Instructional Design is a systematic and reflective process of translating learning principles and instructions into plans for instructional materials, activities, information resources, and evaluations. According to Reigeluth in Richey, Instructional design is the process of deciding what instructional method is best to bring about the desired changes in student knowledge and skills for particular course content and a particular student population. Meanwhile, according to Gustafson, instructional design is a systematic process used to develop education and training programs consistently and reliably (Richey R, Klein J, 2011, p. 2). Some examples of instructional design models are the Dick and Carey model, the Morrison, Ross, Kemp (MRK) model, the ARCS model (Attention, Relevance, Confidence, Satisfaction), the ADDIE model, the ASSURE model, the Alan Jolliffe model, and the Hannafin and Peck model.

The Concept of the Developed Model

According to Wena in Lestari, computer-based learning is learning that uses computers as a tool. Computers are media servants or supporters in the learning process or commonly known as computer-assisted learning or Computer-Assisted Instruction (CAI) (Lestari, 2015, p. 703). Several CAI models are offered as learning media, namely tutorial models, drill and practice, simulations, and instructional games.

Computer-based learning (CBL) has several other terms that are sometimes debatable, such as computer-assisted instruction (CAI), Computer-Based Instruction (CBI), Computer Based Education (CBE), and computer-assisted learning (CAL). CAI refers to using computers to assist the learning process in delivering programmed material. In CAI, the role of the teacher is not eliminated, and the computer only acts as a teacher companion in providing material. CBI is programmed learning that uses a computer as the primary tool to communicate the material to students; the computer becomes a learning center where students play an active role in learning material with the leading media computer. Students learn independently without the help of a teacher. CBE is comprehensive. All computer applications in education can support educational activities such as processing data, recording attendance, storing personal data archives, etc. Applications on CBE are not used to support learning activities. CAL is learning that involves using computers to present learning materials, tutorials, and feedback on student learning progress (Diana, 2014, p. 108).

A computer-based learning tutorial model is a learning program used in the learning process by using software in the form of a computer program containing subject matter and practice questions. The purpose of computer-based tutorials is to provide “satisfaction” or complete understanding (mastery learning) to students regarding the material/subject matter they are learning. Through computer-based tutorials/learning, computers as tutors are oriented towards building student behavior through computers. In a simple tutorial learning patterns are: (1) the computer presents the material, (2) student responses, (3) student responses are evaluated by the computer with an orientation towards students in taking the next achievement, and (4) continue or repeat the previous stage (Syafmen & Theis, 2021, p. 161).

According to Rusman in Lestari, the tutorial provides direction, assistance, guidance, and motivation to students to learn effectively and efficiently (Lestari, 2015, p. 703). For practical learning, tutorials can be provided in the form of videos. By learning through video tutorials that are well designed, expertly validated, and feasible, the results obtained are that students’ conceptual understanding, skills, and creativity in developing computer programs increase significantly (Huda et al., 2018, p. 703)

CBL learning tutorials can be given online or offline. Online tutorials have three crucial points: autonomous but connected, flexible, and continuous learning (O’Hare, 2011, p. 10). In online learning, the presence of technology is significant. Furthermore, institutions that organize online learning need to ensure the availability of technology and how to use this technology to be effective for teaching and learning activities. In this way, the teacher takes on the role of a facilitator for students (Okur, 2011, p. 3920). Online learning, which is applied in e-learning, has also experienced rapid development. Currently, e-learning is moving towards student collaboration and the global distribution of learning content (Aparicio & Costa, 2013, p. 21)

In computer programming learning, good practice is required to facilitate conceptual understanding and encourage creativity in designing computer programs. Students’ problems or difficulties in learning computer programming are generally related to programming concepts, contexts or cases, programming

structures, and personal challenges students (Dijkstra et al., 1991, p. 143). Video tutorials can facilitate students' understanding of concepts, materials, and procedures for making programs in detail (Huda et al., 2018, p. 703).

In the curriculum recommended by the ACM (Association for Computing Machinery), an international computer science association that provides a standard curriculum for all computer fields, web programming is a compulsory subject in most courses in informatics and computers. In the informatics engineering curriculum, web programming is referred to as a software application development course on a platform, so it is included in platform-based development studies (ACM, 2013, p. 142). In the Information Systems or Information Management curriculum, web programming is in application development and programming studies, and web programming is a compulsory subject (ACM, 2020, p. 55). In the Software Engineering curriculum, web programming is included in distributed client-server programming (ACM, 2014, p. 74).

Learning web programming can also be done online with an appropriate learning model. Learning CBL through online video tutorials is a great way to master web programming. In addition, the use of online code editors can help improve students' skills (Elgamal et al., 2013, p. 46). Online learning provides various benefits to students, including (1) enabling schools or colleges to increase the quantity of learning despite the limited number of classes, (2) providing access to learning for students who cannot attend lessons due to an obstacle, and (3) increasing group performance of learners to engage better in a digital environment (Betts et al., 2009, p. 3). E-learning in computer programming learning is not enough with learning content but needs to be equipped with exercises, tests, questions and answers, and other helpful modules (Mustakerov & Borissova, 2017, p. 89).

MODEL DESIGN

A conceptual model is a general verbal description of a particular view of reality (Richey R, Klein J, 2011, pp. 8–9). In general, tutorial learning is assistance or academic guidance by tutors to students (tutees) to help smooth the independent learning process of citizens studying individually or in groups related to teaching materials. Each learning model, including the tutorial, has a syntax, social system, reaction principle, and support system. In online tutorial learning, teachers or lecturers prepare teaching materials, admins as system administrators, and students who take online tutorials. The concept of learning CBL online tutorials can be described as follows:

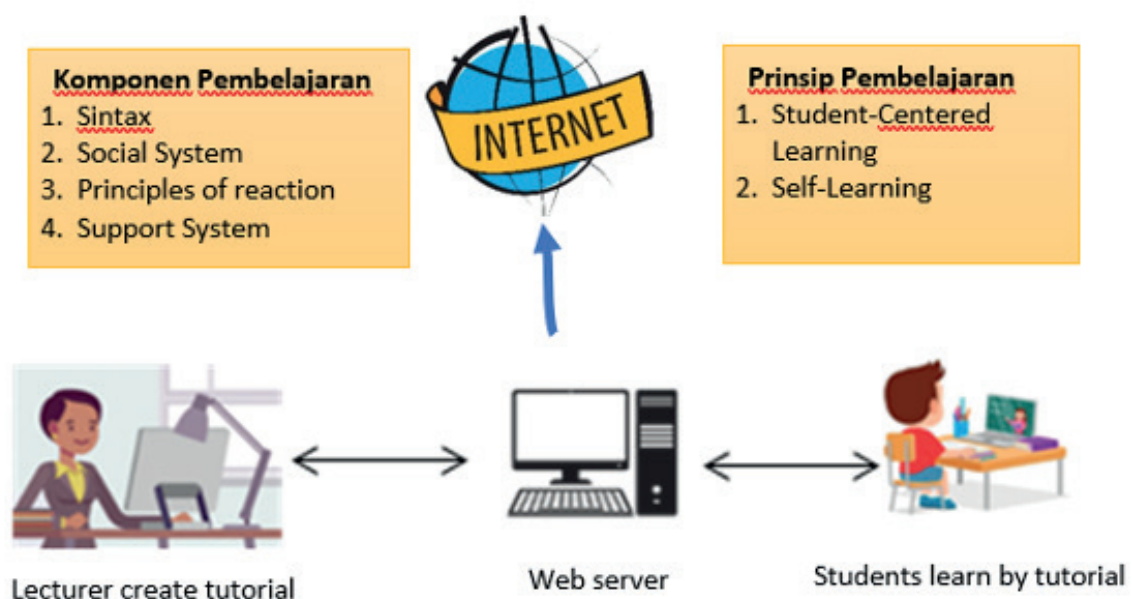


Figure 1. Conceptual model of learning CBL tutorial

The procedural model consists of a CBL tutorial learning model and a research design procedural model. The procedural model of CBL tutorial learning can be described as steps or tutorial learning syntax, which includes 6 (six) steps as shown in the following figure:

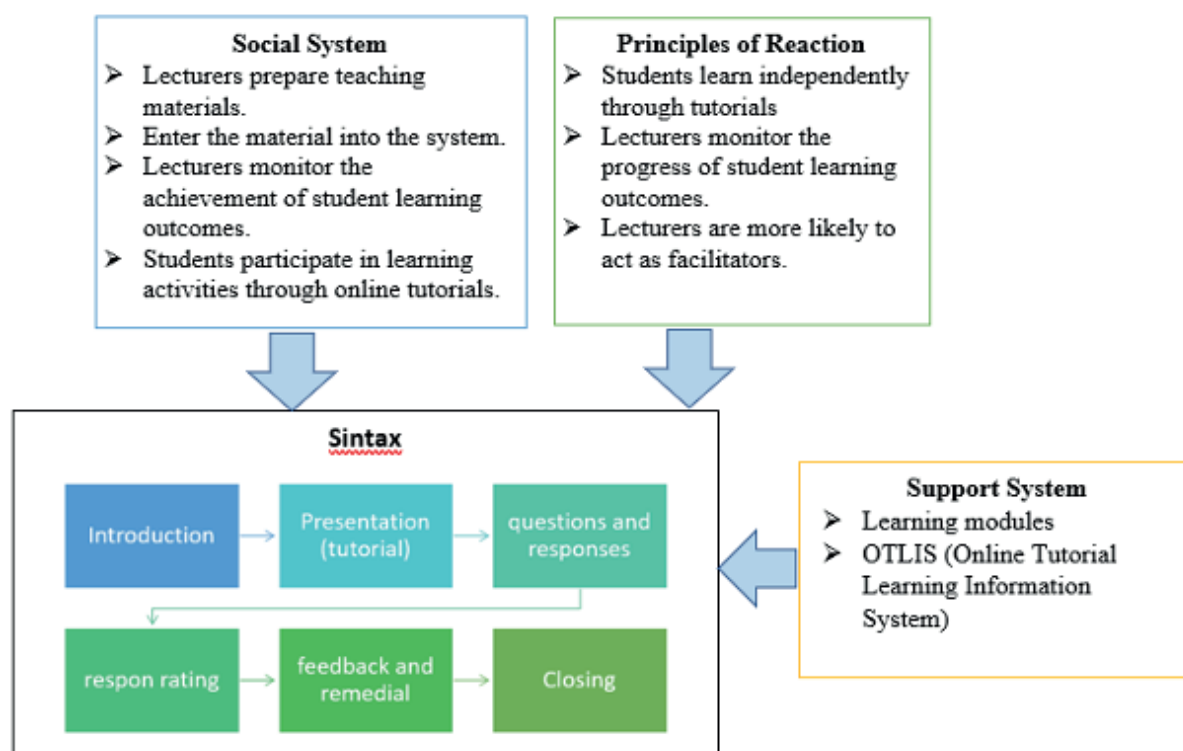


Figure 2. Procedural model of CBL tutorial learning

The tutorial learning steps consist of introduction, presentation of information, questions and responses, response assessment, feedback, and remedial and closing. 1. Introduction. At this introductory stage, the lecturer, through video tutorials, will convey learning outcomes, both subject learning outcomes (CPMK) and sub CPMK from the subject to be carried out. At this stage also, the lecturer gives instructions to students on how to follow the learning that will be carried out through online tutorials; 2) Presentation of information, at this stage, the lecturer, through online tutorials, delivers teaching materials in the form of video tutorials that students can follow. In learning web programming, the video tutorial will be displayed with presentation layouts, screen recordings for application demos, and lecturer videos explaining; 3) Questions and responses, is the stage where students practice and test their abilities, both through practice in the code panel and multiple-choice tests. The results of the exercises carried out can be known directly after each activity is completed; 4) Response assessment is the stage of assessing the effects of each exercise. If the calculation results of the computer machine show that the assessment results do not meet the standards, then students are asked to repeat the learning process; 5) Feedback and remedial, is a process of repeating learning if the results of the response assessment do not meet the traditional values set by the lecturer/ teacher; 6) Closing, is the final stage of the learning process in tutorial learning which includes conclusions and competencies of student achievement on learning outcomes.

The CBL tutorial learning model includes four main things, namely 1) Syntax, namely the steps or sequence of learning activities as shown in the procedural model picture above; 2) The social system, namely the various roles of lecturers and students in each phase of learning activities. The role of the lecturer in learning CBL tutorials is to prepare tutorial teaching materials and enter these materials into the online system. Lecturers also monitor the achievement of student learning outcomes online. The role of students is to participate in web programming learning activities through online tutorials; 3) The principle of reaction, namely the reactions of lecturers to student activities. In this tutorial, CBL learning, students learn independently

through tutorials provided by the lecturer and the system. Lecturers monitor the progress of student learning outcomes. Lecturers are more likely to act as facilitators; 4) The support system, namely all the facilities, materials, and tools needed to carry out the tutorial learning model. The materials and tools required are learning modules and the tutorial learning system in OTLIS (Online Tutorial Learning Information System). The system will provide learning tutorial videos code pads for exercises and practice questions.

RESEARCH APPROACH AND METHOD

The research method used is the research and development or R&D method. According to Borg and Gall, the most widely used R&D step in education is the systems approach model developed by Walter Dick and Lou Carey, as shown in the following figure (Borg & Gall, 1984, p. 570):

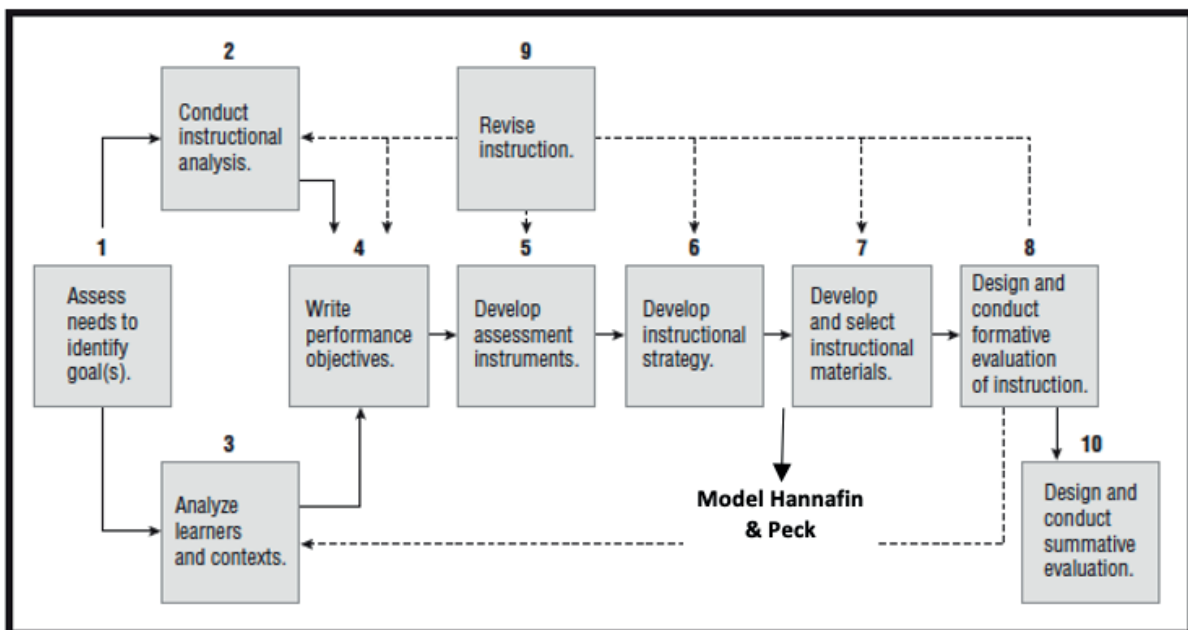


Figure 3. Research approach and method

The explanation of each stage is as follows assess needs to identify goal, conduct instructional analysis, analyze learners and contexts, write performance objectives, develop assessment instruments, develop instructional strategy, develop and select instructional materials, design and conduct formative evaluation of instruction, revise instruction and design and conduct summative evaluation.

MODEL DEVELOPMENT STEPS

Preliminary research was through a survey distributed to 50 students. The survey is filled out online via Google Form. The number of respondents who filled out the survey was 39 people. The plan for developing a web programming learning model based on computer-based learning tutorials is carried out through several stages according to the planned schedule. The settings in model development are adjusted to the settings in Dick & Carey's learning development design, namely as follows: identifying learning objectives, conducting learning analysis, analyzing students, setting specific learning objectives, developing benchmark test criteria, developing learning strategies, developing and selecting learning materials, developing and conducting formative evaluations, revising learning, and developing and executing the summative assessment.

The developing and selecting instructional materials stage, carried out according to the steps in the Hannafin & Peck learning design model, which consists of the stages of needs analysis, design, development, and

implementation. The learning materials and media developed to consist of learning modules for face-to-face learning and an Online Tutorial Learning Information System (OTLIS) as independent learning media.

Revision of the Dick & Carey learning design model can be done at every step of development. This means that the model revision does not need to wait until all the model development process has been completed. If errors or deficiencies are found during the model development process, then the model can be revised at that time. Meanwhile, expert validation and model evaluation was carried out through formative and summative assessments. Formative evaluation is carried out in the model development stage, while summative evaluation is carried out after completion. The formative assessment in research on developing a web programming learning model based on computer-based learning tutorials includes several stages, namely 1) One-to-one evaluation by experts. Evaluation with instructional design, materials, media, and language experts; 2) One-to-one evaluation by learners. This evaluation is carried out by selecting three students with high, medium, and low abilities and then evaluating one by one by each of these students; 3) Small group evaluation. Small groups consist of 8-20 students who represent the developed learning model; 4) Field trial. Field trials were conducted on 30 students who represented the users of the learning model and a teacher who could use the teacher's guide and the student's guide. The summative evaluation was carried out to test the effectiveness of the learning model. Summative evaluation is carried out using a new learning model in the learning process.

RESEARCH RESULT

The physical model generated from this research is a web programming learning model called the Online Tutorial Learning System (OTLIS) and an additional e-module. The learning content in OTLIS consists of learning tutorial videos that are structured according to the topic of web programming courses. Video tutorials for web programming courses produced as many as 14 videos for 14 meetings in 1 semester, apart from the midterm and final exams. The content of this tutorial is divided into 3 parts, namely the opening, presentation of the material and closing or conclusion. The video tutorial looks like the following image:

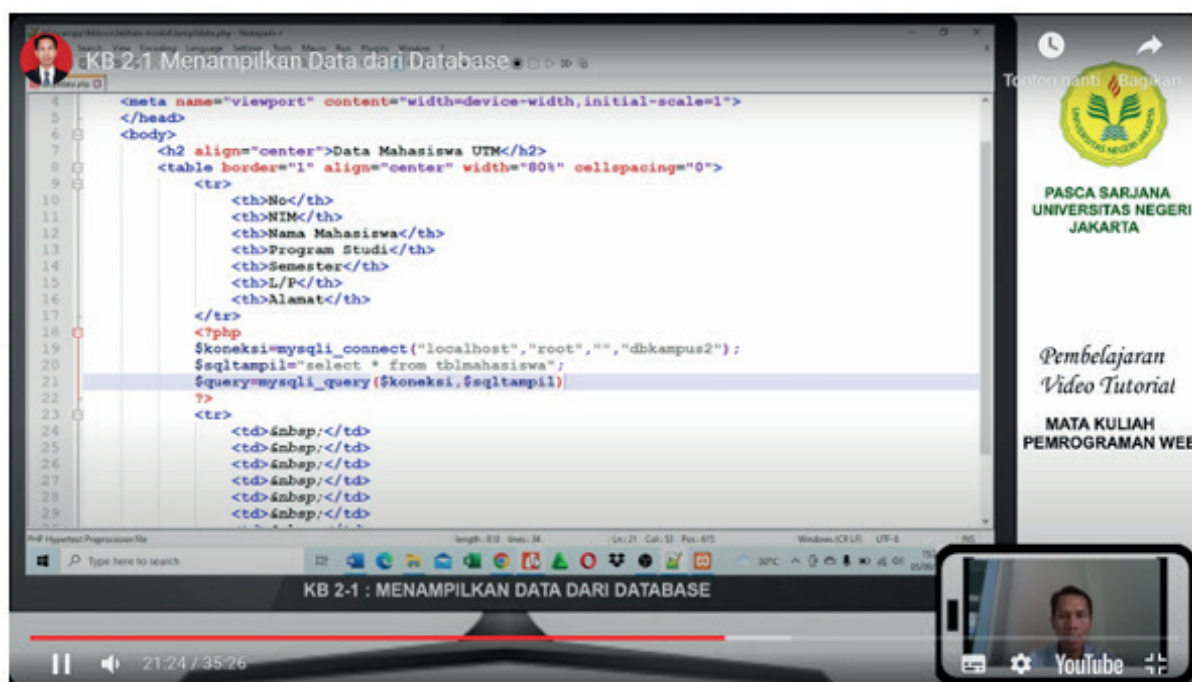


Figure 4. Video Tutorial Display

The topic of discussion in each video tutorial is adjusted to the lesson plan and learning outcomes of the course. The topics for each video tutorial are as shown in the table below:

Table 1. Discussion Topic Video Tutorials on Online Tutorial Learning Systems

Video Tutorial	Topic Discussion	Duration
Video Tutorial 1	Introduction to PHP and web server installation	00:25:00
Video Tutorial 2	Variables, constants, and operators	00:20:30
Video Tutorial 3	Logical structure: If Then Else	00:29:00
Video Tutorial 4	Loop structure	00:28:00
Video Tutorial 5	Implementing PHP functions	00:26:20
Video Tutorial 6	Date and time function	00:22:00
Video Tutorial 7	Form processing	00:28:00
Video Tutorial 8	PHP and MySQL Connection	00:27:00
Video Tutorial 9	Input data to MySQL table	00:29:00
Video Tutorial 10	Displaying data from a MySQL table	00:28:00
Video Tutorial 11	Updating data from a MySQL table	00:29:00
Video Tutorial 12	Deleting data from MySQL table	00:26:00
Video Tutorial 13	Register and login user	00:27:00
Video Tutorial 14	Responsive Templates	00:28:30

Evaluation of the feasibility of the tutorial learning model is carried out through one-to-one, small group, and field trial evaluations after instrument validation and expert testing have been carried out. The formative evaluation instrument is in accordance with the Dick & Carey instrument guidelines which consist of the dimensions of clarity of instruction, impact on learner, and feasibility of instruction (Dick et al., 2015, p. 289). In addition to these 4 dimensions, 2 dimensions are added, namely instructional goals and the technical dimensions of the model (Suparman, 2014, p. 145).

One-to-one evaluation involves three students representing students with high, medium, and low abilities. With a questionnaire with 43 questions in the form of answer choices “Yes” and “No,” the score of the answer “Yes” is 118 or 91.47%, which means that the learning model is suitable for use in the learning process. The small group evaluation involved ten randomly selected students and a lecturer. After testing and filling out a questionnaire with 43 questions, a total score of 408 or 94.88% was obtained. The field trial evaluation involved 30 students and a lecturer. After testing the use of learning models and filling out questionnaires of 43 questions, the results of the “Yes” answer scores are 1,187 or 92%. With the percentage of answers above 90% and the model revision stage has been carried out, it can be concluded that the learning model developed is feasible to be implemented.

Table 2. Formative Evaluation

Dimensions	Indicators	Number of questions	One to One		Small Group		Field Trial	
			Max score	Score	Max score	Score	Max score	Score
Clarity of instruction	Messages	7	21	19	70	67	210	192
	Links	6	18	17	60	59	180	171
	Procedures	5	15	14	50	47	150	144
Impact on learner	Attitudes	5	15	15	50	48	550	145
	Achievement	3	9	9	30	29	90	78
Feasibility of instruction	Learner	4	12	10	40	36	120	107
	Resources	3	9	9	30	27	90	82
Instructional goals	Instructional goals	2	6	6	20	20	60	55
Technical	Learning model	8	24	19	80	75	240	213
Total			43	118	43	408	43	1187

The assessment of the model's effectiveness is done by looking at the increase in the posttest value compared to the pretest value. At the time of the pretest, the average value of the students was 46.7, while at the time of the posttest, the students' scores increased by an average of 78.8. The increase in scores between pretest and posttest was 32.1 or 68.7%. In addition, an evaluation of the level of completeness of students was also carried out with the result that 85% of students completed based on indicators of scores greater than 75.

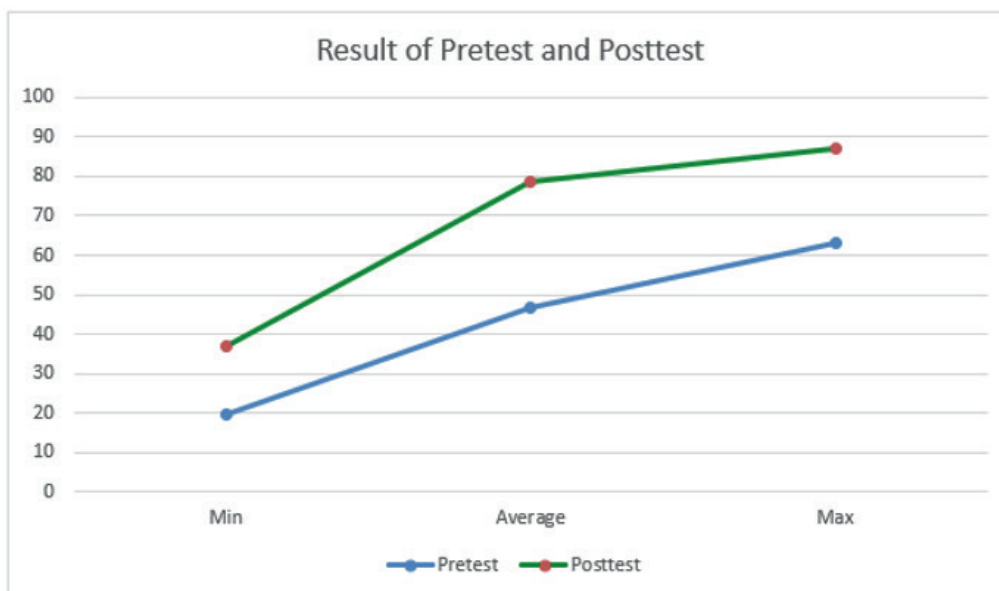


Figure 5. Result of Pretest and Posttest

The results of this study confirm the results of previous research, namely learning tutorials through videos can increase the effectiveness of learning, and at the same time answer suggestions for continuing research on the impact of online video tutorials (Putro & Govindaraju, 2021, p. 209). This research also proves the statement in previous research that the application of CAI as part of CBL makes students interested in studying computer practice material, besides that the material can be presented with various models such as tutorials, simulations, exercises and games (Simarmata et al., 2018, p. 344). This research is also in response to suggestions from other studies on how the use of video lessons by students affects their learning performance (Ou et al., 2019, p. 100). In this study, it was proven that the tutorial learning model with well-designed videos can improve learning outcomes for web programming courses.

CONCLUSION

Research on the development of a computer-based learning tutorial-based web programming learning model produces a feasible and effective tutorial learning model to be applied to web programming courses. This can be seen from the results of the feasibility test and the effectiveness of the model. The feasibility of the model is seen from the percentage of the results of the one-to-one evaluation, which is 91.47%, the small group evaluation is 94.88% and the field trial evaluation is 92%. The effectiveness test results can be seen from the increase in the post-test score with the pre-test reaching 68.7% and the percentage of the success rate of student studies who have carried out learning with the tutorial learning model reaching 83%. The conclusion is that web programming learning model computer-based learning tutorial is effective for improving student learning outcomes in web programming courses. This development research was only carried out in one course, namely web programming and was piloted at one university, namely Mataram University of Technology. For future research, it is hoped that it can proceed to the implementation stage on all learning topics in a wider scope, for example several universities.

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UNCOVERING CHALLENGES AND OPPORTUNITIES FOR IMPROVEMENTS OF DISTANCE LEARNING IN TEACHER EDUCATION: KOSOVO'S EXPERIENCE

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ABSTRACT

This study aims to investigate the pre-service teachers' experiences with online teaching, but also to uncover the challenges and opportunities for improving the distance education in the future. A qualitative research approach using phenomenology is adapted for the study. The participants were 18 pre-service teachers studying at the different programs of the University of Prishtina's Faculty of Education. The interviews were conducted online. The transcripts of interviews were analyzed using the interpretative phenomenological analysis. Five themes were derived from the analysis of the interview data: quality of teaching activities, positive aspects of online teaching, limitations, factors affecting online teaching, and recommendations to improve online teaching and learning in the future. This study proved the importance of pre-service teachers' interest and motivation, but also the faculty lecturers' professional preparedness for online teaching. Findings revealed the inability to relate theory to practice during online teaching as a lack of interaction between the university and the schools. This study is expected to serve as a guide for the expectations of pre-service teachers towards the improvement of distance education in the future.

Keywords: Challenges, distance education, online learning, pre-service teacher, Kosovo.

INTRODUCTION

Kosovo, like many other countries worldwide, have experienced a rapid rate of change in all spheres due to the Covid-19. The pandemic situation has had a major impact on individuals in different ways, including also the teacher education, in particular. Consequently, according to Carrillo & Flores (2020) and Flores & Gago (2020), teacher preparation programs (TPP) start the shift to distance teaching, by providing new models of teaching environments to prepare future teachers. But this process has caused certain challenges that the higher education institutions had to overcome (Carrillo & Flores, 2020). Hodges et al. (2020, p.1) emphasize that "well-planned online learning experiences are meaningfully different from courses offered online in response to a crisis or disaster". The concept of Emergency Remote Teaching (ERT) has been offered as a formally specific term for the forms of teaching delivery in a pressing situation as it was the pandemic. This term has been described as temporary use of remote teaching solutions that will return to that model once the crisis or emergency has ended (Hodges et al., 2020). The prompt closure of educational institutions led to online remote teaching and learning where lecturers were expected to use different technological supplies to ensure the continuity of learning for the pre-service teachers (Alan et al., 2020; Carrillo & Flores, 2020; Flores & Gago, 2020; Hodges et al., 2020; Tarman, 2020).

According to Barbour et al. (2020), even when the pandemic threat will end, higher education institutions should not leave remote teaching and return only to class practices. Singh et al. (2021) suggest that higher education institutions across the world should examine different instructional approaches including online, hybrid, and blended learning methods. Considering that there are different opinions on the advantages and disadvantages of distance education in higher education and the need to use different methods to make lessons more efficient in distance education is increasing, researchers should conduct more studies with pre-

service teachers and faculty lecturers from different departments to understand their experiences with distance education and their suggestions for further improvement (Alan et al., 2020; Batmang et al., 2021; Naah, 2020; Ogbonnaya et al., 2020; Ozudogru, G., 2021). In this process, analyzing distance education provided by TPPs will provide new insight into the mechanisms of establishing the effectiveness and sustainability of the distance teacher education program.

LITERATURE REVIEW

Coping with Online Learning during the Pandemic

The individual's physical, mental, emotional, and social well-being has been affected due to the pandemic situation. Mainly, the emotional responses during pandemics were significantly influenced by specific pandemic-related behavior, with a generally low energy level and dominance of negative feelings (Camacho-Zuniga et al., 2021; Schelhorn et al., 2022). Despite this, the sudden switch to online classes has also been challenging for students and teachers educators. According to Sahu (2020), the situation with pandemics has created a sense of anxiety and panic among students and teachers about what might happen in the future. Students were expected to locate a reliable Wi-Fi connection and find an appropriate space that was private and quiet, while lecturers had to find best practices to keep the class engaged and interested to participate. According to Alan et al. (2020), significant efforts were made to adapt to compulsory distance education practices started with the pandemics, although in some countries there was already a distance education infrastructure. The very fast and dramatic migration of schools to online learning due to the COVID-19 pandemic has caused concerns at local and international levels regarding the quality of education and students' willingness to cope with the new arising situation (Al Abiky, 2021; Dorsah, 2021). This difficult time with pandemic has enabled the educators, teachers and students to learn how to overcome the array of possible challenges and obstacles (Al Abiky, 2021). Wang et al. (2022, p.1) emphasize that "very low attention was paid to whether students were cognitively and emotionally ready to learn effectively in a virtual environment". A study conducted by Dorsah (2021) investigated the pre-service pre-service teachers' readiness for distance learning showed that readiness for online learning is high. Students showed a lower readiness in dimensions of learner control, computer/internet self-efficacy, and online communication self-efficacy. Yagan (2021) as cited in Basaran & Yalman (2022) found that pre-service teachers' attitudes towards distance education courses during the pandemic were at a low level. This study revealed that students preferred face-to-face education (traditional) rather than online education methods. Al Abiky (2021), Adnan & Anwar (2020), Crawford et al. (2020) and Khlaif et al. (2021), all stated that pre-service teachers were not familiar with online learning therefore they were shocked and had a lot of stress, but it appears that they adapted quickly to the new situation (Almendingen et al., 2021). The situation with the Covid-19 pandemic has greatly increased both lecturers' and pre-service teachers' awareness of the importance of equity in education, and how this can be addressed in the provision of teacher education (Nasri et al., 2020; Rasmitadila et al., 2020). Therefore, according to Tarman (2020), understanding the factors that affect students' reactions to online learning during a pandemic should be seen as advices for lecturers to be innovative in learning strategies, but also for policymakers to offer available learning resources in future remote circumstances.

Remote Teaching Experiences as Indicators to Improve Distance Education

According to Santana et al. (2018), the costs of distance education can be lower than of traditional education, but if it will be correlated with the quality of the teaching provided, than the cost per student can be the same or even higher. Furthermore, these researchers state that a poor-quality program of online education can produce a high dropout rate, due to the smaller number of students present and active in the distance education programs. Sakka (2022) stated that the rapid transition to the online system due to pandemic conditions found both students and universities with a lack of readiness on using these systems. Furthermore, this situation has reflected the lack of experience with distance learning in higher education institutions. A study by Almendingen et al. (2021) found that most of the surveyed pre-service teachers felt that learning outcomes would be harder to achieve due to the sudden shift to online education. These study findings showed that the difficulties that students faced during online teaching were a lack of social

relationships, living situations, poor internet connectivity, and a lack of motivation and effort. Students suggested that the learning outcomes in future online courses could be improved with pre-recorded and streamed lectures, frequent virtual meetings and student response systems. In a study by Naah (2020), the preservice teachers have ranked higher the lecturers who use trial questions and quizzes for assessment. Furthermore, they appreciated the teacher-learner rapport and interactions as cordial, collaborative and done in a form of discussion. According to Alan et al. (2020), the lack of students' planning and self-study skills can prevent their desired efficiency in distance education. The possibility of developing students' independent learning skills and responsibility are considered as advantages of distance education, while a disadvantage is considered the fact that this form of learning has low assessment reliability and can't provide the principle of eligibility for the student (Alan et al., 2020). A study by Ogbonnaya et al. (2020) found that the flexibility of online learning expanded the students' motivation to learn and enabled them to communicate and cooperate constructively with their fellow and lecturers. However, the difficulties that students encountered were slow internet connection, lack of appropriate technology, inability for time management, and family interruptions. Another study by Balbay & Erkan (2021) found that students benefited from online teaching by being able to better regulate their own learning process using the recorded lectures and online materials, but also by receiving regular feedback from instructors about their progress. Hojeij & Baroudi (2021) found that mentor teachers have a significant role in the effectiveness of students' virtual practicum placement, particularly in developing preservice teachers' teaching practices, classroom management skills, and the use of online resources. The lack of teachers' technical skills can negatively affect online learning (Alhumaid, 2019). Gonzalez (2012) and Basaran & Yalman (2022) found that pre-service teachers with little or no computer experience may fear the idea of using computers as part of their teaching practices and this may form strong negative attitudes towards using computers. Similar findings are presented in a study by Razkane et al. (2022), which revealed that pre-service teachers showed a negative attitude towards the COVID-19 online teaching experience. Pre-service teachers reported technical and logistical barriers, which have impacted the good delivery of lessons. Furthermore, pre-service teachers also faced other problems such as inability to establish communication with friends, inability to focus, becoming very passive, unfamiliar with the system (Ozudogru, G., 2021). A study by Sakka (2022) showed that students who prefer more face-to-face instruction reported higher levels of cognitive engagement, learning, and comprehension. But, according to Lomba-Portela et al. (2022), the main challenge in implementing the educational reforms is the resistance of teachers to change. Furthermore, according to Jarab et al. (2022), this resistance to technology may be caused by lack of faculty members technology familiarity. The study conducted by Jarab et al. (2022) found that faculties who received training for online teaching and those who have attended courses as a trainee were more satisfied with distance education. Fallah et al. (2021, p.874) suggested that "there should be some training courses for the teachers to provide them with a realistic view of the environment of online classes and what they should expect". Consequently, more guidance and training on online teaching for lecturers is much needed.

PURPOSE OF THE STUDY

There has been an increase in research regarding the pre-service teachers' experiences with distance learning due to the sudden shift to distance education. Although there is a growing body of research (e.g. Alvarez, 2020; Ogbonnaya et al., 2020, **Ozudogru, F., 2021; Ozudogru, G., 2021; Rahiem, 2020; Razkane et al., 2022; Saribas & Cetinkaya, 2021**) in the literature focusing on pre-service teachers' experiences with distance learning, none of the studies was found in Kosovar context. However, as the online teaching practices were not common in many countries, particularly in Kosovo, for TPPs and pre-service teachers this was a very unique situation. Thus, this study has been undertaken to not only share pre-service teachers' experiences and challenges, but also to provide valuable recommendations that could be adopted by TPPs in current and future situations with distance education. The challenges and concerns described by pre-service teachers represent the on-year long period of online learning and provide their perspective on this period of time in higher education. This study findings are expected to serve as a guide for expectations of pre-service teachers towards the improvement of the online teaching and learning in the future, but also to encourage lecturers to reconsider new teaching activities and forms of assessment to more effectively post-COVID teacher training.

This study is guided by these research questions:

1. What are pre-service teachers' views on the quality of teaching activities during online teaching?
2. What are pre-service teachers' views on the positive and negative effects of online teaching?
3. What are pre-service teachers' recommendations to improve distance education in the future?

METHOD

General Background

On March 11, 2020, the University of Prishtina "Hasan Prishtina" stopped the teaching process, as a protective measure against the coronavirus. Each student is provided with a personalized Google "G-Suite for Education" e-mail, so that they can continue learning online, during the time taken to avoid physical contact. From March 2020 until June 2021, all courses at the Faculty of Education of the University of Prishtina are conducted online. The Google platforms such as Google Meet and Google Classroom are used to conduct the lectures. The courses were conducted with the same teaching schedules including lectures and exercises which lasted from one and a half hours, to more than two hours. The Kosovar faculty lecturers start the planning of first-time online teaching, while according to official statistics regarding online teaching at the Faculty of Education (University of Prishtina, 2022) 26.245 lectures are conducted online from 79 professors, while the average enrollment of online courses was 27 students. For academic staff and pre-service teachers, this was the first time doing education online.

Research Design

A qualitative research approach using phenomenology is adapted for the study. The key point for the researcher in a phenomenological study is to try to understand how people experienced a specific phenomenon from each person's own perspective, by entering the inner world of each participant (Johnson & Christensen, 2014). The phenomenon in this research is Online Learning due to the Covid-19 crisis.

Participants

The participants were 18 pre-service teachers studying at the bachelor programs of the University of Prishtina's Faculty of Education. Initially, 25 pre-service teachers were selected randomly from the faculty data and they were invited through email to contribute to this study by informing them as well about the purpose of the research. The pre-service teachers that accepted to participate voluntarily in this research received the interview questions. Convenience sampling was used in the research. Data about the interviewed pre-service teachers are presented in Table 1. Sixteen (16) participants were female, while two (2) were male. The age of the interview participants ranged from 21 to 26 years old.

Table 1. Participants' Background

Participants	Gender	Age	Study program	Year of study
P1	Female	21 years old	Early Childhood	3 rd year
P2	Female	21 years old	Early Childhood	3 rd year
P3	Female	22 years old	Elementary	4 th year
P4	Female	24 years old	Pedagogy	4 th year
P5	Male	21 years old	Pedagogy	3 rd year
P6	Female	22 years old	Elementary	4 th year
P7	Female	23 years old	Elementary	4 th year
P8	Female	26 years old	Elementary	4 th year
P9	Female	23 years old	Elementary	4 th year
P10	Male	21 years old	Elementary	3 rd year
P11	Female	23 years old	Pedagogy	3 rd year
P12	Female	21 years old	Elementary	4 th year
P13	Female	22 years old	Elementary	4 th year
P14	Female	22 years old	Pedagogy	4 th year
P15	Female	21 years old	Pedagogy	3 rd year
P16	Female	22 years old	Early Childhood	4 th year
P17	Female	23 years old	Elementary	4 th year
P18	Female	23 years old	Elementary	4 th year

Ten (10) interviewed pre-service teachers were studying at the Elementary Education Program, five (5) students were studying at the Pedagogy Program and three of interviewed students were at the Early Childhood Education Program. Twelve (12) of them were in the fourth year of study, while six (6) pre-service teachers were in the third year of study. The researcher has chosen to interview the 3rd and 4th-year pre-service teachers of three bachelor programs of the Faculty of Education at the University of Prishtina because they had previous learning experiences in face-to-face courses, and may offer a better comparison between these two modes of teaching and learning.

Data Collection and Analysis

The interviews were conducted online. Participants signed the consent form before answering the questions. Participants were informed that the interview is confidential and will only be used for research issues with the guarantee that their identity will not be revealed in any circumstance. In order to protect the privacy of the participants, codes were used (ST1, ST2). In the process of forming interview questions, the relevant literature was used but also the opinion of an expert working in the field of distance education was taken. From 10 interview questions, the questions were rearranged to 7 questions that seemed more suitable for this research. Seven questions were sent via email to 18 participants. Some of the questions that were posed to the participants are: What is your perception of the quality of teaching and learning during the online courses? What is your perception of the methods and techniques used by lecturers? What are the factors affecting the quality of distance learning? How do you think faculty can improve the quality of online education?

The detailed examination of pre-service teachers' personal lived experiences is conducted through interpretative phenomenological analysis (IPA). This qualitative approach aims to examine how people make sense of their major life experiences (Smith et al., 2009). The data analysis is conducted following the steps described by Creswell (2013). The steps are presented in Figure 1.

Data analysis consisted of preparation and organizing of data in transcripts. The data were reduced into themes through a careful process of coding and condensing the coding. The resulting codes were organized into sub-themes, which were then collected in main themes. The codes, sub-themes and themes are represented in tables.

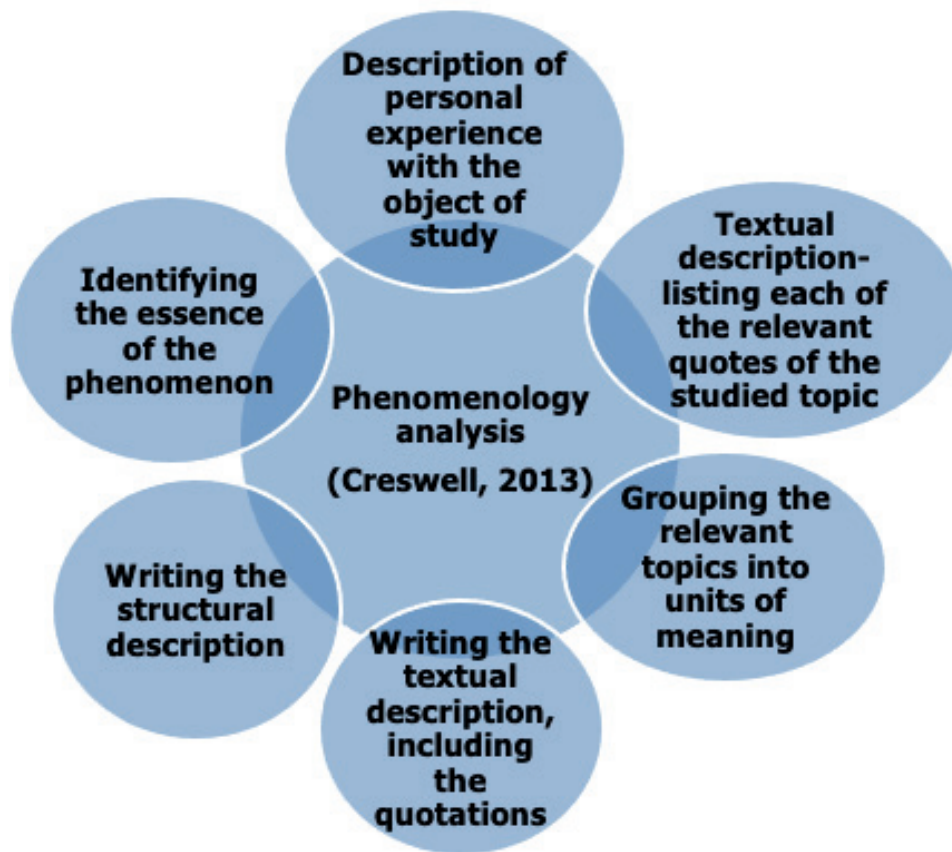


Figure 1. Phenomenology analysis (Creswell, 2013)

The Scale

The validity and reliability of this qualitative study were established by using the technique of triangulation and respondent validation. To ensure that the research is conducted from multiple perspectives, the same data were analyzed by two faculty colleagues. Constant checking of codings and inter-coder reliability was applied. Furthermore, the initial results were shared with the participants in order to test their accuracy.

FINDINGS

Five themes were derived from the analysis of the interview data. The codes and themes resulting from the interviews are presented in a tabular format, whereas the description of the results is done by providing direct quotes taken from the interviews related to the themes that were identified during the data analysis process. The themes identified and the interpretation of findings are strongly linked to the data themselves and to the current literature.

Quality of Teaching Activities

The literature above clearly states that the rapid digital transformation of educational institutions worldwide due to pandemics has required the redesigning of course delivery and objectives, redesigning the style of assessment, and also an organizational change realized by means of digital technologies. Lecturers and pre-service teachers were forced to rapidly adapt to distance education. According to interviewed participants (see Table 2) online learning has its own effects of positives and negatives.

Table 2. Theme 1: Quality of teaching activities

Codes	Sub-themes	Themes
Lesson were good and clear; Lesson were well-organized; Lessons were substantive; Professors attempted to create a very attractive and engaging learning environment; Course syllabus is provided;	Positive qualities	Quality of teaching activities
Not very effective; Lesson were mainly presentations by professors; Lessons were boring; Lesson were complicated, hard to understand; Not enough interactions; Realization of the lessons goals- on a superficial level; Hard to concretize teaching; Presentation slides filled with theory; no creativity; Course syllabus is not provided; Not at the same level as face-to-face lessons;	Negative qualities	

For some pre-service teachers, lessons were very clear, substantive, and well-organized. Participants stated that they value the professors' attempt to create an attractive and engaging learning environment. *"Based on the syllabi presented at the beginning of the semester and considering the pandemic situation, I can say that the goals of the lectures have been achieved well (ST 3); "Some professors really tried hard to concretize the teaching with all the tools at their disposal" (ST10).* More interviewed pre-service teachers were opting for face-to-face classes, as they consider the online modality ineffective, restrictive and complicated. Students stated that the lesson was mainly the presentations by lecturers and that they were getting bored as the lack of interactions. *"Not all of us had the opportunity to express ourselves; there were cases when only two students discussed and the others did not have the floor at all" (ST 1); "During the online lectures, the principal "professor-lecturer, student-listener" was followed. There was no interactivity at all" (ST 3).* The results reveal that participants were unable to establish communication with the lecturers and colleagues, but also they lacked the classroom atmosphere. Pre-service teachers and lecturers were caught up being unaccustomed to the system and had to participate with limited opportunities. Results suggest creating an approach that is inclusive and sensitive to pre-service teachers' needs to socialize and remain active during online learning.

Positive Effects of Online Teaching

Despite the fact that interviewed participants were more opting for face-to-face classes, they consider that online teaching has positive effects on their learning outcomes (see Table 3). Mainly, the positive effects of online teaching were related to their personal and professional development, but also to pedagogical strategies and practices those professors used during online classes. Participants stated that online learning enables them to develop their research skills, critical thinking, and self-discipline. They emphasize that online learning has provided flexibility, comfort, and cost savings. They mostly value the possibility to get familiar with different technologies and platforms that they can use for educational purposes in the teaching profession. *"The best thing about this entire online academic year has been the familiarity with the use of technology and various digital applications like Google Meet and Google Classroom" (ST 3); We are ready to face the same situations in the future; we have gained experience by being introduced to different digital platforms" (ST 8).* Participants stated that online teaching enabled the professors to the usage of different pedagogical methods such as a monologue, dialogue, illustration, demonstration, pictures, drawings, videos, etc. *"Online classes influenced the fact that the teacher must adapt to different situations in order to deliver effective teaching at any time" (ST 7).* Consistently with the literature, the interview results showed that distance learning gives to pre-service teachers and professors more learning options and practical ways to offer and receive

an education. Some of the key advantages of distance education might be the opportunity for students to take and develop some of their transferable skills such as independent working, adaptability, computer and technical skills, digital communication, research skills, and time management.

Table 3. Theme 2: Positive effects of online teaching

Codes	Sub-themes	Themes
Ability to search; Develop research skills; Development of critical thinking; Comfort; Peer-learning; Self-discipline;	Student-related	Positive effects of online teaching
Acquisition of technological knowledge; Familiarity with different technologies and platforms (Google Meet and Google Classroom, Zoom, Edmodo); Internet access; The opportunity to offer the latest updates in the field of teaching ; E-learning tools; Recording the lesson;	Technology-related	
Modification of techniques by professors; Usage of different methods (monologue, the dialogue, illustration, demonstration, pictures, drawings, videos); Urging conversation, brainstorming, group work; Opportunity to show professionalism	Pedagogical	
Teaching in different conditions; Online lectures as adaption to different situations for effective teaching at any time; Time and cost savings; Flexibility;	Condition- related	

Limitations of Online Teaching and Learning

According to the findings, there are several challenges associated with online teaching and learning as the physical separation is involved (see Table 4). The speed with which the higher education institutions moved to online instruction was staggering, whereas the faculties support teams were unable to help all faculty members to learn how to implement online learning. As the literature above explains, the need to create strategies to attract students to be focused and engaged is necessary for the effectiveness of online classes. Interviewed pre-service teachers think that most students lacks awareness of the importance of online learning. According to them, this may be one of the reasons why they were uninterested and unengaged in online classes. They emphasize that lectures could be more interesting and attractive if students will turn on their cameras and engage in discussion. Furthermore, they state that professors lacked any strategic plan on how to encourage them to do so. Pre-service teachers emphasize that the assessment was unrealistic and that even they were overloaded with tasks, their assignments were not considered in the final assessment. *“I think that assessment has been the biggest problem that professors may have encountered because observing the students’ work has been more challenging and difficult” (ST 4).* Among others, participants say that the practical part is completely avoided in online classes. According to them, online lectures lacked attractiveness and simpler, clearer content. *“Some professors used only the monologue method, while only some dialogue method, out of six professors only one used different tests and quizzes. Out of twelve lectures, 5-6 were held” (ST 2).* *“Many students have lost the practical part of certain subjects” (ST 8).*

Although negative pre-service teachers' reactions to assessment have been noted, the results provide important information about the quality of pre-service teachers' remote learning experiences and evaluation. Consistently with the literature, the results suggest the need to explore more the assessment strategies that engage learners and authentically evaluate their learning experiences.

Table 4. Theme 3: Limitations of online teaching and learning

Codes	Sub-themes	Themes
Lack of student engagement; Lack of self-discipline; Lack of opportunities to express; Absence of students in lectures (name appeared); The students did not open the cameras; Lack of motivation and interest; Students' low awareness of the importance of online learning; Aggravated emotional state;	Student-related	Limitations of online teaching and learning
Lack of literature; Unrealistic assessment; Lack of usage of innovative techniques (quizzes, tests, etc.) Difficulties to involve everyone; Overload with tasks; Lack of feedback; Assignments are not considered, only the exam Lack of attractiveness and simpler and clearer content; Assessment was the biggest challenge for teachers; Older professors encountered a lack of knowledge in the use of technology;	Pedagogical issues	
Very low interactivity; Lack of possibility of checking written assignments; Lack of group works; Inability to see students physically; Lack of presence and face-to-face verification of student work; Monotony;	Social- related	
Half the lessons are not held; The practical part is completely avoided; Lack of content that prepares them for the profession; Absence of students due to lack of electricity, non-functioning of technology The use of new techniques was limited	Organizational aspects	

Factors Affecting Online Teaching and Learning

Although online resources offer many benefits for pre-service teachers, the effectiveness of online teaching and learning are affected by many factors. For most of the interviewed pre-service teachers, the very important factors that can affect the quality of online teaching are related to student interest and commitment, lecturer preparedness, digital skills, but also to organizational issues (see Table 5). Pre-service teachers state that online learning could be more effective if students would be more demanding, dedicated, and concentrated during the lessons. Also, they suggest that students should find the proper environment to listen, by eliminating the elements that cause students' distraction. *"I think that a laptop is a tool that provides better opportunities for attending lectures due to the larger screen area that provides better access to what is presented"* (ST 6); *"Stable internet is very important, even it won't depend on us"* (ST 12). Most of the interviewed pre-service

teachers say that the commitment and work of the students will not be missing if the lecturers show a higher commitment and better management of the learning process. They state that the lecturer should be well prepared for the online classes, have creativity and ingenuity to create a satisfying environment for students, be fair and objective in assessment, and use techniques that engage more students. *“One factor that affects the quality of education and is related to lecturers is the involvement of students in research work” (ST 3); “Professors need good digital skills in order to ensure an effective teaching” (ST 16).* Pre-service teachers also emphasize the importance of incorporating school teachers in online lectures to ensure theory-practice linkages in teacher education. All of these factors can influence the effectiveness of distance and online learning experiences and can serve to inform learning experience design and program development and implementation. The results suggest the policy formation and implementation that focuses on designing and conducting online lectures in TPP.

Table 5. Theme 4: Factors affecting online teaching and learning

Codes	Sub-themes	Themes
Lack of technological equipment; Bigger commitment; Student interest; Students economic status; Be more demanding; Student dedication and hard work; Maximum concentration during lectures; The proper environment to listen; Eliminating the elements that cause students' distraction ;	Student-related	Factors affecting online teaching and learning
Preparedness for lectures; Having a lecture plan; Being fair and objective in assessment; Use more creative techniques; Engage more students; To appreciate students commitments; Involving students in research work; Have the creativity and ingenuity to create a satisfying environment for students; Good knowledge of the use of technology; Creativity;	Lecturer-related	
Stable internet; Incorporating school teachers in lectures; Cooperation school-faculty during online teaching; Support system from faculty;	Organizational issues	

Recommendations to Improve Online Teaching and Learning

The recommendations suggested by interviewed pre-service teachers are course-related and faculty-related (see Table 6). They emphasize that guidelines for online teaching and setting the expectations from an online classroom are very necessary. Also, pre-service teachers suggest that professors should provide more projects related to aspects of practice or real-life and encourage the participants to create video lessons. *“Professors should find creative elements so all participants can be active in the discussion and find forms of contemporary online learning work which would also raise the level of quality in online teaching” (ST 15).* Interviewed pre-service teachers recommend that TPP's should invite school teachers in online lectures, but also incorporate mentor teachers in online mentoring. Furthermore, they emphasize that technology and infrastructure should be strengthened and that additional training should be provided for academic

staff. “Some online classes should be provided in cooperation with schools and teachers” (ST 7); “Online teaching demands new pedagogical and digital skills among faculty staff, therefore training should be provided to them” (ST 11). The results showed the necessity of building the online learning system with a friendly and easy-to-use interface of digital tools/technologies and applications such as e-learning platforms and social networking. Furthermore, an important aspect of quality in online learning is the effectiveness of educational experiences that TPPs provide. Compilation of guidelines for online learning and implementation of digital mentoring contributes to pre-service teachers’ and lecturers’ engagement, motivation, and performance.

Table 6. Theme 5: Recommendations to improve online teaching and learning

Codes	Sub-themes	Themes
Creating an effective online syllabuses; Lecturer should provide the syllabuses; Clear guidelines on students’ assessment; Creating inclusive online classrooms; Setting the clear expectations from students; More projects related to aspects of practice or real life; More discussions; Involvement of all students; Students should be required to open the cameras; Participants to be active in the discussion; Involvement of students to create video lessons; Continues use of technology;	Course-related	Recommendations to improve online teaching and learning
Learning new educational technologies; Technology and infrastructure should be strengthened; Additional training for lecturer; Find creative elements of linking practice and theory; Contemporary forms of online learning; Better cooperation school-faculty; Inviting school teachers in online lectures; Incorporating mentor teachers in online mentoring; Compiling a guide for distance teaching and learning; Compiling a guide for online mentoring;	Faculty-related	

DISCUSSIONS AND CONCLUSION

To sum up, the results have identified strengths and gaps in delivering online teaching, opportunity areas for improvements in the delivery of instruction, and also pinpointed pre-service teachers’ needs for more qualitative distance learning. This study proved the importance of pre-service teachers’ interest and motivation, but also the lecturers’ professional preparedness for online teaching. It is clear that the unplanned and fast move to online learning, with no training and preparation, has resulted in poor pre-service teachers’ experiences. According to Jin (2022) and Yang & Cornelius (2004), most of the problems that emerge from distance education are related to quality. These researchers state that there is a pressing need for standards for establishing the quality of online education instructions. Furthermore, according to Brown et al. (2015), online teaching and learning can be done with high quality if teachers make the effort to establish close working relationships with their students. Furthermore, knowing that not all students will be active contributors to online activities, the most important concern of professors should be how to maximize their participation. Among others, preparing academic staff and pre-service teachers to use ICT can enable to attract and enrich the student learning experiences (Grove, 2008; Kim, 2020).

Findings revealed the inability to relate theory to practice as a lack of lecturers' technological skills for effective online teaching and a lack of interaction between the TPPs and the schools. Pre-service teachers experienced motivational, pedagogical, technological, and organizational challenges. Despite the fact that online programs have significant positive effects and offer extraordinary accessibility to quality education, there are some limitations that can cause potential problems to the achievement of any online lecture (Sharma, 2020). According to Deveci (2015) and Sheffield et al. (2015, p.1), it's very important for pre-service teachers to understand the value of the online component for professionalism in teaching, but also to "increase their awareness, competence, and confidence regarding teaching online". According to Kearns (2012), the major challenges and affordances exist in assessing student learning in online environments. Furthermore, the study revealed the low efficacy of institutional communications and support. Even the pre-service teachers feel more comfortable with remote instruction, they prefer more face-to-face education. The faculty members had little or no opportunity to amend the course structure or materials before the online learning launched due to the sudden move to distance education (Das & Meredith, 2021). According to the UNESCO report on education at the time of Covid-19 (2020, p.9), "most teachers have not only had to re-plan and adapt education processes-including adjusting methods and curricula, designing materials, and diversifying the media, formats, and platforms". Even the online teaching has been motivated for many years, the pandemic situation has fostered it extensively. Given that they value online learning and suggest continuous use of technology in teacher education, a hybrid approach could be very beneficial for teacher education courses to adopt in the future. Remains concerning whether the adoption of online learning will continue to persist in the post-pandemic period, but TPPs in Kosovo should identify additional ways to improve outcomes by adopting hybrid models of instructions. Even though the results represent perceptions of online learning that occur inside the context of a global pandemic, the suggestions offer good practices to make online learning work better for Kosovar academic staff and pre-service teachers in the future. Online learning allows the exploration of finding more flexible ways to learn (Sharma, 2020). According to Okada & Sheehy (2020) and Saribas & Cetinkaya (2021), teacher preparation programs should realize the components that have an impact on pre-service teachers' enjoyment of distance education to enhance their academic performance and retention. Furthermore, Karakaya (2021) suggest that educators should understand the difficulties faced by pre-service teachers and create an inclusive pedagogy approach to respond to learners' need. According to Grove (2008), greater cooperation between teacher preparation programs and cooperating schools is needed so they can learn to teach effectively in digital classrooms. TPPs need to advance their virtual courses, otherwise, they risk decreasing student satisfaction. The findings of this study should inform strategies for future possibilities for using online teaching in Kosovo and modify the modes of instruction in response to the situation. Therefore, it is critical to think ahead so that TPPs can consider challenges that may face in the future. This study is expected to serve as a guide for the expectations of pre-service teachers towards the improvement of online teaching and learning in Kosovo. Comparing the findings of this study with other studies, this study recommends that school/university partnership is important in strengthening online learning and digital mentoring in teacher education programs. With the onset of the pandemic crisis impacting Kosovar pre-service teachers learning experiences, especially in creating theory-practice linkages, TPPs should adopt their online lectures to the pre-service teachers' needs. Online mentoring could be used to help the pre-service teachers to feel more connected with their school mentors. The inclusion of school mentors in designing and organizing online lectures with the university lecturers could make the virtual classroom more interactive and interesting for pre-service teachers. Online lectures require a different skillset to design and deliver, therefore professional support with workshops and training courses available to academic staff and school mentors are very necessary for the enhancement of their digital skills. TPPs should evaluate their effectiveness toward qualitative teaching activities, student performance, and the assessment process.

LIMITATIONS AND IMPLICATIONS FOR FUTURE RESEARCH

The study has some limitations too and provides recommendations for further research. This study does not bring the view of lecturers related to their experiences in online teaching. Future research can be directed towards investigating their perspective on the quality of online teaching practices and the need for improvements to enrich the understanding of strategies to improve distance teacher education. Also,

this case can be investigated in other Kosovo universities as well. For future research, preservice teachers' perspectives and experiences regarding distance education should be further examined using mixed-method research designs. Furthermore, different factors that can influence the effectiveness of online teaching were not discussed, therefore future researchers may focus on other aspects. These research findings might provide the lecturers with useful information on how to design their curriculum and instruction for online teaching. Furthermore, lecturers of practicum courses should consider establishing close collaboration with school teachers by inviting them to online classes. Also, an online environment can be used to share pre-service teachers' recorded videos of their teaching practice in a class by maximizing peer-to-peer learning.

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ANALYZING DIGITAL DIVIDE AMONG UNIVERSITY STUDENTS OF PAKISTAN

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ABSTRACT

An emergency shift to online education after Covid-19 brought many challenges for students and teachers, especially the university students living in the rural areas of Pakistan. So this study has focused on assessing the problems students faced while acquiring online education with special reference to the theoretical background of digital divide. It is a quantitative study which employed Heckman's treatment effect model to analyze the impact of digital divide on university students' performance. The results of the study indicate that online education further increases an already existing digital divide between have and have nots. Online education is a good alternate of face-to-face education in many cases however for ensuring maximum benefits of online education requires proper availability of gadgets and internet access along with training. Existing online education system in developing countries like Pakistan may be more suitable to teach theoretical subjects like social sciences which are subjective in nature however it is not much appropriate for teaching numerical subjects. The findings of the study direct a positive impact of digital divide due to the scarcity of necessary gadgets, internet access, family income, gender, field of study, age and location.

Keywords: Digital divide, online education, socioeconomic status, have and have nots, rural, internet access.

INTRODUCTION

Sudden shift from face-to-face education to online education brought many challenges for the teachers and students in Pakistan as the Covid-19 changed the mode of education. Students observed many complications due to an abrupt shift to the technology mediated education (Piyatamrong et al., 2021). Students reported many difficulties in handling online education as they considered it a new experience for themselves yet the curriculum and infrastructure facilities were insufficient to align with online education. Problems of online education were not only limited to internet and technological access but the relevance of curriculum for this mode of education was also a major concern of the university students (Adnan, 2020). Teachers faced problems in handling students especially during exams. They were unable to keep a check and control unethical practices due to the lack of technological skills. They used other methods to control students like

reducing time and adding viva. Limiting time was a good option for the students to keep them busy with their own exams however students faced issues like insufficient time and disliked restrictions associated with online exams (Oliveira et al., 2021).

Students believe that teachers should bring variation and update to the latest gadgets, necessary for delivering online education. Research studies found students being disappointed due to the barriers of communication they faced in online education. However students and teachers both require training and skills to make best use of online education platforms (Piyatamrong et al., 2021). It has increased the importance of innovative teaching and learning methods. With the advancement of technology, new challenges and opportunities have emerged, now teachers will have to update themselves according the needs of virtual and online education (Gnanasegaran et al., 2021). Research found using social media for distance learning was more helpful for theoretical subjects. However for practical subjects students felt online education inefficient and less effective for their requirements (Nadeak, 2020).

H¹: Online teaching is more suitable to theoretical subjects than the practical subjects.

Urban and Rural Disparities

Gu (2021), maintain that students of rural areas and especially from low income families face difficulties in having a proper access to online education. Availability of gadgets like smartphones, computer and internet access facilitates technology mediated education. Online education is not an equal replacement of face to face education especially in developing countries like Pakistan where majority of the students face limitation of resources. They also reported difficulties like lack of interactions and absence of socialization which impeded group projects and class assignments (Adnan, 2020). School teachers suffered more due to the lack of institutional facilities and they are less skilled and technologically equipped as compared to the university teachers. Those who were living in rural areas of Pakistan faced connectivity issues as well as electricity disruption. Many of the teachers as well as students lacked ICTs for online education. Online education brought a new learning experience for students and teachers however workshops and trainings are necessary to develop skills in teachers and students (Noor et al., 2020). Research studies indicate that students of developed countries like Brunei are more satisfied with internet and technological access as compared to the students of developing countries like Pakistan because the developed countries has more urban population (Qazi et al., 2020). In comparison to Pakistan, Brunei has only 21.75% rural population whereas Pakistan has 62.84% rural population (*Brunei: Share of Rural Population 2020 | Statista*, n.d.; *Pakistan - Rural Population - 2022 Data 2023 Forecast 1960-2020 Historical*, n.d.). Keeping in view the potential and necessity of online education it cannot be denied anymore. To cater the future needs of mediated learning, policymakers will have to update education system which is efficient and standardized (Mumtaz et al., 2021).

H²: Rural students faced more problems during online education than the urban students.

Training of Online Education

The students of virtual university consider online education as an opportunity to be more skillful in using ICTs and related software like Microsoft Word, Excel and Power Point. Using PC for chat and videoconferencing with instructor and solving different task help them in improving their skills related to information technology. They found it helpful and motivating, creative and adaptable for learning. Many of the students are confident to get good jobs after getting online education and they also view it as an added advantage to teach others online if they are to opt teaching as profession. A well designed online education system is necessary and there should be more budget and trainings to ensure smooth working of e-learning because this system is not only indispensable today but also innovative and facilitating in learning (Akhter, H., & Mahmood, 2018). There is a significant awareness related to e-learning and now teachers and students are motivated enough to adapt it. Educational institution and government should make a coordinated effort to facilitate and promote mediated education (Qureshi et al., 2012). There are mix kind of responses especially by medical students who consider online learning an easy alternative during Covid-19 (Mukhtar

et al., 2020). However they show more inclination and ease in face to face learning (Abbasi et al., 2020). In Pakistan, e-learning is beneficial and affordable for the students studying at Allama Iqbal Open University (AIOU), providing a distance learning system of education (S. B. Khan & Jumani, 2012). Keeping in view large population of Pakistan which is more than 200 million, the country has a greater need of distance learning universities like AIOU and Virtual University. Similarly, all universities should be upgraded with latest e-learning technology, trainings and infrastructure (Shahzad, 2017).

There is positive as well as negative effects of online education. One positive effect is that the students receive greater guidance from teachers in the form of synchronous or asynchronous communication. Whereas on the other hand, teachers and students lack face to face interaction, which is necessary for a teacher to assess real time feedback of students and their involvement in the learning process. This challenge has also brought many opportunities for teachers and students like now they have started benefiting from the technological purposes for education like arranging webinar and connecting institutions around the globe (Oliveira et al., 2021).

With the shift to online teaching, it was considered essential and the only way to teach, communicate and collaborate with students. Results of different studies state that teachers should try different teaching methods to overcome the barriers of virtual learning. The discipline is also decisive in effectiveness of technology-mediated teaching. For example the students of music and arts found online teaching less useful as compared to the students of information sciences (Vladova et al., 2021). Using of multiple online platforms by different teachers actually confused students to follow separate instructions from all teachers. It enhanced the realization of using a uniform platform for online teaching which would facilitate both students and teachers. Smooth connectivity of internet also interrupted lectures at both end especially student from different areas reported problems. Technology helped students by offering group discussions and at least provided an alternative for higher education to secure the precious lives and time (Oliveira et al., 2021).

Purpose of the Study

The purpose of study is to explore the problems related online education particularly faced by the lower socioeconomic groups of society mainly living in rural areas of Pakistan.

THEORETICAL FRAMEWORK

Knowledge gap theory and digital divide support theoretical foundations of this study. Tichenor, Donehoue and Olien (1970, as cited in Gaziano, 2016) stated that the population of higher socioeconomic status acquire knowledge or information faster as compared to the population of lower socioeconomic status. In other words, the privileged class has more access to knowledge as compared to the less privileged class. Topcu (2022), writes in this technological advancement world where access to information does not require much effort. Anyone can access to the desired information just by a single click however it is interesting to study knowledge gap hypothesis after the increased connectivity. The results of online and social media use cannot be uniform because the individuals differ in characteristics like educational background, socioeconomic status and their cognizance regarding digital media. Tsetsi & Rains (2017) investigated the knowledge gap hypotheses keeping in view different demographic groups. They mainly studied how the use of internet and smartphones contributed to the inequality of haves and have nots among the users of different socioeconomic status.

Digital divide research mainly focuses on the different demographic variables like socioeconomic status, including income, age, gender, education as well as urban or rural location (Azubuike et al., 2021). Digital divide creates problems for those having limited or lack of internet access whereas during Covid-19 urban population particularly had to ensure online activities with inadequate internet access while meeting emergency crisis (Lai & Widmar, 2021). Studying different variables with reference to Covid-19 knowledge gap, Wang et al., (2021) stated that educational level is a decisive factor in determining knowledge gap. Digital divide is obvious because internet use increased the already existing knowledge gap. Traditional media and interpersonal communication are not effective in improving knowledge level. Access to online information is not the only reason of knowledge inequality rather in some cases the quality of use, also reflect the differing benefits individuals acquire through digital media (Li & Cho, 2021). (Mathrani et al., 2021) measured digital

divide with the help of variables like gender, age, family income and their level of study. Digital divide still prevails particularly in developing countries especially gender and lower socioeconomic groups. Access to technology and internet is associated with first level of digital access (Mathrani et al., 2021; Rotondi et al., 2020). This study has been conducted on university students of Pakistan mainly focusing on first level of digital access because contrary to schools and colleges, mainly the universities switched to online education. Considering the theoretical underpinnings of knowledge gap and digital divide the variables of the study are mainly linked with the concept of have and have nots. This study not only highlights the barriers of effective online education in developing countries like Pakistan but also provide empirical evidence regarding the importance of providing required gadgets and internet connections in the rural areas to overcome different levels of digital divide otherwise unprivileged population will lag behind in knowledge and skills.

RESEARCH METHODOLOGY

This is a quantitative research study which used online surveys based on structured questionnaire. To measure the impact of digital divide this study employed Heckman Treatment effect model of regression, particularly designed for such type studies in which the impact of digital divide is measured while assuming that the digital divide is function of some other observable factors such as availability of internet, possibility of possession of computers and electricity etc. Questionnaires consisted of descriptive portion as well as nominal scale on possession of computer/laptops, internet etc. Due to time and monetary constraints the population of this study was federal capital Islamabad. Moreover it was observed that Islamabad is a city where students from all provinces of Pakistan, come to get education so to provide a full spectrum of characteristics of all respondents, educational institutions of Islamabad were chosen.

Students were asked questions about their accommodation place whether it was urban or rural and field of study (Engineering, arts, social or management science). Other questions were related to gender, income, internet and technological access and home environment, as well as experience of online education in comparison to face to face education. Some questions were open ended questions asking students' satisfaction regarding results of online education as well as comparison of online education versus face to face education. To answer these questions students were provided the chance of positive or negative responses. Students' identity and answers were kept confidential. Mathrani et al. (2021) studied similar kind of variables in a study to analyze digital divide of developing countries during online education. This study has adopted above mentioned variables suggested by the relevant literature.

Sampling

An online survey was used to collect data from students of federal capital Islamabad, Pakistan who experience online education during 2020 and 2021 through structured questionnaire by applying convenient sampling. Convenient sampling was only way through which survey could be conducted because whole population cannot be accessed at a time of survey for random sampling Required sample size was measured as 384, using Cochran (1973) who developed a formula to calculate a representative sample for proportions of unknown population as:

$$n_0 = \frac{z^2 pq}{e^2}$$

where, n_0 is the sample size, z is the selected critical value of desired confidence level, p is the estimated proportion of an attribute that is present in the population, $q = 1-p$ and e is the desired level of precision. For several factors, a sample of 486 respondents was eventually accessed, which was 26 percent greater than the required sample. For instance, having a bigger sample size increased confidence that sample responses do not differ considerably from real opinions. Oversampling helped guarantee that the required sample size of 385 people was met.

To study the association between different variables and their contribution to digital divide and student's performance, this study has employed Heckmen's model.

Model Specification

Concept of digital divide can well be estimated by using Heckman's model given below:

Selection Equation

The Heckman's model has two equations: selection equation and outcome equation, with the selection equation capturing the selection bias and the result equation capturing the specification of interest. In the selection equation, digital divide is used as a dependent variable. The Probit model for sample selection equation, like the Heckman model, is estimated to include unobservable factors. The inverse mills ratio (λ) is used to detect selection bias, and it automatically enters as an independent variable in the result equation. One of the main advantages of utilising the Treatment Effect model over the Heckman's approach is that it is better. It's also worth noting that the Treatment Effect model takes into account both the treatment effect value and the selection bias. Sample selection equation can be written as follows:

$$d_i = x_i\alpha + \mu_i$$

Where $d_i > 0$ and 0 otherwise

$$\text{Prob}(d_i=1 | x_i) = \Phi(x_i\alpha) \text{ and}$$

$$\text{Prob}(d_i=0 | x_i) = \Phi(x_i\alpha)$$

The dependent variable is in binary form as respondents who belong to urban area, get value 1 (Urban=1) otherwise zero and d_i could be estimated when $d_i = 1$ if $d_i > 0$ and for $d_i = 0$ otherwise.

This is explained in terms of conditionality of students' performance due to digital divide. The vector of explanatory variable which includes education, age etc. represented by x_i . In addition, α is a vector of coefficients, and μ_i is the error term. Given selection bias and the fact that 'd' is an endogenous variable, the assessment objective is to estimate the regression model using the observed variables. The lambda β or inverse mills ratio, which measures selection bias, is determined as follows:

$$\lambda = (x_i/1 - (x_i \alpha))$$

Here, Φ is a density function and α shows the normal distribution.

Outcome Equation

Outcome equation, carrying the variable of interest or policy as dependent variable, can be written as follows:

$$z_i = y_i\beta + d\alpha + \varepsilon_i$$

Where z_i signifies the vector of possible mediators, such as age, and y_i denotes the students' performance throughout online instruction. β is a collection of parameters, and d is a digital divide dummy variable that comes straight from the selection equation and is known as the treatment effect score in the outcome equation. It provides a counterfactual analysis as well as substantial differences between treated and non-treated homes. The error component of the outcome equation is represented by the letter ε_i . The following are the most important variables:

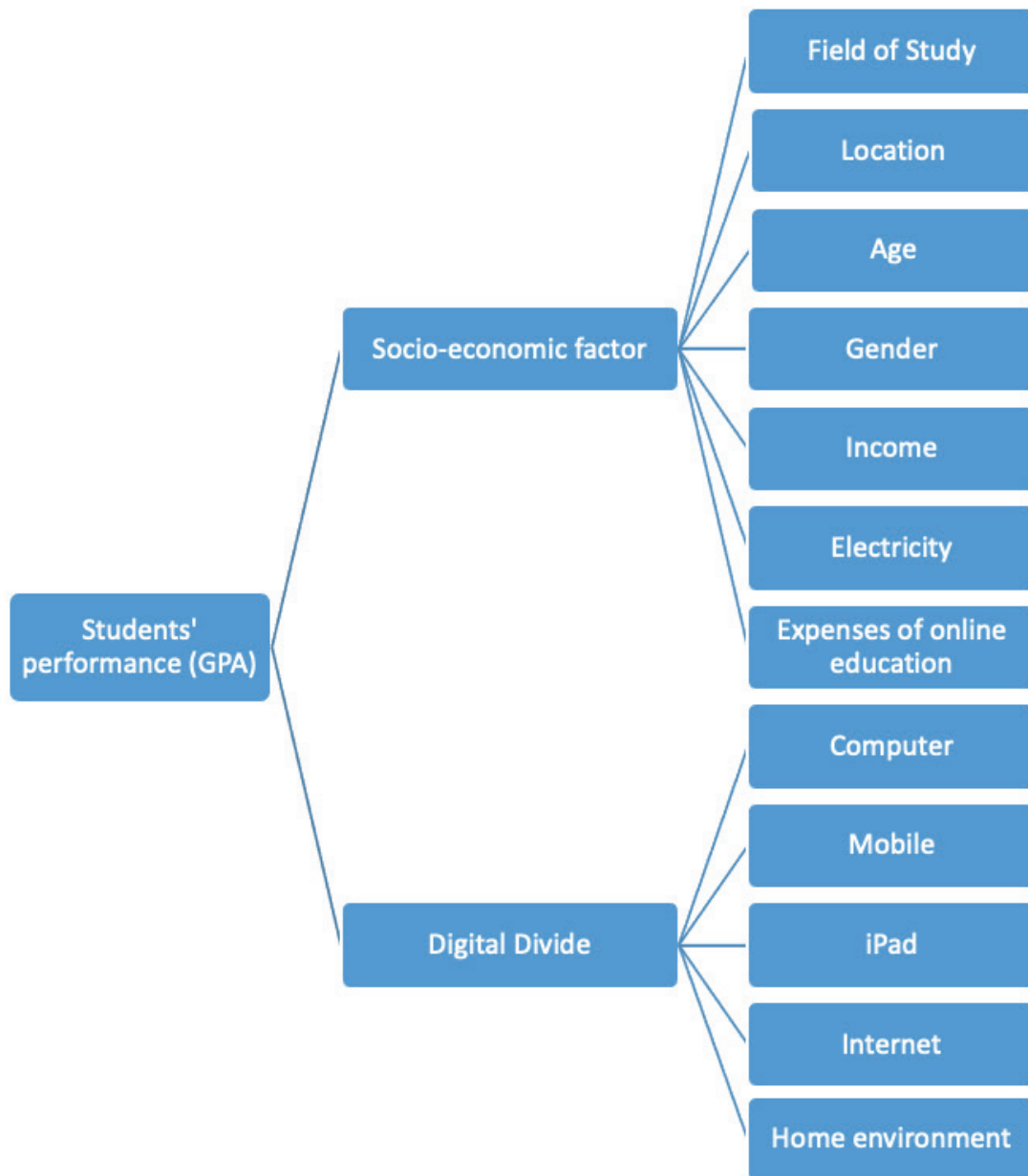


Figure 1. Variables of digital divide along with their relationship with students' performance

RESULTS

Heckman's treatment effect model has been used to analyze the impact of digital divide on university students' performance.

Table 1. Descriptive statistics of sample respondents

Variable	Mean	Std. Dev.	Min	Max
Age	22.023	3.55	16	46
Income	111316.9	39912.2	50000	600,000
GPA	3.16	0.526	1.75	4.7
Gender	0.67	0.46	0	1

Table 1 reflects descriptive statistics of sample respondents. The mean of age remained 22.023 for which minimum age was 16 years and maximum age of respondent was 46 years. Income mean is 111316.9, minimum income has been recorded 50000 and maximum income is 600,000. The mean of GPA is 3.16 whereas minimum reported GPA is 1.75 and maximum GPA is 4.7%. Gender is a dummy variable which was coded with 1 for male and 0 for female; the mean is 0.67 which indicate the distribution of respondents was 67% and 33% for male and female respectively. Usually, ratio of male student is more than female students in Pakistani universities that's why mean value is closer to 1.

A significant inverse mills ratio of -0.24 in model indicated the existence of selection bias. Computer, mobile, iPad, availability of internet and home environment are found to be the reason for digital divide. Different variables have been employed to assess the phenomenon of digital divide, which university students faced during online education in Covid-19. The results show that most of the explanatory independent variables have a positive impact on digital divide, such as field of study, location, age, gender, family income, expenses of online education and digital divide, computer, mobile, iPad and Internet. Whereas, electricity and home environment reflected insignificance to digital divide. Results in Table 2 reflect that H¹ & H² have been approved significantly. P value for H¹ is 0.000 which shows strong significance for the hypothesis that online education is more suitable to theoretical subjects than the practical subjects. Similarly, P value for second hypothesis is 0.000 which is too highly significant indicating rural population face more digital divide than the urban population.

Table 2. Heckman's treatment effect model results

Number of obs = 486						
Wald chi2(4) = 57.55		Prob > chi2 = 0.0000				
Censored obs = 155		Uncensored obs = 331				
Adaptation	Outcome Eq.			Selection Eq.		
	Coef.	Z	P>z	Coef.	Z	P>z
Field of Study	-0.096	-3.88	0.000***			
Location	0.006	0.67	0.502			
Age	0.017	2.36	0.018**			
Gender	-0.254	-4.77	0.000***			
Income	0.016	3.22	0.001***			
Electricity	0.007	0.13	0.899			
Expenses of online education	-0.12	-2.25	0.025***			
Cons.	10.122	4.90	0.000***			
Digital Divide	0.185	3.76	0.000***			
Computer				-0.41	-2.65	0.000***
Mobile				-1.39	-6.06	0.000***
iPad				-0.52	-2.41	0.016*
Internet				0.915	5.65	0.000***
Home Environment				0.164	1.04	0.297
Inverse mills ratio				Rho		0.525
lambda	-0.24	-3.06	0.002***	Sigma		0.471

Asterisks ***, **, * indicate 1%, 5% and 10% level of significance respectively.

Source: Authors' own calculations

DISCUSSION

With the emergence of Covid-19 most of the universities in the world shifted from face-to-face education to online education, similarly Pakistani universities adopted online education system. Based on the above results the study reflects difference in digital access for urban and rural students. University students reported differing experiences of online education based on their demographics and socioeconomic conditions

(Rotondi et al., 2020). For examples students residing in urban areas faced fewer barriers during online education as compared to the rural students. Similarly, students of lower socioeconomic groups faced limitation of facilities, as availability of modern technologies (laptop, smartphones, iPad) and internet access. Some other interesting revelations are the varying experience of students belonging to different disciplines. Students of social studies reported satisfactory learning experience through online education as compared to the students of management sciences or engineering students (Azionya & Nhedzi, 2021).

Let's first explain the results of outcome equation of the Heckman's model. According to the results in above table, field of study played a significant and negative role in determining outcome of students' performance. It means that students whose field of study was theoretical in nature benefited (got high score) from online education and other could not get real benefit (low score) from online education. Social studies had a scale of 1, Arts & Humanities had a scale of 2, engineering & IT had a scale of 3 and Management sciences had scale of 4. Moreover, demographic location is found to be insignificant in determining students' performance.

Age of respondents showed positive and significant relation with students' GPA, which is in line with the study of Tsetsi & Rains (2017). Gender had a negative and highly significant coefficient, which means that male (with score 1) is likely to attain less GPA as compared to female students. Income of the respondents' family is found to be significantly determining students' performance, hence with high income, students are likely to perform well, as higher income group has more resources and assets to buy electronic gadgets (i.e. computer, mobile, iPad and accessibility of internet). Variable of electricity is found to be insignificant. Higher expenses of online education is found to be negatively impacting students' performance due to the fact that lower income group was unable to arrange such electronic gadgets during online education (Esteban Jr. & Cruz, 2021).

On the other hand, selection equation was based on the assumption that digital divide also influences students' performance, and the digital divide is function of availability of electronic gadgets (i.e., computer, mobile, iPad and access to internet) as well as the home environment during online education. Variable of computer/laptop is negative and significant presuming that availability of computer/laptop was likely to reduce digital divide. Similarly, iPad and mobile are also significant and negatively impacting digital divide as availability of these electronic gadgets was likely to reduce digital divide. Access to broadband internet is also significant and impacting positively of students' performance during online education (Mohammad et al., 2021).

CONCLUSION

Findings of the study indicate that the digital divide has a positive impact on student's educational performance during online education. Significant digital divide has been reported by measuring access to internet, smartphone, laptop, iPad and other contributing factors like family income, home environment, gender, and field of study, age, electricity and home environment. Results indicated online education is suitable to theoretical subject and students living in urban areas, having more and easy access to gadgets and internet. Similarly, students reported less satisfaction to online education and its results. So we can conclude a significant rural digital divide especially for the low income families along with many other contributing variables all mentioned in discussion.

LIMITATIONS & RECOMMENDATIONS

Fewer studies have been conducted on digital divide particularly in developing countries keeping in view the context of online education experience of students in Covid-19. So after studying relevant literature a few variables have been studied in this study. Secondly, this study has been more focused on assessing the first level of digital divide. The future studies can be conducted on analyzing the second and third level of digital divide. The second level of digital divide deals with inequalities of technical skills whereas third level of digital divide focuses on benefits inequalities for all the users of internet and digital media (Lythreathis et al., 2022).

In order to bridge digital divide the higher education commission should provide free laptop and scholarships to the needy students especially living in the rural areas of Pakistan (B. U. Khan et al., 2020). Jamil (2021) suggests that there should be allocation of funds along with an integrated effort by federal

and provincial governments to enhance technological access to the less privileged individuals of the society. Higher education should especially focus on students and teachers of rural areas by providing them necessary trainings, accessibility of technology and connectivity particularly residing in far-off areas having lower family income (Jamil, 2021). The study also suggests to pay special attention on digital access and trainings of female as they still have less opportunities as compared to men in Pakistan.

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NEW LEARNERS' SATISFACTION WITH ONLINE EDUCATION: A LONGITUDINAL STUDY

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ABSTRACT

With recent advancements in IT, internet systems and and the need for IT-driven society, particularly during Covid-19, online education (online learning, or e-learning) has become inevitable to achieve the multiple objectives (such as cost-effective, time- efficient, quality enhancement, etc.) both for educator and learner. Keeping in view the importance of online education, the current study focuses on pedagogy of how to increase the efficiency of a learner. Therefore, this study is aiming to explore how these two dimensions of online learning style are used to measure new learners' satisfaction with online education, for which this study focuses on identifying the role of a student-teacher-contact (STC) in exploring the degree of learners' satisfaction with online education, and also applying the moderating effect of student-student contact (SSC). A total of 340 target respondents were surveyed in three phases. The results showed that STC interaction was insignificant during phase – I, whereas both interactions were found significant during phase – II & III. The research emphasizes that SSC in the presence of moderators has a significant determinant of the degree of new learners' satisfaction with online education. In addition, the management of online learning institutions will realize that SSC is essential for achieving new learners' satisfaction with online education. Since there is no sufficient literature on the moderating role of STC, this study is a valuable contribution to the existing body of knowledge.

Keywords: Student-to-teacher contact, student-to-student contact, new online learners, satisfaction with online education, COVID-19, UAE educational institutions.

INTRODUCTION

Many research studies have been conducted to determine whether face-to-face or traditional teaching methods are more effective, or if online or hybrid learning is superior (Lockman & Schirmer, 2020; Pei & Wu, 2019). Students perform far better in online learning than in traditional, according to the findings of the studies. Henriksen et al. (2020) discussed the difficulties instructors experience while transitioning from an offline to an online style of instruction. . Therefore, the current study is investigating the core issue related

to contacts (student-teacher contact and student-student contact) to enhance the satisfaction and efficiency of learning in online education. Online education is a necessity for working-class people as a tool for time-effective and is for full-time students during the COVID-19 epidemic period.

COVID-19 has caused the suspension of courses for millions of children around the world, disrupting schools' initial teaching plans in these countries (Chen et al., 2020). Yet, advances in network information technology have hastened the digitization of traditional education, facilitated the deep integration of topics, courses, and information technology, and facilitated the experience and discovery of online learning (Paudel, 2021). Many countries started providing students with online instruction through systems like Zoom, Skype, and FaceTime. COVID-19 affects online education, which has become a prevalent mode of learning for both working-class and full-time students. Online education is predicted to be a long-term solution given the current state of global epidemic prevention and control. Online education is projected to be a long-standing teaching approach based on the existing worldwide epidemic prevention and control situation (Moore et al., 2010; Chen et al., 2020). Since, it had been a critical issue for the only working class to have access to higher education (King, 2009) because they are required to have at least some form of postsecondary or higher education degree to meet market demand. But, during this COVID-19 epidemic period, the world has witnessed the importance of online education since it has been becoming an alternative mechanism for higher education (March-June 2020). Though there is an increase in the numbers of learners who are willing to enroll, they are exposed to number of obstacles in accessing online education like lack of devices, from learners' end, less information, fever internet facilities/connectivity, and lack of coordination among new learners (Aboagye et al., 2021; Chase et al., 2018; Parsad & Lewis, 2008; Chang, 2007). This sudden transformation from direct contact to online learning requires the educational system to formulate strategies to meet the challenges (such as lack of classroom culture, student-student interaction, and internet connectivity). It is very important to explore the perception of the quality of online learning as it serves as one of the key drivers for learners' choice of online education (Braun, 2008). The other factors that affect perceptions and level of satisfaction are student-to-teacher contact, student-to-student contact, and their online experiences as suggested by earlier researchers (Cleofas & Rocha, 2021; LaBarbera, 2013; Shipley, Johnson, & Hashemi, 2009; Sahin, 2008). The literature highlights online experience, characterized by the three interactions of Moore's Transactional Theory, as positive determinants of satisfaction (Falloon, 2011; Arbaugh et al., 2008). Precisely, the problem is to determine to what extent a blend of experience (like student-to-teacher contact, and student-to-student contact) is most significant in envisaging satisfaction and quality of online education for these new learners. The understanding would help educational institutions to advance pedagogy, and help them in designing courses, and the adopting of technological devices (Cleofas & Rocha, 2021; LaBarbera, 2013). The current study quantitatively investigates the predictor of the learners' level of satisfaction in three two dimensions (Student-Teacher Contact and student-student Contact) on online education and provides timely solutions to the stakeholders in aligning their education system as per demand; this will also help to address the concerns to achieve the desired objectives.

THEORETICAL FRAMEWORK AND HYPOTHESES DEVELOPMENT

The current study mainly addresses different concerns at a time. Firstly, while online education has become the only mechanism of providing education during COVID-19 and is accepted in higher education for the public and private institutions; it has been observed that the attrition rate in online education is comparatively higher than that of traditional scholiast (Angelino, Williams, & Natvig, 2007). Prior researchers highlight learners' level of satisfaction as one of the key factors influencing the decision to persist or drop out of online education (Park & Choi, 2009; Aragon & Johnson, 2008). Moore (1989) argued that there are three sorts of interactions in online learning, that is, learners and learning content, learners and teachers, and learners and learners. Based on this, Li et al. (2020) defined "Internet + teaching" as "information contact between teachers and students, as well as instructional aspects" in a specific context, indicating the shift from one-way to multi-directional interaction. They also mentioned how good the amount of interaction is. The quality of classroom questions reflects this level. According to studies, the proportion of high-level questions that can improve classroom learning impacts has increased dramatically (Graesser and Olde, 2003). There are number of factors, such as knowledge acquisition, ability training, emotional edification, and value establishment, organization learning culture, which constitute an interactive system (e.g., student-to-teacher contact and

student-to-student contact), that influence learners' perceptions of satisfaction with online education (Mu and Wang, 2019; Jiang et al., 2019). However, researchers find inconclusive a mix of findings relating to determinants of perception of learner's satisfaction (Li et al., 2020; Mu and Wang, 2019; Jiang et al., 2019). To address the concern of inconclusiveness of the factors affecting learners' satisfaction about online or traditional education, the study aims to investigate to what extent the grouping of predictor variables predicts the perceptions of satisfaction among new learners of online education in the UAE context. The findings of the current longitudinal study enable us to contribute to the new challenging field of study in designing online courses, methods of delivery, and pedagogy. Since the quality of online education has been the main cause of concern for both stakeholders (online institutions and learners). Okpala and Chapman (2010) highlighted the key factors that contribute to the perception of the quality of online education that would help institutions to re-design online pedagogy accordingly. At the same time, it would also be beneficial for the Higher Education System (Ministry of Higher Education-MoHE) in UAE to formulate the policy or review the existing policy that may address the concerns highlighted by the current study.

Secondly, the current study only focuses on students who have recently shifted from traditional learning systems to online education following the study of Richardson et al., (2020) whose findings enable management to decide to adopt online or hybrid teaching approaches. The findings may help to fill in the gap in a study relating to the education set-ups who have just started online education. At the same time, it may also help MoHE for making a new policy if COVID-19 becomes prolonged. The introduction of advanced technology and the desire to acquire information instantaneously make the learning process quite different from the traditionally accepted and established one (Eubank, 2011). In emerging countries, online education has been introduced as a new form of distance learning with its unique learning features like synchronous, asynchronous, or/and hybrid (blended). Since, online pedagogy is different from traditional one as it is mainly required to facilitate teaching and learning in the cyber classroom (Maeroff, 2003). Isolation, being one of the key features of online education, has been found as a negative predictor of perceptions of online satisfaction (LaBarbera, 2013; Darrington, 2008; Angelino, Natvig, & Williams, 2007). Further, the literature documents certain learning styles as positive predictors of satisfaction with online education (Battalio, 2009; Sahin, 2008). To investigate the impacts of different learning styles on the level of satisfaction, the current study follows the theoretical frameworks of Moore's Theory of Transactional Distance (hereafter TDT) and Felder-Soloman's Index of Learning Styles (Moore, 1997; Felder & Soloman, 1991). Originally, TDT explains the interactions between/among the environment, the learners and teacher, and forms of behavior (Moore, 1997). The TDT also emphasizes the parting in distance between students (learners) and instructors; this separation results in a distinct pattern in learners' behavior (Moore, 1997). In this vein, Sahin, (2008) documents three types of interaction namely learners-to-teacher, learners-to-learners, and learners' content. However, the current study mainly focuses on the first two aspects of the three approaches described by Sahin, (2008). Akyol and Ozden, (2009) state that online experience is based on the two types of interactions, which significantly influence learners' perceptions of satisfaction with online systems (Akyol and Ozden, 2009). In the context of designing the course, the TDT classifies three extents that form an association and therefore may be graded from high to low. For example, institutions can design a course structure with either more flexible activities or rigid ones. In brief, a flexible approach is related to a high conversation between learners and teachers (Sahin, 2008). Similarly, Martin, Budhrani, Kumar & Ritzhaupt, (2019) conduct an interview form award-winning online instructors and they find online instructors' roles as facilitator, course designer, course manager, subject expert, and mentor. The current study examines the online instructor role of being a facilitator following Pappas, (2014). According to Martin and Ritzhaupt, (2019), "online facilitation is the technique of enabling and promoting learning in an online environment using encouraging interaction with and between students and supporting interactive online learning activities". Similarly, online facilitators are required to learn strategies that improve the online course and find or invent new ways to involve the learners in concept meaning (Gustafson and Gibbs, 2000). Further, the study also follows the learning styles model developed by Felder and Soloman (1991). The literature documents these leanings styles as positive predictors of the perception of online satisfaction (Shipley and Hashemi, 2009). Based on the theoretical background discussed, the study constructs the following research questions to address the concerns in UAE context. Once, the research questions are presented, the study documents the main hypotheses to answer the questions.

RQ1: To what degree does the combination of experience with student-teacher contact, and student-student contact predict the degree of satisfaction with online education for learners in UAE universities?

RQ2: To what degree does the interaction of student-student contact moderates the relationship between student-to-teacher contact and new learners' satisfaction with online education for learners in UAE universities?

Effective teacher-student engagement is an essential requirement for deep learning in the context of online education (Mu and Wang, 2019); it is the most powerful factor in the online learning experience (Jiang et al., 2019), and people lead to effective interaction between teachers and students. The impact of various interactive tactics in distant education is dependent on professors and students working together (Liu, 2006). As a result, Hypothesis 1 is proposed in this study:

When examining lecture delivery, Zhang et al. (2020) discovered that a favorable classroom climate is essential in boosting the teaching effect. Students' subjective environmental cognition is influenced by the classroom ambiance, and student's perceptions of the learning environment have a significant impact on their academic achievement (Yu et al., 2013). This study, when combined with the results of the previous research, suggests that a positive psychological environment can help students who are not directly supervised and thus can receive online education more actively in interactions with teachers, allowing them to speed up the learning process in the classroom, which helps to achieve the high impact of learning. Hypotheses 2 and 3 are thus proposed as well:

Hypotheses

- H₁. The combination of experience with learners-teacher contact does predict the degree of satisfaction with online education for learners in UAE universities.
- H₂. The combination of experience with learners-learners contact does predict the degree of satisfaction with online education for learners in UAE universities.
- H₃. The learners-learners experience does positively moderate the relationship between learners-teacher and the degree of satisfaction with online education for learners in UAE universities.

RESEARCH METHODS

The present study is qualitative in nature which was designed to examine the direct effect of student-teacher-contact (STC) on satisfaction with online education. Moreover, this study is also designed to find the interaction of student-student contact (SSC) on the relation between STC and new learners' satisfaction with online education among new learners who have sifted from conventional education systems to online education during COVID-19.

Participants

The population for the study was new learners who have been shifted from traditional learning to online education due to COVID-19 who reside in the United Arab Emirates and the participants are new learners enrolled at four universities – City University College Ajman, Skyline University College Ajman, Amity University Dubai, and Al Ghurair University Dubai as a convenient purposive sampling.

Data Collection and Analysis

The instrument for data collection was a survey consisting of the Distance Education Learning Environment Survey (DELES) adapted from Walker (2005) for perception, and the Index of Learning Styles (ILS), as developed by Felder and Soloman (1991). The scale was changed from 5-points Likert Scale to 7-points Likert Scale to provide more options for new learners to respond more conveniently (See appendix-A

questionnaire). A purposive sample of students (university graduates from UAE universities) currently shifted to online education due to COVID-19 was asked to participate in the study.

Based on a G*Power Analysis (with effect size 0.50, confidence level 0.90, probability of error 0.05, two-tailed), the sample size was 178, but the actual sample size collected was 340 in three phases – after two-week 88 respondents, after four-week 120 respondents, and after six-week 132 respondents. The survey was delivered using an electronic invitation for participation to be sent out to new learners through the contacts at the institutions. The independent variables in this study include the learning experience-learners-to-teachers, and a moderator learning experience which includes learners-to-learners are derived from DELES. The dependent variables were the learners' satisfaction with their perceived quality of online education, which are the scores derived from DELES. Quantitative analyses consisted of descriptive statistics for perceptions, and multiple linear regressions for predicting relationships.

DATA ANALYSIS

Confirmatory Factor Analysis and Reliability

In this study, the standardized factor loadings, factor correlations, and parameter estimates were examined. The current study's factor loadings were found to range between 0.23 to 0.48 in phase-I, 0.51 to 0.66 in Phase II, and 0.72 to 0.86 in Phase-III; and phase II and III are above the minimum acceptable level. Kline's (2011) criterion to accept the standardized factor loadings was set at >0.50. Kline (2011) suggested that in applied factor analytic research, the standardized factor loadings of 0.50 and above can be commonly used to operationally define a salient factor loading. The reliability (Cronbach's alpha) and composite reliability were found to be above the acceptable level because Nunally (1978) and Cascio (1987) reported that the acceptable level was > 0.70. Similarly, Kaiser-Meyer-Olkin's (KMO) measure of sampling adequacy tests was found at > 0.85, which reflects that phase-II and III the number of respondents (N#120, 132) was enough for further analysis.

Table 1. Confirmatory factor analysis and reliability

Constructs	Phase-I			Phase-II			Phase-III		
	FL	α	KMO test	FL	α	KMO test	FL	α	KMO test
STC	0.23			0.63			0.86		
SSC	0.48	0.48	0.61	0.51	0.78	0.75	0.72	0.87	0.89
SS	0.33			0.66			0.75		

Note: STC = Student-to-teacher contact, SSC = Student-to-student contact, SS = Student satisfaction with online education, FL = Factor loading, α = reliability Cronbach's alpha

CORRELATION ANALYSIS

After analyzing the constructs, the researcher calculated the descriptive statistics including the mean, and correlations between all the study variables, which are presented in table 2. The mean response of the 7 Likert scales of STC was found almost the same throughout the three phases (5.248, 5.432, 5.444), whereas the mean response of SSC was very low during phase-I (2.283) and it was substantially increased in phase II and III (5.393, 6.320). More importantly, the mean response of SS was increased over phase II and III (4.775, 5.537) along with SSC, which indicates a strong significant correlation between SSC and SS. The correlation coefficients between the study variables were in the expected direction and below .80, which revealed the absence of multicollinearity and can contribute unique variance to the model (Tabachnick & Fidell, 2001). These findings support the multiple regression analysis.

Table 2. Mean, standard deviation, and correlations

Construct	Phase-I			Phase-II				Phase-III				
	Mean	STC	SSC	SS	Mean	STC	SSC	SS	Mean	STC	SSC	SS
STC	5.248	1			5.432	1			5.444	1		
SSC	2.283	0.003	1		5.393	0.217**	1		6.320	0.547***	1	
SS	3.418	0.025**	0.018	1	4.775	0.102**	0.275**	1	5.537	0.327**	0.658***	1

Note: STC = Student-to-teacher contact, SSC = Student-to-student contact, SS = Student satisfaction with online education, the superscripts *, **, and *** indicate significance at the 90%, 95%, and 99% confidence levels, respectively

HYPOTHESES TESTING ON OUTCOME VARIABLE (NEW LEARNERS' SATISFACTION)

Study findings in table 3 show that the STC predicts the new learners' satisfaction level in online education during phase-II and III of this study (standardized $\beta = 0.181$ and 0.122 , $p < 0.05$). These results are significant and positive which supports H_1 of this study. Concerning hypothesis 2 of the study, findings indicate that SSC is predicting the level of new learners' satisfaction with online education during phase-II and III (standardized $\beta = 0.111$ and 0.120 , $p < 0.10$) but these results are significant at $p = 10\%$ which indicate a low degree of significance. These findings support H_2 of the current study.

The results (table 4) of the multiple regression analysis using the interaction effect have shown that the last two of three phases – phase-I & II are statistically significant at a confidence level of 99% ($p < 0.01$), which explains 45.2% (phase-I) and 78.8% of the variation in the new learners' degree of satisfaction with online education. Furthermore, control variables have not been used because all respondents are an undergrad university students from the department of business and engineering with nearly equal age, experience, gender, etc.; and the correlation among categorical variables with study variables was found to be insignificant during three phases of analysis.

In addition, direct and interaction effects both were found to be insignificant during phase-I but when SSC was added as a moderator to phase-II, the R^2 increased by 44.5%. The R^2 is significant on the 1% level, which means that the impact of interaction variables (STC*SSC) is highly significant, and SSC adds the explanation power significantly to the model. Similarly, during phase II the interaction variable further increased the coefficient (standardized $\beta = 0.408$, $p < 0.01$) with an R^2 change of 33.5% positively which means that SSC is a major factor influencing new learners' satisfaction with online education. Furthermore, in phase-II and III, the F-value significantly increased from 8,531 to 218.43, which reflects that during UAE's transitional online education only SSC has an influential impact on the new learners' degree of satisfaction. Hence, H_3 is strongly supported..

Table 3. Results of multiple regression analysis on learners' satisfaction in online education

Construct	Phase-I		Phase-II		Phase-III	
Intercept	0.231	0.247	0.419*	0.505**	0.633**	0.463**
STC	0.051	0.022	0.181**	0.143**	0.122**	0.150**
SSC	0.004	0.006	0.111*	0.125	0.120*	0.119
STC*SSC	-	0.038	-	0.383***	-	0.408***
R^2	0.004	0.007	0.230	0.452	0.241	0.788
R^2 adj.	0.002	0.004	0.204	0.388	0.225	0.652
F-value	0.215	8.153	12.337	114.549	12.460	218.43
R^2 change	NA	NA	0.226	0.445	0.011	0.336
Number of respondents	88		120		132	

Note: STC = Student-to-teacher contact, SSC = Student-to-student contact, SS = Student satisfaction with online education, the superscripts *, **, and *** indicate significance at the 90%, 95%, and 99% confidence levels, respectively. Phase-I = After two-week, Phase-II = After four-week, Phase-III = After six-week

DISCUSSION

The study aims to investigate to what degree the combination of an interaction term and the predictor variables are significant in envisaging the learners' satisfaction with online education while shifting from traditional classroom teaching to online education (Lockman & Schirmer, 2020; Pei & Wu, 2019). Sahin, (2008) highlighted three types of transaction/interaction: student-to-teacher contact (STC), student-to-student contact (SSC), and student content (SC). As the literature has suggested that STC and SSC are significant predictors of learners' perception of satisfaction with online education (Sun et al., 2022; LaBarbera, 2013; Akyol & Garrison, 2008; Arbaugh, et al., 2008; Sahin, 2007), and therefore, the current study only focuses on these two significant predictors in UAE context. In a theoretical context, the study is based on the theoretical frameworks of Moore's Transactional Distance Theory (1997) (TDT) and the Felder-Soloman learning styles model (1991). TDT emphasizes the separation in distance between learners and teachers; this separation results in a distinct form in learners' behavior (Moore, 1997; Cleofas & Rocha, 2021).

The study mainly answers two research questions. Research question one inquired to what degree the combination of experience with student-teacher contacts, and student-student contact predict the degree of satisfaction with online education for university learners in UAE. For analytical purposes, we use the regression model and findings indicate that the combination of predictors significantly predicts learners' perception of satisfaction with online education during phase-II & III. In addition, we also find that the degree of the prediction with online education has a marginal impact (value of adjusted R^2 is quite low) on prediction at a 90% confidence level. Study results are in line with earlier findings (Li et al., 2020; Mu and Wang, 2019; Jiang et al., 2019; Akyol and Garrison, 2008; Arbaugh et al., 2008, Chen et al., 2010). Similarly, there are two types of interactions that form the online experience, which significantly impacts learners' perceptions of satisfaction with online education (Akyol and Ozden, 2009). Resultantly, this study's findings contradict Bigg, (2006) verdicts on the implication of active learning and student-autonomy subscales. However, researchers' main findings support the earlier empirical studies.

Research question two inquired to what degree the interaction of student-student contacts moderates the relationship between student-to-teacher contact and new learners' satisfaction with online education for university learners in UAE. Results of the statistical analysis of the regression model indicated that the interaction does predict the new learners' satisfaction with online education significantly. Furthermore, the interaction of SSC has a substantially greater effect in predicting the new learners' satisfaction with online education. This study's findings are rather indirectly consistent with prior research on the perceived quality of online education (Okpala, Hopson, Fort, & Chapman, 2010; Chin et al., 2010; Braun, 2008; Shea & Bidjerano, 2008). Moreover, the findings also exemplified that a combination of both predictors and interaction has the highest influence in envisaging learners' perceived quality of online education in UAE. The findings indicated that the perception of new learners' satisfaction with online education was strongly influenced by the student-to-teacher, followed by the student-student combination, and much more importantly by the student-to-student interaction as a moderator (Carter and Rukholm, 2008). This shows that student-to-student interaction is necessary for learners' satisfaction with online education; but in practice, it is lacking seriously (Jiang et al., 2019; Carter and Rukholm, 2008). As a result, the study contributes to the prior knowledge of what extent the factors impact the learners' perception of satisfaction with online education. In addition, the study adds to the limited literature on the understanding of which features are significant in the insight of satisfaction with online education for the UAE university learners. The study also guides courses as well as system designers and online instructors to take into consideration and include the interaction (STC*SSC) as an essential construct into an online system and undertakings to advance learners' perception of satisfaction with online education in UAE.

RECOMMENDATIONS AND LIMITATIONS

The study provides evidence relating to degree the perceptions of satisfaction with online education are predicted by the learning styles -STC contact and STS contact or by a grouping of the predictors with a moderator. Importantly, the authors find evidence in line with earlier studies. Based on study findings, the

authors strongly recommend that online course designers and instructors need incorporate course activities that encourage improved/add interaction (STC*SSC) irrespective of the methods of delivery. Additionally, this study also recommend online instructor training to ease of communication between instructors and learners and more importantly among learners; in combination, greatly expected improved perceptions of the quality of online education.

Further, future researchers can extend the findings to a larger population from UAE different universities. This would help to generalize the study findings in a better way. This study also recommends expanding the current study into a mixed-methods study (a combination of both quantitative and qualitative methods).

Despite several theoretical and practical implications, our study is not free from limitations. First, we investigated only two predictors of learners' level of satisfaction with online education. It is worthy to note that these two predictors are not the sole factors that contribute to learners' level of satisfaction. Future studies should use the multi factors and comparative study of different levels of education with data collected from various sectors (private and public) of UAE to increase the generalizability of the study.

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APPENDIX-1

Student-to-Instructor Contact (SIC)

- 1 | If I have an inquiry, the instructor finds time to respond.
- 2 | The instructor helps me identify problem area in my study.
- 3 | The instructor responds promptly to my questions.
- 4 | The instructor gives me valuable feedback on my assignments.
- 5 | The instructor adequately addresses my questions.
- 6 | The instructor encourages my participation.
- 7 | It is easy to contact the instructor.
- 8 | The instructor provides me both positive and negative feedback on my work.

Student-to-Student Contact (SSC)

- 1 | I work with others.
- 2 | I relate my work to other's work.
- 3 | I share information with other students.
- 4 | I discuss my ideas with other students.
- 5 | I collaborate with other students in the class.
- 6 | Group work is a part of my activities.

Students' satisfaction with distance education

- 1 | Distance education is stimulating me
 - 2 | I prefer distance education.
 - 3 | Distance education is exciting.
 - 4 | Distance education is worth my time
 - 5 | I enjoy studying by distance.
 - 6 | I look forward to learning by distance.
 - 7 | I would enjoy my education more if all my classes were by distance.
 - 8 | I am satisfied with this class.
-

CONTINUOUS INTENTION TO USE ONLINE LEARNING DURING COVID-19 PANDEMIC BASED ON THREE DIFEERENT THEORITICAL MODELS (TAM, SVT, TOE)

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ABSTRACT

The novel COVID-19 pandemic has impacted educational systems in almost all countries worldwide. Traditional classes have been canceled or shifted to online mode through the affected countries. Resuming traditional face-to-face instruction might be delayed. This unexpectedly fast and mandatory shifting to online education, along with the significant challenges that face learners and instructors, has led to uncertainty regarding its future. This study aims to inspect students' continuous intention (CI) towards online education during COVID-19, by incorporating different constructs from three theoretical models: first, conservation values (Security (SEC), Conformity (CON)) of Schwartz Value Theory (SVT), organizational support factors (Training (TR), Top management support (TS)) in Technology-Organizational-Environmental (TOE), and the Technology acceptance model (TAM) main factors (perceived usefulness (PU), perceived ease of use (PEU)). To achieve the research goal, a research model was developed referring to previous strong literature. The data was gathered from 310 students from Imam Abdulrahman Bin Faisal university (IAU) in Saudi Arabia, and analyzed with Structural Equation Modelling SEM-PLS. Findings show that TAM factors (PU, PEU), conservation values factors (SEC, CON), and organizational support factors (TR, TS) are important determinants for online learning adoption during COVID19 pandemic. The study provides directions for designers and developers to establish a more effective online learning environment, which is more suited for the new digitized generation during unexpected conditions.

Keywords: Online learning, Schwartz's Value Theory, COVID-19, technology-organizational-environmental, TAM, continuous intention.

INTRODUCTION

A report from the World Health Organization (WHO) about pneumonia cases in China specifically in Wuhan City, Hubei Province was published to the global society (Gao et al., 2020). The disease spread swiftly worldwide since December 2019 (Rashid & Yadav, 2020). The Chinese government announced that this spreading pneumonia is a new type of coronavirus (Goyal et al., 2019). The primary reason for this rapid spread of the disease is a zoonotic beta-coronavirus, and it is called the 2019 novel coronavirus (2019-nCoV) (Khachfe et al., 2020).

The aftermath of COVID-19 has led to an immense public health crisis, the catastrophic collapse of medical care systems, and a dramatic decline in the wellbeing levels of the world's populations (Khachfe et al., 2020). Since January 2020, many economics, businesses, schools, and higher education institutions (HEIs) have been affected by Covid-19 ('Coronavirus'). It has become a pandemic that poses enormous challenges to the global economy and people's livelihoods in many countries (Agasisti & Soncin, 2021; Rizun & Strzelecki, 2020). Lost revenues, disrupted supply chains, and school closures are some examples of such formidable challenges (Khachfe et al., 2020; Rashid & Yadav, 2020). In response to the high infection rate of Covid-19, many governments adopted strict regulations and took drastic measures to stop its spread to give ample time for health care systems to work more effectively.

Initially, restrictions have been put in place to lower people's social contact by enforced social distancing (Rashid & Yadav, 2020). This means keeping a distance between each other more than one meter according to WHO instructions. The most effective preventive measures according to Agency France Press (AFP) are to remain confined at home and to keep travel and social contact to a minimum which will eventually control the spread of the virus (Khachfe et al., 2020). Also, many governments release daily reports to their citizens to make them aware of the biological nature of (coronavirus), which helps to clarify the controlling instructions and reach good decisions (Xie & Chen, 2020). Consequently, many HEIs and schools across nations have been closed as precautionary steps to save students' and staff's lives. Different HEIs have adopted online education implementing a wide array of models and tools. Some HEIs offer synchronous and asynchronous classes where students can log on to virtual platforms and attend live or recorded classes (Agasisti & Soncin, 2021). Other HEIs use self-paced instruction models. It entails sending different activity worksheets and assignments designed by instructors to students to facilitate self-learning. Relying on remote learning and adopting even more advanced modalities is foreseeable. Hence, shifts in the education landscape are inevitable to prepare the new generations for the upcoming challenges and opportunities. Remote learning will remain an integral part of the educational process around the world even in the post-COVID-19 (Marinoni et al., 2020).

Continuous adaptation of online education is based on the fact that there have been noticeable advancements in the last ten years in the field of online learning resources (Aldikanji & Ajami, 2016; Price et al., 2007; Weltman et al., 2019; Yilmaz, 2015). There is a growing demand for e-learning tools in educational and industrial institutes, which allows the e-learning market to flourish (Alves et al., 2017; van de Heyde & Siebrits, 2019). By 2023, the evolving market of virtual learning is anticipated to reach 65.41 billion USD expanding at a cumulative average increase rate of 7.07% (Panigrahi et al., 2018). Moreover, it is predicted that the global learning management system (LMS) will witness massive growth by 2025 (Panigrahi et al., 2018). There will be a rise from 5.05 billion dollars in 2016 to 18.44 billion increasing at a rate of 15.52% (Panigrahi et al., 2018). This rise has led to an increase in learners' habitual use of the internet in education (Yilmaz, 2015).

Online learning can help educators in enhancing the quality of education by making the learning process more personal and interactive (Saqr et al., 2018; Yilmaz, 2015). Engaging in an interactive learning environment, along with becoming more involved in the learning process, empower students' self-learning abilities, and improve their intrinsic motivation towards learning (Eseroghene & Ahmad, 2018; Weltman et al., 2019). Also, education has become more accessible for students with exceptional circumstances and tight schedules (Marinoni et al., 2020). Online learning has offered them customized learning experiences and access to quality education (Babu et al., 2013). In contrast to traditional classroom teaching, online learning has extended learning beyond the walls of classrooms, reaching a global community of learners via the internet. Shifting from direct instruction to online education has been paved by moving from paper-based to electronic materials (Price et al., 2007), which boasts several advantages over traditional learning (Molnar et al., 2019).

Previous literature has focused on evaluating factors influencing e-learning satisfaction performances and adoption from a descriptive perspective (Asoodar et al., 2016). However, the present study aims at determining key elements affecting the continuous intention to adopt e-learning modality during the current crisis to offer appropriate guidelines for e-learning organizations, decision-makers, academics, and educators. The results can help to overcome hurdles and to lower the risks of e-learning adoption failure. Academics and decision-makers can employ the findings of this research to adopt and implement an effective e-learning system as a safe path during periods of health crises, epidemics, environmental and economic crises.

This study has a contribution of combining Schwartz's value theory (SVT), Technology Acceptance Model (TAM), along with Technology-organizational-environmental to investigate learners' continuous intention for adoption of e-learning during COVID-19 crisis. Additionally, this study considers four factors that can overcome learners' attitudinal ambivalence in adopting online learning as a safe tool during a period of crises: (1) security, (2) conformity, (3) Top management support, and (4) training. Our model provides a useful model for examining learners' intentions for using e-learning continuously. The next section starts with reviewing the literature and then manifesting the research model with hypotheses. After that, we demonstrate the methodology and empirical results. The paper ends with a discussion of the results.

THEORETICAL BACKGROUND

Technology Acceptance Model (TAM)

TAM was suggested by Davis to explore the influence of innovations on individuals' actions (Liu et al., 2010). TAM is one of the most widely applied and dominant models (King & He, 2006). TAM indicates that the Use Intention (UI) can be anticipated using two basic constructs: Perceived Usefulness (PU) and Perceived Ease of Use (PEU). PU refers to the enhancement in user performance through using the innovation, while PEU indicates that using the innovation is effort-free (Davis, 1989). Venkatesh & Davis(2000) indicated that several constructs can be adopted to enhance PU and PEU. TAM model was used in the online learning context to explain individuals' acceptance, UI, and CI (Binyamin et al., 2019; Liaw, 2008). Still, the adoption of the TAM model to explain the online learning adoption, particularly in a crisis, is novel. The power of TAM to evaluate the UI and CI of innovations in several environments has motivated us to adopt TAM as a theoretical ground of this research (Cheng et al., 2011; Gefen et al., 2003; Liaw, 2008; Liu et al., 2010)

Schwartz's Value Theory (SVT)

Previous literature has indicated how cultural factors influence technology adoption and acceptance (Baptista & Oliveira, 2015; Kummer et al., 2017; Srite & Karahanna, 2006; Udo et al., 2012). Srite & Karahanna(2006) investigated the impact of culture-related values on the acceptance of innovation. The authors indicated that individuals' cultural values are affected by national culture, and this consequently affects technology acceptance. Similarly, Baptista & Oliveira(2015) explained how mobile banking acceptance is affected by cultural factors. Besides, Udo et al. (2012) examined the impact of cultural ethos on the acceptance of e-services. These studies indicated that culture is regarded as a critical factor that impacts UI. Referring to Tarhini et al. (2017) research, which focused on e-learning in Lebanon, the social environment was considered as a significant factor, in which the culture influences the behavior of individuals. Also, Salehan et al.(2018) indicated that cultural changes are more associated with individualism and it is affected by technology. Nevertheless, according to Smith(2002) study, culture is usually formed by members of a particular society and constitutes a set of basic common values. Bagchi et al. (2015) indicated the difference between culture and values. While the values distinguish between the individuals, the culture distinguishes between the groups of individuals. Values act as the main standard by which people choose and explain behaviors. Values are internally held beliefs that represent favorable goals that drive the action of behavior (Schwartz et al., 2012).

Values constitute the motivational bases of attitude along with the behavior of a person. Whereas at a group level, the prioritization of value structures helps to frame the culture (Boer & Fischer, 2013; Schwartz, 1994). UI of technology might be influenced by the cultural or personal values that form the user's attitude. Therefore, values act as the primary principles and indicators by which users adopt and justify actions.

At the individual level, Schwartz developed a theory that relates basic values that people recognize in every culture (Schwartz, 2012). Schwartz's theory is one of the common implemented and verified cross-cultural theories in the field of behavioral research (Garay, 2019). Schwartz (1992) highlighted 10 motivationally different groups of values as follows: (1) achievement, (2) self-direction, (3) tradition, (4) stimulation, (5) security, (6) hedonism, (7) benevolence (8) power, (9) conformity, and (10) universalism. These groups were categorized into four high-level values: self-transcendence, self-enhancement, openness to change, and conservation. Combining SVT with decision models was implemented by several studies (Ahmad & Sun, 2018; Diddi & Niehm, 2017; Goncalves et al., 2018; Grigoryan et al., 2018a, 2018b; Pahnla et al., 2011; Seddig & Davidov, 2018). These studies revealed that individual-level values and values dimensions can affect users' attitude (ATT). Moreover, as indicated by these studies, the approach adopted by researchers who apply Hofstede's dimensions as moderators of attitude-behavior relationships differs from the procedure carried out by studies that utilize Schwartz's values as predictors of ATT or UI (Diddi & Niehm, 2017; Grigoryan et al., 2018b).

The values theory has been utilized to explore political choices and human rights (Davidov et al., 2008). Still, few papers deployed this theory in the adoption of innovation (Mehta et al., 2019). For example, in research about the most prominent experiences of effective and ineffective innovation adoption, Partala & Saari (2015) indicated that most of the values are tied to effective innovation adoption. Bagchi et al. (2015) proposed a model using the Schwartz values theory to explore Internet use. They indicated that most of the individual values impact the usage of the Internet.

Technology-organizational-environmental (TOE)

TOE framework has been broadly implemented in organizational context studies to investigate firm adoption of IT products and services (Tornatzky et al., 1990; Zhu, 2004). According to the TOE, which is an organizational-level theory, compared to other technological acceptance models like TAM, TPB, and RBV, studies should concentrate not only on technical respects yet, they should also take into consideration the organizational and environmental contexts of the IT adoption (Borgman et al., 2013; Gangwar et al., 2015). Flexibility of the TOE framework allows it to be more advantageous over other IT adoption models (Oliveira & Martins, 2009). Moreover, TOE offers a comprehensive consideration for user adoption of innovations by incorporating factors affecting decisions of the adoption of business innovation, to enhance organizational abilities in utilizing technology (Salwani et al., 2009; Shahzad et al., 2020; Y. M. Wang et al., 2010). Besides, several studies have implemented the TOE framework to understand the adoption of IT-based systems with an environmental, organizational, and technological base (Alqahtani, 2016; Awa et al., 2015; Boateng et al., 2016; Friedrich-Baasner et al., 2018; Lian et al., 2014; Liang et al., 2017; Mohd Sharif et al., 2017; Mtingwi, 2015; Senyo et al., 2016).

Extended TAM with SVT, and TOE Framework

This paper employs three theoretical grounds: the TAM model, SVT and TOE framework. Although the significance of the TAM and the TOE models in technological adoption have been justified by a broad range of empirical and conceptual research, these models have several limitations. For example, the extrinsic variables in the extended models of TAM are not plainly defined. Also, its two main constructs (PU and PEU) elucidate less than 50% of the system's use (Legris et al., 2003). On the other side, Riyadh et al. (2009) described the TOE framework as a too generic model that has vague major constructs (S. Wang & Noe, 2010). According to Gangwar et al. (2015) it is not simple to combine both models, but it is important to improve the TOE structure by combining it with a model with clear constructs. Hence, previous studies have advocated the need to combine TAM and TOE to boost the predictive capacity of the resulting outcomes and address some of its limitations. Moreover, each of the TOE or TAM models does not concentrate on how personal values affect the adoption of innovations in any context. Based on Goncalves et al. (2018) few studies applied SVT in technology adoption and few studies have integrated it with the TAM model. Consequently, the research approach implemented in this paper is based on integrating the TAM with the TOE framework, which is broadly acknowledged, and it reckons institutional adoption variables rather

than individual variables (Borgman et al., 2013; Chau & Tam, 1997; Low et al., 2011; Tweel, 2012). Also, the paper integrates TAM with SVT theory that focuses on personal values in evaluating personal and institutional decision-making concerning the adoption of e-learning during the COVID-19 crisis.

RESEARCH MODEL AND HYPOTHESIS DEVELOPMENT

This study involves developing and testing an extended TAM model with SVT, and TOE framework. Hence, several hypotheses have been developed in the hypothesized model as illustrated in Figure 1, also see table 1. The hypotheses depict the relationships between variables that have been supported by previous literature.

According to Schwartz (1992) study, conservation values refer to meeting the expectations of key influencers in their environment, considering both peers as well as organizational levels. The adoption of new technology is often influenced by formal and informal communication and control between inter-organizational mechanisms over organizational resources (Salwani et al., 2009; R. K. Singh, 2013). Consequently, this study discusses the related organizational factors that influence online learning adoption in HEIs.

Hypothesis 1: Security (SEC) and Perceived Usefulness (PU)

The SEC values contain two subtypes, the first is personal SEC like values of sense of belonging, personal health, wellbeing, and safety, while the second is societal SEC like the value of national SEC, safe from enemies, and firm social order (Schwartz et al., 2012). In this research, we define security as individuals' emphasis on safety, sympathy, and firm social links. Referring to Mehta et al. (2019) study, employees will perceive job-related e-learning program, which is endorsed by top managers in the organizational hierarchy, as necessary to their career objectives, and worth their effort and time to deploy them. Moreover, the study projected that workers finish basic training programs through e-learning tools to protect their future employment against the threat of peer competition. Consequently, a secured environment is essential to all users, students who give significant importance to SEC value will perceive online learning technology to be helpful to their learning performance during COVID-19. So, by incorporating conservation-type values (SEC) as a predictor of PU, the following hypothesis is proposed H1: SEC has a significant positive impact on the PU of online learning.

Hypothesis 2: Conformity (CON) and Perceived Usefulness (PU)

Schwartz, (1994) defined CON as "control of behaviors, inclinations, and momentum likely to disturb others and defile social prospects or norms." Schwartz et al. (2012) suggested two potential CON subtypes, the first is interpersonal that is related to values like avoiding upsetting others, and showing respect, while the second is complying with expectations, meeting obligations, following rules, and avoiding doing anything people say is wrong. Conforming persons show obedience to follow rules, structures, and instructions designed by the organization in terms of obligatory choice (Bagchi et al., 2015; Mehta et al., 2019). Moreover, they are abiding by the rules and conforming to agreed laws. In this study, students who give significant importance to CON to authority instructions, like social distancing to avoid the threat of COVID-19, will perceive online learning technology to be helpful to their learning performance during COVID-19. Hence, we add the conservation-type values (CON) as a predictor of PU so, H2: CON has a significant positive impact on the PU of online learning.

Hypothesis 3: Training TR and Perceived Ease of Use (PEU)

Schillewaert et al. (2005) described TR as a degree to which organizations instruct and educate their staff in using innovation in terms of quality and quantity. Several studies indicated that TR's goal is to reduce ambiguity and to develop knowledge for future effective usage (Davis, 1989; Gangwar et al., 2015; Igbaria & Angele, 1997). TR should reflect the usefulness of the innovation and provide users with the necessary knowledge and capability to operate it. Since online learning is a complicated information system, HEIs need to train and educate its students before adopting it. This helps to lower students' anxiety about the

usage of online learning. Also, based on Schillewaert et al. (2005) study, TR helps to achieve the goals of the organization, increases students' understanding of online learning benefits, and raises the motivation to adopt the technology. (Arpaci, 2017) indicated that if students believe that they are capable of using an online learning system through the TR time, they will be mindful of the unfavorable learning curve impacts. So, the following hypothesis is proposed H3: TR has a significant and positive impact on PEU of online learning.

Hypothesis 4: Top Management Support (TS) and Perceived Ease of Use (PEU)

Innovation adoption literature has also determined how TS affects the adoption of innovations (Salwani et al., 2009; Teo et al., 2009). Previous literature explained that TS is higher-level officials' actions and perceptions toward using innovation, to create values for the organization (Gangwar et al., 2015; Salwani et al., 2009). Top managements have various roles that are necessary to ensure the commitment of resources, cultivation of organizational climate, reinforcement of values, and ensuring long-term vision. Furthermore, continuous TS is necessary for overcoming barriers and to handle possible resistance towards technological innovation (Gangwar et al., 2015; Jeyaraj et al., 2006; Ramdani et al., 2009; R. K. Singh, 2013; Teo et al., 2009; Y. M. Wang et al., 2010). TS is positively related to PEU and is considered a critical factor in the adoption of information technologies. Unfortunately, according to G. Singh & Hardaker(2014), in the academic field, TS is often absent and has a low priority. Managers might not support online Learning, due to many reasons like competing priorities and lack of resources (Freitas et al., 2006; Lisewski, 2004). In the current study, TS is necessary to reinforce the value of using online learning services due to the very fast shift to online learning caused by the crisis. So, the following hypothesis is proposed H4: TS has a significant and positive impact on PEU of online learning.

Hypothesis 5: Perceived Usefulness (PU) and Attitude (ATT)

PU is defined as the degree to which person can utilize a particular innovation to increase users' job achievement (Davis, 1989). This construct is identical to other constructs, like "relative advantage" in the DOI (Rogers, 2010), and "effort expectancy" in the UTAUT (Venkatesh et al., 2003). Focusing on the current crisis, PU refers to the extent to which students believe that the utilization of online learning will enhance their learning process and will boost their learning performance. So, the following hypothesis is proposed H5: PU has a significant and positive impact on learners' ATTs.

Hypothesis 6: Perceived Ease of Use PEU and Attitude (ATT)

PEU's is the degree to which users presume that understanding and learning innovation is easy and effortless (Davis, 1989). This construct is the same as the effort expectancy in the UTAUT (Venkatesh et al., 2003) and to "complexity" in the DOI Theory (Rogers, 2010). The complexity of online learning systems depends on how easy it is to perform the key learning functionalities. The easier it is to perform these functionalities, the lower the level of complexity, and the easier the perception of system advantages. In this study, PEU is learners' perceptions that the use of online learning is possible without physical and mental effort. Accordingly, if the learners feel that using an online learning platform requires less mental and physical effort and can be simply and easily used, their ATT towards using online learning are greater; hence, we suggest H6: PEU has a positive impact on students' ATT towards online learning adoption.

Hypothesis 7: Attitude (ATT) and Contious Intention (CI)

Davis et al. (1989) defined ATT as "an individual's overall affective reaction to using innovation". However, continued use intentions can be defined as "the level of users' belief that he or she will keep using the innovation (Venkatesh et al., 2003). Icek (1991) proposed that the more favorable students' ATT towards using an online learning system, the greater their CI would be. The TAM presumes that PU and PEU positively influence the ATT, which refers to a user's assessments and evaluation regarding system usage. According to Shih(2004), ATT describes general users' feelings of favor or disfavor toward a specific behavior. Consequently, we suggest the following H7: ATTs toward online learning services are significant and positively associated with CI.

Table 1. Summary of the Hypothesis

Number	Hypothesis details
H1	SEC has a significant positive impact on the PU of online learning.
H2	CON has a significant positive impact on the PU of online learning.
H3	TR has a significant and positive impact on PEU of online learning.
H4	TS has a significant and positive impact on PEU of online learning
H5	PU has a significant and positive impact on learners' ATTs
H6	PEU has a positive impact on students' ATTs towards online learning adoption.
H7	ATTs toward online learning services are significant and positively associated with CI.

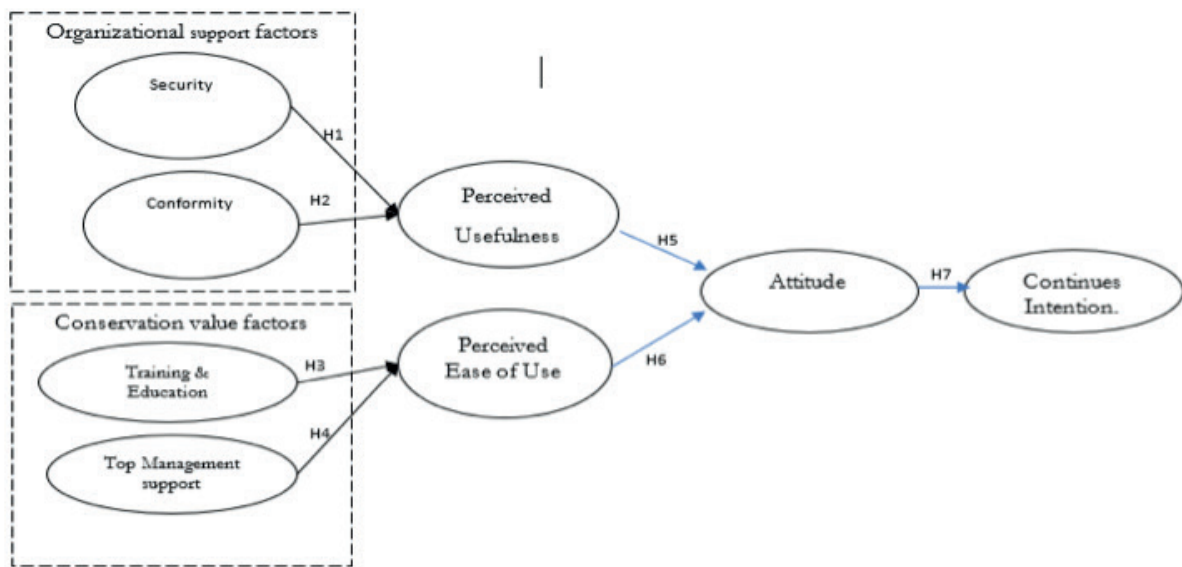


Figure 1. The Research Model

RESEARCH METHODOLOGY

For data gathering, we utilized a questionnaire tool to assess the eight basic variables in the research model (SEC, CON, TR, PU, TS, PEU, ATT & CI). We adopted a five-point Likert scale (1 to represent: strongly disagree and 5 to represent: strongly agree) for the basic factors in the research model. To assure the credibility of the utilized questionnaire, the questions were adapted from previous studies. Following that, survey questions were evaluated by five experts in the education and information system fields. The research was performed with the involvement of 310 participants (IAU). As the participants of the survey are students in a higher education institution, we did not need to translate the questionnaire to the Arabic language. The questionnaire was sent to students through their emails and they were encouraged to fill it by their instructors. The questionnaire contains two parts. In the first part, demographic information was needed to segment the data and classify the respondents. This part gathered information regarding age, gender, education level, see table 2. The purpose of the second part was to assess the factors affecting continuous intention to use online learning based on the conceptual model factors, see table 7 in Appendix 1. The validity and reliability of the results were evaluated using partial least square (PLS) software, by considering the values of Composite Reliability(CR) (0.7), Cronbach's Alpha(CA) (0.7), Average Variance Extracted (AVE) (0.5), and Loading Factor (0.7) (Hair et al., 2013).

Table 2. Demographic Results of the Participants (N=310)

	Item	Frequency	Percent
Gender	Female	150	48.3
	Male	160	51.6
Age	18-20	70	22.5
	21-30	190	61.2
	>30	50	16.1
Academic level	undergraduate	220	70.9
	Postgraduate	90	29.0

EMPIRICAL RESULTS

Measurement Model Analysis

Referring to Hair et al. (2013) all research variables, SEC, CON, TR, TS, ATT, PU, PEU, and CI, were examined in terms of CA, and AVE tests. CA measure was used to evaluate the reliability of the multi-indicator variables. The resulted outcomes of the CA test varied between 0.734 to 0.929, presenting sufficient reliability for each research variable Hair et al., (2013) . As presented in Table 5, the CR test result was more than 0.7 for all research variables, supporting the internal consistency of the variable items. Assessing the convergent validity of research variables was established using AVE and outer loading measures. The AVE was higher than 0.5, affirming the latent variables' explanatory power of the presented variables. The indicator loadings were inspected to assess the reliability of the variable for research measurement. The loading of each indicator needs to achieve a result of at least 0.70 to fulfill the indicator reliability condition (Hair et al., 2013). In the resulted outcome, only one item (CON 5) did not achieve the outer loading condition. Still, following Hair et al. (2013) suggestions, we decided to keep the item for further analysis, as deleting this item will not impact the result of CA and CR tests. The Discriminant validity was inspected by two main tests: the Fornel-Larker criterion and cross-loadings tests. In the Fornel-Larker criterion, the outcomes of the square roots for each factor's AVE need to be higher than the correlation with other variables. In the cross-loadings evaluation of the indicators, the loading of each index in any variable needs to load more highly than the cross-loadings on other variables. The above-mentioned indicators supported that the research model of this research can be utilized to inspect the collected data (Table 6).

Structural Model Analysis

After affirming the validity and reliability of the variables model, the paths model should be analyzed carefully. A bootstrapping method was applied to obtain the t-values and p-values (Hair et al. 2015). These measures can aid the researcher to check the degree of the impact of the coefficients. The path test outcomes are displayed in Table 3. All the paths in the research model are statistically accepted. Additionally, the predictive power of the research model is identified using the coefficients of the determination test (R²). R² defines the ratio of contrast in an endogenous variable, which can be reflected by its exogenous variables (Hair et al. 2015). The R² measures for the endogenous variables have values in the 0-1 range. The findings of the coefficients of the determination test are demonstrated in Table 4. The measures of R² fall between 0.434 to 0.662, highlighting more predictive accuracy with increasing measures (Hair et al. 2015).

The effect size test inspects each exogenous variable, by the means of the power of its share to explain a specific endogenous factor using the R² indicator. Cohen (1988) recommended that if the f² result is within the 0.02-0.15 range, the influence is little. The effect is moderate if the result of the effect size is within the 0.15-0.35 interval. On the other hand, if the f² outcome is more than 0.35, the impact is high. Table 4 presents the effect sizes.

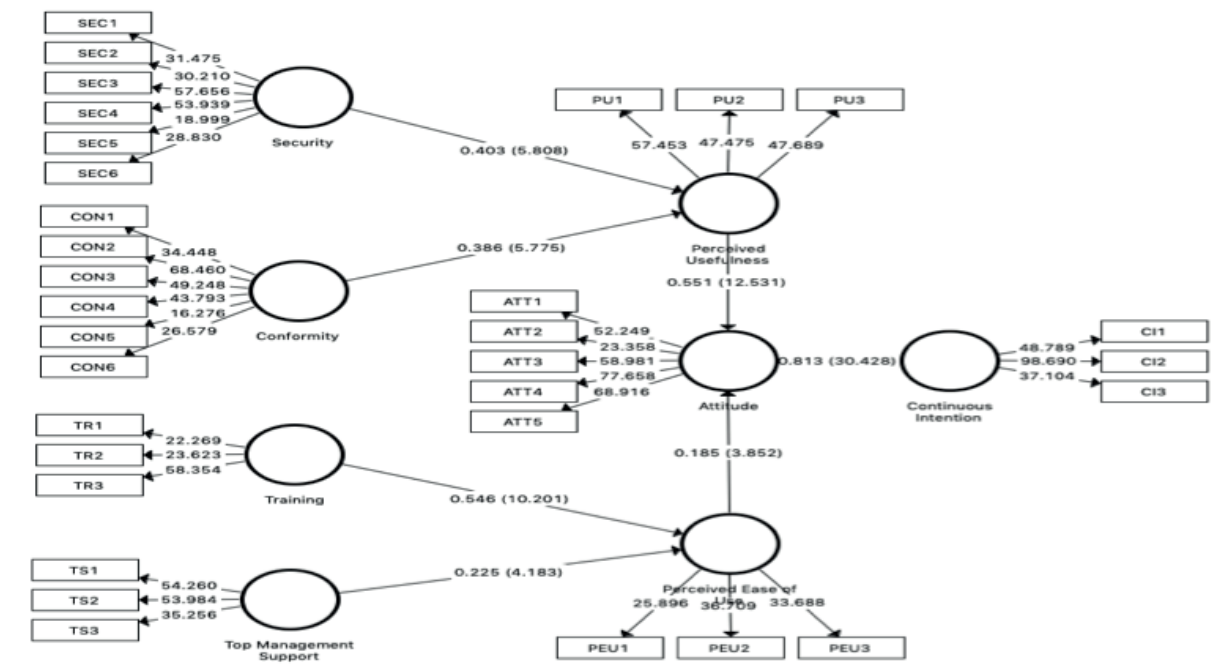


Figure 2. The Final Research Model

Table 3. Path Analysis Output

Hypotheses	Original Sample (O)	Sample Mean (M)	STDEV	T-Values	P-Values	
ATT -> CI	0.813	0.813	0.024	33.279	0.000	Accepted **
CON -> PU	0.386	0.384	0.073	5.302	0.000	Accepted **
PEU -> ATT	0.185	0.192	0.046	4.051	0.000	Accepted **
PU -> ATT	0.551	0.548	0.046	12.068	0.000	Accepted **
SEC -> PU	0.403	0.409	0.076	5.315	0.000	Accepted **
TS -> PEU	0.225	0.224	0.053	4.204	0.000	Accepted **
TR -> PEU	0.546	0.553	0.052	10.513	0.000	Accepted **

Significant at Degree= * <0.05, ** <0.01

Table 4. F-Squares and R-Squares Results

	ATT	CI	PEU	PU	R Square	R Square Adjusted
ATT		1.956			0.434	0.430
CI					0.662	0.661
CON				0.155	0.438	0.434
PEU	0.047				0.535	0.532
PU	0.417					
SEC				0.168		
TS			0.078			
TR			0.461			

DISCUSSION

The goal of this research is to present a new research model that integrates SVT, TOE with the TAM model to investigate the variables that affect students' behavioral continuous intentions to use online learning systems during the COVID-19 pandemic. Based on the proposed model, we investigated the relationships among research factors as follows: conservation values (SEC, CON and the PU, organizational support (TS, TR) and the PEU, and the relationship between PU, PEU, and students' CI through the mediation of students' ATT. In general, the outcomes supported the suggested hypotheses. The major results of this research are as follows: First, the measurement model result shows an immense and positive effect of the SEC on the PU. The results ($\beta = 0.403$, $t\text{-value} = 5.315$, $p < 0.05$) provided proof to reinforce this hypothesis. Therefore, the PU of online learning is profoundly influenced by SEC, and H1 is supported. It could be inferred that students appreciate the online learning system that meets their SEC needs. SEC is a key factor to promote students' perception of the system's usefulness during COVID-19. This study confirms prior studies' outcomes that indicate the significant role of online learning during a political crisis (Aldikanji & Ajami, 2016; Rhema & Miliszewska, 2012). On the other hand, during COVID-19, students consider the online learning system as being better and safer than the traditional learning approaches, which can enhance their perception of the usefulness of the system (Chang & Tung, 2008; Lee et al., 2011; Wu & Wang, 2005). Our finding contradicts Mehta et al. (2019) study, in which the influence of CON and SEC was insignificant, when learners recognize e-learning as an optional choice, but not obligatory, and there is no clear compensation nor disciplinary measures, SEC and CON may not be important in job environment. Furthermore, if the accomplishment obtained through e-learning has no direct reward related to job professional advancement, CON and SEC will not be essential in deciding e-learning adoption. A similar argument was presented by Liu et al. (2010) study, in which no proof was acknowledged to reinforce the correlation between SEC and ICT acceptance, indicating SEC might not be regarded as vital in some contexts. Moreover, this outcome agrees with Bagchi et al. (2015) study, in which the authors indicated that the most related type of Schwartz values is SEC. Considering the use of the Internet, SEC is considered to be steering the behavior of individuals.

The assessment model result demonstrates a considerable and positive effect of CON on PU. The result ($\beta = 0.386$, $t\text{ value} = 5.302$, $p < 0.05$) provides the proof to support Hypothesis 2. So, CON has a positive and considerable influence on PU. CON has a favorable effect on PU because following organizational policy and confirming its instructions, in the situation of the mandatory usage of the e-learning program in the educational institution, can improve the PU of the e-learning. Learners who use e-learning to achieve their learning objectives, endorsed by decision-makers support in their organizations, will utilize the required time and effort to achieve their tasks by using the system. The result of this study demonstrates that the strength of the impact of conforming to authority rules and public safety policies is impacted by the government rules followed by most institutions in the country, including HEIs, to avoid students' exposure to the COVID-19 risk. The COVID-19 pandemic has a huge impact on increasing the importance of using online learning as a tool for public safety. The influence of CON can be developed if students believe in the necessity and importance of using online learning in compliance with the HEIs/government's instructions, which include quarantine rules for a long period.

The measurement model result shows a remarkable impact of the TR on PEU. The results ($\beta = 0.546$, $t\text{-value} = 10.513$, $p < 0.05$) provided the evidence to support hypothesis 3. Therefore, the PEU of online learning is significantly shaped by the presented TR. The result runs consistently with previous studies' outcomes (Amoako-Gyampah & Salam, 2004; C et al., 2015; Kerimoglu et al., 2008). TR of users allows them to comprehend the technical and functional perspectives of an online learning system and allows them to gain the required information and experience. By supporting students to be well-educated, experienced, and responsible; students can effectively use the online learning system. Thus, it becomes viable for them to use and realize its benefit in the learning process and increases their performance. Thus, top managers in HEIs should design compelling and functional TR modules so that online learning can be successfully adopted by their students. This boosts the essential technical requirements and develops a constant intention towards online learning as a risk prevention mechanism.

Fourth, the result of this study shows that TS plays a crucial part in the adoption of online learning. As Hypothesis 4 indicates, TS significantly affects PEU. The results ($\beta = 0.225$, $t\text{-value} = 4.204$, $p < 0.05$)

provided the evidence to support this H4. The result of this study supports previous literature (Gangwar et al., 2015; Low et al., 2011; Ramdani et al., 2009; Schillewaert et al., 2005; Teo et al., 2009). This result is consistent with the result presented by Lee et al. (2011), which indicated that TS facilitates the use of electronic learning systems. Thus, users tend to perceive the online learning system as easy to use if TS is presented. The study of Konradt et al. (2006) found that TS impacts the PEU of system technology. As indicated by Venkatesh (1999), during the initial stages of learning and system usage, TS will impact the PEU of the system positively. The educational institution's top management plays a vital role in persuading their students with their policies and guiding their e-learning practices. E-learning requires diligent and constant support for designing a conducive online learning environment (like providing the needed resources). Thus, according to Gangwar et al. (2015), technology adoption is generally conducted via a top-down approach. Thus, top managers must recognize the role of technology in enhancing the performance of the organization, overcoming the performance gaps, and seizing the opportunities. This is particularly vital during the COVID-19 pandemic where online learning adoption is exploited by top management as a safety tool. Thus, TS is an essential factor to be considered for online learning adoption during a crisis.

Fifth, the result of this study suggests that PU has a considerable impact ($\beta = 0.551$, t -value = 12.068, $p < 0.05$) on the ATT towards adopting online learning. The result is in alignment with several prior TAM studies, which highlighted that PU is a critical determinant of technology adoption and directly influences users' ATT and behavioral intention (Boateng et al., 2016; Chau & Hu, 2002; Davis, 1989; Keil et al., 1995; Ong & Lai, 2006; Purnomo & Lee, 2013; Venkatesh & Davis, 2000). Those scholarly works illustrated that PU impacts intention to use directly through user ATTs.

Sixth, according to the results obtained from the measurement model, PEU affects the ATT towards adopting online learning positively. Based on the results ($\beta = 0.185$, t -value = 4.051, $p < 0.05$), hypothesis 6 is supported. This was also confirmed by Sanchez et al. (2013) study, in which better technical service support or aid provided to students, to assist in solving their issues, has impacted their perception towards the e-learning platform usage. The problem can be increased if top management fails to present suitable support. Therefore, top management should select an online learning system carefully and should offer the technical support that enables learners to gain competence and confidence in carrying out the required class activities.

Finally, a hypothesized path between ATT towards using online learning and CI to use has been established and a direct relationship is supported by this study. However, mixed results, considering this hypothesis, have been indicated in the literature. For example, Davis (1989) asserted that introducing the benefits of technology explicitly, in a user-friendly manner, enables users who lack a positive viewpoint about technology to use it. Thus, in the technology acceptance context, the role of ATT towards usage is modest in this case. Additionally, Al-hawari & Mouakket (2010) did not support the immediate influence of ATT on the adoption of technology. This result also confirms Ong & Lai's (2006) study and contradicts the result obtained by Cheung & Vogel (2013), in which PU was found to be the most determinant trigger of behavioral intention towards online learning.

RESEARCH CONTRIBUTIONS AND IMPLICATIONS

This study supports the online learning adoption research and asserts previous findings from the literature. It entails implications for students, HEIs, and online learning providers. Its contributions are discussed further from theoretical and practical aspects in the following sections:

Theoretical Contribution

This study manifests the key constructs that trigger students to adopt online learning during the COVID-19 crisis. The development of a validated model is a major contribution to online learning literature. The proposed research model integrates SVR, TOE with TAM. Constructs derived from the literature contribute towards a better perception of the CI to use online learning. The TAM model has been widely utilized in interpreting users' behavioral intention to use technology, still, a few studies validated the TAM model in the context of human values (Mehta et al., 2019). There are mixed pieces of evidence regarding the greater expository capacity of integrating SVR with TAM. It was determined by Mehta et al. (2019), first, human

values give tremendous power to the TAM to explain behaviors. This represents a remarkable contribution considering the existence of conservation values (CON, SEC) in the online learning context. The results suggest that students with a higher initial level of CON to authority and SEC tended to perceive online learning systems as useful during a crisis like the COVID-19 pandemic more than others. Moreover, this study extended TAM by employing a set of TOE variables related to continuous intention to use online learning, both TS and TR are critical factors influencing continuous intention to use online learning system during crisis. The successful continuous intention to use online learning relies on the competency of top management in creating an environment of trust. It should take serious measures to ensure that senior management is fostering organizational climate and creating a supportive and creative culture by providing TR, encouragement, and support to prompt adopters of online learning. Findings show that PU, PEU, conservation values (SEC, CON), and organizational support (TR, TS) are important determinants for online learning adoption.

Practical Contribution

SEC has major implications for the CI to use online learning during COVID-19. Online learning that is perceived as yielding high SEC is more likely to increase the CI to use online learning. Students should ensure that adopting online learning is all perceived as highly valuable to them. Practitioners implementing online learning in the educational process should also be aware of the link between perceived SEC and the PU of electronic learning during a crisis like COVID-19. Accordingly, top management in higher education institutions should invest further in technology to enable this shift from traditional learning style to remote education, this will lead to developing learning processes during the crisis and enhance access to the learning resources (Marinoni et al., 2020). It is advised that top management should seek to engage early in promoting online learning through positive word-of-mouth. Making online learning a mandatory choice is another recommended approach that top management can use. This will assist in informing novice users about the possible advantages of using online learning systems which will consequently increase their perceptions about how technology helps during the crisis period.

Also, the CI to use online education will refine the learning process, bridging the gap between rural and urban regions, and will help to meet education targeted visions. Moreover, the awareness of the importance of the TR in education should be considered by the top managers, they should provide adequate time and resources to train students, teachers, even parents on how to use online learning. TR is very essential in building self-esteem and presents users with adequate experience in utilizing electronic platforms. Teachers and instructors need to be trained not only on how to use the technology but also how to organize and deliver the material (Polloff & Pratt, 2001; G. Singh & Hardaker, 2014). Top management should reflect on their higher educational vision and mission to ensure the quality of their online learning subject matter by offering sufficient cutting-edge content that meets students' needs and the quality of learning outcomes (Rashid & Yadav, 2020). Failing to offer the TR in terms of technology usage and the effectiveness of incorporating the innovation into the curriculum will negatively influence the CI to use online learning (Gulbahar, 2007; G. Singh & Hardaker, 2014; Surry et al., 2005). Moreover, top managers and policymakers should have follow-up plans for the further development of online learning platforms. Besides, they must maintain collaboration with the government and institutions to overcome the digital divide deficiency and make the online learning services more accessible, dependable, and affordable, also they should enhance the readiness of HEIs for any emergency cases.

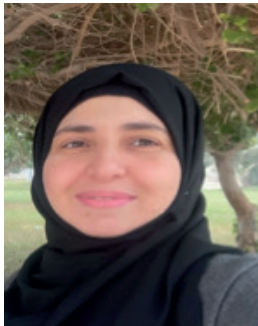
LIMITATION AND FUTURE WORK

This study has many restrictions, first, the population is specific merely to students at a higher educational level. Therefore, applying the outcomes of this study to students at the secondary level or lower requires caution, as the factors may vary with the age and level of students. Given the increasing importance of online learning technologies for schools during the COVID-19, and the considerable variations between graduated students and secondary level or lower students, however, CI to use online learning by lower-level students' grow over time and requires deep exploration. Second, the generalization of the conclusion and findings of

the study is limited. Although the research methodology chosen to fulfill the research goals of this study was sufficient, still, it was restricted to the questionnaire and online survey method for data collection. Choosing alternative data-gathering techniques like interviews or both qualitative and quantitative methods may result in various outcomes. Third, students from private sectors are not included in the sample. This restricts the generalizability of this study to other communities. Furthermore, the data, which is restricted to online learning during the COVID-19, was gathered in a limited base.

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APPENDIX 1

Table 5. Constructs' Reliability and Convergent Validity Test (N=310)

Variable	Indicator	Outer Loadings	CA	CR	AVE
ATT	ATT1	0.877	0.929	0.946	0.779
	ATT2	0.837			
	ATT3	0.887			
	ATT4	0.910			
	ATT5	0.901			
CI	CI1	0.893	0.873	0.922	0.797
	CI2	0.930			
	CI3	0.854			
CON	CON1	0.807	0.897	0.922	0.665
	CON2	0.886			
	CON3	0.875			
	CON4	0.860			
	CON5	0.669			
	CON6	0.775			
PEU	PEU1	0.815	0.772	0.868	0.686
	PEU2	0.855			
	PEU3	0.814			
PU	PU1	0.877	0.841	0.904	0.759
	PU2	0.882			
	PU3	0.854			
TS	TS1	0.884	0.855	0.911	0.774
	TS2	0.905			
	TS3	0.849			
TR	TR1	0.760	0.734	0.848	0.651
	TR2	0.795			
	TR3	0.862			
SEC	SEC1	0.795	0.891	0.917	0.650
	SEC2	0.795			
	SEC3	0.864			
	SEC4	0.871			
	SEC5	0.716			
	SEC6	0.788			

Table 6. Fornell-Larcker Criterion (N=310).

	ATT	CI	CON	PEU	PU	SEC	TS	TR
ATT	0.883							
CI	0.813	0.893						
CON	0.665	0.625	0.816					
PEU	0.445	0.440	0.448	0.828				
PU	0.638	0.623	0.676	0.472	0.871			
SEC	0.644	0.601	0.720	0.433	0.681	0.806		
TS	0.528	0.527	0.620	0.422	0.832	0.607	0.880	
TR	0.431	0.434	0.373	0.628	0.369	0.435	0.362	0.807

Table 7. The Questionnaires Items

Construct	Item	References
CON	1. I think that I need to follow what people in leadership ask.	(Mehta et al., 2019; Saris & Schwartz, 2013)
	2. It is vital to me to obey instructions even when no one is monitoring.	
	3. Following all the rules is significant to me.	
	4. It is significant to me to prevent disturbing other people	
	5. I believe it is vital not to disturb anyone.	
	6. I attempt to be sensitive and assure not to irritate others.	
SEC	7. I try to prevent anything that might threaten my safety	(Mehta et al., 2019; Saris & Schwartz, 2013)
	8. My security is highly significant to me.	
	9. It is significant for me to be in a secure environment.	
	10. It is vital to me that my government defends us against all dangers.	
	11. I think the government needs to be firm to protect the community.	
	12. We need to have rules and stability in the community.	
TS	13. Our upper administration considers the adoption of online learning as strategically significant.	(Gangwar et al., 2015; Shahzad et al., 2020)
	14. Our upper administration provides powerful direction and shows a culture of broad knowledge sharing.	
	15. Our upper administration takes risks entailed in the adoption of online learning	
	16. The upper administration has the regulations to support the utilization of online learning	
TR	17. My organization supports me with comprehensive training in using online learning	(Gangwar et al., 2015)
	18. The training can enhance my understanding of online learning	
	19. The training empowers my self-esteem in utilizing online learning	
PU	20. Online learning would enhance my learning outcomes.	(Tantipongnant & Laksitamas, 2014)
	21. Online learning would raise academic productivity.	
	22. Online learning easiness the study of course contents.	
PEU	23. I find the online learning system easy to use	(Tantipongnant & Laksitamas, 2014)
	24. Learning how to use an online learning system is easy	
	25. It is easy to become proficient at using an online learning system	
	26. The benefits of using an online learning system were more than the difficulties in operation	
ATT	27. I believe that adopting online learning is good for the educational process.	(Taylor & Todd, 1995)
	28. I think that adopting online learning is beneficial for the educational process.	
	29. I think that using online learning is wise during COVID-19.	
	30. I think that using the online system is the best choice during COVID-19.	
	31. I think that adopting online learning is appropriate during COVID-19.	
CI	32. If I can access the online learning system, I will continue to use it.	(Davis, 1989; Venkatesh & Davis, 2000)
	33. I recommend others to use online learning.	
	34. If I can access the online learning system, I will use it in the future	

APPENDIX 2

Table 8. Cross-Loadings Test

	ATT	CI	CON	PEU	PU	SEC	TS	TR
ATT1	0.877	0.717	0.616	0.380	0.577	0.568	0.486	0.362
ATT2	0.837	0.668	0.562	0.378	0.506	0.546	0.429	0.381
ATT3	0.887	0.680	0.545	0.423	0.557	0.555	0.456	0.375
ATT4	0.910	0.717	0.601	0.394	0.570	0.587	0.464	0.362
ATT5	0.901	0.800	0.607	0.391	0.601	0.587	0.493	0.419
CI1	0.740	0.893	0.589	0.413	0.583	0.577	0.487	0.393
CI2	0.766	0.930	0.610	0.396	0.559	0.558	0.469	0.409
CI3	0.669	0.854	0.466	0.368	0.526	0.470	0.457	0.359
CON1	0.596	0.562	0.807	0.344	0.612	0.634	0.545	0.270
CON2	0.614	0.549	0.886	0.430	0.609	0.625	0.538	0.335
CON3	0.517	0.489	0.875	0.336	0.526	0.573	0.500	0.314
CON4	0.534	0.481	0.860	0.311	0.540	0.561	0.513	0.297
CON5	0.457	0.491	0.669	0.335	0.481	0.498	0.442	0.334
CON6	0.510	0.470	0.775	0.434	0.515	0.612	0.481	0.278
PEU1	0.383	0.389	0.377	0.815	0.441	0.335	0.366	0.436
PEU2	0.333	0.353	0.341	0.855	0.374	0.352	0.329	0.486
PEU3	0.385	0.351	0.390	0.814	0.361	0.382	0.352	0.616
PU1	0.529	0.547	0.566	0.407	0.877	0.579	0.742	0.336
PU2	0.562	0.519	0.618	0.447	0.882	0.591	0.732	0.300
PU3	0.575	0.562	0.582	0.379	0.854	0.609	0.703	0.331
SEC1	0.531	0.547	0.557	0.434	0.519	0.795	0.465	0.385
SEC2	0.537	0.493	0.577	0.387	0.553	0.795	0.499	0.377
SEC3	0.538	0.526	0.641	0.355	0.607	0.864	0.537	0.335
SEC4	0.592	0.522	0.641	0.369	0.581	0.871	0.521	0.362
SEC5	0.453	0.404	0.479	0.255	0.479	0.716	0.434	0.354
SEC6	0.459	0.409	0.572	0.288	0.546	0.788	0.472	0.299
TR1	0.306	0.245	0.206	0.454	0.236	0.257	0.225	0.760
TR2	0.396	0.399	0.307	0.428	0.321	0.358	0.316	0.795
TR3	0.349	0.400	0.372	0.608	0.333	0.421	0.329	0.862
TS1	0.446	0.478	0.555	0.357	0.739	0.536	0.884	0.339
TS2	0.469	0.438	0.564	0.422	0.746	0.533	0.905	0.296

STUDENTS' DISCOURSES DURING THE ONLINE DISTANCE LEARNING IN THE FIRST WAVE OF THE COVID19 PANDEMIC: AN ACTION RESEARCH WITH STUDENTS AS CO-RESEARCHERS

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ABSTRACT

The COVID-19 pandemic affected education communities by turning students and teachers abruptly to online teaching. This imposition of digital education is being investigated by various researchers all over the world since it has changed the way we conceive of the use of technology in classrooms and in our lives in general. Nevertheless, the students' voice is being neglected and not taken seriously into account. In this paper an action research is presented with the teacher acting as researcher and the students as co-researchers. This action research took place during the first wave of the pandemic (March 2020-May 2020) in Crete, Greece. The students, after investigating the online education in general and after various discussions, in their final accounts reflected upon a. the changes in their role as students, b. the changes in the role of the teacher, c. they proposed the role that a teacher should have today. The teacher-researcher analyzed these three categories with Critical Discourse Analysis to identify the discourses the students promoted or silenced. The findings showed that online education is not a success story as promoted by researchers, policymakers, and other stakeholders; rather it lacks human elements like humor, psychological support, and instant interaction.

Keywords: Action-research, students' voice, discourses, online education, digital literacy, critical literacy.

INTRODUCTION

The COVID19 pandemic has affected all sectors of society and in particular education, since it has led this sector to an unprecedented crisis when the educational communities shifted so abruptly from offline to online courses (Assuncao Flores & Gago, 2020). This abrupt shift left spaces for companies like Google Classrooms, Zoom, Cisco WebEx, Microsoft Teams, and Edmodo to enter homes and to be part of everyday school practices.

The use of technology in the classroom was a need in developed countries from the '70s and early '80s (Howard & Mozejko, 2015). Nevertheless, it was the COVID19 pandemic in March 2020 that led to a large number of students using not only digital but online education all over the world, including Crete where the research was carried out.

Several scholars have started dealing with this impressive turn to digital online education and have tried to evaluate the impact of this phenomenon at the macro-level by investigating the impact on society, education and future working conditions. There are well-known scholars that tried to explain what has happened in education in general (Selwyn & Jandric, 2020) or how it is going to affect education in the future (Code et al., 2020). Other articles were more focused on specific areas like the education of teachers in service (Akar & Erden, 2021; Assuncao Flores & Gago, 2020; Lwin et al., 2022) ΚΑΝΤΕ ΚΛΙΚ Η ΠΑΤΗΣΤΕ ΕΔΩ ΓΙΑ ΝΑ ΕΙΣΑΓΑΓΕΤΕ ΚΕΙΜΕΝΟ. or the inequality issues in particular places in the world (Abioui et al., 2020; Demir Kaymak & Horzum, 2022; Van & Thi, 2021; Vaz, 2022).

Some other scholars focused more specifically on the impact of the learning and teaching practices and the change in the participants' role (Niemi & Kousa, 2020). These kinds of research identify the insights into the micro-level of a classroom, like the students' low motivation or the teachers' weakness in monitoring their students' online progress.

Although there are studies that focus on students' voices in universities and communities (Kong et al., 2022; Mojica & Upmacis, 2022; To et al., 2022; Vaz, 2022), there seems to be a lack of research on students' voices and free expression of their opinion in school settings, away from predetermined answers in questionnaires. Furthermore, there is also a lack of research which attempts to connect the micro-level with the macro-level.

The main aim of this paper is to contribute to the discussion about the rapid adoption of online education due to the COVID19 pandemic: a. offering students' unique insights which were developed through the participatory activities in an action research project, in which the students took an active role as co-researchers, and b. connecting the micro-level with the macro-level using Critical Discourse Analysis.

BACKGROUND

The Promotion of Students' Voice in Educational Changes and Innovation

The students can contribute significantly to discussions about educational issues which they experience. As Mok (1997, p. 318) argues, students know their educational needs and their problems and therefore they are in a privileged position to express what they need to learn and in which way they can learn it better and more effectively. In a democratic society it is the students' right to intervene in decision-making that affects their learning.

The active participation of students in research is beneficial for the students themselves, the teachers and the education community in general. The young people have unique insights into learning, teaching and schooling. The adults should pay attention to these insights, the problems that students confront and the ways these problems can be investigated in a specific local context.

Through participative approaches the educational practices are getting better, the students raise their academic competences by enhancing their responsibility and producing knowledge that can affect policies and practices in their school (D. L. Mitra, 2004). When the students participate so actively, the relations between students and teachers get better, since teaching is seen as a mutual attempt to change the problematic situations; through this mutual attempt and the building of beneficial relations, there is a chance to discover the inconsistencies and the issues that cause problems in the teaching and learning procedures (Flutter & Rudduck, 2004). In order to carry out these procedures, there is a need to develop dialogue and mutual trust between the participants.

The students' perspectives are crucial in the teacher's reflection, because with honesty and consistency they express with clarity the problematic situations and therefore should be seriously taken into account (Cullingford, 1991). These voices can offer a clearer representation of the failures of the education system (D. Mitra, 2001). These representations can be made in research settings, where they can be discussed and seriously considered.

Furthermore, these structural changes where the students are becoming active participants in research projects are based on democratic values and guide the future citizens in this direction (Hart, 1997). The students understand that their approaches are unique and crucial to the evaluation, assessment and improvement of their learning. Participating in decision-making transforms them from active learners to active citizens.

THE STUDY

The study is action research with the researcher acting as a teacher-researcher and the students as co-researchers (Fielding, 2001, 2011). **Κάντε κλικ ή πατήστε εδώ για να εισαγάγετε κείμενο.** As action research, it can be characterized as a case study since the implementation took place in a specific context. It is also qualitative research since the main goal is to discover the participants' perspectives through analyzing the students' journals with Critical Discourse Analysis.

Research Questions

The goal of this study is to promote and discuss the students' representations regarding their distance learning experiences during the COVID19 pandemic. For this reason, the study will focus on the discursive features marked in their personal diaries. Research questions are as follows: Which discourses did the students (re) produce about the teaching practices during the COVID 19 pandemic? How did the students represent their own role? How did the students represent the teacher's role?

Context and Participants

This research took place in the Experimental Junior High School (12–15-year-old students) in the first grade (12-13 years old), which collaborates with the University of Crete and, therefore, it can be supported by experts and academics. Conducting research is one of the school's roles. The students are chosen by lot, and it is a gender-balanced school (not class). In the specific class there were 23 students (9 boys and 14 girls). The group was mixed concerning socioeconomic class, abilities and origin. 5% of the students were second-generation immigrants from Albania, Turkiye and India.

In this action research, the author of this paper was the facilitator and the teacher-researcher, and the students acted as co-researchers. They were aware that we were conducting research. Action research has been utilized productively in literacy studies (Katsarou, 2013; Staples, 2012), and this research took place as a literacy and research event in the Course of Modern Greek (L1).

The Teaching and Research Intervention

The action research lasted two and half months (from March to May 2020), when the schools in Greece were in lockdown to control the spread of COVID19. Very rapidly the students were forced to continue their schooling through digital means. WebEx was financed by the Greek government for synchronous online courses and several platforms were constructed by the state such as e-me and e-class (this platform existed before but was enhanced during this period). The Experimental Junior High School promoted the use of Edmodo, which had been used since 2011. The students were more familiar with this platform, so its use was readily accepted by the particular learning and teaching community. The students attended synchronous online courses from 8:00 a.m. to 12:00 p.m. and afterwards they had to send their exercises to the asynchronous online platform where the educational material was also uploaded. For the synchronous education the ministry provided the WebEx Cisco communication tool.

As shown in Table I, the action research took place in two cycles. In the Modern Greek course, the teacher and students dealt with general themes such as nutrition, the environment and cinema. In the A cycle the students worked on the general theme of school. The students brought texts (such as Harry Potter "The Order of the Phoenix", the extract with the austere Professor Umbridge) and movies such as *L'école buissonnière* (1949) and *Summerhill* (2008). They analyzed the texts and noticed different teaching and learning methods, and discussed thoroughly the role of the teacher and the learner in various contexts. From the discussion, the students mentioned the changes in teaching and learning practices due to the pandemic and the abrupt start of online teaching in their lives. After this discussion, the students in the B cycle acted as auto-ethnographers and expressed their thoughts in final accounts where they focused on the online learning and teaching practices during the COVID19 pandemic.

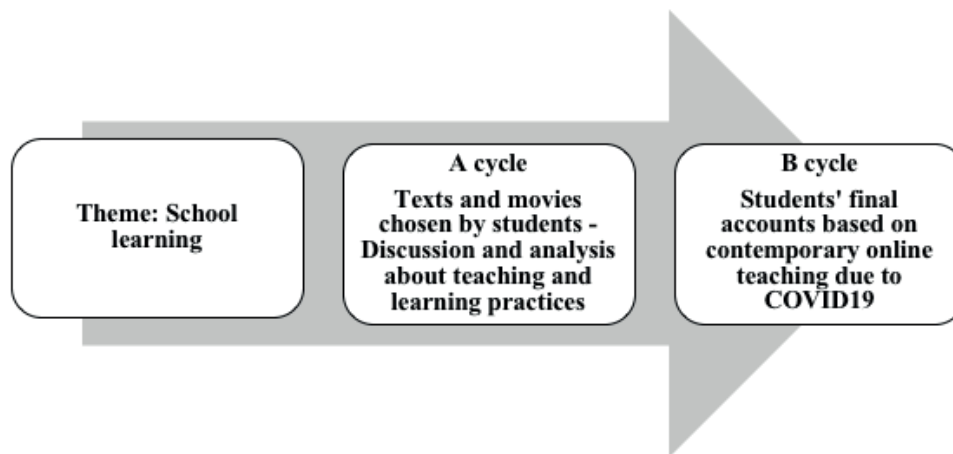


Figure 1. Teaching and Research intervention

In the B cycle, the students acted as auto-ethnographers. Ethnography in general has been used in education since the 1980s and it is the detailed observation of particular forms and a written (or sometimes audio-visual) account, based on social and cultural theory. In an action-research like this one, it promotes the students' voice and gives them the opportunity to express freely their thoughts since they are empowered as co-researchers (Fielding & Bragg, 2003).

Methodology

After this second cycle, the teacher-researcher (hence TR) analyzed the data based on the thematic categories the students had chosen and conducted Critical Discourse Analysis using Halliday's Systemic-Functional Grammar (see next chapter for details about the use of SFG).

Data Collection and Analysis

From this particular intervention the TR collected 23 written accounts from the students in a particular class, 9 boys and 14 girls, where 5% are from a foreign country and have a different first language, culture and religion. Due to protection of their personal data, the students have nicknames in the findings section.

In the analysis the TR followed the themes the students had put forward during their discussions and the themes that dominated their written accounts. These themes represented the discussion that took place in the online classroom during the analysis of the texts and the movies. The themes were: a. the difficulties the students faced in online education, b. the differences the students noticed in the teacher's role in the online and the offline courses, c. the role and the knowledge the teachers should have. After the discussions, the TR conducted Critical Discourse Analysis.

Critical Discourse Analysis in Action Research Projects

Critical Discourse Analysis (CDA) is an important qualitative communication tool that critically describes, interprets and explains the ways discourses construct and legitimize social inequalities. As a method, CDA investigates "which options are chosen in which institutional and social contexts, and why these choices have been made, what interests are served by them, and what purposes achieved"(van Leeuwen, 2008, p. 33). In other words, CDA tries to reveal the ways in which language, society and ideologies are connected by analyzing the micro-level of texts (oral, written, visual) and the macro-level, which refers to the social structures and the power relations in these texts. CDA as a method used in this particular research is described in the next section.

In action research projects with a critical dimension, where the main goal is to give voice to participants and understand in depth the theories, ideologies and stances they promote, silence or undermine, CDA offers the suitable tools to connect the classroom micro-level with the social injustice and the power relations that construct and preserve this injustice.

In an action research project, the teacher-researchers take decisions and gradually make choices that shape their practices. CDA can illuminate how these decisions have been taken and help them understand the educational process in a political and socially-grounded discourse analysis. In this case the teacher-researcher can pose questions such as: “How does discourse shape social relations? Who has a voice to speak?, How does discourse express power and refined ways of social control?” (Katsarou, 2013, p. 196).

Action research is politically oriented and promotes empowerment and emancipation (Carr & Kemmis, 2005). In this action research the TR promotes the students’ voices and in order to understand in depth the discourses the students promote, and understand as a teacher the institutional power that shapes the students’ voices, the TR conducted CDA (Katsarou, 2013).

In this case, CDA assisted in the identification of a. the social actors (teacher, students and policy makers) and the identities that are promoted; b. the reasons these identities and social actors were constructed in a particular way; c. which interests and which purposes these particular constructions serve.

The CDA connected the micro-level (the linguistic items like words, syntax, transitivity, modality, presupposition) with the macro-level (the institutions, the discourses, the practices and the ideologies they promoted). CDA has a strong political influence, since it develops theories to question and modify particular common practices (Horkheimer, 1937; 2014).

In this analysis the TR followed Richardson (2007), who states that CDA focuses on: a. a mutually constituting nature of discourse and society; b. context discourse; c. the ideological nature of language; d. social issues; e. power relations, representations of agency (space to act for an actor) and structure (restrictions to this space); f. systemic interpretation and explanation (Richardson, 2007, pp. 26-27).

Regarding identities, (Richardson, 2007) claims that all people “possess a range of identities, roles and characteristics that could be used to describe us equally accurately but not with the same meaning” (Richardson, 2007, p. 49). He acknowledges the fluidity of identities and the fact that meaning-making is not one and unique.

Subsequently, in order to understand the teacher-students identity, scholars need to define the specific society where the identity is constructed (e.g. Greece), the particular context (e.g. online teaching during the COVID19 pandemic), that the language transmits specific ideologies (e.g. teachers “not having the necessary knowledge”), the social issues that come to the surface (e.g. no funding for students that do not have money to buy laptops), what the actors can or cannot do (e.g. the Ministry of Education should or should not provide money) and, of course, the ideological consequences and explanations of this identity (e.g. the role of online education).

This approach is useful to interpret the data, because it connects precisely the micro-level (e.g. lexical analysis, syntax structure), with the macro-level (e.g. the ideological and social consequences). More specifically, it gives the opportunity to connect language representations with the ideological aspects and perspectives that are taken for granted by particular discourses within certain practices.

Lexical analysis and transitivity helped me answer questions such as: Which social actors do the students’ texts refer to? Which words (e.g. nouns) are used to refer to the actor? Which words (e.g. verbs) are used to refer to the actors’ deeds?, Which grammar is used to refer to the actors? Which structures suggest agency?

FINDINGS

The presentation of the main finding is based on the thematic categories identified by the students: 1. The difficulties we (as students) face. 2. The changes in the teacher’s role 3. What the teacher should/must do. The subtitles of these main categories arose after the CDA. In the findings section, I tried to present excerpts from almost all the students. Figure 2 shows the main themes and the sub-themes. The following table (Table 1) summarizes the findings with examples from the students’ excerpts:

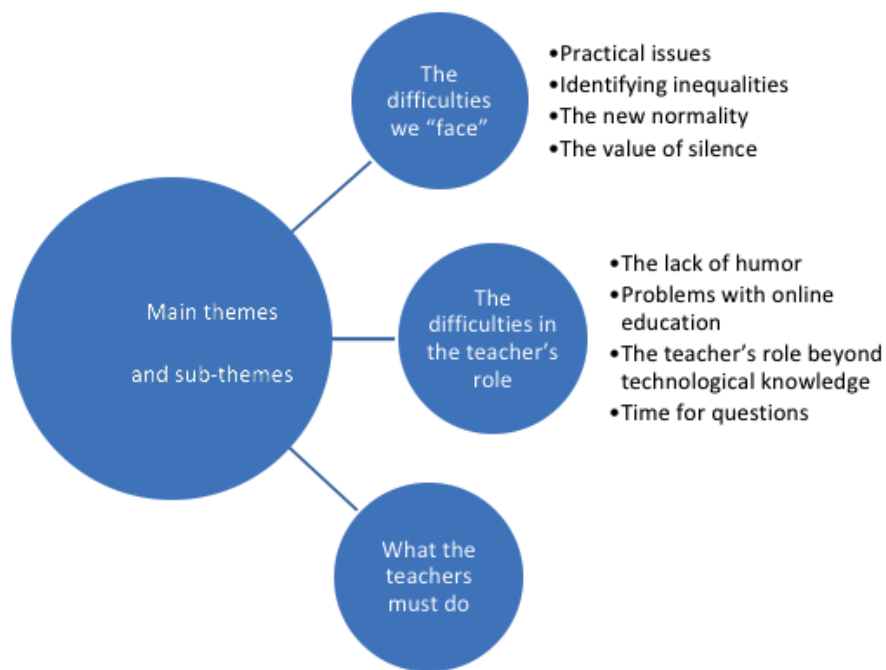


Figure 2. Visualization of the themes and the subthemes

Table 1. Summary of the findings with examples from students' excerpts

Main themes	Subthemes	Examples from students' excerpts (exc.)
The difficulties we "face"	Practical issues	-bad (internet) connection (exc. 1) -(when) we ask something we have to wait (exc. 1) -Miss classmates and teachers (exc. 1)
	Identifying inequalities	-No (strong) internet connection (exc. 2, 3) -No proper devices (exc.2, 3) -Parents cannot help (exc. 4)
	The new normality	-Familiar with this way of learning (exc. 5) -Problematic distance education is better than no education (exc. 6)
	Silence as a value in online distance education – a marginalized perspective	-Online education is not so noisy as in the classroom (exc. 7)
The difficulties in the teacher's role	The lack of humor	-Most of the teachers have changed their behavior (exc.8) -(teachers) are not familiar with this kind of learning (exc. 8)
	Problems with online education	-The teachers have problems with this kind of education (exc. 9)
	The teacher's role beyond technological knowledge	- Many hadn't the necessary knowledge [...] the technical means to cope with this procedure (exc. 10) - the role of the teacher is more basic in stuff such as immediate communication, exchanging ideas, instant help and offering knowledge (exc. 11) -cannot have contact with another student (exc. 12)
	Online education allows time for questions	- The teachers in online distance education are calmer, as well as us (the students) (exc. 13)

-
- The teacher must help children to discover their talents and to give them knowledge that will be useful for the future. (exc. 15)
 - The teacher should promote collaboration [...] have fun and make us feel better and not get bored (exc. 14)
 - The classroom is not simply four walls with desks and chairs, but a relationship based on confidence, a community, a living organism (exc. 16)
-

The Difficulties “We Face”

Practical issues

One of the main problems the students identified was the emergence of several practical issues. For example, the time it took for a student’s question to be answered by the teacher, the lack of internet connection and the demand for PCs in houses, where many students needed electronic devices, as well as the parents who also had to work online.

Excerpt 1.

The difficulties I deal with as a student with the online education in the COVID 19 period have to do with practical issues and technology. Many times, the internet has a bad connection because my other two siblings are also doing online courses. Sometimes I also have problems because I cannot upload an exercise and when I want to ask something I have to wait until the next lesson. I also forget that I have tasks to do, and I miss my classmates and my teachers so much. (Yiannis St2 – 12 years old)

In this excerpt, the abstract entity “difficulties” appeared as the student’s main problem, and the student refers to himself with the general entity “as a student”. These problems that he “deals with” are connected with the next proposition with “practical issues” and “technology”. These entities are more concrete, and the student realized the exact problems he had. In the next proposition the source of the problems is identified: 1. the bad internet connection; 2. two siblings that also attend online courses; 3. his knowledge concerning uploading. The student presents himself (repetition of first singular “I”) to be responsible for his knowledge of technology and does not try to discover the reasons why the internet connection is so bad nor why his family lacks electronic devices. At the end of his paragraph, although he has referred to these problems, he concludes that his questions needed to wait, that he forgets he has tasks to do and that he misses his classmates and his teachers. In addition, he refers to more problems that arise from online education. Although the last sentence (I miss...teachers) sounds irrelevant, it seems to be the voice that tries to find a way to be expressed. The main problem for the student might not be the internet or the lack of PCs, but rather the lack of communication with his classmates and teachers.

Although the student started with practical issues and referred to other problems such as the delay in answering his questions, as shown from the ending of his paragraph, this is also a structural space where the student evaluates what he describes and provides an overall point of view; the most important aspect for him is real life communication. Learning is not a situation that should be associated with electronic devices; for the students, their classmates, relationships and human communication seem to be the most important elements.

In other excerpts the students constructed a more collective identity through which they expressed their stances. For instance, Emmanuela St5 (12 years old) says that “we cannot connect with” regarding the same problem. In this case, agency is more collective, and it is not a personal matter, as it was for Yiannis in excerpt 1, who insisted on using the first-person singular (‘I’).

Identifying inequalities

Another issue is the political angle of the practical problems Yiannis St2 expressed. Although this student seemed to neglect the political factor and insisted that online teaching has practical issues like problems with the internet connection, many students mentioned financial difficulties which they and their families dealt with during the COVID19 pandemic.

Excerpt 2.

The internet connection is not always possible, and some online platforms are not working, so I couldn't switch on the microphone and follow the course. Generally, some students might have a lack of laptops, or they do not have the internet (Paschalis St6 – 12 years old)

In contrast with Yiannis, although Paschalis referred to the same problems as the slow platforms, the bad connection and other technical problems, in the next proposition he started with the discourse marker “generally” and he actually identified a social group (some students) that might have access problems arising from the “lack of laptops” or the “internet connection”. This excerpt is different from Yiannis’s because another social group is identified, and the student realized that all the students are not the same.

In the next excerpt, Michalis is aligned with Paschalis and he also identified that the students are separated into different social groups with access problems (“cannot participate in the online courses”). He also identified another group concerning the cultural environment in which the students have been raised. Michalis clearly connected “opportunity” with financial issues.

Excerpt 3.

Many students do not have a strong internet connection, or not even the internet, and they cannot participate in the online course. It is also an important problem that many students do not have the opportunity to buy the proper electronic device and attend the courses (Michalis St10 – 12 years old)

It is important for the students to have identified these inequalities and also to have acknowledged the existence of different social groups. In most cases, the educational setting treats the students as a homogenized bundle of people. Nevertheless, in these excerpts the students have identified social issues that have come to the surface due to the pandemic. Another issue that emerged from the students was cultural background and especially the role the educated and non-educated parents can play. Initially, Petros was aligned with Yiannis and referred to the main problems they were dealing with, such as the siblings that also attended online courses and the parents that had to use the laptops for work.

Excerpt 4.

All the students do not have an internet connection in their houses and most of us have brothers and parents that also use the laptop and we have to connect through our mobiles (...) Additionally, all the students are not familiar with all the web tools and some face difficulties and waste a lot of time, since they cannot ask for help not even from their parents, especially when they also know only the basics (Petros St3 – 12 years old)

What is more, in Petros’s case he connected learning with parents’ cultural and educational capital. When the parents have knowledge of ICT, their children can have easier access to online education. In the pandemic the main burden was on the students, neglecting the fact that the students need help and that the parents are not always knowledgeable about technology. Petros identified crucial issues that showed that inequality is reproduced from the family’s educational capital.

The “New Normality”

Another issue that emerged from the data was that the students seemed to accept this learning situation as a normality that will last for a long time, even though it was well known that it would last only for a while.

Excerpt 5.

It is still difficult, spending so much time in front of a laptop! Finally, despite all the problems and the difficulties, I believe that I will learn to be familiar with living in this way (Katerina St4 – 12 years old)

The student starts with a mental verb, because the phrase “it’s difficult” in Greek is realized with a verb (disko ‘levome- 1st person singular) and the goal of this mental verb is the next proposition “spending so much time”. The annoyance the student feels can be identified in the use of the exclamation mark in the first proposition. Although Katerina has realized the “problems” and the “difficulties”, there seems to be a series of propositions where the only person responsible for the situation is her. In all the actions that needed to be done, “learn”, “be familiar with”, Katerina recognizes herself as the only person responsible. This responsibility can be identified with the grammatical choice “I” in the role of agent. In this last proposition the student’s main feeling can also be located in the lexical choice of the three dots. In this case, we can assume that the student was somehow obliged to accept this situation and live with it. The choice of punctuation instead of a clear statement of dislike of this situation revealed the student’s voice that struggles to be heard and express these feelings.

Excerpt 6.

For sure it is better to have a problematic distance education rather than no education at all (Maria St7 12 years old)

The acceptance of this situation as normality can be identified from another point of view in another student, who compared the “problematic distance education” with “no education”. This case is different from the previous one in the sense that in this case the student recognized the value of distance education. This value was diminished when it was compared with no education at all, showing that distance education cannot be the first choice and it is actually better than nothing.

Silence As a Value in Online Education – A Marginalized Perspective

Although in this thematic category the change of the students’ role is presented, the TR has chosen representative excerpts that reflect the approaches the students have. In this case, a marginalized case expressed only by one student is presented.

Excerpt 7.

Missing some minutes of the class due to technical issues or because of the mobile’s low battery or spending time trying to enter the class, makes you understand nothing (...) To sum up I prefer online education because it is not so noisy as it is in the classroom (Lefteris St16 – 12 years old)

Lefteris’s approach is interesting because this was the only case where the student, although realizing the difficulties and the problems of online education like “low battery” and some students’ behavior like being late, also argued that this kind of education was better, because “it is not so noisy”. Silence and being able to listen to the teacher were considered significant by the student. At the same time, the student neglected the fact that silence was not always positive. The students might be present on a platform, but this does not necessarily mean that they are active.

The Changes in The Teacher's Role

In the classroom various discussions took place concerning the changes in the teacher's role and the difficulties they faced, as well as the role that they should have in online education.

The Lack of Humor

From excerpt (8), it seems that one of the main actions connected with online distance education is the change in the teachers' behavior and practices.

Excerpt 8.

Since we started online lessons, most of the teachers have changed their behavior. Many of them have stopped being relaxed, not in the sense that we were laughing all the time in the classroom, but in the sense that during lessons we were telling jokes that arose during the lesson. Furthermore, many of them are not familiar with this kind of learning and as a result they are more cautious (Athena St1 – 12 years old)

The main change identified by Athena was that the teachers 'stopped being relaxed'. Online education stopped this action along with 'telling a joke'. Athena clarified that being relaxed does not mean that there was no learning, but there was somehow more interaction and a more relaxed teaching procedure. It seems that some practices were more connected with live education, and that some human practices like laughing and telling a joke were stopped by the machines, the cables and the online platforms. Another reason which can be identified in the next proposition is the teachers' unfamiliarity with the new tools.

Problems with Online Education

Athena in excerpt (8) definitely represented the teachers as more cautious because of their lack of technological knowledge. In (9) she continued her account by referring to the problems the teachers faced.

Excerpt 9.

Despite all of this, I believe that not only the students but also the teachers have problems with this kind of education. For example, some might live in areas where there is no good internet connection and as a result they cannot do the course. What is more, many have never worked in this way and therefore there are many problems with the specific kind of education (Athena St1 – 12 years old)

In (9) Athena recognized that the teachers also faced problems during the online distance education that took place in the first wave of the pandemic in Greece. The problems that were identified by the students are "areas where there is no good internet connection". Regarding Crete, and especially the region of Rethimno, it is important to mention that there are indeed poor internet connections in more mountainous areas where many students and some teachers live. It is significant that this factor was also mentioned by the students. Although the problems were identified, the students did not consider the reasons why this was happening and which solutions (e.g. teacher training, provision of electronic devices) could be found to overcome these problems.

The Teacher's Role Beyond Technological Knowledge

Beyond the recognition of the problems that the teacher faced during the first wave of the pandemic, there were also cases where students attributed characteristics to the teacher that are not attributed to technological issues.

Excerpt 10.

For sure many hadn't the necessary knowledge, the previous experience, and not even the technical means to cope with this procedure and to adapt their teaching from the real classroom to the virtual. (...). What was more important, I believe, was the fact that the teachers were more interested in preserving the communication with the students and to help them in their learning and support them psychologically. For sure, distance education offers a lot to all of us, but in any case cannot substitute real classroom learning (Georgia St8 – 12 years old)

After referring to the problems and the teachers' difficulties (For sure...virtual), Georgia in (10) says that it was more important for the teacher (What was more important) to preserve communication, help the students and support them psychologically. The voice of the student was also strongly present since it was expressed with the first-person singular "I" and the verb "believe", which belongs to the mental verbs. The student here became the "Senser" who was present in the situation. According to the student, in addition to the technological skills needed to design online courses, there were more important skills for a successful teacher connected with humanity, feelings and support. Learning during the COVID19 pandemic was not the most important job for the teacher, according to the student. Psychological support played an important role when students were confined in their houses.

Beyond these two skills that were mentioned by Georgia, Yiannis in excerpt (11) also compared online learning with classroom education and argued that there were also other important practices connected with the teacher, such as exchanging ideas, instant help and offering knowledge.

Excerpt 11.

In contrast with classroom education, the role of the teacher is more basic in stuff such as immediate communication, exchanging ideas, instant help and offering knowledge (Yiannis St2 – 12 years old)

In (11) the teacher was not connected with technological skills, nor with the knowledge of ICT. Another problem that the teacher had to face was the inequalities issues that arose.

Excerpt 12.

(...) but the most difficult, I think, is that when they cannot have contact with another student because the student doesn't have the means for online education (Nikoleta St9 – 12 years old)

According to Nikoleta St9, the "most difficult" situation for the teacher is dealing with the students with no financial means. This difficulty is evaluated as important due to grammatical choices (most – superlative form). In this case, Nikoleta identified inequality issues and connected these issues with the teacher, showing that the teacher is unable to provide education to these marginalized students.

In this excerpt it is not obvious whether Nikoleta neglects the political factors that could enhance online teaching and learning, or she understood that and identified that the only person who faced the problem was the teacher, who was unable to help. From (12) it could be acknowledged that the students underlined a problematic situation and a teacher who cannot provide a solution.

Online Education Allows Time for Questions

In the data there was another single case that was different from the others, since the students stated that the teachers were calmer and gave opportunities for more questions.

Excerpt 13.

The teachers in online distance education are calmer, as well as us (the students) and since there are moments when you can ask something, and they tell you the answer immediately. In the school they used to answer you during the break (Emmanuella St5 – 12 years old)

In excerpt 13, Emmanuella differs from the other students and recognizes that the teacher provides more opportunities for questions. This excerpt was important since the student realized that the same time for questions is not taken for granted in the real classroom lesson. Nevertheless, it is another case that favored individualistic approaches to learning and neglected the higher communication that most students recognized in real classrooms.

What the Teacher Must Do?

In the last thematic unit, the students reflected upon the role of the teacher. Although the discussion was on the new technologies and the problems students and teachers faced during the online distance education that took place during the pandemic, the students changed the discussion theme to the general role of the teacher.

Excerpt 14.

The teacher must help children to discover their talents and to give them knowledge that will be useful for the future. Furthermore, the teacher's character and the way of thinking the teacher will promote in the classroom are very important, so that each student can elaborate their own way of thinking (Evgenia St20 – 12 years old)

Evgenia in (14) started with a strong opinion with the deontic modal verb ‘must’ and the first action that was connected with the teacher was “help to discover.” In the next proposition certain characteristics are attributed to the teacher: “character” and “way of thinking.” These traits are important, according to the students, and had a great impact on the students since these characteristics “can elaborate” the students to develop their own way of thinking. There was no reference to technological skills, or to knowledge of complicated platforms.

Another student, Yiannis St2, also referred to other traits of the teacher and he also neglected to refer to any technological skills the teacher should develop or have.

Excerpt 15.

The teacher should promote collaboration with classmates, put them in groups for assignments, and generally help the students with difficulties. Furthermore, to talk to us about various things, have fun and make us feel better and not get bored. We had to stay away from school to understand that these were the things we were missing (Yiannis St2 – 12 years old)

In this excerpt, Yiannis used almost the same grammatical features (modality, teacher as agent) as the previous students and added some more traits to the teacher such as: the promotion of collaboration, putting students in groups, assistance to students with difficulties, talking about extracurricular themes, making students feel better and not getting bored. The most important proposition is the ending of his paragraph where he actually reflected as a collective entity (we), and by using the mental verb “understand” showed that this collective entity gained the “phenomenon” (according to Halliday): “the things we were missing”. All these actions the teacher should do are actually the important things that the students evaluated as crucial for teaching and learning.

Apart from the case where the technological skills that the teacher should have had were missing, another student reflected deeper and constructed a representation of learning by separating the material and non-material elements.

Excerpt 16.

In conclusion, we would say that the whole education system is a living organism. Its goal is not only the offering of knowledge. The classroom is not simply four walls with desks and chairs, but a relationship based on confidence, a community, a living organism. The online classrooms that are located hundreds or millions of kilometres away are connected through contemporary technology in a virtual reality and therefore they cannot express the feelings of the participants (Paschalis St6 – 12 years old)

This excerpt is very important since the student represented the classroom and learning through a comparison between online and offline education. Online education is characterized by remoteness and a space where feelings cannot be expressed. On the other hand, offline education was characterized as a “living organism” that can lead learning beyond the offering of knowledge. Offline education had nothing to do with materiality such as the “four walls”, the “desks”, the “chairs”, but rather with non-material elements such as human relationships, community and feelings. The student repeated several times in this excerpt his main idea and represented offline education as a “living organism.”

DISCUSSION AND CONCLUSIONS

Promoting Students' Voice in School Settings

In this action research, with the students as co-researchers, the TR investigated the teaching and learning discourses that emerged from the online education during the first wave of the Covid19 pandemic in Europe (March-May 2020) in the region of Crete, Greece. This research gave voice to the students and through the analysis significant findings were identified.

In online distance learning it is important to identify the students' needs and the necessary support as well as to identify the suitable learning theories to train qualitative instructors (Akbaba Altun & Bulut, 2021: 26). In this discussion the students' voices have been neglected. Researchers have conducted research upon the notion of voice in the Covid 19 pandemic mainly in universities (Kong et al., 2022; Vaz, 2022) or with a community of practices (To et al., 2022).

Action research can also identify problems that arise during online distance education such as the amount of (home)work the teachers were giving to the students. This finding was also confirmed by another research in Finland (Niemi & Kousa, 2020, p.16). The teachers were unconsciously parts of a game played during the pandemic, where a lot of unpaid work took place in the afternoons or at the weekends. Their houses became the new workplaces and their families had to tolerate this situation (Selwyn & Jandric, 2020, p. 992).

Action research is an epistemology that enhances the voices of the ones that are being neglected (Fine, 2018). To identify the students' needs and empower their voice there is the need to adopt an approach and cultivate a democratic culture. This research showed that action research is this approach and schools can benefit from the students' voice (Flutter & Rudduck, 2004).

Action research provides the opportunity to all the students and all their perspectives can be expressed and accepted. For instance, for some students there were benefits from online education, such as silence and having the opportunity to ask questions. This finding is peripheral since it is mentioned by only one student. Most of the students preferred the exchange of ideas and the instant question-answer that take place in real classrooms. The same finding was also confirmed in a study which took place in Finland, where the students also lost their motivation, and missed contact with classmates and having fun (Niemi & Kousa, 2020, p. 9, 17).

Learning in Online Distance Education

This research, as well as other limited investigations on the students' voice, showed that constructionism and participation are important factors for the students' learning through online distance education (Squire, 2022).

In this research the students provided unique insights regarding the changes in the role of the students and the teacher in online educational practices. Furthermore, they supported the view that online education is not considered by the students as important as it is by private companies in Silicon Valley (Selwyn & Jandric, 2020). Students focused on communication, expression of feelings and a sense of belonging. These take place only in real classrooms.

Students' discourses can contribute significantly to the discussion regarding the benefits and the disadvantages of online education, its implication for student-teacher relationships and for learning in general. Students' perspectives are also aligned with directors' perspectives since both of them acknowledge that it is important to determine students' needs as well as transferring knowledge and skills through online and offline communication (Akbaba Altun & Bulut, 2021, p. 27).

Issues of Power – Barriers to Online Distance Communication

The research showed that the students are capable of recognizing issues of inequality such as the barriers that the students and their families confronted in Covid 19 online distance education. This problem was identified by different scholars across the globe during the pandemic and before (Demir Kaymak & Horzum, 2022; Van & Thi, 2021; Rizvi et al., 2019).

This research showed that action research can offer the students' insights in the discussion about issues of access and inequalities. For instance, in this research the students noticed that there are different social groups in a single classroom; the ones that have access to digital tools and the ones who do not. The students also recognized that the teacher is the one that must deal with this problem. The same problem has also been noticed by other researchers; for instance, in Morocco (Abioui, et al., 2020) and in Portugal (Assuncao Flores & Gago, 2020). Additionally, Critical Discourse Analysis allows researchers to identify the power issues and the discourses the students reproduce.

Teachers' Education in Online Distance Education in the Post-Covid Period

In the Covid19 period more than 1.2 billion children were out of the classrooms, thus changing education for ever (Li Cathy and Lalani Farah, 2020). This fact poses new issues for instructors and experts, who should reconsider the students' characteristics when redesigning the learning environments and reorganizing students' education (Ates-Cobanoglu & Cobanoglu, 2021; Bovermann et al., 2018).

As was shown by this research, the students have to offer new insights. For instance, although researchers in online distance education are focusing on the digital skills and the platforms the teachers should know, the students also mentioned other non-technological characteristics such as the psychological support the teachers should provide, especially in hard times such as the Covid-19 pandemic. It is noticeable that the qualitative research approaches focused on the psychological support the students and the teacher need. Another research which was based on the teacher's narratives also showed that health and financial problems affected teachers and their teaching, especially in interacting and communicating with their students, as well as students' motivation (Akar & Erden, 2021).

Limitations, Implications and Future Research

This research is not without limitations, since it is a case study taking place in a single context. Nevertheless, it seems that action research with students as participants can shed more light on various educational issues such as online education. Students can contribute significantly to these discussions. Action research is limited to specific contexts and should be analyzed according to the context. This is not always negative. The contextual analyses and the knowledge of what is happening in different regions and why this is happening

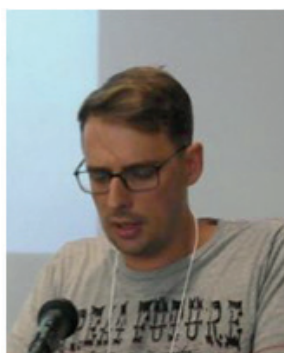
can be beneficial not only for digital education but for education and social sciences in general. Should this research be continued, it could contribute more effectively and might even encourage the political activism that is needed to deal with the inequality and access issues that emerged in the classroom.

Based on the findings of the research the following implications could be taken into consideration in future studies:

- It will be beneficial for researchers in their studies in the field of teaching, especially when they are focusing on the students' voice
- The study examined the students' empowerment in online educational settings. This can be examined further in other settings and comparable studies can take place to shed light on the contextual factors that affect online education
- Researchers are recommended to conduct studies comparing the technology needed in educational settings, the students' skills and the teachers' training with regard to the online distance education in different school settings

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EXAMINING UNIVERSITY STUDENTS' BEHAVIOURAL INTENTION TO DISTANCE LEARNING DURING COVID-19: AN EXTENDED TAM MODEL

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ABSTRACT

Learning was obliged to be transformed to distance learning due to the long-lasting COVID-19 lockdown period. This situation has brought to investigate the critical factors influencing students' intention and actual use of distance learning tools. In this context, this study aims to evaluate the effects of distance learning, deriving independent variables adopted from ETAM. Data was gathered from 92 undergraduate students enrolled in five and other courses in Turkiye. Data were investigated via SmartPLS 3.0 through Structural Equation Modelling (SEM). Results indicate that Computer Anxiety had a negative impact on Self-efficacy. Self-efficacy had a positive influence on Experience. Experience and Enjoyment had positive effects on Perceived Ease of Use. Enjoyment had a positive influence on Perceived Usefulness. The proposed model explained 87.7% of the variance of the actual use of distance learning tools. Computer anxiety and self-efficacy, which were proposed to measure experience, made this study unique and valuable. This contributes to acknowledging higher education institutions and lecturers to understand the benefits and barriers of distance learning tools for students used during the unpredicted pandemics in the future.

Keywords: Distance learning, Structural Equation Modelling, Extended Technology Acceptance Model, COVID-19.

INTRODUCTION

Education has changed dramatically with the rise of the COVID-19 pandemic from January 2020 to June 2021 in the world. As the rapid shift occurred to distance learning, 85% of countries closed their schools partially or entirely (The World Bank, 2020). Distance learning has also become essential all around the world and is also inevitable for countries to pursue education. However, the interruption of distance education occurred because of inadequate internet bandwidth declared by El-Said (2021) and the lack of online education tools use presented by Rahmadi (2020). With the growth of the pandemic by Delta variant, It is probably seen that COVID-19 epidemics have not finished yet soon, so these issues are needed to be addressed for higher education institutions to understand what effects determine the university students to accept or reject online education tools.

The COVID-19 pandemic has changed the schools' academic plans and the way how they operate their classes. It is different for distinct countries according to the technological infrastructure (The World Bank, 2020). In Turkiye, Education Information Network (EBA) was developed to provide an education digital platform for 18 million students within 18 channels for primary schools, elementary schools, and high schools with 6- 8 GBs extra data packages allowance by the ministry of national education (MoNE). In Macedonia, the Eduino platform was created to continue primary school education by the ministry of education, a UK government-funded program, and the UNICEF collaboration. In South Korea, the government increased 4 % of the total education budget to build Wedorang and e-Hakseupteo cyberlearning services that were established to arrange education plans via three distinct Telcoms (SKT, KT, and LGU+) for

students to contain healthy education by The Ministry of Science and ICT (MSIT). In Japan, the ministry of education, culture, sports, science, and technology built a centralized website for online class delivery and video conferences for all schools. In Indonesia, Google Suite Education, Smart Class, Microsoft Teams, Quipper School, Sekolahmu, and Kelas Pi are the five technology companies that provide online learning study programs via TV Edukasi. In India, The DIKSHA portal was developed to contain e-learning tools with 12 languages for students by the Ministry of Human Resource Development (HRD). In Jamaica, One on One Educational Services, Cheetah, Book Fusion, Edufocal, the Learning Hub, and CSEC COVID-19 Toolkit was used as an online learning platform with 25 cable channels by the ministry. In Croatia, Loomen, Microsoft Teams, and Yammer platforms were conducted to operate the classes with 15 minutes per class by containing free internet for the lower status children by the ministry of education. In Czechia, the Ministry of Education, Youth, and Sport (MEYS) categorized education into three separate programs: opened a live daily program, UčiTelka in the mornings, educational TV programs in the afternoons, and inspirational programs for the exam preparations.

Moving to online teaching for higher education varies from country to country. Some countries such as the US, Brazil, Chile, India, Indonesia, Jordan, and South Africa had a half distance learning via virtual learning platforms, whereas Australia, Germany, Italy, the Republic of Ireland, the United Kingdom, China, Egypt, Hong Kong, Brazil, and Singapore had a full distance learning. In those countries, all campus closures were practiced except in some states in the USA, some cities in Brazil, and some cities in Singapore (Crawford et al., 2020).

Turkiye has had closures and a limited country-wide policy. As a policy, the Council of Higher Education planned to move the semester dates extending or starting early for higher education, coming to an agreement with GSM operators for free GB use (Crawford et al., 2020). Educational Informatics Network (EIN) Infrastructure was invested by the Ministry of National Education (MoNE) to strengthen the high-volume access of students and teachers, which set precedents for higher education institutions to build their distance learning tools. Even the government support was gathered, most universities were indecisive about how to deal with e-learning infrastructure. Higher education institutions were also obliged to upgrade internet bandwidth and data center capacities and purchased licensed online education platforms (El Said, 2021).

Universities in Turkiye did not transform swiftly to online teaching. Each university in Turkiye has a separate policy for higher education as synchronous in terms of web meeting tools, and asynchronous in terms of discussion boards and other tools. Virtual learning environments such as Microsoft Teams, and Zoom has intensively had used in Turkish higher education. Some universities, which invested in distance learning, used Moodle, Adobe Connect, ALMS, and Blackboard (Kacan& Gelen, 2020). With these portals for each university in Turkiye, the process of distance learning adoption for higher education has brought the technical challenges such as access failure mentioned by Kazakova & Murzich (2020), high cost of technology stated by Cacault et al. (2019), and high user charge by Santos et al. (2021). These also increase the requirements for acquiring knowledge for the online distance learning platforms (Barreto et al., 2020). In this context, the research question of the study was how university students were affected by the use of distance learning platforms. In this context, the study aims to examine the attitude of higher education students in Turkiye toward distance learning tools and understand to what extent the acceptance of IT communication tool technologies was obtained by applying the ETAM model.

In order to come up with an understanding of the behavioral intention to use distance learning platform, the ETAM addressed key challenges of distance learning adoption such as Perceived Usefulness (PU), Perceived Ease of Use (PEOU), Attitude Towards Using (ATU), Intention to Use (ITU), Actual Use (AU), Experience (XP), Enjoyment (ENJ), Computer Anxiety (CA), and Self-Efficacy (SE). The originality of the study is that there are no studies regarding the understanding of the acceptance of distance learning tools in Turkiye, as well as incorporating a technological acceptance model in terms of measuring the correlation of computer anxiety with self-efficacy, and self-efficacy with experience.

Theoretical Framework

There are several adoption theories widely used for assessing factors of actual use of technologies: Theory of Reasoned Action (TRA) Fishbein & Ajzen (1975), Technology acceptance theory (TAM) (Davis, 1989), Extended Technology acceptance model (ETAM) Venkatesh & Davis (2000), and Unified Theory of Acceptance and Use of Technology (UTAUT) Venkatesh et al (2003). In this study, ETAM theory models were applied for measuring the actual uses of distance learning tools, because factors were added to TAM to include external factors such as Experience (XP), Enjoyment (ENJ), Computer Anxiety (CA), and Self-Efficacy (SE) for understanding behavior intention through Perceived Ease of Use (PEOU) and Perceived Usefulness (PU).

Computer Anxiety (CA) was defined as the concern or potential benefit from a computer (Chua et al., 1999). It is suggested that the students, who have less computer anxiety, tend to be self-efficacy using distance learning tools. Self-Efficacy (SE) was described as the dimension of the belief people can succeed in doing a task by computer (Compeau, 1995). It is claimed that the students, who have higher perceived self-efficacy, were more likely to be experienced to use distance learning tools. Experience (XP) was described as humans' knowledge of technology acceptance (Venkatesh & Bala, 2008). It was reported that the students, who have much experience, tend to have used distance learning tools easily. Enjoyment (ENJ) was defined as the activities' joy level (Venkatesh, 2000). It is shown that the students, who have a high perceived enjoyment, are more likely to have ease of use distance learning use, and system usefulness. Perceived Ease of Use (PEOU) was defined as a degree to which students think that the system users will be complex (Davis, 1989). It is exhibited that the students, who have used distance learning tools easily, tend to have perceived system usefulness. Perceived Usefulness (PU) was defined as which students think that distance learning technology would enhance the student's study performance (Davis et al., 1989). It is believed that the students, who have high perceived usefulness, are likely to affect users' attitudes toward using the technology, their intention to use it, and their actual use of it positively.

To investigate the effects of the proposed model on the actual use of technology acceptance, the following hypotheses were developed.

- H1. Computer Anxiety (CA) have a negative impact on *Self Efficacy (SE)*.
- H2. Self-Efficacy (SE) has a positive impact on *Experience (XP)*.
- H3. Experience (XP) has a positive impact on *Perceived Ease of Use (PEOU)*.
- H4. Enjoyment (ENJ) has a positive impact on *Perceived Ease of Use (PEOU)*.
- H5. Enjoyment (ENJ) has a positive impact on *Perceived Usefulness (PU)*.
- H6. Perceived Ease of Use (PEOU) has a positive impact on *Perceived Usefulness (PU)*.
- H7. Perceived Usefulness (PU) has a positive impact on *Attitudes Towards Using (ATU)*.
- H8. Attitudes Towards Using (ATU) has a positive impact on *Intention To Use (ITU)*.
- H9. Intention To Use (ITU) has a positive impact on *Actual Use (AU)*

MATERIALS AND METHODS

The quantitative research design was applied to 92 university students, containing five-course and the others: Graphical Design, Applied English and Translation, Occupational Health and Safety, Civil Aviation Transportation Management, and Medical Documentation and Secretariat. The data were collected as an online survey from the fall term in 2020 to the end of the spring term in 2021 and sent to those who participated in Introduction to Computer and Information Technology, Computer-Aided Office Programs I, and Object-Oriented Programming lectures. A total of 32 questions were asked via Google Forms. Four of them were for descriptive analysis. 28 of them were executed to test structural equation modeling. The question sample size, which should be from 3 to 20 times the variables' number confirmed by Daniel et al. (2005), was fit as the minimum was (28x3) 84 which was needed. Confirmatory factor analysis was applied to test the hypothesis.

RESULTS

Students in Demographic Participants of Survey as descriptive were illustrated in Table 1 below. Gender, course studying, age, and distance learning platform use sections were presented. According to the survey, 59.8% of the sample were female. The rest of them were male with 40.2%. The course with the most participants was Civil Aviation Transportation Management with 29.3%. The second most was Applied English and Translation with 19.6%. The third course was Graphical Design by 18.5%. The fourth and the fifth were Medical Documentation and Secreteriat, and Occupational Health, and Safety by 19.6%, and 12%, respectively. The last and the least course was Management Information Systems by 1.2%. Most participants, aged 20-21, attended 44.6%. The second participants, aged 18-19, were 37.0%. The rest of them were aged 22-23, aged 24-25, aged 26-29, and above 30 by 8.7%, 4.3%, 4.3%, and 1.1%, respectively. The platforms of distance learning were distinct: Blackboard Ultra by 93.5%, Zoom by 5.4%, and Sakai by 1.1%.

Table 1. Demographic participants of the survey

(1) Gender N (%)		Total (Ratio)
	Female	55(59.8)
	Male	37(40.2)
(2) Course Studying N (%)		
	Graphical Design	17 (18.5)
	Applied English and Translation	18 (19.6)
	Occupational Health and Safety	11 (12)
	Civil Aviation Transportation Management	27 (29.3)
	Medical Documentation and Secreteriat	16 (17.4)
	Others	3(1.2)
(3) Age N (%)		
	18-19	34(37.0)
	20-21	41(44.6)
	22-23	8(8.7)
	24-25	4 (4.3)
	26-29	4(4.3)
	Above 30	1 (1.1)
(4) Distance Learning Platform		
	Blackboard Ultra	86 (93.5)
	Sakai	1 (1.1)
	Zoom	5 (5.4)

An ETAM consists of nine constructs: CA, SE, XP, ENJ, PU, PEOU, ATU, ITU, and AU. The structural model's SRMR value was 0.096, which MacCallum et al. (1996) pointed out that, the SRMR value, which had between 0.08 and 0.10, was a considerable fit. All factor loadings were accepted, which should be above 0.7, declared by Hair et al. (2017). All AVE values were valid, which should be above 0.5, as stated by Hair et al. (2010). All CR values were fit, and the threshold of value was 0.7, clarified by Hair et al. (2010). According to Table 2, CA has 4 items, including factor loadings between 0.852 and 0.921, CR was 0.792, and AVE was 0.781. SE has 3 items, containing factor loadings between 0.841 and 0.902, CR that was 0.897, and AVE that was 0.745. XP has 4 items, involving factor loadings between 0.708 and 0.773, CR that was 0.831, and AVE that was 0.552. ENJ has 3 items, holding factor loadings between 0.942 and 0.965,

CR that was 0.967, and AVE that was 0.908. PU has 4 items, containing factor loadings between 0.889 and 0.950, CR that was 0.956, and AVE that was 0.845. PEOU has 4 items, including factor loadings between 0.690 and 0.884, CR that was 0.891, and AVE that was 0.674. ATU has 2 items, involving factor loadings between 0.939 and 0.946, CR that was 0.941, and AVE that was 0.889. ITU has 3 items, containing factor loadings between 0.751 and 0.928, CR that was 0.960, and AVE that was 0.888. AU has 1 item, involving factor loadings is 1, CR that was 1, and AVE that was 1.

Table 2. Items, Factor Loadings, Composite Reliability (CR), Average Variance Extracted (AVE) of ETAM Constructs, and Standardized Root Mean Square Residual Value (SRMR) of the structural model

TAM constructs	Items	Factor Loadings	CR	AVE
CA	CA1	0.855	0.792	0.781
	CA2	0.852		
	CA3	0.921		
	CA4	0.906		
SE	SE1	0.844	0.897	0.745
	SE2	0.841		
	SE3	0.902		
XP	XP1	0.773	0.831	0.552
	XP2	0.764		
	XP3	0.708		
	XP4	0.723		
ENJ	ENJ1	0.965	0.967	0.908
	ENJ2	0.951		
	ENJ3	0.942		
PU	PU1	0.938	0.956	0.845
	PU2	0.898		
	PU3	0.950		
	PU4	0.889		
PEOU	PEOU1	0.690	0.891	0.674
	PEOU2	0.844		
	PEOU3	0.852		
	PEOU4	0.884		
ATU	ATU1	0.939	0.941	0.889
	ATU2	0.946		
ITU	ITU1	0.776	0.960	0.888
	ITU2	0.751		
	ITU3	0.928		
AU	AU1	1	1	1
Structural model fit				
SRMR (0.096)				

Three levels of correlation were classified as strong (above 0.7), moderate (0.3-0.7), and low (below 0.3) (Hair et al. 2017). Above all constructs' relationships in Table 3, the three highest correlations for the per stage were firstly strong. There is a strong correlation between Intention to Use (ITU) and Actual Use (AU) with a value of 0.93, Attitudes towards Using (ATU) and Actual Use (AU) with a value of 0.828, Enjoyment (ENJ), and Intention to Use (ITU) with a value of 0.824. Secondly, medium correlations were presented. There was a moderate correlation between Perceived Ease of Use (PEOU) and Perceived Usefulness (PU) with a value of 0.671, Enjoyment (ENJ) and Perceived Ease of Use (PEOU) with a value of 0.655, Experience (XP) and Perceived Ease of Use (PEOU) with a value of 0.645. Thirdly, low correlations were displayed. There is a low correlation between Computer Anxiety (CA) and Attitudes toward Using (ATU) with a value of -0.275, Computer Anxiety (CA) and Perceived Usefulness (PU) with a value of -0.256, Computer Anxiety (CA) and Intention to Use (ITU) with a value of -0.185.

Table 3. Correlation Matrices of Constructs

Constructs	CA	SE	XP	ENJ	PU	PEOU	ATU	ITU	AU
CA	1								
SE	-0.468	1							
XP	-0.619	0.558	1						
ENJ	-0.405	0.467	0.595	1					
PU	-0.256	0.380	0.516	0.748	1				
PEOU	-0.474	0.556	0.645	0.655	0.671	1			
ATU	-0.275	0.463	0.490	0.066	0.800	0.634	1		
ITU	-0.185	0.400	0.457	0.824	0.763	0.505	0.828	1	
AU	-0.145	0.353	0.427	0.799	0.773	0.510	0.817	0.937	1

The study exhibited that CA negatively affects SE with a strong effect size ($\beta = -.468$, $p = .000$), with a T value of 3.949, thus supporting H1. SE positively affects XP with a strong effect size ($\beta = .558$, $p = .000$), with a T value of 6.906 thus supporting H2. The study showed that XP and ENJ positively affect PEOU with a strong effect size ($\beta = .396$, $p = .000$) and ($\beta = .419$, $p = .000$), with the T value of 3.447 and 3.592 respectively, thus supporting H3, and H4. The study indicated that ENJ positively affects PU with a strong effect size ($\beta = .540$, $p = .000$), with the T value of 6.510 respectively, supporting H5. PEOU positively influences PU with a strong effect size ($\beta = .318$, $p = .000$), with a T value of 3.650 thus supporting H6. PU positively affects ATU with a strong effect size ($\beta = .540$, $p = .000$), with the T value of 25.691, therefore supporting H7. ATU positively affects ITU with a strong effect size ($\beta = .829$, $p = .000$), with the T value of 21.928, thus supporting H8. ITU positively affects AU with a strong effect size ($\beta = .937$, $p = .000$), with the T value of 75.421, thus supporting H9.

The results indicated that the variance of CA explained 21.9% of the variance of SE. The variance of SE explained 31.1% of XP. The variance of XP, and ENJ explained 53.0% of PEOU. The variance of ENJ and PU explained 61.7% of PU. The variance of PU explained 67.9% of ATU. The variance of ATU explained 68.5% of ITU. The variance of ITU explained 87.7% of the structural model, as illustrated in Figure 1.

Table 4. Hypothesis Testing of the Structural Model

Structural Model	Path Coefficients	T Values	Results	p-value
CA-> SE (H1)	- 0.468	3.949	SUPPORTED	0.000 (***)
SE Explained as %: (21.9)				
SE->XP (H2)	0.558	6.906	SUPPORTED	0.000 (***)
XP Explained as %: (31.1)				
XP->PEOU (H3)	0.396	3.447	SUPPORTED	0.000 (***)
ENJ->PEOU (H4)	0.419	3.592	SUPPORTED	0.000 (***)
PEOU Explained as %: (53.0)				
ENJ->PU (H5)	0.540	6.510	SUPPORTED	0.000 (***)
PEOU->PU (H6)	0.318	3.650	SUPPORTED	0.000 (***)
PU Explained as %: (61.7)				
PU->ATU (H7)	0.829	25.691	SUPPORTED	0.000 (***)
ATU Explained as %: (67.9)				
ATU->ITU (H8)	0.828	21.928	SUPPORTED	0.000 (***)
ITU Explained as %: (68.5)				
ITU->AU (H9)	0.937	75.421	SUPPORTED	0.000 (***)
Structural Model: AU Explained as %: (87.7)				

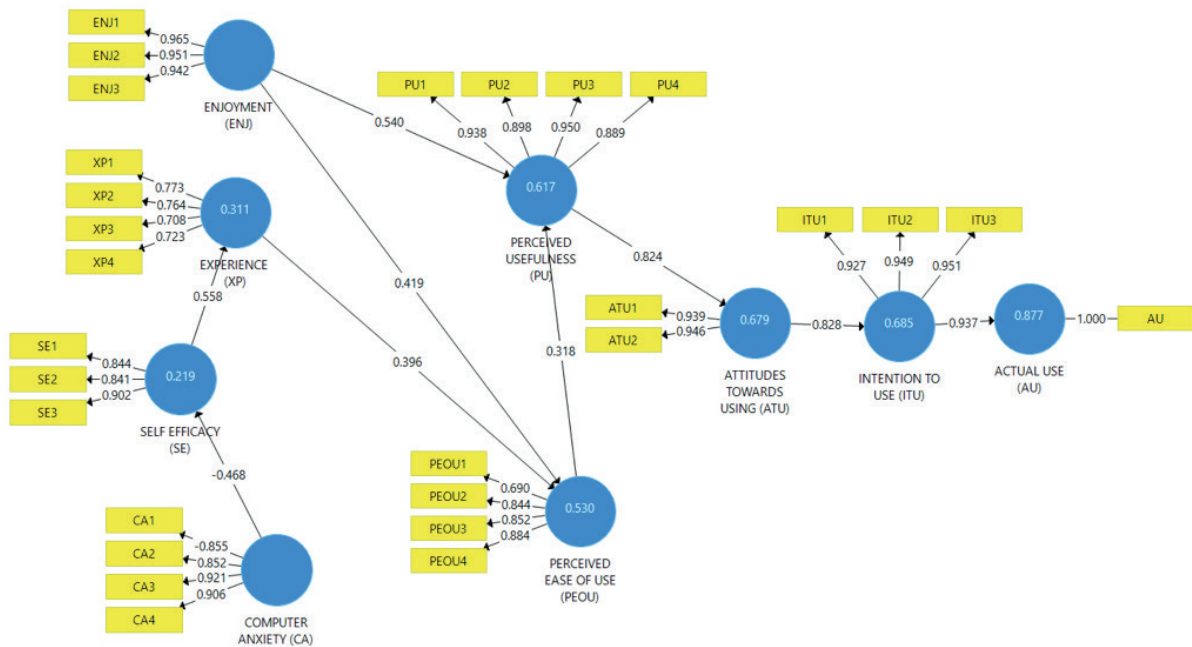


Figure 1. Structural model of ETAM model

DISCUSSION

In Türkiye, education has changed unexpectedly after the COVID-19 breakout in March 2020. Thus, distance learning adoption was needed abruptly from scratch to today. Lecturers, students, and higher education steering committees were especially caught unprepared, so universities built education system policies, containing synchronous, and asynchronous education tools. These tools were aimed to form the lectures as interactive for students to build two-way communication. For student information systems in Türkiye, most universities have used commercial software systems such as Moodle 47.8% and Adobe Connect 26.7% (Kacan & Gelen, 2020). In the world, that kind of system was just used to share files, enter or see grades, finding internships, and career development meetings (Ozbay, 2015). Anadolu Open University, a pioneering online higher education institution, has conducted several courses via AKADEMA for 34 years. Most universities in Türkiye also had a remote education for the intensive and crowded courses such as History 101, and Turkish Language before COVID-19. Thus, distance learning is not a new phenomenon in Turkish higher education.

Now, this sudden change along with the COVID-19 pandemic has brought developments in the Turkish higher education system. Some universities such as Bahcesehir University found this opportunity as an experience and therefore, transformed some courses to online teaching from now on (BAU, 2021). Some universities also found it as an entrepreneur skill, which they build their learning tools by 15.7%, ALU created by Ataturk University, SOFRA developed by Bilecik Seyh Edebali University, DE-OYS found by Dokuz Eylul University (Kacan & Gelen, 2020). Kacan & Gelen (2020) also declared that some universities, which invested in open-source software systems such as Zoom and Microsoft Teams were widely used that was by 37.0%. Thus, this technology is worth measuring the students' acceptance or rejects the actual use of distance learning.

Later, from March 2020 till today, understanding the actual use of distance learning adoption has become crucial. It can be inferred that attitude towards using (ATU) distance learning was not correlated with perceived ease of use (PEOU) but was correlated with perceived usefulness (PU), as this learning transformation to online during the COVID-19 outbreak has a priority for higher educations in Türkiye. In other words, implementing the system was more important than using the system usability at the first phase.

From the structural model, from a computer anxiety- self-efficacy hypothesis (H1), the privilege was given by the higher education. For example, even add-drop time for lectures has been extended by the universities, applying to it was so few, which showed that university students have had self courage that decreases computer anxiety. Some distance learning tools also provide support for students. For example, the Sakai tool had a real-time 7-24 two-way messaging opportunity, and Blackboard Ultra also had online webinars and conferences for obtaining system usability feedback. This two-way communication has brought students to increase their self-courage. Achim& Kassim (2014) also agreed that computer anxiety negatively affected the self-efficacy of employees' computer usage in Malaysia.

From a self-efficacy-experience hypothesis (H2), the learning center of universities has given training for students to acquire computer skills that have brought experience over using distance learning tools. Lecturers also got informed by the students concerned with students' class issues such as incomprehensive points of classes, pre-exam materials, lack of equipment Ferran (2021) monitored the effects of self-efficacy on the acceptance of distance learning adoption in the Philippines, but disregarded the influence the self-efficacy on experience, which this study tested and accepted it.

From an experience- perceived ease of use hypothesis (H3), Anadolu University (2021) stated that 29% of students have been attending open Universities in Türkiye so some university students had previously experienced using distance learning. Nearly 99% of universities put History and Turkish as online courses. These show that students tend to use distance learning tools easily just before the COVID-19 outbreak. In addition, Park & Park (2020) approved that experience affected positively perceived ease of use and perceived usefulness for construction IT in South Korea.

From an enjoyment- perceived ease of use hypothesis (H4), current Turkish students during COVID-19, who were born between 2000 and 2003, had already used technological equipment to play games, watch educational videos during their childhood, documents, and presentation software to do their homework, and followed the classes on the smart boards during their adolescence so their prior experiences have brought enjoyment in the process, they even used to use asynchronous tools such as web seminars, web lectures, web laboratory exercises, web field trips, and web term papers. The sessions also have been recorded on the universities' servers. Thus, these servers enable students to be able to access the classes over and over again which brings learning more dynamic and interesting. From an enjoyment- perceived usefulness hypothesis (H5), students, who found joy, and happiness during online classes, can learn how to use distance learning tools easily, and help the system to be improved by finding barriers over using them. Salloum (2018) found that enjoyment affected positively perceived ease of use and perceived usefulness for distance learning in the United Arab Emirates, whereas Rahmi et al. (2021) disagreed that enjoyment did not have an effect in Turkiye.

From the perceived ease of use- perceived usefulness hypothesis (H6), it can be deduced that the easier students use distance learning tools, the more useful they will be for students. From perceived usefulness - attitudes towards using hypothesis (H7), attitudes towards using- intention to use hypothesis (H8), and intention to use – actual use (H9) it can be inferred that system's acceptance has changed the attitude towards using, later intending to use it, finally actual use of distance learning tools.

This study aims to monitor the behavioral intention to distance learning during COVID-19 to develop the standards of higher education for university students and acknowledge them toward using distance learning tools by adopting an extended technology acceptance model (ETAM). The external variables of TAM are computer anxiety (CA), self-efficacy (SE), experience (XP), and enjoyment (ENJ) which explained 61.7 % of the variance of perceived usefulness (PU), and 53.0 % of the variance of perceived ease of use (PEOU) of distance learning. Thus, this ETAM model was built to show that experience and enjoyment are two important critical constructs that cannot be ignored for the actual use of distance learning, which explained 87.7 % of actual use of distance learning.

CONCLUSION AND RECOMMENDATION

Distance learning adoption was widespread from the spring term of 2020 till 2021 along with COVID-19 pandemics. In addition, it is expected to be able to continue in the fall term 2021-2022 or longer, as the new Delta variant has been spread. Thus, understanding the behavior intention of higher education students for distance learning adoption is important to sustain the education quality.

The study examined the actual use of distance learning tools by applying an extended technology acceptance model (ETAM) that was computer anxiety, self-efficacy, experience, and enjoyment. The external variables that were the most affected construct are experience and enjoyment. Self-efficacy is another construct that was affected by computer anxiety negatively. For example, university learning centers can gather in a communal learning portal for the same distance learning tools and form an experienced team for each university to register their failures and obstacles that will be able to be collected as a handbook to raise self-efficacy. These issues, which are registered in a handbook, can also be a precedent for the other universities in the future, which are faced with the same issue that increased experience. In addition, training videos can be stored in university servers so that students can access video files from anywhere at any time via mobile phones or laptops to decrease computer anxiety. Furthermore, instructors should support students by creating a gamification strategy for the content of lectures, such as holding points, winning badges, and extracting daily or weekly performance graphs on a student-oriented syllabus basis to increase enjoyment.

The study contributes to higher education institutions through e-learning platform providers by applying the ETAM model to how students have a perceived actual use of distance learning. This will help the students, who struggled with distance learning, exhibit the factors affecting distance learning for the future participants.

LIMITATION AND SUGGESTIONS

Although the proposed model has important implications for students and higher education institutions, some limitations were found. First, the study will be applied in different regions in different periods, and the results will be different. Second, students studying varying courses will be added to obtain the different varying samples. Third, the ETAM model can be combined with the different theories in terms of TOE models to understand the external variables affecting distance learning adoption such as technological readiness, and regulatory support.

Testing the proposed model for different cultures is recommended to show the distinctions of countries over actual using distance learning. Different analyses such as cluster analysis can be applied for separate departments such as social sciences, natural, and applied sciences to provide separate solutions for each department.

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