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Dear TOJDE Readers,

Welcome to Volume 23 Issue 3 of TOJDE.

There are 15 articles in the July 2023 issue of TOJDE. 46 authors from 14 different countries contributed to the issue. These countries are Bangladesh, China, Ethiopia, India, Indonesia, Iran, Malaysia, Saudi Arabia, Tanzania, Thailand, Turkish Republic of Northern Cyprus, Turkiye, UK, and USA.

The title of the first article is REFLECTIONS ON MASSIVE OPEN ONLINE COURSES (MOOCS) DURING THE COVID-19 PANDEMIC: A BIBLIOMETRIC MAPPING ANALYSIS. The authors are Ahmed TLILI, Fahriye ALTINAY, Zehra ALTINAY, Cengiz Hakan AYDIN, Ronghuai HUANG and Ramesh C. SHARMA. The study intended to explore how this enrollment reflected on the research studies included in scientific publications, indexed by Web of Science. Specifically, the bibliometric mapping analyses of 108 studies have revealed an ongoing trend in the countries contributing to the MOOCs research, namely USA, China, UK and Spain.

CLASSIFICATION OF STUDENTS' ACHIEVEMENT VIA MACHINE LEARNING BY USING SYSTEM LOGS IN LEARNING MANAGEMENT SYSTEM authored by İlhan KOYUNCU, Abdullah Faruk KILIC and Derya ORHAN GOKSUN is the 2nd article. The purposes of this study are to determine the variables that affect the classification of students according to their course achievements in ERT during the pandemic process and to examine the classification performance of machine learning techniques. In the study, analyzes were carried out with various machine learning techniques and their performances were compared.

The 3rd article THE MERLIN PROJECT: MALAYSIAN STUDENTS' ACCEPTANCE OF AN AI CHATBOT IN THEIR LEARNING PROCESS, is written by Mai NEO. The MERLIN Project was undertaken to develop a virtual learning assistant that would provide online support to students outside of their online classes in the study. Results show that students found the chatbot to be helpful in their learning process and improved their understanding of the course material.

A SYSTEMATIC REVIEW OF STUDIES ON ONLINE EDUCATION FOR AUTISM SPECTRUM DISORDER is the title of the 4th article, and the authors are Hamza POLAT, Elif TASLIBEYAZ and Murat Tolga KAYALAR. The study aims to investigate the current issues in online education studies relating to individuals with or involved with (i.e., parents or teachers) in the COVID-19 period. Results indicated that the publication rates of studies pertaining to individuals with autism spectrum disorder, their parents and teachers increased after 2014, and although online learning environments are found to be beneficial in meeting the needs of the target group, several improvements are needed to make them more useful and adaptable.

Tuba KARAHISAR and Ayhan Oguz UNLUER are the authors of the 5th article titled A RESEARCH ON DISTANCE EDUCATION AND ALIENATION IN ACADEMIC STAFF DURING THE COVID-19 PANDEMIC. The aim of the study is to identify the work alienation of academics during the Covid-19 pandemic and reveal the underlying reasons, with the help of semi-structured interview technique within the framework of the phenomenological approach, one of the qualitative research methods. As a result, it was found that the interviewed academics were adversely affected by the distance education method and they were not competent enough to use it. They also were unable to identify their demands regarding their economical and technical needs yet at the same time they were not satisfied with the support provided by their institutions.

The title of the 6th article is EMERGENCY DISTANCE EDUCATION DURING THE COVID-19 PANDEMIC: A QUALITATIVE RESEARCH FROM A SPECIAL EDUCATION PERSPECTIVE. Aysegül PURBUDAK, Mutluhan YILMAZ and Özlem ÇAKIR are the authors. The aim of the study is to determine the difficulties experienced by students with special needs and special education teachers in distance education process. The findings are discussed by the authors related to special education teachers, students and the families.

INVESTIGATING NURSING STUDENTS' SATISFACTION WITH THE QUALITY OF COURSES AND VIRTUAL LEARNING DURING THE COVID-19 PANDEMIC IN 2020-2021 is the 7th article. Zahra FARSI, Effat AFAGHI, Andrew FOURNIER, Yazdan AHMADI, Seyedeh Azam SAJADI and Shahla ALIYARI are the authors. . This cross-sectional study was conducted at a nursing school (105 nursing students) in Tehran, Iran, in the first semester of 2020-2021. Given the unknown time of eradicating COVID-19, it is necessary to adopt appropriate policies and perform proper planning to continue better nursing education and increase student satisfaction.

The authors of the 8th article are Mussa Saidi ABUBAKARI, Nurkhamid NURKHAMID and Priyanto PRIYANTO. The title is FACTORS INFLUENCING ONLINE LEARNING ENGAGEMENT: INTERNATIONAL STUDENTS' PERSPECTIVE AND THE ROLE OF INSTITUTIONAL SUPPORT. The study is intended to model online learning engagement of international students studying in Indonesia to determine which factors affect learner engagement. A survey was conducted online, and 102 international students filled the questionnaire. The implications and recommendations are discussed as the result.

Elif CELIK, Gulsah OZDEMIR BAKI and Ahmet ISIK are the authors of the 9th article. The title of this article is EFFECT OF CLUSTER TEACHING WITH WORKSHEETS ON STUDENTS' ACADEMIC ACHIEVEMENT IN DISTANCE EDUCATION. The study aims to examine the effect of teaching with worksheets prepared for the 6th grade clusters in distance education on the academic achievement of students. The findings obtained from the interviews show that the students adopted the lessons taught with the worksheets.

The 10th article which is authored by Mohammed Yassin Mohd ABA SHA'AR, Chamaiporn BUDDHARAT and Phanit SINGHASUWAN is titled ENHANCING STUDENTS' ENGLISH AND DIGITAL LITERACIES THROUGH ONLINE COURSES: BENEFITS AND CHALLENGES. This study aims to examine the benefits of incorporating online courses, MyELT, for General English curricula and to investigate the challenges that negatively affect the expediency of the courses in improving the students' English proficiency and digital literacy. The results indicate four factors namely: teachers' teaching practices, their inability to mentor students' performance which further instigated some students to do unethical practices, the company system of accessibility, and MyELT courses content.

ANALYSIS OF ONLINE TEXT-BASED DISCUSSIONS FOR SECONDARY SCHOOL STUDENTS IN THE FRAMEWORK OF THE COMMUNITY OF INQUIRY is the 11th article authored by Yasemin KARAL and Osman KONTEK. The study analyzes students' shares and views with the goal of exploring the implications of online synchronous text-based discussions held in the Information Technology and Software lessons. One of the results is online text-based discussions help achieve a meaningful learning experience through development of social, cognitive and teaching presence.

The 12th article, A MIXED-METHODS STUDY OF THE CORRELATION BETWEEN IRANIAN UNIVERSITY STUDENTS' SATISFACTION AND ANXIETY IN ONLINE CLASSES DURING THE COVID-19 PANDEMIC, is authored by Zeinab AZIZI, Afsheen REZAI and Azam NASERPOUR. The study aims to investigate the correlation between university students' satisfaction and anxiety in online classes during the COVID-19 pandemic in Iran. A range of implications is suggested in the result.

Ashwaq Abdulrahman ALDAGHRI and Iman M. ORAIF are the authors of the 13th article titled THE IMPACT OF ONLINE TEACHING ON STUDENTS' ENGAGEMENT IN WRITING DURING THE PANDEMIC OF COVID-19. The present study adapts Student Course Engagement Questionnaire to explore the impact of online teaching through Blackboard on English as foreign language college students' engagement in writing. The results of the present non-experimental study generally indicate that online learning through Blackboard positively influenced the engagement of Saudi EFL learners. The findings also demonstrate that the students perceived the learning experience positively.

The 14th article titled TEACHERS' NARRATIVES FROM INITIAL VIRTUAL CLASSROOMS AND PROFESSIONAL DEVELOPMENT DURING THE COVID-19 PANDEMIC IN DEVELOPING BANGLADESH is authored by Tasnima AKTAR, M. MANIRUZZAMAN, Harunur Rashid KHAN and Mahadhi HASAN. This paper aims to understand how virtual classrooms look like in the Higher Education context in Bangladesh through TESOL teachers' narratives from initial virtual classrooms imparting emergency remote teaching. A multidisciplinary approach is discussed in the results.

The 15th article STUDENTS' SATISFACTION WITH THE PRACTICES AND IMPLEMENTATION OF NON-REGULAR EDUCATION PROGRAMS: THE CASE OF HARAMAYA UNIVERSITY, ETHIOPIA is authored by Geremew Chala TERESA and Gutema Imana KENO. To achieve the aim of the study mentioned in the title, an explanatory sequential mixed methods research design, which initially allows collecting quantitative data and then qualitative data for elaboration on the quantitative data, is used. The findings are presented sequentially following the order of the analysis of quantitative and qualitative data in the result.

Hope to meet again in the next issue of TOJDE.

Cordially,

Dr. T. Volkan YUZER

Editor in Chief

REFLECTIONS ON MASSIVE OPEN ONLINE COURSES (MOOCS) DURING THE COVID-19 PANDEMIC: A BIBLIOMETRIC MAPPING ANALYSIS

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ABSTRACT

Massive Open Online Courses (MOOCs) have been around for some time, but several studies highlighted different issues associated with them, including quality. The COVID-19 pandemic catalyzed their second blooming, where MOOCs have seen a surge in enrollments since March 2020. This study intended to explore how this enrollment reflected on the research studies included in scientific publications, indexed by Web of Science. Specifically, the bibliometric mapping analyses of 108 studies have revealed an ongoing trend in the countries contributing to the MOOCs research, namely USA, China, UK and Spain. Additionally, MOOCs research coming from US, UK and other western countries was decreasing before the pandemic and showed a continuous dramatic reduction also during the COVID-19 pandemic. Growing attention in MOOCs research among less represented countries was also observed. Besides, most of the topics focused on by MOOCs research during the pandemic were mainly related to education and engineering.

Keywords: Bibliometric mapping analysis, Covid-19 pandemic, Massive Open Online Courses (MOOCs), research, learning resources.

INTRODUCTION

The COVID-19 pandemic has posed great challenges to the field of education. As of October 2020, more than 1.6 billion children and youth in 188 countries, accounting for 94 percent of world's student population, have been affected by the pandemic (UNESCO, 2020; UNICEF, 2020). In a time of health crisis, in order to contain the spread of virus, countries have implemented policies, such as travel restrictions, closing of borders, and closing of schools (Bergdahl & Nouri, 2020). The unexpected health crisis pushed educators to come up with new learning methods in response to this pandemic. The major change is the transition to remote learning, giving rise to distance education. Hodges et al. (2020) defined remote teaching as “a temporary shift of instructional delivery to an alternate delivery mode due to crisis circumstances. It involves the use of fully remote teaching solutions for instruction or education that would otherwise be delivered face-to-face or as blended or hybrid courses and that will return to that format once the crisis or emergency has abated.”

One of the remote learning solutions used by universities during this pandemic to maintain education from home is Massive Open Online Courses (MOOCs). Unlike traditional online courses, MOOCs can provide rich learning resources (video, audio, PPT, etc.) and accommodate hundreds of students online from different regions/locations (Stracke, Downes, Conole, Burgos, & Nascimbeni, 2019). Despite that MOOCs quality has been questioned by several researchers, MOOCs have seen the highest pick in terms of enrollment number, since 2007 (Razo, 2020). For instance, Coursera had over 10 million course enrolments over 30 days in 2020, a 644% increase compared to last year. In addition, edX reached the world's top 1000 websites during the COVID-19 pandemic (Shah, 2020). This shows that this pandemic brought MOOCs to the spotlight again, due to their features that can help in maintaining education during uncertain times, such as this pandemic, namely (Bozkurt, 2020; Huang et al., 2020a): (1) openness, where students can access to these courses and learn without any restrictions from home; (2) flexibility, where students can learn depending on their own pace and needs without being limited to a specific time schedule; (3) social interaction, where students can use forums to collaborate together on some learning activities, as well as to talk with each other. For instance, Peter the Great St. Petersburg Polytechnic University has provided a MOOC about Philosophy for 3122 students during the COVID-19 (Bylieva, Bekirogullari, Lobatyuk, & Nam, 2020). London School of Hygiene and Tropical Medicine is also providing a MOOC titled “COVID-19: Tackling the Novel Coronavirus.” It aims to raise health-care awareness among people (Shah, 2020). Huang et al. (2020a) further reported that several universities started releasing MOOCs to maintain education from home for their students.

Based on the background above, it is seen that despite the criticism that MOOCs received, the COVID-19 pandemic brought them again to the front line as one of the popular ways of maintaining education from home, making them from a “curse” to a “blessing”. Therefore, this study aims to conduct a bibliometric mapping analysis to draw reflections on MOOCs during this COVID-19 pandemic. Bibliometric mapping analysis was adopted mainly because it provides visual representations of the relations existing between the main concepts (Yilmaz, Topu, & Takkac Tulgar, 2019). This visualization through mapping enables researchers to identify the background of a given research field, the relations between key concepts, and the possible trends to develop in the future (Heersmink, van den Hoven, van Eck, & vanden Berg, 2011; Vogel & Masal, 2015). Since the early days, systematic review or bibliographic analyses of MOOCs research have been conducted. For instance, in one of the earlier ones, Liyanagunawardena, Adams, and Williams (2013) examined the research studies published between 2008–2012 and uncovered that the early studies were mostly conceptual, descriptive, theory-based and focused on characteristics of the learners. Later a series of similar studies followed on different aspects of MOOCs research, such as research methods and topics (Gašević, Kovanovi, Joksimovi, & Siemens, 2014; Raffaghelli, Cucchiara, & Persico, 2015), learner characteristics (Zhang, Yin, Luo, & Yan, 2017), self-regulated learning (Alonso-Mencia, et al., 2020; Reparaz, Aznarez-Sanado, & Mendoza, 2020), retention (Paton, Fluck, & Scanlan, 2018; Zhu, Sari, & Lee, 2020), countries contributed (Veletsianos & Shepherdson, 2016). Particularly, during the COVID-19 pandemic, several bibliometric mapping analysis studies have been conducted related to a specific focus, such as business and management (Verma, & Gustafsson, 2020), however, to the best of our knowledge, no research has focused on MOOCs during this pandemic.

The findings of this study can contribute to the future research about MOOCs and open education in uncertain times, such as crises and pandemics. These findings can also contribute to the recent initiative launched by The United Nations Educational, Scientific and Cultural Organization (UNESCO), calling for more research and debate on how knowledge and education should be designed in a complex and uncertain world (UNESCO, 2020). As indicated before, this study intended to explore how this enrollment reflected on the research studies included in scientific publications, indexed by Web of Science. Specifically, this study answers the following research questions:

- RQ1. Which countries are the most contributors to MOOCs research during the COVID-19 pandemic?
- RQ2. What is the distribution of MOOCs research during the COVID-19 pandemic in terms of document type, index and topic?
- RQ3. What are the frequently used terms in keywords, abstracts and titles of MOOCs research during the COVID-19 pandemic?

METHOD

This study conducted a bibliometric analysis, with both quantitative and statistical analysis to report the distribution patterns of research articles within specific topics and time periods (Marti-Parreno, Mendez-Ibanez, & Alonso-Arroyo, 2016). It is a systematic and reproducible review process of scientific publications, using quantitative measures to evaluate research articles and depict their trends and patterns in a given period (Aria & Cuccurullo, 2017; Broadus, 1987). This analysis allows researchers to understand the literature and facilitate knowledge building by creating multiple types of associations among patterns, keywords and references. This study followed the bibliometric analysis steps, suggested by Zancanaro et al. (2013), namely: (1) collecting, filtering, and data standardization; and, (2) analysis and synthesis of the collected data.

As a first step, the search process was conducted in the Web of Science (WoS) database, one of the largest databases of peer-reviewed literature. The search keywords were: MOOCs OR Massive Open Online Courses AND Covid-19 OR Coronavirus OR pandemic OR crises. The time was set to the year 2020 and above, as the COVID-19 pandemic started at the end of 2019. Studies that did not focus on MOOCs research during the COVID-19 pandemic or have talked about MOOCs in other crises or pandemics were excluded from the analysis. As a result, 108 studies were obtained. Since the obtained studies were from only one database (WoS), data standardization was not needed in this context. The final search was conducted on March 05, 2021.

As a second step, the obtained studies were then analyzed in various ways to answer our three research questions. For instance, some of the results given by the search function were exported to Excel file to quantify them. Additionally, VOSviewer software was used for the construction of distance-based co-occurrence maps, where terms retrieved from titles and abstracts were clustered and mapped according to their relatedness in a similarity matrix (Van Eck & Waltman, 2010).

FINDINGS

The reporting of the results was organized into three subsequent sections based on the research questions.

Countries Contributing to the MOOCs Research during the COVID-19 Pandemic

When examining the countries contributing to the MOOCs research, 44 countries were found. Particularly, Table 1 shows only those which have at least two studies. It can be seen that most of research studies related to MOOCs and COVID-19 were from China ($n = 24$) with a rate of 22.2%, followed by Spain with a rate of 16.6% ($n = 18$) and USA with a rate of 14.8% ($n = 16$). The rest of the countries are shown in detail in Table 1.

Findings should respond to the purpose of the study and be presented systematically. They should be supported with sufficient and relevant quotations, examples, tables and diagrams. Findings should be discussed with a reference to relevant and recent literature.

Table 1. Distribution of Academic Studies by Country

Countries	N	%
China	24	22.222
Spain	18	16.667
USA	16	14.815
India	6	5.556
Mexico	6	5.556
Belgium	5	4.63
Italy	5	4.63
Morocco	5	4.63
Russia	5	4.63
Turkiye	5	4.63
Ecuador	4	3.704
England	4	3.704
Australia	3	2.778
France	3	2.778
Greece	3	2.778
Jordan	3	2.778
Malaysia	3	2.778
Netherlands	3	2.778
Germany	2	1.852
Indonesia	2	1.852
Ireland	2	1.852
Scotland	2	1.852
Sweden	2	1.852
Yemen	2	1.852

Table 2 further presents that the most cited countries related to MOOCs studies during the COVID-19 pandemic. It is seen that Spain had the highest citation rate, followed by China, Ecuador, Australia, USA, Chile and France. It should be noted that countries with less than 10 citations were not included in Table 2.

Table 2. Top Cited Countries related to MOOCs Studies during the pandemic

country	documents	citations
Spain	18	34
China	24	26
Ecuador	4	18
Australia	3	16
USA	16	11
Chile	1	10
France	3	10

Particularly, Table 3 presents the most universities that contributed to the MOOCs research during the COVID-19 with at least three studies. It is found that most studies were conducted by Universidad Rey Juan Carlos from Spain (n = 5), followed by Tecnológico De Monterrey from Mexico and Wayne State University from USA, with 4 studies each.

Table 3. Distribution of MOOCs Research during the pandemic by University

Affiliations	N	%
Universidad Rey Juan Carlos	5	4.63
Tecnologico De Monterrey	4	3.704
Wayne State University	4	3.704
Hse University National Research University Higher School Of Economics	3	2.778
Indiana University Bloomington	3	2.778
Indiana University System	3	2.778
Symbiosis International University	3	2.778
Universidad De Especialidades Espiritu Santo	3	2.778

Distribution of MOOCs Research during the COVID-19 Pandemic in Terms of Document Type, Index and Topic

When examining the published studies by document type, Figure 1 shows that 83.3% (n = 90) of the studies consist of articles. 24.7% (n = 26) are early access studies, followed by review articles (5.55%, n = 6).

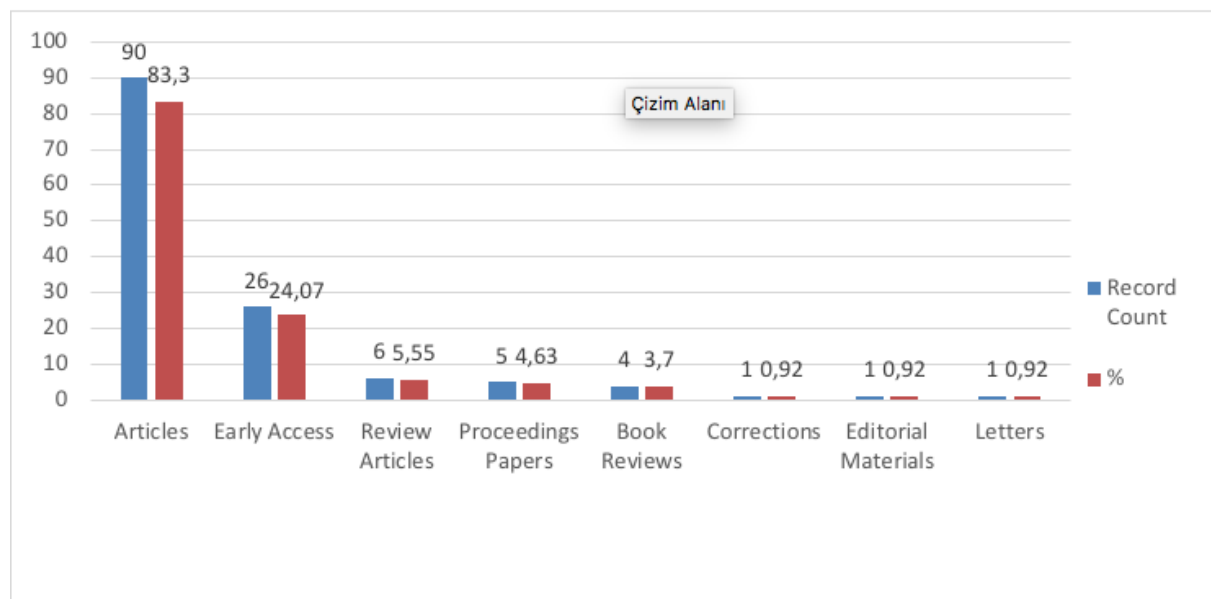


Figure 1. Distribution of Academic Studies by Document Types

Additionally, as shown in Figure 2, 45% (n = 60) of the published studies are indexed in the SSCI index, 26% (n = 35) are indexed in the ESCI index, and 23% in the SCI-Expanded (n = 30) index. Particularly, as shown in Table 4, the highest number of studies (n = 7) were published in the journal of Education and Information Technologies, followed by Computers & Education and IEEE Access journals, each with a rate of 5.5% (n = 6). It should be noted that journals and conferences with less than 2 academic studies were not presented in Table 4.

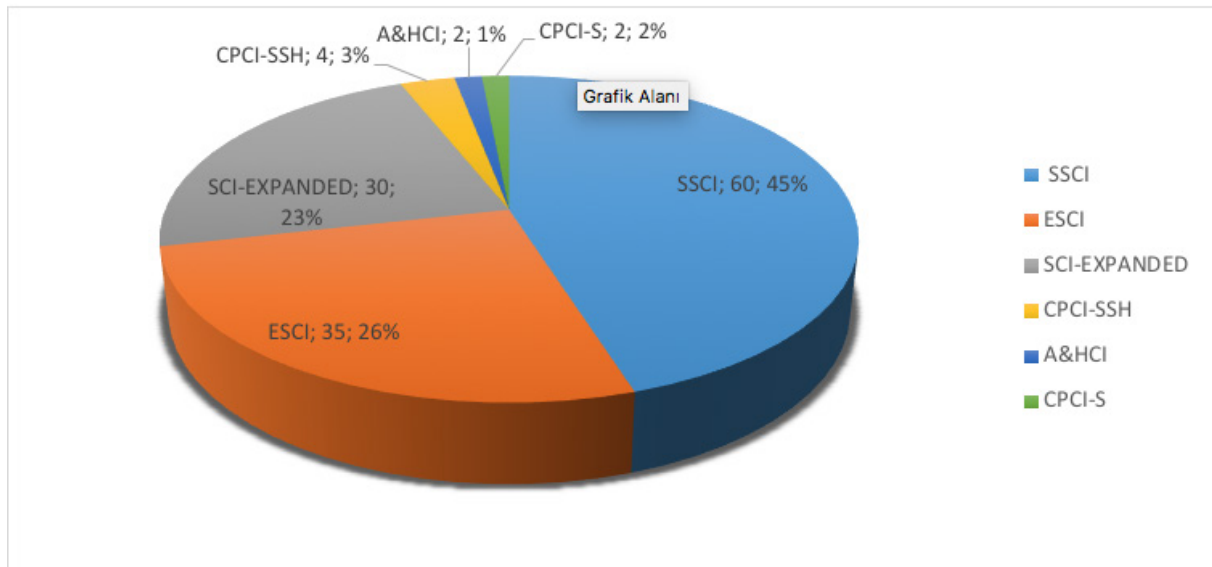


Figure 2. Distribution of Academic Studies by Index

Table 4. Distribution of studies by Journals and Conferences

Conferences/journals	N	%
Education and Information Technologies	7	6.481
Computers and Education	6	5.556
IEEE Access	6	5.556
International Journal of Emerging Technologies in Learning	5	4.63
Computer Applications in Engineering Education	4	3.704
Interactive Learning Environments	4	3.704
14Th International Technology Education and Development Conference Inted2020	3	2.778
Behaviour Information Technology	3	2.778
Educational Technology Research and Development	3	2.778
INTED Proceedings	3	2.778
Journal of Computing in Higher Education	3	2.778
Sustainability	3	2.778
Interactive Technology and Smart Education	2	1.852
International Journal of Technology Enhanced Learning	2	1.852
International Review of Research in Open And Distributed Learning	2	1.852
Journal of Interactive Media in Education	2	1.852
Open Learning	2	1.852
Technology Knowledge and Learning	2	1.852
Turkish Online Journal of Distance Education	2	1.852
Zdm Mathematics Education	2	1.852

Finally, as shown in Figure 3, the most developed MOOCs during the COVID-19 pandemic were in the field of educational sciences (52%, n = 77), computer science (17%, n = 26), engineering (11%, n = 17), and telecommunications (5%, n = 7).

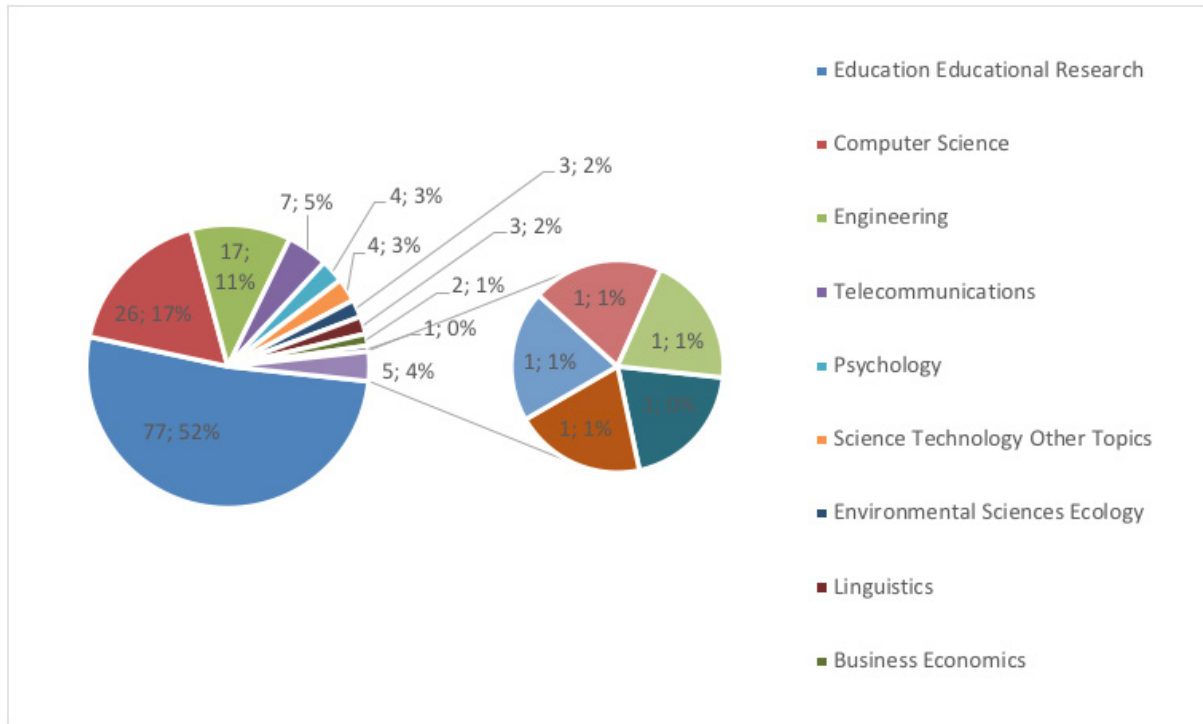


Figure 3. Distribution of MOOCs based on Their Topic

The Frequently Used Terms in the Keywords, Abstracts and Titles of MOOCs Research during the COVID-19 pandemic

As shown in Table 5, the most frequent and strongest keyword was “MOOCs”. The second word with the strongest connection strength is “students”. The third word with the highest connection strength is “motivation”, followed by the terms “engagement” and “performance”. When the common point of all these terms is examined, it can be interpreted that there are trends in academic studies regarding the effects of MOOCs on students’ motivation, commitment and performance during the COVID-19.

Table 5. Most Recurring Keywords and Their Link Strengths

Keyword	Occurrences	total link strength
Moocs	38	121
Mooc	24	59
Students	19	90
Motivation	16	71
Engagement	15	67
Education	13	38
massive open online courses	12	42
e-learning	11	43
Performance	11	46
online learning	10	41
Participation	10	52

To visualize term co-occurrence results in keywords using VOSviewer, the threshold for including a term in the analysis was set as a minimum of five occurrences. This process resulted in the inclusion of 532 terms, where only 37 terms met this threshold. The resulting co-occurrence network map is shown in Figure 4, where three final clusters were obtained in different colors, namely red, green and blue. Specifically, the size of labels and circle depend on the number of occurrences. Lines identify major links between terms, and their thickness, as well as the distance between terms represent the association strength.

In the blue cluster, the terms “MOOCs”, “Motivation”, “Self-determination”, “continuance intervention”, “e-learning”, “motivation” and “distance education” come to the fore. Thus, this cluster emphasizes on motivation and individualization in MOOCs. In the green cluster, the terms “satisfaction”, “model”, “performance”, “online”, “self-efficacy”, “intention”, “adaption”, and “impact” come to the fore. This cluster, on the other hand, investigates the learning outcomes of MOOCs. Finally, the red cluster covers the terms “massive open online course”, “strategies”, “participation”, “behavior”, “quality”, “learning analytics”, and “challenges”. Therefore, this cluster focuses on assessment in MOOCs.

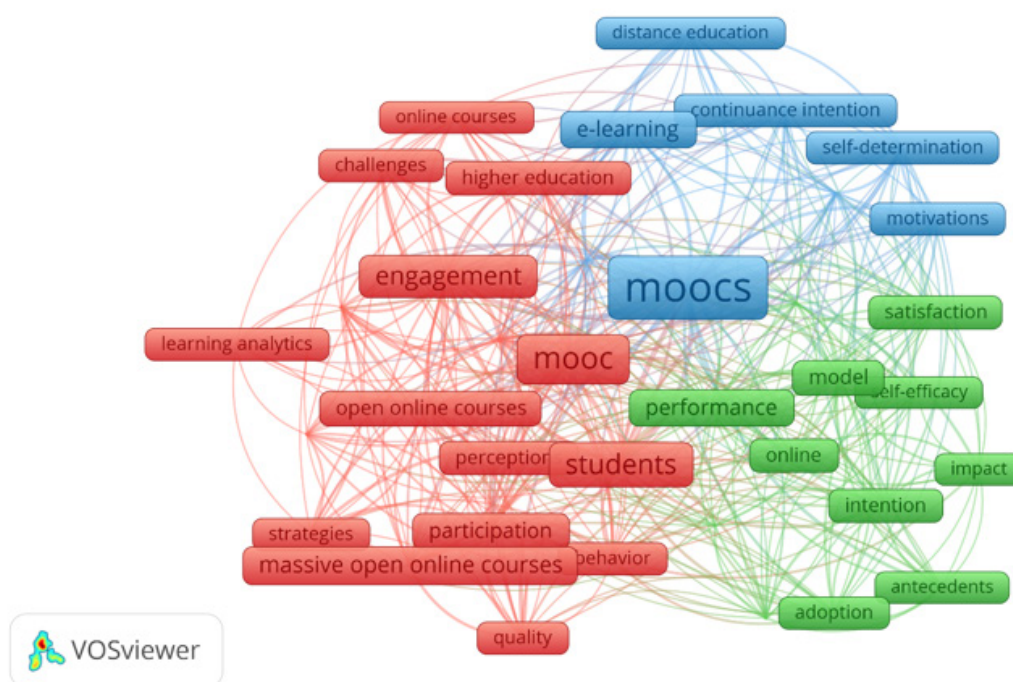


Figure 4. Term Co-occurrence Network Map in Keywords

To further have a deeper understanding of the MOOCs focuses and trends during the COVID-19 pandemic, terms co-occurrence in both abstracts and titles were analyzed. As shown in Table 6, the most common terms are “education”, followed by “participant”, “intention”, “motivation” and “commitment”. This implies that the tendencies of MOOCs studies during the pandemic focused on participants’ intention, motivation and commitment while learning.

Table 6. Most Recurring Terms in Titles and Abstracts, and Their Link Strengths

term	occurrences	relevance score
education	65	1.1113
participant	63	0.8248
intention	55	1.0205
motivation	51	0.6099
engagement	39	1.0879
level	38	0.4969
framework	33	1.1492
university	32	1.5919
process	31	0.953
teacher	31	1.8141

To visualize term co-occurrence results in titles and abstract using VOSviewer, the threshold for including a term in the analysis was set as a minimum of 10 occurrences. Only 38 terms met this threshold. The resulting co-occurrence network map is shown in Figure 5, where five final clusters were obtained in different colors, namely red, green, blue, yellow and purple. Particularly, it can be seen that the purple cluster focused on the perception towards MOOCs during the pandemic, where it included terms, such as “intention”, “motivation”, “satisfaction” and “use”. The red cluster focused more on the learning process using MOOCs during the pandemic, where it covered terms, such as “behavior”, “process”, “way”, “instructor” and “person”. The purple cluster focused on the engagement with MOOCs during the pandemic, where it covered the terms “engagement” and “learner engagement”. The green cluster focused on the context of MOOCs studies during the pandemic, where it covered terms, such as “teacher”, “country”, “university”, and “group”. Finally, the blue cluster covered the challenges of MOOCs studies during the pandemic, where it included terms, such as “barrier”, “lack”, “need”, “participant” and “effect”.

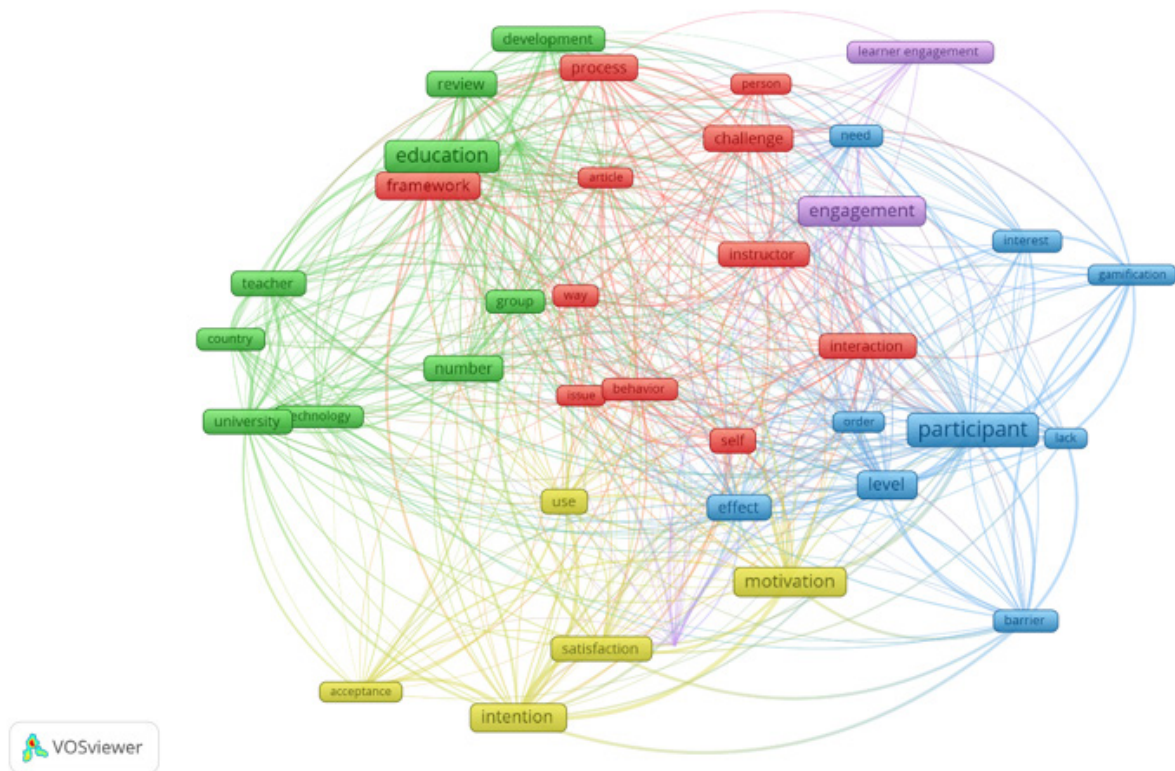


Figure 5. Term Co-occurrence Network Map in Titles and Abstracts

DISCUSSIONS AND IMPLICATIONS

One of the areas in which the COVID-19 pandemic has had a positive impact was the MOOCs movement since all the MOOC providers, even the new ones, such as SWAYAM of India, have all seen drastic growth. According to Class Central, all the major providers have observed between 50 to 200 percent increase in the number of enrollments during the pandemic (Shah, 2020). This increase has also some implications for research studies conducted during this period. Our study focused on these implications.

One of the interesting findings of this study was about the countries contributing to the MOOCs research. It seemed that the COVID-19 pandemic had no effect on the countries that contributed to the MOOCs literature. As it can be observed in Tables 1 and 3, a good number of studies on MOOCs came from China, Spain and USA respectively. In one of the studies conducted just before the pandemic, Zhu, Sari and Lee (2020) investigated 541 empirical MOOCs research published from 2009 to 2019 in order to gain a comprehensive understanding of research methods, topics, and trends of empirical MOOC research. The authors also examined the affiliations of the first authors of the MOOC studies. They found that authors respectively from USA, China, UK and Spain published more studies than others. Hence, our study has shown an ongoing trend in terms of countries contributing to the MOOCs research. This high interest in MOOCs during the COVID-19 pandemic could be due to their feature (Huang et al., 2020a), namely: (1) open and free, hence ensure access to education for everyone without any restrictions; and (2) flexibility, where students can learn according to their own pace, especially during these crises.

Zhu, Sari and Lee (2020) also observed decreases in the number of USA and UK based studies while increases in China and Spain between Phase I (2009-2016) and Phase II (2017-2019). In fact, the percentage of the authors from China had shown a dramatic rise from 8 to 21.3. Our study uncovered the continuity of the same trend during the COVID-19 pandemic. Chinese followed by Spanish researchers still showed interest in MOOCs research more than researchers in other countries during the pandemic. Particularly, it is seen, for instance, that the Chinese government supported the MOOCs initiative by releasing thousands of MOOCs during the pandemic (Huang et al., 2020b). On the other hand, it was interesting to notice that researchers from UK tended to show less interest in MOOC research before and during the pandemic although the number of enrollments to FutureLearn, a UK based MOOC platform, increased 116 percent during the pandemic (Shah, 2020). This might be related to other two concepts and implementations regarding opening up education, Open Education Resources (OER) and Open Education Practices (OEP). The researchers in UK as well as in some other countries seem to show more interest in OER and especially in OEP, as an emerging implementation, lately rather than MOOCs. According to the results of our study, researchers in some of the other countries, such as India, Mexico, Belgium, Italy, Morocco, and Russia, have shown more interest during the pandemic. In fact, these countries were not listed among the countries in the previous study indicated before (Zhu, Sari, & Lee, 2020). In other words, it would be fair to infer that although an ongoing trend about the countries contributed the MOOC research was observed, COVID-19 acted as a catalyzer for researchers in underrepresented countries to focus more on MOOCs research.

One of the unique results of our study was about the publication type due to the fact that a great deal of the previous studies did not look for the publication type. As can be seen in Figure 1, the majority of publications were journal articles (including early access and review types) followed by book reviews during the COVID-19 pandemic. This result can be explained with two major phenomena, namely book writing and production usually take time, and the number of academic events decreased during, especially, the beginning of the pandemic due to the shortage of experience in organizing online academic meetings (e.g., conferences). One of the a few studies included the examination of document type also presented the journal articles as the most preferred publication type followed with book chapters (Duggal & Dahiya, 2020).

Another interesting result of our study was about the rising interest of the technical fields into MOOCs. As shown in Table 4, we observed a quite number of publications in the journals generally publish articles on technical issues, such as IEEE Access and Computer Applications in Engineering Education. Previous studies in the literature usually limits their studies with the publications in the journals related to education or related fields (Babori, 2020; Babori, Fassi, & Zaid, 2019; Bozkurt, Akgun-Ozbek, & Zawacki-Richter, 2017; Veletsianos, & Shepherdson, 2016; Zhu, Sari, & Lee, 2020). Our study as well as a few others from other fields (Bhattacharya, Singh, & Hossain, 2020) have shown that a more diverse fields must be taken into consideration while reviewing the MOOC research including health, engineering, etc.

Figure 3 also supports this finding, where education, especially technology-based learning, was identified as the most frequently investigated topic in the studies during the pandemic. Since the shift from classroom-based education to completely online (emergency remote) learning during the pandemic and issues raised due to this sudden change, such as access, effective pedagogies, right technological infrastructure, efficient and appealing course materials, digital literacy, student and teacher support, etc., it was not evitable to focus by the researchers, as well as practitioners of education. Thus, many researchers not only from the field of education, but also from diverse fields of studies, such as engineering, communications, health, and so forth, tried to explore the potential of MOOCs in formal, informal and non-formal learning processes in their fields (Cha & So, 2020; Lochlainn, Mhichil, Beirne & Brown, 2020; Merzdorf & Douglas, 2020; Setia, Tay, Chia, & Subramaniam, 2019). The following most frequently studies topics are related to the technical fields, respectively computer sciences, engineering and telecommunications. As it has mentioned before, this result also observed in the journals covered MOOCs related studies. In other words, our study has revealed that researchers in technical fields have shown more interest in MOOCs during the pandemic than before. It was most probably related to the growing interest among their students towards participating MOOCs. However, one of the latest Class Central reported a noteworthy observation about the topics the MOOC participants followed (Shah, 2020 December). According to the report, technology-related topics were the most popular among MOOCs participants, but it changed to topics related to the personal development, business, art and design, management and leadership, self-improvement, and humanities. So, that was why we observed more studies on technical fields but it might change if we can re-examine the topics of the research studies on MOOCs in near future.

Retention has been one of the major issues regarding MOOCs since the early days (Breslow et al., 2013; Cormier & Siemens, 2010; Littlejohn et al., 2016; Yuan, Powell & Olivier, 2014; Xing, 2019). Recent studies on retention, or completion ratio in MOOCs (e.g., Chaw & Tang, 2019; Maya-Jariego et al., 2020) presented evidence on positive interaction between learners' engagement, satisfaction and motivation in MOOCs. Our analyses of the keywords, titles and abstracts reflected the retention issue in MOOCs research clearly. Both content analyses as well as co-occurrence network maps have illustrated the importance of retention and related terms, such as motivation, intention, commitment, engagement, participation, self-regulation, etc. Previous studies also indicated a boosting interest in factors affecting the learners' motivation to complete MOOCs. According to Zhu, Sari and Lee (2020), for example, the specific research topics that had the biggest increase between Phase I (2009-2016) and Phase II (2017-2019) were retention and completion (from 14 to 29), motivation (from 3 to 20), and engagement (from 11 to 23). In the light of these results, it would not be wrong to claim that during the pandemic, the MOOC research mainly showed a tendency toward evaluating learners' motivation to complete MOOCs they were enrolled in so as to measure the success rate of MOOC programs.

CONCLUSIONS, LIMITATIONS AND FUTURE DIRECTIONS

The main purpose of our study was to investigate the trends in MOOC research during the pandemic. More specifically the study intended to find out (1) the countries of the researchers who contributed the most to MOOCs research during the COVID-19 pandemic, (2) the distribution of MOOCs research during the COVID-19 pandemic in terms of document type, index and topic, and (3) the frequently used terms in the keywords, abstracts and titles of MOOCs research during the COVID-19 pandemic.

The study revealed an ongoing trend in terms of countries contributing to the MOOCs research during the COVID-19 pandemic: researchers in China and Spain especially showed more interest in MOOCs research than other countries same as before the pandemic. Researchers in USA have also contributed the literature. On the other hand, this study has also presented evidence about growing attention in MOOCs among less represented countries (e.g., Mexico, India, Morocco) during the pandemic compared to those once dominated the literature, such as UK, Netherland, Germany, etc. In addition, journal articles were the most preferred publication type due to the fact that others like books takes a quite time to be published. Moreover, the study has also uncovered another ongoing trend about the topics focused on MOOC research: factors affecting the learners' retention or completion ratio and relate topics, such as self-regulation, motivation, intention, goal-orientation and so forth have been the most often studied variables in MOOCs research during the pandemic.

This study provides some hints for future research. For instance, it was interesting to observe the growing interest in MOOCs research in underrepresented countries. It would be interesting and beneficial to examine why and how these countries focus on MOOCs. Rather than a quantitative approach a more qualitative might help develop get better insight about their motives and ways to benefit from MOOCs. Another research idea about MOOCs would be investigating the practitioners' perspectives about MOOCs rather than just researchers' perspectives. In general, it would be fair to state that the field of technology-based learning (TBL), of which MOOCs can be considered as a subset, is an applied science. Thus, we as researchers should not forget the practice of MOOCs and concentrate on the effective, efficient, engaging and enduring (4Es) implementations. For instance, a repetition of the Chickering and Gamson's (1987) study on effective principles of college teaching in MOOCs might help MOOC designers and researchers.

Despite the solid ground that this study provided about MOOCs and the COVID-19 pandemic, it still has some limitations that should be acknowledged. For instance, this study conducted only a bibliometric mapping analysis of the obtained results. Additionally, no data was collected from stakeholders, including teachers, students and policy makers. As several research studies have revealed the importance of Open Educational Resources (OER) and Practices (OEP) in enhancing students' motivation during the pandemic (Zhang et al., 2020), future research direction could focus on investigating how to integrate OEP into MOOCs design for better retention rates and learning outcomes.

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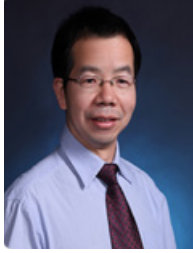
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REFERENCES

- Alonso-Mencia, M.E., Alario-Hoyos, C., Maldonado-Mahauad, J., Estevez-Ayres, I., Perez-Sanagustin, M. & Kloos, C.D. (2020). Self-regulated learning in MOOCs: lessons learned from a literature review. *Educational Review*, 72(3), 319-345, DOI: 10.1080/00131911.2019.1566208
- Aria, M., & Cuccurullo, C. (2017). Bibliometrix: An R-tool for comprehensive science mapping analysis. *Journal of Informetrics*, 11(4), 959–975. <https://doi.org/10.1016/j.joi.2017.08.007>.
- Babori, A., Zaid, A., & Fihri Fassi, H. (2019). Research on MOOCs in Major Referred Journals: The Role and Place of Content. *The International Review of Research in Open and Distributed Learning*, 20(3). <https://doi.org/10.19173/irrodl.v20i4.4385>

- Babori, A. (2020). Trends in MOOCs Research: Analysis of Educational Technology Journals. *International Journal of Emerging Technologies in Learning*, 15(17), 47-68.
- Bhattacharya S, Singh A, Hossain MM (2020). Epidemiology, epidemiologists and coronavirus disease (COVID-19)- A perspective. *J Public Health Prim Care*, 1(43),4.
- Bergdahl, N., Nouri, J. (2020). Covid-19 and Crisis-Prompted Distance Education in Sweden. *Tech Know Learn*. <https://doi.org/10.1007/s10758-020-09470-6>
- Bozkurt, Aras (2020). A global outlook to the interruption of education due to COVID-19 pandemic: Navigating in a time of uncertainty and crisis. *Asian Journal of Distance Education*, 1-126.
- Bozkurt, A., Akgun-Ozbek, E., & Zawacki-Richter, O. (2017). Trends and Patterns in Massive Open Online Courses: Review and Content Analysis of Research on MOOCs (2008-2015). *The International Review of Research in Open and Distributed Learning*, 18(5). <https://doi.org/10.19173/irrodl.v18i5.3080>
- Breslow, L., Pritchard, D.E., DeBoer, J., Stump, G. S., Ho, A.D., & Seaton, D.T. (2013). Studying learning in the worldwide classroom. Research into edX's first MOOC. *Research & Practice in Assessment*, 8, 13–25.
- Broadus, R. N. (1987). Toward a definition of “bibliometrics”. *Scientometrics*, 12(5–6), 373–379. <https://doi.org/10.1007/BF02016680>.
- Bylieva, D., Bekirogullari, Z., Lobatyuk, V., & Nam, T. (2020). Analysis of the consequences of the transition to online learning on the example of MOOC philosophy during the covid-19 pandemic. *Humanities & Social Sciences Reviews*, 8(4), 1083-1093.
- Cha H., So HJ. (2020). Integration of Formal, Non-formal and Informal Learning Through MOOCs. In: Burgos D. (eds) *Radical Solutions and Open Science. Lecture Notes in Educational Technology*. Springer, Singapore. https://doi.org/10.1007/978-981-15-4276-3_9
- Chaw L.Y., Tang C.M. (2019). Driving high inclination to complete massive open online courses (MOOCs): Motivation and engagement factors for learners. *Electronic Journal of e-Learning*, 17(2), 118-130.
- Cormier, D., & Siemens, G. (2010). Through the open door: open courses as research, learning, and engagement. *EDUCAUSE Review*, 45(4) 30-39. Retrieved from <http://www.educause.edu/ero/article/through-open-door-open-courses-researchlearning-and-engagement>
- Duggal, S. & Dahiya, A. (2020). An Investigation into Research Trends of Massive Open Online Courses (MOOCs). *International Journal of Hospitality and Tourism Systems*, 13 (2), 17-28.
- Gašević, D., Kovanovi, V., Joksimovi, S., & Siemens, G. (2014). Where is research on massive open online courses headed? A data analysis of the MOOC Research Initiative. *The International Review of Research in Open and Distributed Learning*, 15(5), 134-176.
- Heersmink, R., van den Hoven, J., van Eck, N. J., & van den Berg, J. (2011). Bibliometric mapping of computer and information ethics. *Ethics and Information Technology*, 13(3), 241. doi:10.1007/s10676-011-9273-7
- Hodges, C., Moore, S., Lockee, B., Trust, T., & Bond, A. (2020). The difference between emergency remote teaching and online learning. *EDUCAUSE Review*. <https://er.educause.edu/articles/2020/3/the-difference-between-emergency-remote-teachingand-online-learning>.
- Huang, R., Liu, D., Tlili, A., Knyazeva, S., Chang, T. W., Zhang, X., ... & Holotescu, C. (2020a). *Guidance on open educational practices during school closures: Utilizing OER under COVID-19 pandemic in line with UNESCO OER recommendation*. Beijing: Smart Learning Institute of Beijing Normal University.
- Huang, R., Tlili, A., Chang, TW. et al. (2020b). Disrupted classes, undisrupted learning during COVID-19 outbreak in China: application of open educational practices and resources. *Smart Learning Environments*, 7, 19. <https://doi.org/10.1186/s40561-020-00125-8>

- Littlejohn, A., Hood, N., Milligan, C., & Mustain, P. (2016). Learning in MOOCs: Motivations and Self-Regulated Learning in MOOCs. *Internet and Higher Education*, 29, 40-48.
- Liyanagunawardena, T.R., Adams, A., & Williams, S.A. (2013). MOOCs: A systematic study of the published literature 2008-2012. *International Review of Research in Open and Distance Learning*, 14(3), 202-227.
- Lochlainn, C.M., Mhichil, M.N.G., Beirne, E., & Brown, M. (2020). The soul behind the screen: understanding cultural enrichment as a motivation of informal MOOC learning. *Distance Education*, 41(2), 201-215, DOI: 10.1080/01587919.2020.1757408
- Marti-Parreno, J., Mendez-Ibanez, E., & Alonso-Arroyo, A. (2016). The use of gamification in education: A bibliometric and text mining analysis. *Journal of Computer Assisted Learning*, 32(6), 663-676. <https://doi.org/10.1111/jcal.12161>
- Maya-Jariego, I., Holgado, D., Gonzalez-Tinoco, E., Castano-Munoz, J., & Punie, Y. (2019). Typology of motivation and learning intentions of users in MOOCs: the MOOCKNOWLEDGE study. *Education Technology Research & Development*, 68, 203–224.
- Merzdorf, H.E., & Douglas, K.A. (2020). *Surveying Motivation and Learning Outcomes of Advanced Learners in Online Engineering Graduate MOOCs*. 2020 IEEE Frontiers in Education Conference (FIE), Uppsala, 1-4, doi: 10.1109/FIE44824.2020.9273965.
- Paton, R.M, Fluck, A.E., & Scanlan, J.D. (2018). Engagement and retention in VET MOOCs and online courses: A systematic review of literature from 2013 to 2017. *Computers & Education*, 125, 191-201. <https://doi.org/10.1016/j.compedu.2018.06.013>.
- Raffaghelli, J., Cucchiara, S., & Persico, D. (2015). Methodological approaches in MOOC research: Retracing the myth of Proteus. *British Journal of Educational Technologies*, 46(3), 488-509.
- Razo, D. (2020, September 17). The Rebirth of Online Courses in the COVID-19 Era. *Observatory of Education Innovation*. Retrieved from <https://observatory.tec.mx/edu-news/boom-of-online-courses-covid-era>
- Reparaz, C., Aznarez-Sanado, M., & Mendoza, G. (2020). Self-regulation of learning and MOOC retention. *Computer and Human Behavior*, 111, 106423.
- Setia, S., Tay, J. C., Chia, Y. C., & Subramaniam, K. (2019). Massive open online courses (MOOCs) for continuing medical education - why and how?. *Advances in medical education and practice*, 10, 805–812. <https://doi.org/10.2147/AMEPS219104>
- Shah, D. (2020, Dec 14th). *The Second Year of the MOOC: A Review of MOOC Stats and Trends in 2020*. Retrieved from <https://www.classcentral.com/report/the-second-year-of-the-mooc/>.
- Shah, D. (2020, September 21). *The 200 Best Free Online Courses of All Time (Based on the Data - 2020 Edition)*. Retrieved from: <https://www.freecodecamp.org/news/best-online-courses/>
- Stracke, C. M., Downes, S., Conole, G., Burgos, D., & Nascimbeni, F. (2019). Are MOOCs open educational resources?: A literature review on history, definitions and typologies of OER and MOOCs. *Open Praxis*, 11(4), 331.
- UNICEF (2020). Retrieved from <https://www.unicef.org/coronavirus/keeping-worlds-children-learning-through-covid-19>
- UNESCO (2020). *Global Education Monitoring (GEM) Report*. Retrieved from <https://en.unesco.org/news/global-education-monitoring-gem-report-2020>
- Vogel, R., & Masal, D. (2015). Public leadership: A review of the literature and framework for future research. *Public Management Review*, 17(8), 1165–1189.
- Xing, W. (2019). Exploring the influences of MOOC design features on student performance and persistence. *Distance Education*, 40(3), 1-16.

- Yuan, L., Powell, S., & Olivier, B. (2014). *Beyond MOOCs: sustainable online learning in institutions*. A white paper for the Centre for Educational Technology, Interoperability and Standards. Retrieved from <http://publications.cetis.ac.uk/2014/898>
- Veletsianos, G., & Shepherdson, P. (2016). A Systematic Analysis and Synthesis of the Empirical MOOC Literature Published in 2013–2015. *The International Review of Research in Open and Distributed Learning*, 17(2). <https://doi.org/10.19173/irrodl.v17i2.2448>
- Van Eck, N. J., & Waltman, L. (2010). Software survey: VOSviewer, a computer program for bibliometric mapping. *Scientometrics*, 84(2), 523-538.
- Verma, S., & Gustafsson, A. (2020). Investigating the emerging COVID-19 research trends in the field of business and management: A bibliometric analysis approach. *Journal of Business Research*, 118, 253-261.
- Yilmaz, R. M., Topu, F. B., & Takkac Tulgar, A. (2019). An examination of the studies on foreign language teaching in pre-school education: a bibliometric mapping analysis. *Computer Assisted Language Learning*, 1-24.
- Zancanaro, A., Erpen, J. G., Santos, J. L. S., Stell, A. V., & Todesco, J. L. (2013). Mapeamento da produção científica sobre memoria organizacional e ontologias. *Perspectivas em Ciência da Informação*, 18(1), 43-65.
- Zhang, X., Tlili, A., Huang, R., Chang, T., Burgos, D., Yang, J., & Zhang, J. (2020). A Case Study of Applying Open Educational Practices in Higher Education during COVID-19: Impacts on Learning Motivation and Perceptions. *Sustainability*, 12(21), 9129.
- Zhang, M., Yin, S., Luo, M., & Yan, W. (2017). Learner control, user characteristics, platform difference, and their role in adoption intention for MOOC learning in China. *Australasian Journal of Educational Technology*, 33(1). <https://doi.org/10.14742/ajet.2722>
- Zhu, M., Sari, A.R. & Lee, M.M. (2020). A comprehensive systematic review of MOOC research: Research techniques, topics, and trends from 2009 to 2019. *Educational Technology Research & Development*, 68, 1685–1710. <https://doi.org/10.1007/s11423-020-09798-x>

CLASSIFICATION OF STUDENTS' ACHIEVEMENT VIA MACHINE LEARNING BY USING SYSTEM LOGS IN LEARNING MANAGEMENT SYSTEM

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ABSTRACT

During emergency remote teaching (ERT) process, factors affecting the achievement of students have changed. The purposes of this study are to determine the variables that affect the classification of students according to their course achievements in ERT during the pandemic process and to examine the classification performance of machine learning techniques. For these purposes, the logs from the learning management system were used. In the study, analyzes were carried out with various machine learning techniques and their performances were compared. As a result of the study, it was observed that Fisher's Linear Discriminant Analysis was the best technique in classification according to F measure performance criteria. As another result, the most effective variable, in classifying students, is the average number of days logged into the system per month and week. It has been observed that total activity duration (min), total number of weeks and total number of page views during the semester are less influential factors. Accordingly, it could be suggested to check the monthly and weekly follow-up of the lectures instead of the total follow-ups per semester. In addition, students' interaction patterns can be monitored with course tracking systems.

Keywords: Emergency remote teaching, linear discriminant analysis, machine learning, measurement and assessment, pandemic process, COVID-19.

INTRODUCTION

Covid-19 pandemic process caused to troubles at higher education institutions from various aspects as in numerous fields of life owing to restrictions. Face-to-face education systems were laid over and emergency remote teaching (ERT) activities were conducted at Turkiye along with other all countries. At this unpredictable process, with the intent of being able to continue learning activities, not disrupting instruction programs, typical face-to-face education elements like contents, teaching approaches, strategies and methods were presented to students via online platforms. Whereas distance education is required to

different instructional design processes from face-to-face teaching. Because of instructor could not reach these design opportunities in current conditions, conducted activities were named as ERT (Hodges, Moore, Lockee, Trust and Bond, 2020).

Although National Ministry of Education in Turkiye have decided different strategies primary, secondary and high school stages occasionally, all universities have chosen ERT for theoretical courses even some of them made it for applied courses as well. Universities planned these processes with their own means and opportunities. Some of ways of ERT at universities are learning management systems (LMSs), video conferencing tools, Google tools, Web 2.0 tools. Even though each ERT ways of universities differ from others, at essential points of them have similarities such as accessing course materials, course presentations, participation to synchronous courses, online exams. These similarities give an opportunity to comparisons of activities and common assessments. There are several studies on literature which students and instructors' views on ERT activities, suggestions on the frame of course and field, achievement comparisons (Aboyinga and Nyaaba, 2020; Piilikangas and Lindfors, 2021; Yazawa; 2021). These studies are result-oriented and depend on self-reported data by a majority. In spite of several scientific findings are able to ascertained on the basis of self-reported data, these data are limited for predictions, creating generalizable findings (Brutus, Aguinis and Wassmer, 2013; Lauritsen, 1999).

Data about student-system interactions are recorded on LMSs and Web 2.0 tools. These data can be exemplified as participation frequency to discussions, the days which students logged into course page, how much time s/he passed time etc. The findings, revealed by worked of system logs which is one of the most important data sources for comprehensive analysis and synthesis and are able to give lots of information about process, are become popular and widespread on literature. These data, seen as independent and relevant of each other, is named as big data and give opportunities for revealing important findings via patterns which were gained from analysis.

The patterns, created by analyzing gathered complex data, are named as learning analytics. Learning analytics consist of three processes as preoperational process, post operation analysis and actions (Bahecci, 2015). Accordingly, learning analytics cover whole processes of gathering analyzing data, giving feedbacks to respective people, using these for development and updating. Briefly, learning analytics is an ever-developing field, which uses students online activities for rising learning and achievement (Saqr, Fors and Tedre, 2017). It was highlighted that students interactions can be monitored and made provisions against probability of failure (Karaoglan-Yilmaz, 2020). In this sense, learning analytics give opportunities for following student activities, examining instructional contexts and gaining important feedbacks.

When reviewing literature, both studies on describing learning analytics (Dietz-Uhler and Hurn, 2013; Elias, 2011) and predicting student achievement by using these analytics (Aydin and Ozkul, 2015; Fernandez-Delgado, Mucientes, Vazquez-Barreiros and Lama, 2014; Saqr, et al., 2017) were observed. The studies on educational data mining, published at between 2006 and 2016 were examined and it was reported by Tekin and Oztekin (2018) that most of them focused on academic achievement and conducted by literature review. Besides this, it was seen that there are studies, investigated effects of online learning environments on the basis of a course (Bulca and Demirhan, 2020). Moreover, it can be observed in an obvious way, learning analytics studies can be conducted on the basis of a course or on national level (Dietz-Uhler and Hurn, 2013).

When creating learning analytics, several data mining techniques were set on. These can be exemplified as text mining, social media analytics, machine learning techniques. Also, it was known that a transition process to semantic systems in education and pandemic conditions were speeded up (Devedzic, 2004). In general, it can be said that operations and progressions are realized via patterns, which specified by instructors, individualized learning environments at these days and future. In other words, instructors assign to students preconditions and context modules in a nonlinear progression. For example, the students, finished module A, can continue with modules B or C, the students, finished modules A and B, can access to module D or E, module F can be accessed without finishing module D. These descriptions and specifications are identified by instructors. But this access is identified via general algorithm specifications, student's content achievement and interactions in semantic learning environments (Ohler, 2008). At this point, algorithms can be created in the frame of patterns, gathered by machine learning techniques, and system achievement can be raised. These algorithms are set on patterns, gathered by analyzing big data consist of human-computer

interactions, for developing systems, can think nearly human intelligence (El Naqa and Murphy, 2015). By this way, guardianships are provided based on interaction data and content achievement, individualized effective learning environments are designed (Kivinen, Warmuth and Hassibi, 2006).

Machine learning is a computer science field, aim to ensure computer “learning” without direct programming (Samuel, 1959). It has developed from 1950s, based on artificial intelligence and deep learning initiative, till today and especially is formed within the frame of implemented targets particularly prediction and optimization (Bi, Goodman, Kaminsky and Leesler, 2019; van Ginneken, 2017). Computer learning in machine learning is developed via interactions and experiences within the context of a task (Mitchell, 1997:15). These interactions and experiences are based on data in implementation. Above mentioned data are named as big data and can be gathered from learning tools such as LMSs, video context, screens, social media platforms, interactive videos. Patterns are tried to create by analyzing big data via machine learning techniques. For this reason, there is no certain differentiations between machine learning and algorithmic statistic techniques such as least absolute shrinkage and selection operator (LASSO), stepwise regression (Bi, et al., 2019). It can be said in conclusion that machine learning is successful algorithms and patterns by analyzing big data, gathered from logs, via various statistical techniques.

The success of machine learning technique is important for creating patterns. The machine learning techniques can be exemplified as logistic regression, decision trees and Naive Bayes classifiers etc. in a general point of view (Mackenzie, 2015). These techniques have advantages and disadvantages from the point of findings. Besides each has different preconditions, they create predictions by using different formulizations. For these reasons, experimenting these techniques on the same data and comparing them by this way are important for reaching valid and reliable findings, would be used when designing instructional systems and context. The current study has one another originality about comparing different machine learning techniques on the data, gathered from students, had no alternatives apart from ERT.

Importance of the Study

In literature, there are studies implementations on distance education and ERT by using analytic sources besides face-to-face teaching (Karaoglan-Yilmaz, 2020; Saqr et al., 2017). Data of this study consist of students-system interaction logs, who are at university and take courses via ERT. From the point of this view, it can be said that analyzed data have a holistic characteristic contextually. On the other hand, this study has an originality in terms of that the most appropriate technique was chosen by conducting frequently used machine learning techniques along and thuswise incorrect and subjective findings could be eliminated. It was seen that the other studies, used these techniques, had an approach in a similar way (e.g., Kotsiantis, Pierrakeas and Pintelas, 2003; Osmanbegovic and Suljic, 2012; Romero, Espejo, Zafra, Romero and Ventura, 2013). Moreover, within the context of measurement and evaluation course, students’ the time (min) passed into LMS and number of logging to LMS were investigated on the basis of semester, month, week and day. It was thought that investigation of these variables would be contribute to examining student achievement, controlling and updating compulsory ERT activities.

Purpose of the Study

According to previous explanations, the aim of this study was examining which variables could affect students’ achievement during teaching activities by ERT. With this aim, the logs, which were gained from LMSs, used for measurement and evaluation course presented by ERT, were analyzed. The instructor shared with students 14 course content presentation videos, 606 minutes in total, at 14 week-period time at whole semester. Each of instructional contents’ average duration was approximately 43 minutes, they were presented to students weekly. At the semester, two synchronous online courses that students must attend them and one synchronous online course for reviewing theoretical content and solving sample problems were performed. Besides these, the electronic document of relevant course content in pdf format was sent to students at each week. At the same time, each week, discussions page was created and students were encouraged to participate them. To achieve this aim, machine learning techniques were used and tried to answer the research questions listed below:

According to students' average number of page views (daily, weekly, monthly, and in total) in the learning management system, average number of days (weekly and monthly) and total number of weeks logged into the system, and total time (min) spent in the system;

1. Which machine learning technique has the highest performance in classifying students as “passed” and “failed”?
2. What are the classification results of the machine learning technique with the highest classification performance?
3. What is the importance level of all these variables in classification?

METHOD

In this study, students' average number of page views (daily, weekly, monthly, and in total) in the learning management system, average number of days (weekly and monthly) and total number of weeks logged into the system, total time (min) spent in the system were described, and hence it is a descriptive survey research. In such studies, it is aimed to describe the existing characteristics of students (Karasar, 2014). In addition, it is also a correlational research since it examines the relationship between the success-failure of students and their interactions in the learning management system. In correlational studies, it is aimed to explore the relationships between the variables (Buyukozturk, Kilic-Cakmak, Akgun, Karadeniz and Demirel, 2013).

Participants

The participants of this study are 284 students studying at the education faculty of a state university in Turkiye. The participants were selected according to purposeful sampling method. This sampling method allows in-depth examination of the cases that provide satisfying information about research problem (Buyukozturk et al., 2013). The distribution of the participants according to their departments and gender is given in Table 1.

Table 1. Number of students by department and gender

Department/Gender	Female		Male		Total	
	f	%	f	%	f	%
Guidance and Psychological Counseling	56	62,2	34	37,8	90	31,7
Social Sciences	42	79,2	11	20,8	53	18,7
Science Teaching	17	85,0	3	15,0	20	7,0
Early Childhood	33	80,5	8	19,5	41	14,4
Religion and Culture	54	67,5	26	32,5	80	28,2
Total	202	71,1	82	28,9	284	100,0

As seen in Table 1, 202 (71.1%) of the participants were female and 82 (28.9%) were male. 90 (31.7%) of the participants attending to Guidance and Psychological Counseling Program, 53 (18.7%) to Social Sciences Education, 20 (7.0%) to Science Education, 41 (14.4%) to Early Childhood Education, and 80 (28.2%) to Religion and Culture Education programs.

Data Collection and Analysis

Within the scope of the study, system log reports of the measurement and evaluation course in the faculty of education given in the form of ERT throughout the semester were examined. This course is given at all departments of education faculties and related departments of other faculties having pedagogical formation education. In order to obtain the data to be used in the present study, students' average number of page views (daily, weekly, monthly, and in total) in the learning management system, average number of days (weekly

and monthly) and total number of weeks logged into the system, total time (min) spent in the system were evaluated. Descriptive statistics regarding these variables are presented in Table 4. Accordingly, the average number of page views was calculated as follows:

$$\text{average page view}_{\text{daily}} = \frac{\text{total page views}}{\text{total number of days logged into the system}} \dots 1$$

$$\text{average page view}_{\text{weekly}} = \frac{\text{total of average number of views per week}}{\text{total number of weeks logged into the system}} \dots 2$$

$$\text{average page view}_{\text{monthly}} = \frac{\text{total of average number of views per month}}{\text{total number of months logged into the system}} \dots 3$$

The average number of days logged into the system was calculated as follows:

The average number of days logged into the system was calculated as follows:

$$\text{average number of logins}_{\text{weekly}} = \frac{\text{total number of days logged into the system}}{\text{total number of weeks logged into the system}} \dots 4$$

$$\text{average number of logins}_{\text{monthly}} = \frac{\text{total number of days logged into the system}}{\text{total number of months logged into the system}} \dots 5$$

In this study, machine learning techniques were used in order to examine how effective fail-pass decisions of the students are predicted by using the students' log reports (interaction activities) in a learning management system. In order to prevent erroneous and biased results, many techniques are used together and the most appropriate one is chosen in machine learning applications (e.g. Kotsiantis, et al., 2003; Osmanbegovic and Suljic, 2012; Romero, et al., 2013). Accordingly, the performance of a wide variety of well-known techniques is often tested and compared. Therefore, in this study, out of the 34 analysis techniques, it was aimed to select the technique with the highest classification performance. In Table 2, it is given that these techniques are Bayes (Naïve Bayes Simple, Naïve Bayes, BayesNet, and Bayesian Logistic Regression), discriminant analysis (FLDA, QDA, and LDA), logistic regression (Kernel, Logistic, and Simple), neural networks (RBF Network, RBF Classifier, MLP Classifier, WiSARD, and Multilayer Perceptron), decision trees (J48, J48 Consolidated, NB Tree, Random Tree, Decision Stump, Random Forest, Extra Tree, FT, REP Tree, BF Tree, LMT, and Simple CART) and instance-based [nearest neighborhood] (KStar, IBk, and RseslibKnn), and rule-based (Decision Table, PART, DTNB, and OneR). Detailed information on the working principles of these techniques is included in the related packages of WEKA (Hall et al., 2009) software.

Table 2. Machine learning techniques used

Functions	Bayes	Trees	Lazy	Rules
FLDA	Naïve Bayes Simple	J48	KStar	Decision Table
QDA	Naïve Bayes	J48 Consolidated	IBk	PART
RBF Network	BayesNet	NB Tree	RseslibKnn	DTNB
Kernel Logistic Regression	Bayesian Logistic Regression	Random Tree		OneR
Logistic		Decision Stump		
LDA		Random Forest		
RBF Classifier		Extra Tree		
MLP Classifier		FT		
WiSARD		REP Tree		
Multilayer Perceptron		BF Tree		
Simple Logistic		LMT		
		Simple CART		

Note: FLDA: Fisher's Linear Discriminant Analysis, QDA: Quadratic Discriminant Analysis, RBF: Radial Basis Functions, LDA: Linear Discriminant Analysis, MLP: Multilayer Perceptron, NB: Naïve Bayes, FT: Functional Trees, RP: Reduced-Error Pruning, BF: Best-First, LMT: Logistic Model Trees, CART: Classification and Regression Trees, PART: Partial Decision Trees, DTNB: Naive Bayes and Decision Tables, KNN: K-Nearest Neighborhood

As the dependent variable of the study, the students' end-of-term grade point averages from the assessment and evaluation course were used. These grades were calculated by summing 20% of the first and second midterm exam grades and 60% of the final exam grades. In order to pass a course at the state university where this study was conducted, the end-of-year passing grade must be at least 60 points. Therefore, the cut-off score was taken as 60, and those whose end-of-term average was 60 and above were coded as "passed", and those below 60 were coded as "failed". In order to facilitate the analysis and increase the optimization of some techniques, all numerical variables were standardized as 0 in mean and 1 in variance before analysis. The whole steps that followed in the current study are given in Figure 1.

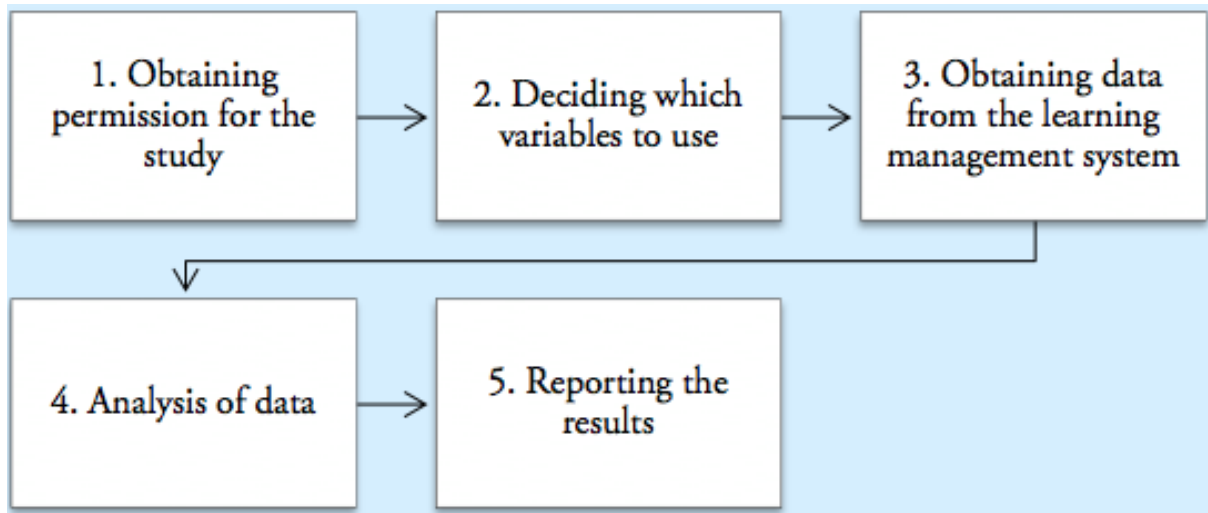


Figure 1. The Workflow of the Study

In evaluating the performance of machine learning techniques, threshold metrics (Accuracy, error rate, sensitivity, specificity, precision, recall, F measure, Kappa fit) and ranking metrics (Receiver operating characteristic [ROC] curve and precision-recall curve [PRC]) are mostly used. In determining which of these metrics to use, it is checked whether the number of observations in the dependent variable is balanced or not. In this study, there is an imbalanced dependent (class) variable ($n_{\text{passed}} = 215$, $n_{\text{failed}} = 69$). F measure is used as a model evaluation criterion in imbalanced distributions (Han, Pei and Kamber, 2011). In addition, since precision and recall values have equal importance for measurement and assessment course examined in the present study, F measure which was evaluated from equal weighting of these two measures will be one of the most appropriate evaluation metrics. Therefore, in this study, F values of the models were used as model evaluation criteria, and they were compared statistically with the dependent sample t test. In addition, the area under the ROC curve and accuracy values were also reported.

The techniques used to test the performance of models in machine learning are holdout, cross-validation and bootstrap methods. The holdout method, which is traditionally used in machine learning, is based on dividing the data into two parts, one part as train (usually 2/3 of data) and one part as test data (usually 1/3 of data) for analysis. Bootstrap method allows to obtain large samples by resampling from the existing data set. On the other hand, cross-validation allows the classification performance average to be obtained as a result of dividing the data into 10 equal parts and using one of them as test and the others as learning data in each iteration (Han, et al., 2011). In this study, all analyzes were performed with 10-fold cross-validation technique by using WEKA (Hall et al., 2009) software.

FINDINGS

In this section, findings of the study are presented under separate sub-headings for each research problem.

Selection of the Technique with the Highest Classification Performance

In Table 3, F measure, area under ROC curve, and percent correct values of machine learning techniques are given together with their standard deviation values. In addition, graphical representation of performance comparison of techniques is given in Figure 2.

Table 3. Classification performances of machine learning techniques

Techniques	F	Sx	ROC	Sx	PC	Sx
Fisher's Linear Discriminant Analysis (FLDA)	0.50	0.13	0.77	0.09	69.65	8.33
Naïve Bayes Simple (NBS)	0.49	0.14	0.74	0.10	70.32	9.16
Naïve Bayes (NB)	0.48	0.14	0.74	0.10	69.86	9.24
BayesNet (BayesN)	0.47	0.17	0.70	0.12	76.99	7.21
Quadratic Discriminant Analysis (QDA)	0.46	0.13	0.74	0.11	65.75	9.56
J48	0.46	0.19	0.66	0.13	77.06	7.47
J48Consolidated (J48_C)	0.46	0.14	0.67	0.13	65.75	10.00
Radial Basis Functions Network (RBFN)	0.42	0.19	0.73	0.11	78.12	5.99
KStar	0.41	0.15	0.66	0.11	72.45	7.28
Decision Table (DT)	0.41	0.19	0.66	0.12	77.83	6.58
Partial Decision Trees (PART)	0.41	0.21	0.68	0.11	75.91	7.03
Naive Bayes and Decision Tables (DTNB)	0.40	0.19	0.68	0.12	77.21	6.46
Naïve Bayes Tree (NBT)	0.40	0.20	0.64	0.12	76.50	7.01
IBk	0.39	0.15	0.60	0.10	70.32	7.58
Random Tree (RT)	0.39	0.16	0.60	0.10	70.70	7.80
Decision Stump (DS)	0.38	0.18	0.60	0.09	75.00	5.06
Bayesian Logistic Regression (BLR)	0.37	0.19	0.61	0.09	77.25	5.46
Kernel Logistic Regression (KLR)	0.37	0.19	0.76	0.10	76.97	5.60
Logistic	0.37	0.19	0.76	0.10	77.01	5.58
Linear Discriminant Analysis (LDA)	0.36	0.19	0.77	0.09	77.36	5.50
Random Forest (RF)	0.36	0.18	0.74	0.11	75.06	6.19
Radial Basis Functions Classifier (RBFC)	0.35	0.16	0.76	0.10	76.75	4.66
Multilayer Perceptron Classifier (MPC)	0.34	0.21	0.75	0.11	74.83	6.79
WiSARD	0.34	0.16	0.57	0.11	70.32	7.44
Extra Tree (ET)	0.34	0.17	0.57	0.11	67.71	8.00
Functional Trees (FT)	0.34	0.17	0.67	0.11	73.95	6.26
Reduced-Error Pruning Tree (REPt)	0.34	0.19	0.60	0.13	75.48	6.14
Multilayer Perceptron (MP)	0.33	0.20	0.74	0.11	74.61	6.64
Simple Logistic (SL)	0.33	0.18	0.75	0.10	76.52	5.05
Best-First Tree (BFt)	0.33	0.17	0.57	0.11	73.97	6.25
Logistic Model Trees (LMT)	0.33	0.19	0.75	0.10	76.28	5.37
Simple Classification and Regression Trees (CART)	0.31	0.17	0.55	0.09	74.57	4.50
Rseslib K-Nearest Neighborhood (KNN)	0.28	0.16	0.68	0.11	74.36	5.01
OneR	0.27	0.17	0.56	0.08	73.28	5.73

Note: ROC: Receiver Operating Characteristic, Sx: Standard deviation, PC: Percent Correct

Table 3 and Figure 2 show that the highest F measure values were obtained by Fisher's Linear Discriminant Analysis (FLDA). In order to examine whether this value differs statistically significantly from the F values of other techniques, a paired samples t test was performed. According to the t test results, FLDA technique has a significantly higher F value than all other techniques ($p < 0.05$). Similarly, the area under the ROC curve of this technique (0.77) indicates also high classification performance. At the same time, this value is higher or equal to the values obtained from all other techniques. The percent correct classification obtained with the FLDA technique is 69.65%. However, although a correct classification close to 100% indicates that the method performs well, the interpretation of this value will lead to incorrect inferences, since the dependent variable used in this study is imbalanced. For this reason, the number of correctly classified and incorrectly classified students for each category and precision and recall values were given in Table 4.

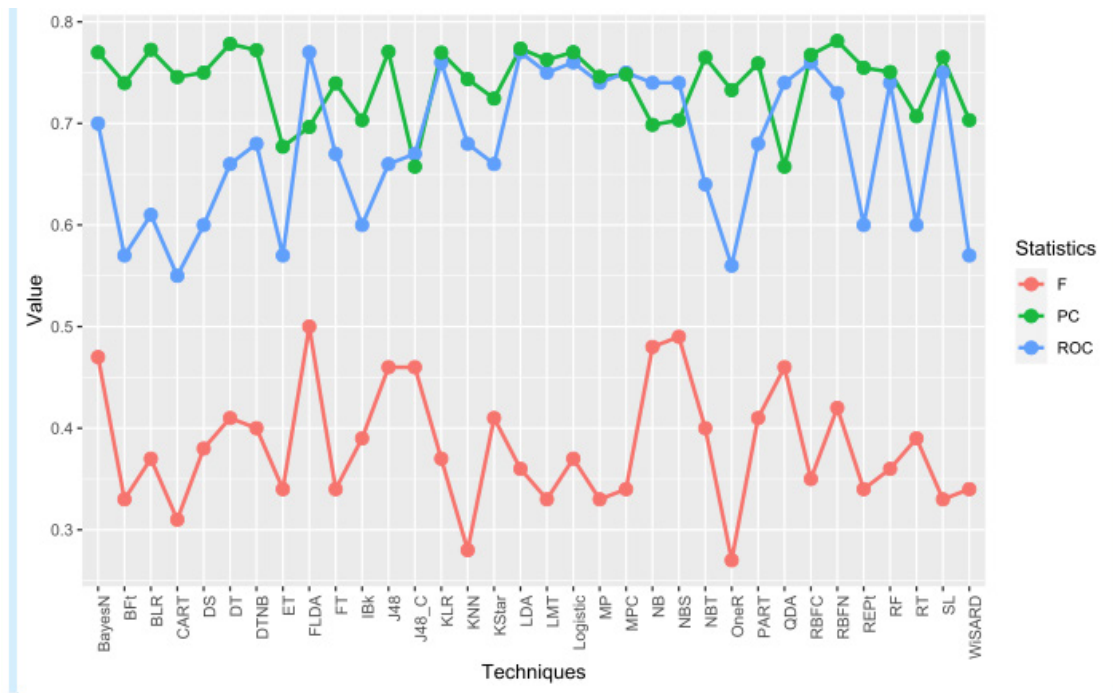


Figure 2. Performance Comparison of Machine Learning Techniques

Classification Results

In Table 4, the classification results obtained with the FLDA technique, which is the technique with the highest classification performance, are given.

Table 4. Classification results for FLDA technique

		Model Evaluation Criteria							Predicted			
		TP Rate	FP Rate	Precision	Recall	F Measure	ROC Area	PRC Area	Failed	Passed	Total	Percent
Actual	Failed	0.667	0.288	0.426	0.667	0.520	0.751	0.466	46	23		
	Passed	0.712	0.333	0.869	0.712	0.783	0.751	0.903	62	153		
Weighted Average		0.701	0.322	0.762	0.701	0.719	0.751	0.797			199	70.07

Note. TP: True Positive, FP: False Positive, ROC: Receiver Operating Characteristic, PRC: Precision-Recall Curve

In Table 4, it is seen that 199 out of 284 students were classified correctly according to the FLDA results. 23 students were classified as “passed” although they actually “failed” the course. On the other hand, 62 students were classified as “failed” although they actually “passed” the course. The ratio of students that were classified as “passed” although they actually “failed” is assumed to have equal importance with ratio of students that were classified as “failed” although they actually “passed” for the measurement and assessment course studied in the present study. Hence, F measure value were interpreted instead of precision and recall values. Accordingly, when F value (0.719) is interpreted together with the ROC value (0.751) and PRC value (0.797), it can be said that these values are close to 1 and the model has acceptable classification performance in general.

Variables in the Model

In Table 5, descriptive statistics and variable importance results regarding the independent variables used in the model are given.

Table 5. Variable importance results

Variables	Weight*	N	Min	Max	Mean	Sx
Average number of days logged into the system per month	0.624	284	2.60	21.20	8.25	3.24
Average number of days logged into the system per week	-0.514	284	1.13	6.24	2.55	0.83
average number of page views per month	-0.291	284	5.62	26.47	14.32	3.76
average number of page views per day	0.260	284	5.30	27.92	11.98	3.13
average number of page views per week	0.259	284	5.66	30.12	12.14	3.56
total time (min) spent in the system	-0.236	284	21.02	1424.32	297.85	194.30
total number of weeks logged into the system	-0.211	284	9.00	19.00	15.78	1.86
Total number of page views	-0.165	284	159.00	2066.00	476.04	213.19

* Threshold: 0.128, Sx: Standard deviation

In FLDA model, the weight values of the variables represent the coefficients in the model. The weight for each variable is interpreted as the power of that variable to separate “failed” and “passed” students. The sign of weight is used to obtain the discriminant function and assign students to the classes. If the values obtained for the students are equal or greater than threshold value, the students are assigned to class one, otherwise they are assigned to the other class. When the discrimination power of the variables is examined, it is seen that the most discriminating variable is average number of days logged into the system per month ($\bar{X} = 8.25 \pm 3.24$). The least discriminating variable is total number of page views ($\bar{X} = 476.04 \pm 213.19$). The other variables are listed from largest to smallest according to their discrimination power as follows: Average number of days logged into the system per week ($\bar{X} = 2.55 \pm 0.83$), average number of page views per month ($\bar{X} = 14.32 \pm 3.76$), average number of page views per day ($\bar{X} = 11.98 \pm 3.13$), average number of page views per week ($\bar{X} = 12.14 \pm 3.56$), total time (min) spent in the system ($\bar{X} = 297,85 \pm 194,30$), and total number of weeks logged into the system ($\bar{X} = 15.78 \pm 1.86$).

DISCUSSIONS AND CONCLUSION

In this study, the classification performance of machine learning techniques in classifying students as “passed” or “failed” were examined by using their log reports in the learning management system. As a result of the study, it was found that Fisher’s Linear Discriminant Analysis (FLDA) have the highest classification performance according to F measure model performans criteria that used for imbalanced data. In addition,

it has been observed that this technique makes more successful estimations according to area under ROC curve when compared to the other techniques. The FLDA technique is used in statistics, pattern recognition, and machine learning to find a linear combination of related variables to categorize events or objects into two or more categories (Li and Wang, 2014). This technique is also robust to violations of normality and homogeneity of variances assumptions when interactions between continuous independent variables do not affect the dependent variable (Knoke, 1982). Especially when the assumption of normality is provided in continuous data and the sample size is more than 50, the FLDA technique gives better results than many other used analyzes such as logistic regression (Pohar, Blas and Turk, 2004).

The discriminating power of the variables used in the study is ranked from high to low as average number of logins (monthly and weekly), average number of page views (monthly, weekly and daily), total time (min) spent in the learning management system, the number of weeks logged into the system and total number of page views, respectively. Accordingly, it was observed that monthly, weekly and daily interactions in the learning management system are more powerful factors in discriminating successful and unsuccessful students when compared to average time spent per semester and average numbers of logins to the system in total. Koc (2017) found that students' participation in discussion and live class in the learning management system was positively related to their project and final scores. Since these activities are planned daily, weekly or monthly, it can be said that regular follow-up of the learning management system increases the success of the students. In another study in which monthly activities of students were observed throughout the semester, it was seen that 66% of students in the risk group who do not use the system regularly could not complete the course (Cohen, 2017). Emphasizing that following the learning activities of students in distance education gives teachers important information about the development of their students, Zhang and Almeroth (2010) developed the Moodog system for this purpose. This system not only provides teachers with important information, but also gives education researchers the opportunity to evaluate the usefulness of distance education systems.

Suggestions and Limitations

According to the study findings, since the most effective variable in the classification of students' achievement is the monthly average number of logins to the learning management system, it can be examined whether the students login to the system monthly or not. Similarly, weekly or even daily follow-ups should be done if possible. At this point, students who log into the system less than the average may be warned about this issue or encouraged to spend more time and log in. In addition, instead of examining the semesterly course activities of the students, it can be followed whether they attend the course on a monthly and weekly basis. Monitoring the changes in students' activities throughout the semester will contribute to identifying the students who are in the risk group in terms of dropping out, making the necessary interventions in the process, and monitoring the problem throughout the campus by the university authorities and initiating the necessary intervention programs (Cohen, 2017). In addition, students' interaction patterns can be monitored with course tracking systems such as Moodog (Zhang and Almeroth, 2010).

In this study, since Fisher's linear discriminant analysis (FLDA) was found to be the most effective technique in discriminating students according to the relevant variables, the FLDA technique may be preferred to the frequently used and known analyzes such as logistic regression, artificial neural networks, when working with continuous variables. According to Gao, et al. (2020) FLDA is a preferable technique for deep learning and machine learning systems. As known, deep learning is one of subfields of machine learning and blows up designing smart learning environments (Balyen and Peto, 2019). But deep learning methodology uses nonlinear transformations (Dargan, Kumar, Ayyagari and Kumar, 2020). From this point of view, it can be said that this study may be an inspiration for deep learning but it is not a pioneer, so these algorithmic techniques should be test for a deep learning environment.

It should be noted that this study is limited to the data of educational measurement and evaluation courses in faculty of education or faculties with pedagogical formation education. Instructional activities designed by the instructors in this course are another limitation of the study. Considering that the classified variable is performance in the course, the interaction of the students is directly related to the difficulty level of the course content and the content design of the instructor. For this reason, researchers can carry out similar

studies by using teaching activities and different student analytics that they use for other courses. In addition, the logs kept in the learning management system, which is the source of the study, constitute the big data of the research. In this learning management system, no data can be kept on students' interactions with video content. Since the scope of big data will change in a course where student interactions can be recorded with video content presented from different learning management systems or Web 2.0 tools, different findings can be reached by comparison and relationship analysis.

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REFERENCES

- Aboyinga, J., & Nyaaba, M. (2020). Factors that ensure motivation in virtual learning among college of education students in Ghana: The emergency remote teaching (ERT) during Covid'19 pandemic. *European Journal of Research and Reflection in Educational Sciences Vol*, 8(9), 1-9.
- Aydin, S., & Ozkul, A. E. (2015). Veri madenciligi ve Anadolu Universitesi acikogretim sisteminde bir uygulama. *Egitim ve Ogretim Arastirmalari Dergisi*, 4(2), 36-44.
- Bahceci, F. (2015). Ogrenme yonetim sistemlerinde kullanılan ogrenme analitikleri araclarinin incelenmesi. *Turkish Journal of Educational Studies*, 2(1), 41-58.
- Balyen, L., & Peto, T. (2019). Promising artificial intelligence-machine learning-deep learning algorithms in ophthalmology. *The Asia-Pacific Journal of Ophthalmology*, 8(3), 264-272.
- Bi, Q., Goodman, K. E., Kaminsky, J., & Lessler, J. (2019). What is machine learning? A primer for the epidemiologist. *American Journal of Epidemiology*, 188(12), 2222-2239.
- Brutus, S., Aguinis, H., & Wassmer, U. (2013). Self-reported limitations and future directions in scholarly reports: Analysis and recommendations. *Journal of Management*, 39(1), 48-75.
- Bulca, Y., & Demirhan, G. (2020). Egitsel cevrimici sosyal ogrenme ortami EDMODO'nun fiziksel aktivite kavramini ogrenmede erisiye ve kaliciliga etkisi. *Egitim Teknolojisi Kuram ve Uygulama*, 10(2), 577-589. doi:10.17943/etku.721876
- Buyukozturk, S., Kilic-Cakmak, E., Akgun, O. E., Karadeniz, S., & Demirel, F. (2013). *Bilimsel arastirma yontemleri* (14th Edition.). Ankara: Pegem Akademi.
- Cohen, A. (2017). Analysis of student activity in web-supported courses as a tool for predicting dropout. *Educational Technology Research and Development*, 65(5), 1285-1304.
- Dargan, S., Kumar, M., Ayyagari, M. R., & Kumar, G. (2020). A survey of deep learning and its applications: A new paradigm to machine learning. *Archives of Computational Methods in Engineering*, 27(4), 1071-1092.
- Devedzic, V. (2004). Education and the semantic web. *International Journal of Artificial Intelligence in Education*, 14(2), 165-191.
- Dietz-Uhler, B., & Hurn, J. E. (2013). Using learning analytics to predict (and improve) student success: A faculty perspective. *Journal of Interactive Online Learning*, 12(1), 17-26.
- Elias, T. (2011). Learning analytics : Definitions , processes and potential. *Learning*, 1-22.
- El Naqa, I., & Murphy M.J. (2015) What is machine learning?. In: El Naqa I., Li R., & Murphy M. (Eds) Machine learning in radiation oncology. Springer, Cham. https://doi.org/10.1007/978-3-319-18305-3_1
- Fernandez-Delgado, M., Mucientes, M., Vazquez-Barreiros, B., & Lama, M. (2014). Learning analytics for the prediction of the educational objectives achievement. In *2014 IEEE Frontiers in Education Conference (FIE) Proceedings* (pp. 1-4). doi:10.1109/FIE.2014.7044402.
- Gao, Z., Yuan, T., Zhou, X., Ma, C., Ma, K., & Hui, P. (2020). A deep learning method for improving the classification accuracy of SSMVEP-based BCI. *IEEE Transactions on Circuits and Systems II: Express Briefs*, 67(12), 3447-3451.
- Hall, M., Frank, E., Holmes, G., Pfahringer, B., Peter, R., & Witten, I. H. (2009). The WEKA data mining software: An update. *SIGKDD Explorations* 11(1), 10-18.
- Han, J., Pei, J. & Kamber, M. (2011). *Data mining: Concepts and techniques*. Amsterdam, The Netherlands: Elsevier.

- Hodges, C., Moore, S., Locke, B., Trust, T., & Bond, A. (2020). The difference between emergency remote teaching and online learning. *Educause review*, 27, 1-12.
- Karaoglan-Yilmaz, F. G. (2020). Ogrenme analitigi geribildirimleri ile desteklenmis ters-yuz ogrenme ortaminin cesitli degiskenler acisindan modellenmesi. *Bilgi ve Iletisim Teknolojileri Dergisi*, 2(1), 1–16.
- Karasar, N. (2014). *Bilimsel arastirma yontemi* (26th Edition). Ankara: Nobel Yayinlari.
- Kotsiantis, S. B., Pierrakeas, C. J., & Pintelas, P. E. (2003). Preventing student dropout in distance learning using machine learning techniques. In *Knowledge-Based Intelligent Information and Engineering Systems* (pp. 267-274). Springer Berlin/Heidelberg.
- Knoke, J. D. (1982). Discriminant analysis with discrete and continuous variables. *Biometrics*, 191-200.
- Koc, M. (2017). Learning analytics of student participation and achievement in online distance education: A structural equation modeling. *Educational Sciences: Theory & Practice*, 17, 1893–1910. <http://dx.doi.org/10.12738/estp.2017.6.0059>
- Kivinen, J., Warmuth, M. K., & Hassibi, B. (2006). The p-norm generalization of the LMS algorithm for adaptive filtering. *IEEE Transactions on Signal Processing*, 54(5), 1782-1793.
- Lauritsen, J. L. (1999). Limitations in the use of longitudinal self-report data: A comment. *Criminology*, 37, 687.
- Li, C., & Wang, B. (2014). *Fisher linear discriminant analysis*. CCIS Northeastern University. https://www.ccis.northeastern.edu/home/vip/teach/MLcourse/5_features_dimensions/lecture_notes/LDA/LDA.pdf
- Mackenzie, A. (2015). The production of prediction: What does machine learning want? *European Journal of Cultural Studies*, 18(4-5), 429–445. doi:10.1177/1367549415577384
- Mitchell, T.M. (1997). *Machine learning* (1st Edition) New York, NY: McGraw-Hill Education.
- Ohler, J. (2008). The semantic web in education. *EDUCAUSE Quarterly*, 31(4), 7-9.
- Osmanbegovic, E., & Suljic, M. (2012). Data mining approach for predicting student performance. *Economic Review*, 10(1), 3-12.
- Piilikangas, A., & Lindfors, E. (2021). Stay online: Student teachers' views on online experiential learning in emergency remote teaching (ERT). *Techne Serien-Forskning i Slojdpedagogik och Slojdvetsenskap*, 28(2), 294-302.
- Pohar, M., Blas, M., & Turk, S. (2004). Comparison of logistic regression and linear discriminant analysis: A simulation study. *Metodoloski Zvezki*, 1(1), 143.
- Romero, C., Espejo, P. G., Zafra, A., Romero, J. R., & Ventura, S. (2013). Web usage mining for predicting final marks of students that use Moodle courses. *Computer Applications in Engineering Education*, 21(1), 135-146.
- Samuel A.L. (1959). Some studies in machine learning using the game of checkers. *IBM J Res Dev*. 3(3):210–229.
- Saqr, M., Fors, U., & Tedre, M. (2017). How learning analytics can early predict under-achieving students in a blended medical education course. *Medical Teacher*, 39(7), 757–767. doi:10.1080/0142159X.2017.1309376
- Tekin, A., & Oztekin, Z. (2018). Egitsel veri madenciligi ile ilgili 2006-2016 yillari arasinda yapilan calismaların incelenmesi. *Egitim Teknolojisi Kuram ve Uygulama*, 8(2), 67–89.
- van Ginneken, B. (2017). Fifty years of computer analysis in chest imaging: Rule-based, machine learning, deep learning. *Radiological Physics and Technology*, 10(1), 23-32. DOI: 10.1007/s12194-017-0394-5.
- Yazawa, O. (2021) Comparison of Japanese university students' levels of self-determined motivation in face-to-face and ERT classrooms: NESTs and JTEs Effect on satisfaction of students' basic psychological needs. *Computer Assisted Language Learning Electronic Journal*, 22(2), 2021, 91-103
- Zhang, H., & Almeroth, K. (2010). Moodog: Tracking student activity in online course management systems. *Journal of Interactive Learning Research*, 21(3), 407-429.

THE MERLIN PROJECT: MALAYSIAN STUDENTS' ACCEPTANCE OF AN AI CHATBOT IN THEIR LEARNING PROCESS

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ABSTRACT

The COVID-19 pandemic has accelerated the educational landscape of institutions of higher education, which were predominantly face-to-face. In Malaysia, many universities converted their courses into online courses to keep up with the challenges of working from home during the pandemic, using web technologies and blended learning approaches. However, there are challenges in ensuring students' attention and retention rates are maintained and enough support and scaffolding are provided to them when they are learning online. As such, the MERLIN Project was undertaken to develop a virtual learning assistant that would provide online support to students outside of their online classes. The project used Artificial Intelligence (AI) technology with Natural Language Processing (NLP) features to develop a chatbot that simulated human-like conversation between chatbot and students. Content in the learning environment was media-rich and mapped to Mayer's 12 Multimedia Learning Principles. Data from 102 students was collected to gauge their perceptions and feedback. Results showed that students found the chatbot to be helpful in their learning process and improved their understanding of the course material. A conceptual learning framework for the use of AI chatbots as learning assistants is proposed to improve students' online learning experiences in the new normal.

Keywords: Artificial intelligence, Malaysian students, e-learning, scaffolding.

INTRODUCTION

Today's education landscape now sees more technologies being used in the classrooms, making it a necessary enabler to cultivate creativity, innovation, communication and critical thinking among students. In addition, today's learners, the Gen Zs, are highly visual learners and demand more visually appealing content in order to stay engaged in their classes. With the recent COVID 19 pandemic, the shift to online classes has brought its share of challenges to educators around the world (Li & Lalani, 2020; Bentley, 2020; Butnaru, Nita, Anichiti, and Brinza, 2021). When the pandemic hit Malaysia in 2019, the Government issued a total lockdown and the closing of all educational institutions, and many universities were taken by surprise and had to switch to online teaching almost immediately, and many were not prepared for such a drastic change (Azlan, Hamzah, Sern, Ayub, and Mohamad 2020).

Although many universities had technological support in the form of LMS systems and web technologies, there was still an issue of lack of interaction with students (Keshavarz, 2020), which stemmed from poorly designed online learning environments, and the suggestion that Malaysian teaching methodologies were becoming outdated (Mahathir 2018) and needed to be redesigned to accommodate these new learning requirements. In other words, shifting to online learning should not only deliver course materials online, but to also provide proper support and interaction opportunities during times when they are not online with the

lecturer. There is growing evidence that chatbots are being utilised in the classrooms to support the student learning process (Winkler and Sollner, 2018; Sandu and Gide, 2020; Gaglo, Degboe, Kossingou, and Ouya, 2021) and would be conducive to scaffolding students when learning online without the lecturer present (Armstrong, 2017; Yang and Evans, 2019). As such, this paper seeks to investigate the impact of using an AI chatbot with Natural Language Processing (NLP) features integrated into a course that was taught online. In doing so, the study was guided by the research question, “*What are the students’ perceptions of using an AI chatbot in their learning process?*”. Specifically, data was collected to gauge students’ readiness to use an AI chatbot in their learning, as well as their perceptions about using an AI chatbot as an instructional tool that supports and scaffolds them when learning online outside of the class time. The chatbot was theoretically underpinned by Mayer’s (2001) 12 Principles of Multimedia, and Davis’ (1989) Technology Acceptance Model (TAM) was adapted as the data collection research instrument.

OVERVIEW

The COVID 19 pandemic had a serious global impact on education with regards to the instructional designs and the teaching and learning methodologies (Hodges, Moore, Lockee and Trust, 2020; Mailizar, Almanthari, Maulina and Bruce 2020), and forced many instructors to turn to online learning to deliver their course in the face of the pandemic (Bentley, 2020; Li and Lalani, 2020). Although online learning has become more prevalent in higher education (Bali and Liu, 2018; Butnaru et. al, 2021), the abilities of educators to effectively teach online is likely to differ depending on the design of the learning environment created (Liguori and Winkler 2020; Doyumgac, Tanhan, A. and Kiymaz, 2021). The unexpected shift to online learning has posed many challenges to both students and instructors. Research has shown that many institutions of higher education have reacted to this sudden change by simply transferring educational content to digital repositories and not necessarily focussing on the methods and delivery of these online materials (Adnan and Anwar 2020; Vu, Hoang, Than, Nguyen, Dinh, Le, Le, Pham and Nyugen, 2020). Butnaru et. al (2021) posited that going online for students have resulted in different outcomes, and these are dependent on how well they are able to use online learning tools and access online materials, and how well the teaching staff manages the online learning environment. The rapid and accelerated move to online learning has resulted in mixed outcomes. According to Li and Lalani (2020), while some who transitioned to online education were unable to maintain and yielded poor student learning experiences, especially in the interactions between students and teacher (Kebritchi, Lipschuetz and Santiago, 2017), some others were able to harness the potential of online learning and developed new models for online education and hybrid learning (Platt, Raile and Yu, 2014; Bentley, 2020; Zavyalova, 2020).

Many would argue that online education in the face of the pandemic has tremendous potential to innovate current education systems (Dede and Richards, 2020). There is increased flexibility in the delivery of course materials; lecturers able to create more authentic learning experiences by being able to access experts online to join their courses, thus saving on time and cost of travel, and students are presented with a wide range of online courses from Coursera, Khan Academy, EdX, to name a few, to join in order to supplement their online courses. Research has also shown that students retain 25-60% of the course content when learning online compared to the 8-10% average when in a physical learning environment, and learn more efficiently, at about 60% less time to learn than when in a physical classroom (Li and Lalani, 2020).

However, most of these happen when students are in class with their peers and lecturer. When these online classes are over, students are then provided with learning activities and materials to go over on their own. As such, during these times, students experience less communication and interactions as the teacher is not around to provide enough online support to them (Adnan and Anwar, 2020; Keshavarz, 2020), especially after class times. Girik (2020) argued that online education differs from traditional classroom learning in that learning activities need to provide a higher level of active participation in the absence of the lecturer, noting that effective online learning environments must provide the support for students to learn materials before and after the online class. Wang, Hall and Wang (2018) and Doyumgac, Tanhan, and Kiymaz (2021) further noted that to rely on students to manage and self-regulate their learning and engagement, without proper guidance, is unrealistic, and measures need to be in place to assist them during online out-of-class learning times.

As such, scaffolding measures in online learning environments can be a possible solution to assist students in their learning process outside of the online classroom. Scaffolding has been recognised in research as a very integral part of the learning process and an effective instructional strategy as it enables students to better engage with their learning process and achieve their learning outcomes (Belland, Walker, Kim and Lefler; 2017). Vygotsky (1978) posited that learning is enhanced when learners are actively engaged in interactions and when tasks are supported by more experienced tutors or peers. Vygotsky's (1978) Zone of Proximal Development theory posits that learning takes place when tasks are supported with assistance from more experienced peers or tutors. Armstrong (2017) further states that scaffolding is an integral part of the learning process and can contribute significantly to improved engagement in the content. In such occasions, the use of technologies can be of significant benefit and advantage, especially when available 24/7 to students.

According to the Horizon Reports 2019 (Alexander, Ashford-Rowe, Barajas-Murph, Dobbin, Knott, McCormack, Pomerantz, Seilhamer and Weber, 2019) and 2020 (Brown, McCormack, Reeves, Brook, Grajek, Alexander, Bali, Bulger, Dark, Engelbert and Gannon, 2020), mixed reality, adaptive learning, and AI (Artificial Intelligence) machine learning, are some of the technologies posited to emerge to enhance the learning processes. Research in AI has shown there is good potential in the use of chatbots as teaching and learning agents (Winkler and Sollner, 2018; Tsidylo, Samborskiy, Mazur and Zamoroz 2020; Gaglo, Degboe, Kossingou, and Ouya, 2021). Using Artificial Intelligent (AI) chatbots when students are studying online, without the presence of the teacher, will increase the support they will receive during those times. This can be especially true when Natural Language Processing (NLP) features are incorporated into the chatbots to simulate intelligent conversations between humans and chatbots. Such AI Conversational chatbots can do the following: 1. Simulate intelligent human language interaction through text or speech. 2. Promote more interaction between students and chatbots, and consequently, in engaging in their learning materials, and 3. Establish a more engaging virtual teaching-learning environment. Sandu and Gide (2020) and Yang and Evans (2019) have suggested that the education industry can benefit tremendously from the use of chatbot as it can provide efficient teaching assistance (Nurshatayeva, White and Gehlbach, 2020), reduce the confusion during interactions, and perform functions similar to a human tutor (Georgescu 2018; Perez, Daradoumis, and Puig, 2020). Some universities such as Northwestern University (USA), Griffith University (Australia), and the University of Oklahoma (USA) have started to incorporate chatbot services to their students (Brown, McCormack, Reeves, Brook, Grajek, Alexander, Bali, Bulger, Dark, Engelbert, Gannon, Gauthier, Gibson, Gibson, Lundin, Veletsianos and Weber, 2020). In Malaysia, the use of chatbots has been limited to customer service carelines (Lee, Kee, Chan, Liow, Chin and Alkandri (2020), customer satisfaction (Johari, Zaman, Nohuddin, 2019), for reviewing medical applications (Safi, Abd-Alrazaq, Khalifa and Househ, 2020) and for digitalising Malaysian industries (Seah, Loh, Lew, Keong, Chin, Lio, Lee, Lim and Wong, 2021), but very few, if any, as an educational facilitator of learning materials (Yang and Evans, 2019). This is a gap that needs to be addressed especially in online learning environments.

Therefore, this research investigates the use of AI chatbots as scaffolds and virtual learning agents to support student learning outside of the classroom. In particular, it investigates how ready are students to accept chatbots in their learning process, and whether these AI chatbots can function as the scaffold and learning assistant, when the teacher is not present.

DESIGNING THE LEARNING ENVIRONMENT: MERLIN THE AI CHATBOT

The MERLIN chatbot was part of a research project funded by Telekom Malaysia's Research & Development agency to develop virtual classrooms for 21st century learning using mixed reality technologies. The project was undertaken at the Faculty of Creative Multimedia, Multimedia University, and looked at using Artificial Intelligence (AI) and Natural Language Processing (NLP) features in a virtual learning assistant to support online student learning. For this research project, the content used in MERLIN was mapped to topics taught in the faculty's Diploma of Creative Multimedia curriculum. These topics were provided by the course lecturer and were designed to support the teaching content by the lecturer when students are learning online on their own. These topics were then re-designed to be presented in a media-rich form, allowing MERLIN to return more visually appealing and interactive content to the questions asked by the students. As part of the innovation to develop 21st century classrooms, learning was presented in 3 ways:

1. Students would learn these topics while they were online with the lecturer.
2. Students can also take part in an Augmented Reality (AR) game, a Virtual Reality (VR) game, or a Hologram application, that would provide them with experiential learning of the topics, and
3. Depending on the scores achieved in each game, students would be advised to interact with the MERLIN chatbot to learn more advanced content about the topic, or to refresh their knowledge of the topic so that they can go back to the game and score better.

During the design stage, brainstorming sessions were centred around the dialogue flow of the chatbot and how it would be teaching learners, thus developing the structure and flow of the chatbot before any production would take place, as shown in Figure 1.

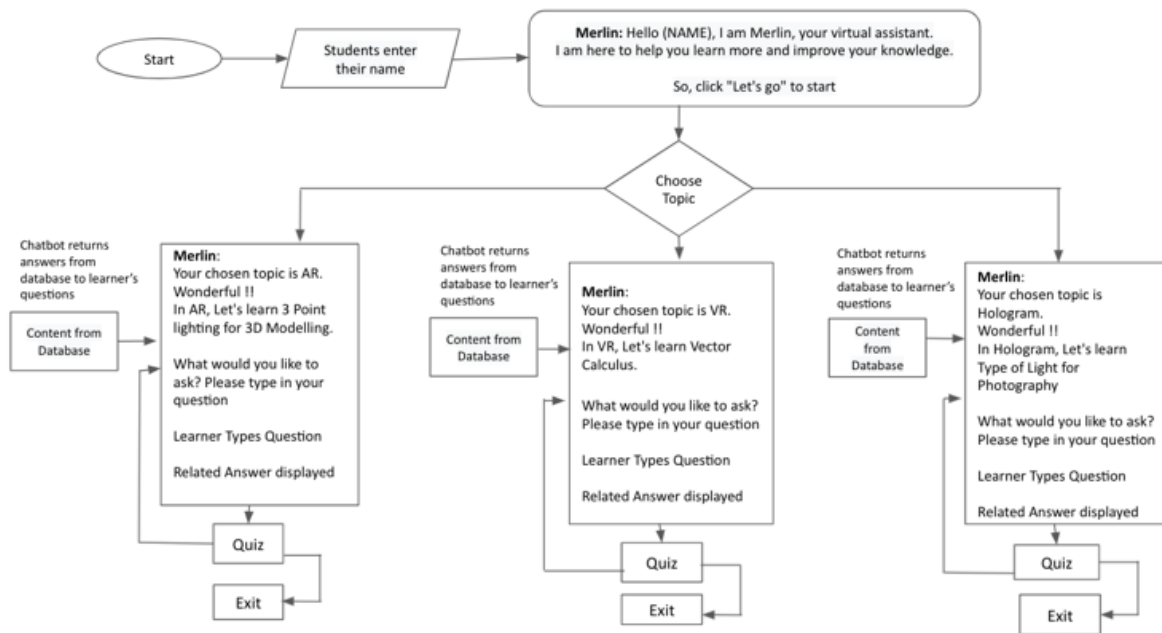


Figure 1. The dialogue flow of the chatbot

METHOD

In order to create a chatbot that was pedagogically sound, Mayer's (2001) Cognitive Theory of Multimedia Learning was used as its theoretical framework and underpinned its development. Mayer's (2001) cognitive theory of multimedia learning suggests that when incorporating multimedia elements into an application, its impact on the interactivity and feedback on student learning must be considered. According to Mayer and Moreno (1998) and Mayer (2014), this theory operates on the assumption that information is processed using two separate channels, visual and auditory (also known as the Dual-Coding theory). They also state that people have limited capacity for processing information, and that learning is an active process where learners filter, select, organise and integrate the information based on their prior experiences.

Mapping MERLIN Content to Mayer's Principles of Multimedia Learning

As such, based on this theory, using multimedia elements in the learning content will positively impact and contribute effectively to their learning process, and put the locus of control with the learner, Therefore, the MERLIN chatbot was underpinned by Mayer's (2001) 12 Principles of Multimedia Learning and designed with the following characteristics:

1. Content was presented in both text and graphics that were placed next to each other at the same time,
2. Wherever there were images that explained a certain concept, narration was provided in the form of a human voice,

3. The narration was presented in a conversational and casual style, to simulate the way a lecturer would be presenting a lecture in class, and animations and videos were used to illustrate these concepts, instead of talking heads,
4. The chatbot would welcome the students by asking them to type their name and using their name to address them throughout the presentation,
5. The chatbot would ask learners about how they performed in the game, and would answer accordingly, making the interaction more personal and conversational
6. Content presented was categorised into small chunks of information and, wherever necessary, “NEXT” buttons were added for learners to click to go to the other information segments,
7. A self-efficacy quiz was available for learners to test themselves on the content they learned to provide them with a benchmark on how they performed on the topic. By doing the quiz and seeing their scores, learners can then choose to go back to the game and try to score better.

In addition, MERLIN was also developed with Natural Language Processing (NLP) features that would allow for the chatbot to return the most relevant answers to their questions, and to do the following:

1. **Menu items** for learners to choose from different options to explore, such as a) Topics, b) Quiz and c) Edpuzzle. EdPuzzle modules were incorporated into the chatbot’s learning environment to provide blended learning opportunities to students and to curate relevant interactive information for them while learning online. This will reduce their own search time and allow them to focus on the topics at hand.
2. If the learner chooses “**Topics**”, a menu will appear with a list of topics contained in the chatbot. This will give the learner an overview of the topic modules they can learn in the chatbot and make their choices then. The learner can do so by typing their question about what they would like to learn, and MERLIN will return the most relevant content to them. Learners can either type whole sentences or simply key in the topic number (eg: 1,2,3,i,ii,a,b,c) from the menu.
3. If the learner wants to learn about a **specific topic** that may not be listed in the menu, but are part of the chatbot’s content database, such as “*Point light*” or “*Spot light*”, they can just type in these keywords and the MERLIN will display this specific content for them. This is designed for learners who may have scored better in the AR game QUEST, and simply wanted to find out more about a specific topic.
4. **Text to Speech** features, where text is transformed into audio and can be played within the chatbot’s learning environment. However, this feature uses a computer voice and therefore it is presented only at the beginning of the chatbot module, to welcome the learner by name, and at the end of the module, when the learner clicks the “EXIT” button, to say goodbye to the learner. The rest of the audio in the MERLIN’s learning environment uses human voice, as per Mayer’s Voice Principle.
5. **Robust** keyword recognition using NLP to capture **general terms** like “light”, “lighting”, “render”, “rendering”. In this instance, MERLIN will return a menu that would contain items with all these general terms listed, and the learner can make a more specific choice from it.
6. An **error** message will be displayed when the learner types in something that is not related to the content of the modules.

Figure 2 shows examples of chatting with MERLIN.

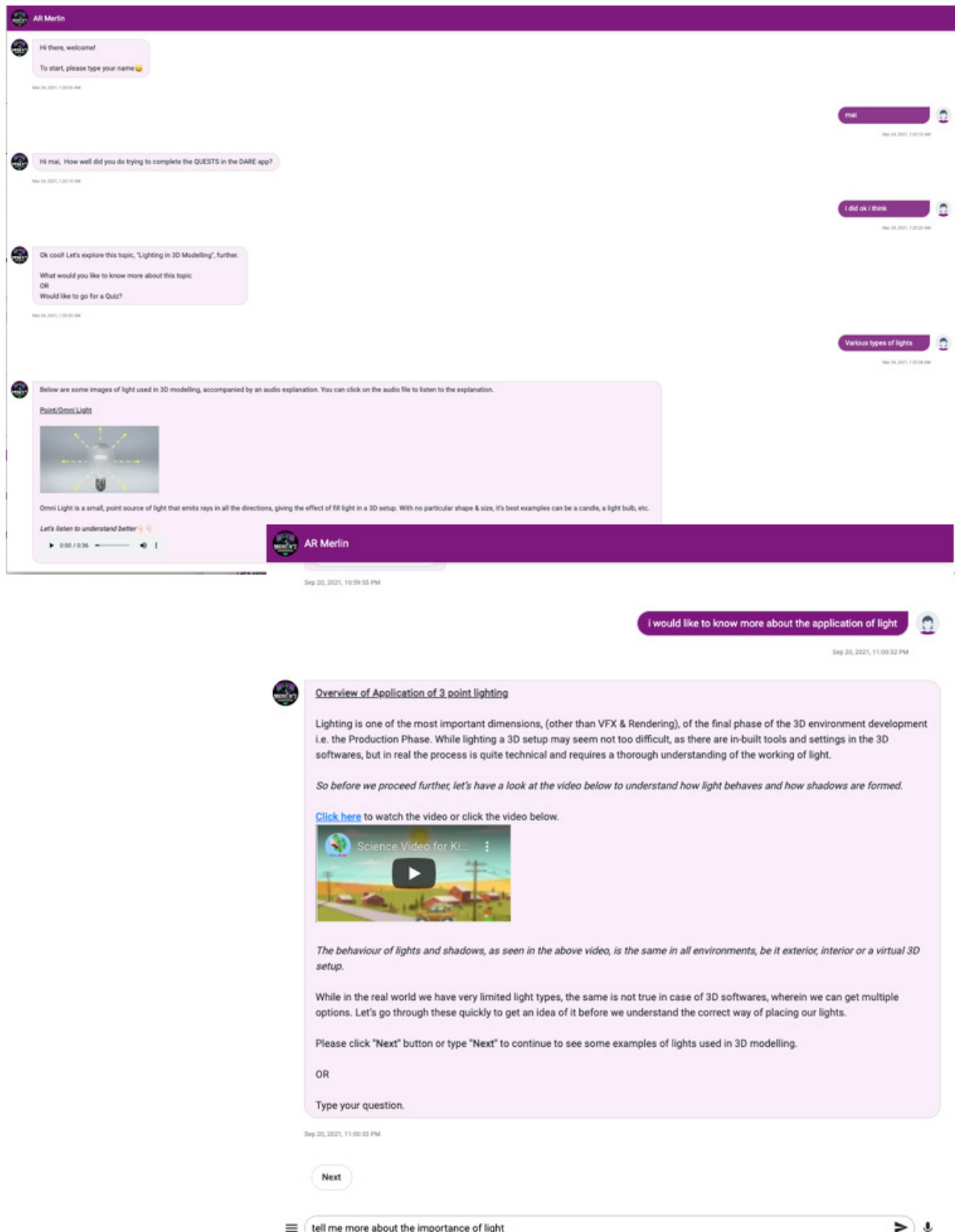


Figure 2. Chatting with Merlin

Participants

The questionnaire was administered to first year Diploma students from Faculty of Creative Multimedia, Multimedia University, taking their Diploma in Creative Multimedia, and the topic covered in the chatbot was one of the topics in their class, which was “3-Point Lighting in 3D modelling”, and was provided by the lecturer of the class. Students were informed that participation in the survey was voluntary and would in no

way influence their grades for their course. Additionally, their consent was solicited in the form and students who did not want to participate could opt out of the exercise. A total of 102 students agreed to participate, with 5 students choosing not to participate. The participating students were given the link to the chatbot and a quick overview of the navigation around the chatbot. They were then given 30 minutes to explore the chatbot on their own and complete the questionnaire.

Data Collection and Analysis

The research design used in this study was a convergent mixed method design, using both quantitative and qualitative data collection methods. According to Creswell and Creswell (2018), a convergent mixed method design is where both quantitative and qualitative data are collected and analysed in one phase. The data from both methods are then analysed and compared to see if the data support or contradict each other. In this study, quantitative data was collected from a 5-point Likert scale questionnaire administered to the participants, while qualitative data was collected from the open-ended questions in the survey.

The questionnaire used in this study adapted Davis's (1989) Technology Acceptance Model (TAM) to gauge learners' Intention to Use (IU), which was based on their Perceived Usefulness (PU) and Perceived Ease of Use (PEOU) of the MERLIN chatbot. These two perceptions would then impact their Attitudes Towards Usage of the chatbot (ATU), and subsequently, their Behavioral Intentions to Use (BIU). In other words, how user-friendly and how useful the chatbot was would impact the learners' attitudes towards it and consequently influence their intentions to use the chatbot in their learning process and provide insight to their readiness to use a chatbot in their learning process. Items adapted for the 22-item questionnaire consisted of 3 constructs which can be mapped to measure learners' Perceived Usefulness (PU) and Perceived Ease of Use (PEOU), and 1 construct that would measure learners' Intention to Use (IU). The Motivation and Understanding construct would provide results for learners' Perceived Usefulness (PU) and the Content and Navigation construct would yield results for the learners' Perceived Ease Of Use (PEOU) construct. In addition to that, 6 items on the questionnaire would yield results for learners' Intentions to Use construct of the model, which were:

1. Perceived Usefulness (PU) which consisted of Motivation and Understanding items:
2. Perceived Ease Of Use (PEOU) which consisted of Content and Navigation items
3. Intention to Use (IU) items

The questionnaire that was administered to the participating students consisted of 22 items on a 5-point Likert scale, ranging from Strongly Agree (5) to Strongly Disagree (1). Table 1 shows the results of the questionnaire (means, standard deviation, and percentage responses for Agree and Strongly Agree on the scale). The results show that qualitative data strongly supported the quantitative data and are combined and presented in Tables 1-4 below. To collect qualitative data, the students were asked open-ended questions to solicit their feedback and comments on the chatbot. These questions were asked to gauge their perceptions of MERLIN as an instructional tool and to investigate the critical factors that would make MERLIN a successful virtual learning assistant.

FINDINGS AND DISCUSSION

In this research, the research question investigated was, "*What are the students' perceptions of using an AI chatbot in their learning process?*". A questionnaire was administered to 102 students and yielded a Cronbach Alpha of 0.961, making it a reliable scale. Analysis was performed on the questionnaire, using SPSS v27, and the findings were presented in the following manner:

1. Triangulation of findings of the TAM questionnaire on student readiness, supported by student comments,
2. Discussion the use of MERLIN as an instructional tool

Student Readiness in Using an AI chatbot

Perceived Usefulness (PU): The Motivation Construct

As shown in Table 1 below, the Motivation construct consisted of 6 items in the questionnaire. Results showed that 81.4% of students reported an overall satisfaction towards using MERLIN in the learning of the topic (Item #6, $X = 4.14$), making it the highest mean score in that category. This is followed by 87.3% of the students reporting that they enjoyed learning with MERLIN (Item #1, $X = 3.91$). 67.7% of the students reported that they had fun learning with MERLIN (Item #2, $X = 3.89$), and 67.6% of the students felt more engaged with the topic with the chatbot's assistance (Item #5, $X = 3.88$). In addition, 64.4% of the students reported that they felt more motivated to learn more about the topic (Item #3, $X = 3.80$), and 61.4% of the students felt more confident with the knowledge that they gained through the interaction with the MERLIN chatbot (Item #4, $X = 3.76$).

Table 1. The Merlin Chatbot Questionnaire Results for Motivation

Motivation (Perceived Usefulness)				
	Item Name	Mean (X)	Std. Dev (SD)	p (%)
1.	I enjoyed learning with the MERLIN Virtual Assistant module.	3.91	0.76	87.3
2.	I had fun learning with MERLIN.	3.89	0.87	67.7
3.	Thanks to MERLIN, I feel more motivated to learn further about this topic.	3.8	0.85	64.4
4.	I am more confident now with the knowledge that I have gained from the MERLIN Virtual Assistant	3.76	0.84	61.4
5.	With MERLIN's help, I feel more engaged with this topic.	3.88	0.84	67.6
6.	Overall I am satisfied in using the MERLIN Virtual Assistant for my learning of this topic.	4.14	0.83	81.4
Student comments on Innovativeness and Fun (Personalization Principle)				
(Comments mapped to Mayer's (2001) Personalization Principle)				
1.	<i>It teaching me in interesting way</i>			
2.	<i>It's user friendly and a cool way to learn something</i>			
3.	<i>Very fun to use and it is able to get my attention</i>			
4.	<i>I feel like this will really help students, especially the shy ones, because sometimes it is scary to go up to a lecturer and ask a question, so a chatbot like Merlin would really help us in studying.</i>			
5.	<i>I like the implementation of the concept of conversational language and how the bot is designed to comprehend it.</i>			
6.	<i>I can save time to get info</i>			
7.	<i>It would be good because of the current situation in which students have to do online learning and most of them prefer to work at night. Maybe the virtual assistants can help them.</i>			
8.	<i>Can help me to solve my problem ASAP without always disturbing my friends and others.</i>			
9.	<i>It's fun having a conversation with VA without the feeling of thinking too much on what to say.</i>			
10.	<i>I enjoyed learning along with Merlin and find the Virtual Learning assistant very helpful.</i>			

Table 1 also shows student comments that were found to support the results of the questionnaire. Here, students commented on their enjoyment and the innovativeness of learning with MERLIN. These comments also show evidence of Mayer's (2001) Personalization Principle in the chatbot. Research by Girik (2020) stated that activities for the online learning environment should not be similar to that of the traditional, conventional classrooms, and this is further noted by Brown, McCormack, Reeves, Brook, Grajek, Alexander, Bali, Bulger, Dark, Engelbert and Gannon (2020) that 21st century education should take advantage of new and emerging technologies to support learning. Findings from this study support these research studies. In addition, students in the study commented that MERLIN was an innovative and fun virtual learning

assistant to interact with as it was “...user friendly and a cool way to learn something.” They also commented that “It’s fun having a conversation with VA without the feeling of thinking too much on what to say”, that it was “Very fun and it is able to get my attention”. The results also support Dede and Richards (2020) position that online learning can be innovative to allow students a more interesting and authentic way to learn.

Perceived Usefulness (PU): The Understanding Construct

The findings also yielded results for the Understanding construct, which consisted of 6 items in the questionnaire, as shown in Table 2 below. In terms of their understanding of the content presented in the chatbot, 79.4% of the students reported that the additional information that was available to them in the chatbot was very helpful (Item #2, X = 4.14), making it the highest mean score in that category. 79.2% of them further reported that they found the MERLIN chatbot to be informative and engaging (Item #6, X = 4.03). 70.3% of them found the inclusion of the quiz further enabled them to assess the authenticity of their understanding (Item #3, X = 3.93), and 70.6% of the students reported that MERLIN helped to strengthen their retention of the information of the topic (Item #5, X = 3.91). In addition, 67.7% of the students found MERLIN helped to clear their doubts for certain questions posed (Item #1, X = 3.90), and 71.8% of them reported that the MERLIN chatbot enhanced their understanding in an interesting and engaging way (Item #4, X = 3.88).

Table 2. The Merlin Chatbot Questionnaire Results for Understanding

Understanding (Perceived Usefulness)				
	Item Name	Mean (X)	Std. Dev (SD)	p (%)
1.	The Merlin Assistant helped in clearing my doubts for certain questions.	3.90	0.83	67.7
2.	The additional info available through the virtual module was quite helpful.	4.14	0.80	79.4
3.	The inclusion of quiz in the MERLIN Virtual Assistant further helped in assessing the authenticity of my understanding of the topic.	3.93	0.80	70.3
4.	The MERLIN virtual assistant tool enhanced my understanding of this topic in an interesting & engaging manner.	3.88	0.86	71.8
5.	The MERLIN Virtual Assistant helped me strengthen my retention of the topic.	3.91	0.73	70.6
6.	I found Merlin Virtual Learning Assistant informative and engaging.	4.03	0.77	79.2
Student comments on empowering their learning process (mapped to Mayer’s (2001) Coherence, Signaling, Image and Segmenting Principles)				
1.	<i>More detailed and depth of the subject</i>			
2.	<i>Clear and concise. The minimization of information shown at one time allows information to be digested easier.</i>			
3.	<i>Good application to help with my learning. Lots of knowledge.</i>			
4.	<i>It provides a lot of extra knowledge.</i>			
5.	<i>It is very straight to the point and gives detailed explanations on the topics. (Signaling)</i>			
6.	<i>It uses video to explain the concept to the user.</i>			
7.	<i>I got to learn new things that I don’t know.</i>			
8.	<i>Makes it easier to understand without the needing to do much research</i>			
9.	<i>It helps me with things that I don’t understand</i>			
10.	<i>I got to see most of the topics that I’ve learn in class so that I can refresh my memory</i>			
11.	<i>It explains topics I have known and read again in a clear manner, with addition to audio and visual information.</i>			

Similarly, in Table 2 above, the questionnaire results were also well-supported by the comments from the students. Students commented that their learning process was improved as they were able to acquire a deeper understanding and knowledge of the topics, showing the presence of Mayer's (2001) Coherence, Signaling, Image and Segmenting Principles in their comments. This meant that information that was presented to the students upon their query were relevant and appropriate, with appropriate cues and visuals, and presented in an easy manner to understand. Findings from the questionnaire and comments also showed that chatbots helped to empower the student's learning process and increased their understanding of the content. This can be seen in the comments from students, such as, "*It is very straight to the point and gives detailed explanations on the topics*", "*It helps me with things that I don't understand*", and "*It explains topics I have known and read again in a clear manner, with addition to audio and visual information*". This shows that students were able to understand and comprehend their course topic better after they interacted with MERLIN. The incorporation of audio and video materials, as suggested by Mayer (2001), resulted in a better understanding of the topic, as the juxtaposition of text and images together increased the comprehension of the material, and the inclusion of human voice in the audio resulted in an improved learning process. Furthermore, Li and Lalani (2020) have suggested that online learning improves the retention rate. The results of this project supported their research as students commented that they were able to retain and understand the course content better. Here, students were able to reflect on the content, by being able to re-read the materials presented by the chatbot, proceed to the quiz for a self efficacy test, or view EDPuzzle videos specifically chosen for them by the chatbot, increasing their efficiency in learning, supporting the suggestion by Yang and Evans (2019).

Perceived Ease of Use (PEOU): The Content and Navigation Construct

To gauge the ease-of-use of MERLIN, Table 3 below shows the results of the Content and Navigation construct, which consisted of 4 items in the questionnaire. 82.3% of the students reported that they found the language and content of the chatbot easy to understand (Item #3, X = 4.24), making it the highest mean score for this construct. This was followed by 78.4% of students who reported that the inclusion of web links and visual aids (eg., videos and images) had provided more clarity to the topic (Item #4, X = 4.24). In addition, 81% of the students reported that the content in the chatbot was well-organised and followed a suitable sequence that helped in the understanding of the topic (Item #2, X = 4.10). And 69.6% of the students reported that they were able to navigate easily through the chatbot from beginning to end (Item #1, X = 3.92).

Table 3. The Merlin Chatbot Questionnaire Results for Content and Navigation

Content & Navigation (Ease of Use)				
1.	I was able to navigate through MERLIN easily from start to finish.	3.92	0.87	69.6
2.	The content in the MERLIN Virtual Assistant was well-organized and followed a suitable sequence for understanding a topic.	4.10	0.82	81.0
3.	The language and the content of the MERLIN Virtual Assistant was easily understandable.	4.24	0.80	82.3
4.	The inclusion of web links and visual aids, such as videos & images, in the MERLIN Virtual Assistant further helped in the clarity of the topic.	4.24	0.84	78.4
5.	I had no problem going through MERLIN on my own.	4.02	0.86	68.3
6.	It was easy for me to become skillful at using the Merlin Virtual Assistant.	3.87	0.78	66.6

Student comments on engagement in the content (Mapped to Mayer's (2001) Signaling, Personalization, Spatial & Temporal Contiguity Principles)
1. <i>[I like] the interactive conversation</i>
2. <i>I can explore more knowledge on my own when class is unavailable</i>
3. <i>It is very convenient if I was referring to a certain information for a certain topic, no need to find the notes and take extra time to search for it.</i>
4. <i>It helps me a lot providing answers as I am trying to find informations I needed</i>
5. <i>It is interesting and suitable for learning extra knowledge.</i>
6. <i>Faster to let me understand in my learning</i>
7. <i>I think putting photos into the explanations does help a lot to understand it, as well as the voice audio. Hence , the learning process is more immersive.</i>
8. <i>Very immersive on the topic</i>
9. <i>I like how with the accessibility of a VLA students are incentivise to study/learn/revise outside of their class time. This is very significant in the academic learning process</i>
10. <i>It provides not just images and text but also voice explanations.</i>
11. <i>I liked how it was in the form of an interactive chat bot. It emulates the feeling of interactivity and is an engaging concept.</i>

In addition, these results were positively supported by student comments and feedback. As can be seen in Table 3 above, students commented about their level of engagement with the topic through MERLIN, and the level of immersion with the content. These comments also show evidence of Mayer's (2001) Signaling, Personalization, Spatial Contiguity and Temporal Contiguity Principles in the chatbot, as MERLIN was developed with complementing and appropriately placed text and images, and with human audio instead of computer audio. Research by Doyumgac, Tanhan, and Kiyimaz (2021) has shown that learning online requires that some form of guidance needs to be provided to help students manage their learning process and their engagement levels. Findings show that students were able to better engage with the content when interacting with MERLIN and supported that research. Here, students had commented that MERLIN's features were, "*Very immersive on the topic*", that their "*...learning process is more immersive*", and that they liked "*...the interactive conversation*", showing evidence that they were very responsive and receptive to the using an AI chatbot to learn from when their lecturer is not around. Students were also better able to self-regulate their engagement, and with the content, by interacting with MERLIN on queries relevant to them. This is in line with the research by Wang, Hall and Wang (2018) and Doyumgac, Tanhan, and Kiyimaz (2021) who suggested that some form of guidance be provided to help students manage themselves online, and addresses the issue of lack of interactions in online education by Keshavarz (2020).

Intention to Use (IU)

And lastly, Table 4 presents the 4 items in the questionnaire under the category Intention to Use (IU). 87% of the students reported that they found virtual learning assistants very suitable for online learning environments (Item #4, $X = 4.27$), making it the highest mean score in this category. This is followed by 84.3% of the students who also reported that they would like to use more chatbots in their other subjects (Item #1, $X = 4.25$). In addition, 82.2% of the student believed that learning with chatbots provides extra knowledge and in-depth understanding of the topic outside of class (Item #3, $X = 4.12$). And overall, 68.7% of students reported that they would like to use chatbots more often in their coursework (Item #2, $X = 4.06$).

Table 4. The Merlin Chatbot Questionnaire Results for Intention to Use

Intention to Use (IU)				
1.	I would like to learn more with such virtual assistants for my other subjects.	4.25	0.81	84.3
2.	I would like to use virtual learning assistants more often for my coursework.	4.06	0.93	68.7
3.	I believe it is a good idea to use virtual learning assistants for extra knowledge and in depth understanding outside of the class.	4.12	0.75	82.2
4.	I found these assistant learning tools very suitable for online learning environments	4.27	0.75	87.3
Student comments scaffolding and support (Mapped to Mayer's (2001) Pre-Training & Personalization Principles)				
1.	<i>It's so much more helpful, and you wouldn't have to wait for an answer, if your teacher were to be busy</i>			
2.	<i>If I am ever stuck at anything the virtual assistant merlin would be there fast</i>			
3.	<i>I feel like this will really help students, especially the shy ones, because sometimes it is scary to go up to a lecturer and ask a question, so a chatbot like Merlin would really help us in studying.</i>			
4.	<i>It helps answering question when the lecturer is not free</i>			
5.	<i>It helps me a lot providing answers as I am trying to find informations I needed</i>			
6.	<i>I got to learn new things that I don't know.</i>			
7.	<i>This chatbot will be helpful if I need to study for a quiz and there's no one to ask.</i>			
8.	<i>It helps me with things that I don't understand</i>			
9.	<i>I can explore more knowledge on my own when class is unavailable</i>			
10.	<i>The information given was straight to the point and it helps me clear out all the questions I had about certain topics.</i>			
11.	<i>I overall am very keen on the idea of having a virtual assistant such as merlin in the future</i>			

The survey results in Table 4 above were also well-supported by students' comments. In particular, students commented on the role of the chatbot as an effective learning and scaffolding structure that supports them during the period when they are learning online without the presence of the lecturer, as highlighted in Table 2 below. These comments also show the presence of Mayer's (2001) Pre-Training and Personalization Principles. This meant that students were already familiar with the topic prior to interacting with MERLIN but needed to learn more about it. However, the content that was returned to them was personalised to them as content that was returned to them depending upon the questions posed. Research by Sandu and Gide (2019) has posited that chatbots can be used to provide tutoring assistance to students, which can increase the efficiency of the instruction. As presented in Table 4, student comments showed interesting evidence that chatbots can provide effective scaffolding and learning support to students when learning online without the presence of the lecturer. This result provides good support for the use of chatbots as educational scaffolds, supporting research by Sandu and Gide (2019), and Gaglo, Degboe, Kossingou and Ouya (2021). In addition, by providing the asynchronous support to the students, the chatbot also becomes an important tool to narrow the gap between what students already know and what they need to learn with assistance, supporting Vygotsky's (1978) theory of the Zone of Proximal Development, where learning is enhanced through the help of more experienced tutors. Comments from students such as, "*It's so much more helpful, and you wouldn't have to wait for an answer, if your teacher were to be busy*", and "*This chatbot will be helpful if I need to study for a quiz and there's no one to ask*" show that students are in need of academic support during their asynchronous learning times, and by using a chatbot such as MERLIN was able to provide them with relevant information to their queries. This consequently reduced their search time and any confusion that arose and supported the research by Armstrong (2017) and Belland, Walker, Kim and Lefler (2017).

Overall, based on the results of the TAM questionnaire and supported by student comments, the findings showed that students' readiness to use an AI chatbot in their learning process was positive and well-received. The MERLIN AI chatbot, which was developed on Mayer's (2001) 12 Principles of Multimedia, was successful in creating a positive learning experience for the students in the study. Specifically, the chatbot's Perceived Usefulness construct showed that it was well-received by students as both enjoyable and motivating, and improved their engagement with the course content. The high overall satisfaction reported

by students after using MERLIN indicates that the chatbot was successful in improving learning and student satisfaction and is in line with research by Winkler and Sollner (2018), who posited that chatbots will have a significant positive impact in education. Students also reported positively on the chatbot's Perceived Ease-of-Use (PEOU) construct, showing that the students found the MERLIN AI chatbot to be easy to use and navigate, and well-organised with informative links and visual aids. This is also supportive of Yang and Evan's (2019) research of the incorporation of Natural Language Processing (NLP) features in MERLIN that help simulate conversations between humans, making it more relatable and useful to the learner. By being able to converse easily with MERLIN, students were more amenable to exploring the topic and delving deeper into the content, and is consistent with research by Gaglo, Degboe, Kossingou, and Ouya (2021).

In addition, student feedback and comments were also solicited in the questionnaire to gauge their attitudes towards using MERLIN. Findings from the questionnaire provide very strong evidence that using a chatbot as an instructional tool is conducive to the students' online learning experience. Specifically, results show that the use of chatbots can be useful in several areas: 1) as a scaffold and support to asynchronous online learning, 2) in empowering the student learning process by improving their understanding of the topic and being user-friendly, 3) as an innovative and fun instructional tool, that allowed students to have fun while using a new tool to learn, and 4) in improving the students' engagement in the content. In addition to these categories, these comments also provide evidence of effective mapping of Mayer's (2001) 12 Principles of Multimedia Learning to the design of the chatbot. Combining the data culled from the questionnaire and the open-ended questions show strong and positive support for the use of the MERLIN AI chatbot in their learning process, and for the use of chatbots in general as an effective instructional tool.

Using MERLIN as an Instructional Tool

Overall, the TAM findings in this study showed a high readiness to adapt and use an AI chatbot in the students' online learning process. The positive results of the chatbot's Perceived Usefulness (PU) and Perceived Ease of Use (PEOU) consequently impacted favourably on students' Intention to Use (IU) the chatbot, which were confirmed and supported by their comments and feedback. Students reported positively on the benefits of using a chatbot in online learning, and a desire to use more chatbots in their other subjects, specifically as a scaffold and support to improve their learning and engagement, as well as being innovative and fun to learn with. This is consistent with research by Tsidylo, Samborskiy, Mazur and Zamoroz (2020), who found that students were ready to use chatbots in their courses. These results are also consistent with Georgescu (2018), who stated that chatbots are playing a more active role in delivering pedagogical content and using media-rich assets and text-to-speech features, and with research by Nurshatayeva, White and Gehlbach (2020) who posited that chatbots are effective and useful within student-centred learning environments.

Generally, the findings from the TAM questionnaire and the students' comments supported works in research on using chatbots as an effective instructional tool in the student learning process. It also successfully addressed the issue posed by Kebritchi, Lipschuetz and Santiago (2017) and Li and Lalani (2020) on the challenges in transitioning from conventional learning and physical face-to-face classrooms to the online learning environments. Using the MERLIN AI chatbot in this online learning setting was very positively viewed as a learning tutor beyond the class times, and is consistent with research conducted by Perez, Daradoumis, and Puig (2020). Figure 3 illustrates the learning framework of using the MERLIN AI chatbot as an instructional tool for asynchronous online learning.

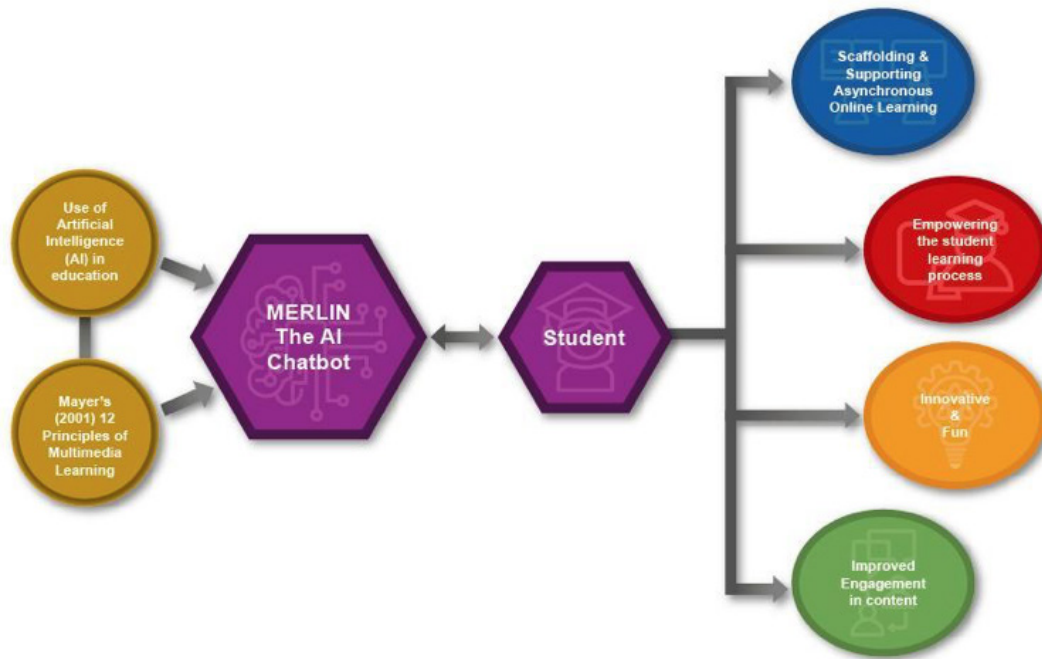


Figure 3. A learning framework of the role of the MERLIN AI Chatbot in the student learning process

As shown in Figure 3, developing the chatbot that was underpinned by Mayer's (2001) 12 Principles of Multimedia Learning and imbued with Artificial Intelligence Natural Language Processing (NLP) features enabled the chatbot to become an effective instructional tool to students. Supported by results of the study, interacting with MERLIN provided 1) Asynchronous online scaffolding and support, 2) Improved student online learning and understanding, was 3) Innovative and Fun for them to learn from, and 4) Increased their level of engagement with the course content. Using AI chatbots in an online learning setting was thus very positively viewed as a learning tutor beyond the class times.

CONCLUSION AND RECOMMENDATIONS

The advent of the COVID 19 pandemic resulted in changing to online learning. Research has shown that online learning is challenging and has limitations in the interactions it provides to students by the teacher. In addition, there was a need to provide some support for students to manage their asynchronous online learning. There is growing evidence that chatbots are playing an important role in education and can provide the pedagogical support needed for asynchronous online learning. As Malaysia was still new to the use of chatbots in the education sector, it was important to study how ready students were towards using AI chatbots as their virtual learning assistant. This project was thus undertaken to address those issues by investigating students' perceptions towards using an AI chatbot as an instructional tool in their learning process, specifically to assess their readiness to accept using an AI chatbot when learning online, and its impact in their learning process. An AI chatbot named MERLIN was designed with Natural Language Processing (NLP) features, to simulate human-like conversations, to return content that was media-rich and instructionally sound.

A questionnaire, adapted from Davis' (1983) Technology Acceptance Model (TAM), was administered to students to investigate their readiness to use chatbots, and to gauge their perceptions of using it when learning online. Findings from the study showed that Mayer's (2001) 12 Multimedia Learning Principles was an effective theoretical framework to underpin the development of the chatbot. The overall findings of positive Perceived Usefulness (PU), Perceived Ease-of-Use and Intention to Use (IU) show strong encouragement that chatbots can be an attractive yet instructionally sound learning tool to support and scaffold students asynchronous online learning. Chatbots can also be an important tool for teachers to utilize and incorporate into their teaching strategies to increase engagement and interactions with students online.

Feedback and comments from students strongly supported the results of the TAM questionnaire. Specifically, MERLIN was effective in 4 areas of the student learning process: 1) It was able to complement the teacher by being a scaffolding tool to the students when they are asynchronously learning online. This helps keep the learning process ongoing as students are not delayed in getting information or feedback, 2) It enabled students to become more active in their learning and the interactions led to a deeper understanding of the course content, 3) It made the learning fun and interesting, and was an innovative way for students to ask questions and obtain feedback immediately, especially when the teacher is not present, 4) It increased the level of engagement and participation, and made the learning experience more immersive. A learning framework was developed to provide educators with some guidance to using chatbots in the classroom to support asynchronous online learning.

There were also practical implications to using chatbots such as MERLIN and some recommendations for its use. In this study, the learning environment created was out of necessity as institutions of higher learning had to transition almost immediately from the conventional physical classroom teaching to fully online, due to the COVID 19 pandemic. However, as global education moves forward post-pandemic, there are more opportunities to continue the online learning process as the new normal, and especially with the support of technology. Based on the results of this study, it is recommended that online learning environments continue to be developed to meet the current needs of student learning, which are that these learning environments be flexible and accessible. In this new normal, more online hybrid learning environments can be created to bridge the gap between face-to-face teaching and full online learning in the following years. Hybrid and flex learning encourages these learning outcomes to be achieved as new technologies are bringing forth more adaptive, versatile and holistic learning affordances within the learning spaces, as forecasted by the Horizon Reports 2019 (Alexander, Ashford-Rowe, Barajas-Murph, Dobbin, Knott, McCormack, Pomerantz, Seilhamer and Weber, 2019), and 2020 (Brown, McCormack, Reeves, Brook, Grajek, Alexander, Bali, Bulger, Dark, Engelbert and Gannon, 2020).

It is also recommended that at the organization level, top management in universities need to provide the appropriate institutional support for the redesigning of learning spaces, imbued with technological infrastructures that support the use of blended and mixed reality technologies. By harnessing the potential of mixed reality technologies that bring more immersion into the learning experience, the study showed that chatbots can provide educators a means to better transition to the online learning environment as the interactions, engagement and understanding of the content is assisted and managed by the chatbot. This can be especially significant when students are not online with the lecturer and provides an alternative solution to the issue posed by Kebritchi, Lipschuetz and Santiago (2017) and Li and Lalani (2020). As such, institutions should begin to prepare campus infrastructures that support the use of emerging technologies such as Artificial Intelligence, Augmented Reality and Virtual Reality, for example, to assist online learning, and build more immersive and experiential learning environments that are more congruous with 21st century learning. This can be in the form of collaborative classrooms where the chatbots can facilitate group discussion and enquiries, or makerspace labs, where students create learning artefacts aided by chatbot tutors.

The study was also successful in creating a new learning system that is innovative, and a new model for online and hybrid learning. Educational institutions who are in the midst of transitioning to hybrid and flex learning can focus their new normal modes of learning towards this direction and build a more learner focused learning environment that is holistic and supportive during non-class times. The 24-hour access to the AI chatbot will allow students continual access to information and feedback, enabling them to focus on and complete their assignments with minimum challenges, and place lesser demands on the teacher to be present online after class times. There is also potential to adapt this learning framework to the learning and development centers of organizations who are looking into pedagogically sound chatbots that provide instructionally sound and media-rich content.

At the faculty level, it is recommended that lecturers prepare to upskill and redesign their learning content and teaching strategies to cope with the challenges and opportunities of teaching online. Moving assertively towards blended learning methods, at the very least, will prepare them for teaching in technology-enhanced online and hybrid learning environments, and be adaptable to any possible situation such as that brought forth by the pandemic. Training and upskilling support should be provided to these educators to afford them the necessary proficiencies and competencies to teach in mixed reality environments, and, as in this study, to

redesign their learning content to be suitable for the AI chatbot environments. In addition, students should also be provided with awareness training programs to prepare them for the newly designed content and delivery in their learning environments. While they may adapt to the use of these technologies faster, as was shown in the study's TAM questionnaire results, some form of orientation should be conducted to acquaint all levels of students with this new model for learning.

In conclusion, there is still much to be researched with regards to the efficiency and effectiveness of AI chatbots in education. But results such as in this study provide very encouraging support towards using chatbots in the classrooms as effective instructional tools in the new normal.

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REFERENCES

- Adnan, M., & Anwar, K. (2020). Online Learning amid the COVID-19 Pandemic: Students' Perspectives. *Online Submission*, 2(1), 45-51.
- Alexander, B., Ashford-Rowe, K., Barajas-Murph, N., Dobbin, G., Knott, J., McCormack, M., ... & Weber, N. (2019). Important Developments in Educational Technology for Higher Education. *Horizon report 2019 higher education edition*, pp. 20-32 Retrieved from <https://library.educause.edu/resources/2019/4/2019-horizon-report>
- Armstrong, F. (2019). Social Constructivism and Action Research: Transforming teaching and learning through collaborative practice. *Action Research for Inclusive Education*, pp. 5-16. Oxfordshire, England: Routledge.
- Azlan, A. A., Hamzah, M. R., Sern, T. J., Ayub, S. H., & Mohamad, E. (2020). Public knowledge, attitudes and practices towards COVID-19: A cross-sectional study in Malaysia. *Plos one*, 15(5), DOI: <https://doi.org/10.1371/journal.pone.0233668>
- Bali, S., & Liu, M. C. (2018). Students' perceptions toward online learning and face-to-face learning courses. *Journal of Physics: Conference Series*, 1108(1), pp. 012094. Retrieved from <https://iopscience.iop.org/article/10.1088/1742-6596/1108/1/012094/meta>

- Belland, B. R., Walker, A. E., Kim, N. J., & Leffer, M. (2017). Synthesizing results from empirical research on computer-based scaffolding in STEM education: A meta-analysis. *Review of Educational Research, 87*(2), 309-344.
- Bentley, K. (2020, July 13). Hybrid Learning Goes Mainstream amid Response to COVID-19. Retrieved from <https://www.govtech.com/education/k-12/hybrid-learning-goes-mainstream-amid-response-to-covid-19.html>
- Brown, M., McCormack, M., Reeves, J., Brook, D. C., Grajek, S., Alexander, B., Bali, M., Bulger, S., Dark, S., Engelbert, N., Gannon, K., Gauthier, A., Gibson, D., Gibson, R., Lundin, B., Veletsianos, G. & Weber, N. (2020). *2020 Educause Horizon Report Teaching and Learning Edition*, pp. 13-31. Retrieved from <https://library.educause.edu/resources/2020/3/2020-educause-horizon-report-teaching-and-learning-edition>
- Butnaru, G. I., Nita, V., Anichiti, A., & Brinza, G. (2021). The Effectiveness of Online Education during Covid 19 Pandemic—A Comparative Analysis between the Perceptions of Academic Students and High School Students from Romania. *Sustainability, 13*(9), 5311. <https://doi.org/10.3390/su13095311>
- Creswell, J.W., & Creswell, J.D. (2018). Mixed methods procedures. In, *Research design: Qualitative, quantitative, and mixed methods approaches* (5th ed., pp. 213-246). Los Angeles, CA: SAGE Publications, Inc.
- Davis, F. D. 1989. Perceived usefulness, perceived ease of use, and user acceptance of information technology. *MIS quarterly, 13* (3), 319-340.
- Dede, C. J., & Richards, J. (Eds.). (2020). *The 60-year curriculum: New models for lifelong learning in the digital economy*. New York, NY: Routledge.
- Doyumgac, I., Tanhan, A., & Kiyamaz, M. S. (2021). Understanding the most important facilitators and barriers for online education during COVID-19 through online photovoice methodology. *International Journal of Higher Education, 10*(1), 166-190.
- Gaglo, K., Degboe, B. M., Kossingou, G. M., & Ouya, S. (2021). Proposal of conversational chatbots for educational remediation in the context of covid-19. *2021 23rd International Conference on Advanced Communication Technology (ICACT), 23*, 354-358. Retrieved from <https://ieeexplore.ieee.org/abstract/document/9370946>
- Georgescu, A. A. (2018). Chatbots for education—trends, benefits and challenges. In *Conference proceedings of eLearning and Software for Education «(eLSE)*, 2(14), 195-200.
- Girik, A. M. D. (2020). Is online learning good in the midst of Covid-19 Pandemic. *The case of EFL learners. J. Sinesthesia, 10*(1), 1-8.
- Hodges, C.; Moore, S.; Lockee, B.; Trust, T.; Bond, A. (2020, March 27). The Difference between Emergency Remote Teaching and Online Learning, Why IT Matters to Higher Education. Retrieved from <https://er.educause.edu/articles/2020/3/the-difference-between-emergency-remote-teaching-and-online-learning>
- Johari, N. M., Zaman, H. B., & Nohuddin, P. N. (2019). Ascertain Quality Attributes for Design and Development of New Improved Chatbots to Assess Customer Satisfaction Index (CSI): A Preliminary Study. In *International Visual Informatics Conference*, pp. 135-146. https://doi.org/10.1007/978-3-030-34032-2_13
- Kebritchi, M.; Lipschuetz, A.; Santiago, L. (2017). Issues and challenges for teaching successful online courses in higher education: A Literature review. *J. Educ. Technol. Syst., 46*, 4–29.
- Keshavarz, M. H. (2020). A Proposed Model for Post-Pandemic Higher Education. *Budapest International Research and Critics in Linguistics and Education (BirLE) Journal, 3*(3), 1384-1391.
- Lee, M. Z., Kee, D. M. H., Chan, K. Y., Liow, C. S., Chin, K. Y., & Alkandri, L. A. (2020). Improving Customer Service: A Case Study of Genting Malaysia. *Journal of the Community Development in Asia (JCDA), 3*(1), 44-53.
- Li, C. & Lalani, F. (2021, April 29). The COVID-19 Pandemic Has Changed Education Forever. This Is How. Retrieved from <https://www.weforum.org/agenda/2020/04/coronavirus-education-global-covid19-online-digital-learning/>

- Liguori, L., & Winkler, C. (2020). From offline to online: challenges and opportunities for entrepreneurship education following the covid-19 pandemic. *Entrepreneurship Education and Pedagogy*, 3(4), 346-351.
- Mahathir, M. (2018, May 17). Malaysia's education is outdated says new education minister Mahathir, *The Independent News & Media*. Retrieved from <https://theindependent.sg/malaysias-education-is-outdated-says-new-education-minister-mahathir/>
- Mailizar, Almanthari, A., Maulina, S., & Bruce, S. (2020). Secondary School Mathematics Teachers' Views on E-learning Implementation Barriers during the COVID-19 Pandemic: The Case of Indonesia. *Eurasia Journal of Mathematics, Science and Technology Education*, 16(7), 1-9. DOI: <https://doi.org/10.29333/ejmste/8240>
- Mayer, R. E. (2001). *Multimedia learning* (2nd ed.). Cambridge, England: Cambridge University Press.
- Mayer, R. E., & Moreno, R. (1998). A cognitive theory of multimedia learning: Implications for design principles. *Journal of educational psychology*, 91(2), 358-368.
- Mayer, R. E. (2014). Cognitive theory of multimedia learning. R. E. Mayer (Ed.), *The Cambridge handbook of multimedia learning* (pp. 43-71). Cambridge, England: Cambridge University Press.
- Nurshatayeva, A., Page, L. C., White, C. C., & Gehlbach, H. (2020). Proactive student support using artificially intelligent conversational chatbots: The importance of targeting the technology. *EdWorking paper, Annenberg University*. Retrieved from <https://www.edworkingpapers.com/sites/default/files/ai20-208.pdf>
- Perez, J. Q., Daradoumis, T., & Puig, J. M. M. (2020). Rediscovering the use of chatbots in education: A systematic literature review. *Computer Applications in Engineering Education*, 28(6), 1549-1565.
- Platt, C. A., Amber, N. W., & Yu, N. (2014). Virtually the same?: Student perceptions of the equivalence of online classes to face-to-face classes. *Journal of Online Learning and Teaching*, 10(3), 489-503.
- Safi, Z., Abd-Alrazaq, A., Khalifa, M., & Househ, M. (2020). Technical Aspects of Developing Chatbots for Medical Applications: Scoping Review. *Journal of medical Internet research*, 22(12), e19127. DOI: 10.2196/19127
- Sandu, N., & Gide, E. (2019). Adoption of AI-Chatbots to enhance student learning experience in higher education in India. In *2019 18th International Conference on Information Technology Based Higher Education and Training (ITHET)*, pp. 1-5. DOI: 10.1109/ITHET46829.2019.8937382
- Seah, C. S., Loh, Y. X., Lew, A. L. K. L. B., Keong, K., Chin, M. X., Lio, G. C., Lee, M. K., Lim, L. B. & Wong, S. J. (2021). The Significance of Technology in Digitalising Malaysia Industries. In *CoMBInES-Conference on Management, Business, Innovation, Education and Social Sciences*, 1(1) 1835-1842.
- Tsidylo, I., Samborskiy, S., Mazur, S. I., & Zamoroz, M. (2020). Designing a Chat Bot for Learning a Subject in a Telegram Messenger. *ICTERI Workshops* (pp. 1329-1340). Retrieved from <http://ceur-ws.org/Vol-2732/20201329.pdf>
- Vu, C. T., Hoang, A. D., Than, V. Q., Nguyen, M. T., Dinh, V. H., Le, Q. A. T., Le, T. T. T., Pham, H. H. & Nguyen, Y. C. (2020). Dataset of Vietnamese teachers' perspectives and perceived support during the COVID-19 pandemic. *Data in brief*, 31, 105788. <https://doi.org/10.1016/j.dib.2020.105788>
- Vygotsky, L. S. (1980). *Mind in society: The development of higher psychological processes*. Cambridge, Massachusetts: Harvard University Press.
- Winkler, R. & Sollner, M. (2018). Unleashing the Potential of Chatbots in Education: A State-Of-The-Art Analysis. *Academy of Management Annual Meeting (AOM)*. Retrieved from <https://www.alexandria.unisg.ch/254848/>
- Yang, S., & Evans, C. (2019). Opportunities and challenges in using AI chatbots in higher education. *Proceedings of the 2019 3rd International Conference on Education and E-Learning* (pp. 79-83). DOI: <https://doi.org/10.1145/3371647.3371659>
- Zavyalova, K. (2020). Unlocking students' motivation in the blended higher education classroom: Lecturers' perspectives. *E-Learning and Digital Media*, 17(5), 425-441.

A SYSTEMATIC REVIEW OF STUDIES ON ONLINE EDUCATION FOR AUTISM SPECTRUM DISORDER

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ABSTRACT

The novel coronavirus (2019-nCoV) outbreak caused a paradigm change in education and made it necessary to conduct educational activities through online learning environments (OLEs). This sudden shift also affected special education practices for learners with autism spectrum disorder (ASD). The present study aims to investigate the current issues in online education studies relating to individuals with or involved with (i.e., parents or teachers) ASD. For this purpose, a literature search was carried out to review the relevant studies conducted from 2010 to 2019, and 19 studies were selected based on predefined research criteria. Content analysis was performed to analyze the reviewed articles considering the following domains: publication year, country, field, purpose, research methods, instruments, results, and suggestions. Results indicated that the publication rates of studies pertaining to individuals with ASD, their parents and teachers increased after 2014, and although OLEs are found to be beneficial in meeting the needs of the target group, several improvements are needed to make them more useful and adaptable.

Keywords: Online learning, special education, autism spectrum disorder, review, research trend.

INTRODUCTION

Online education has become a necessity rather than an option, especially in the face of the recent novel coronavirus (2019-nCoV) outbreak (Telli Yamamoto & Altun, 2020). Thanks to the recent developments in education, learning activities can now be delivered in a flexible and personalized manner, anytime and anywhere. Thus, educators were able to remotely plan and offer K12 and higher education courses during the outbreak.

The reflections of online education technologies are particularly visible in special education practices, an area which incorporates various promising strategies for addressing the needs of individuals with special needs including those with autism spectrum disorder (ASD) in an efficient and specific manner (Odluyurt & Cattik, 2018). In view of the differences in contemporary education, there remains the need to implement

these practices in the least restrictive educational environments. In this context, a personalized and flexible curriculum that incorporates the latest technological innovations and developments can offer valuable opportunities to increase effectiveness and efficiency in education (Sani-Bozkurt, 2017).

Individuals with ASD

ASD is a neurodevelopmental disorder characterized by five diagnostic criteria (American Psychiatric Association [APA], 2013). Main symptoms are lack of social communication/interaction and exhibition of atypical behaviors (Hyman & Levy, 2013), along with communication impairment. Individuals diagnosed with ASD also have difficulty in understanding the feelings of others (Hyman & Levy, 2013), establishing empathy (Travis, Sigman & Ruskin, 2001), making eye contact (Klin, Jones, Schultz, Volkmar & Cohen, 2002), and developing natural speech (Mitchell et al., 2006). In short, it is a developmental disorder that causes impairments in mutual social interaction and communication, and restricted, repetitive behaviors.

Recent developments in the diagnostic procedures led to a remarkable increase in the number of children with ASD (Richardson, 2017). While one out of every 68 children was diagnosed with ASD in 2012, this figure increased to one out of 59 children in 2014 (Center for Disease Control and Prevention [CDC], 2016). In addition to the limited understanding of the possible causes of ASD, etiological factors of the disorder are not well known. Thus, a comprehensive treatment method—other than special education activities—is yet to be developed for this condition (Hanayli, Serbest & Urekli, 2015). In this regard, numerous educational implementations have been applied towards the education of individuals with ASD to improve their quality of life and to meet their needs, such as interacting with others and performing daily routines independently (Stenhoff, Pennington & Tapp, 2020). Carried out within the framework of an individualized education program (IEP) in collaboration with parents, teachers and speech/language pathologists, these implementations are reported to have produced many positive outcomes (Stenhoff et al., 2020).

Technological Practices about ASD

Several studies utilizing different educational approaches have been conducted to increase active participation of individuals with ASD into the social life (Virnes, Karna & Vellonen, 2015). Technology-based solutions have also become a prevalent research topic in the field (Kientz et al., 2013). It was concluded that technology-based possibilities could mediate academic skills while supporting communication and social skills (Ganz et al., 2017; Millar, Light & Schlosser, 2006), improving cognitive skills (Richardson, 2017), and reducing atypical behavioral problems of individuals with ASD (Walker & Snell, 2013).

Online Education and Online Learning Solutions for ASD

First attempts of distance education can be traced back to the correspondence courses provided for students at a physical distance from the instructor in the 1800s. In parallel to the developments in web technologies, most distance education activities shifted to OLEs after the 2000s. Online learning broadly refers to learning activities offered in OLEs and is difficult to define explicitly due to interactions that take place among numerous variables during the learning experience (Moore, Dickson-Deane & Galyen, 2011). It can either be structured (i.e., formal learning activities planned by someone else or an institution) or unstructured (i.e., informal learning activities managed by learners as in social media). An unstructured OLE may present several obstacles for students (Sun, Tsai, Finger, Chen & Yeh, 2008), such as the inability to manage the learning process. Therefore, an unstructured online learning experience may not promote learning by itself and requires external programmed support (Garrison & Cleveland-Innes, 2005). In this regard, online learning activities should be systematic and planned to allow students effectively experience the learning content. To that end, online environments such as learning management systems, course management systems and virtual learning environments are used in combination with many common denominators (Moore et al., 2011).

There are a number of online educational solutions designed for individuals with ASD (Ardic, 2015), some of which can be delivered synchronously (Shire, Worthman, Shih & Kasari, 2020) or asynchronously (Tsiopela & Jimoyiannis, 2017). For example, mobile technologies backed by artificial intelligence and online education solutions (Rad & Furlanello, 2016; Hanayli, Serbest & Urekli, 2015) may improve living conditions, provide equal opportunities and facilitate access to learning initiatives considering individual differences (Sagdic & Sani-Bozkurt, 2020). Additionally, they can increase students' interest and motivation towards learning materials and tasks (Virnes, Karna & Vellonen, 2015).

Theoretical Orientations for the Current Study

Special education is a process in which experts in different disciplines and parents are actively involved. While designing instruction, therefore, it is also necessary to consider the needs of people in the learning environment of individuals with special needs. In this respect, this study has benefited from the following theoretical frameworks emphasizing the role of individuals who may contribute to the educational development of individuals with ASD: “zone of proximal development” (Vygotsky, 1978) and “ecological systems theory” (Bronfenbrenner, 1992).

According to Vygotsky (1978), social interaction with experienced instructors is remarkably crucial for meaningful learning. The community in which the child grows up helps children make meanings of facts, which paves the way for the rise of a theoretically important principle, “zone of proximal development” (Vygotsky, 1978). It is a critical concept that links to the difference between what a child can accomplish individually and what a child can accomplish with external support from an experienced one. The “zone of proximal development” implies the importance of guidance and assistance provided by skilled partners in the development and learning of individuals with ASD. The participation of special education practitioners (e.g., teachers, therapists, technicians, healthcare providers) in the process of designing learning and teaching activities is therefore of utmost significance to achieve more efficient, effective and engaging results.

The second theoretical framework that emphasizes the significant role of environmental support for individuals with ASD is the ecological system theory (Garbacz, McIntyre & Santiago, 2016). This theory claims that individual development could not be sufficiently explained without considering the proximal and distal social systems (Bronfenbrenner, 1992). It consists of five systems: microsystem, mesosystem, exosystem, macrosystem, and chronosystem. Among these systems, the microsystem refers to direct interactions between individuals and those in the proximal setting of these individuals (Bronfenbrenner, 1992). In other words, a child's development is influenced by people, groups, or institutions that are directly connected with the child. These arguments imply that the success of educational applications for ASD depends critically on the rapport between parents and special education institutes. One way of doing that is to train parents to develop adequate skills for sustaining their children's education outside.

PURPOSE OF THE STUDY

OLEs provide substantial learning and teaching opportunities for individuals with ASD, their parents and practitioners by offering a flexible learning setting in which learners are able to customize the learning environment and access learning materials at anytime and anywhere (Civril, Arugaslan & Yakut, 2013). With the support of parents and practitioners, online education offers an alternative pathway for special education students who otherwise have no means to attend special education institutions and participate in learning activities (e.g., those living in rural areas or in the case of a global pandemic) (Heitzman-Powell, Buzhardt, Rusinko & Miller, 2014; McDonald & Lopes, 2014).

Despite several studies on the subject, the literature lacks sufficient coverage of online learning opportunities. Advancements in online solutions towards individuals with or involved with ASD will certainly contribute to the development of new practices in the field (Richardson, 2017). Consequently, it is believed that reviewing the current literature from different perspectives (demographic, methodological, findings and suggestions) may extend our understanding of the online learning issues in the field and shed light on the problems faced by individuals with ASD.

Thereby, this study aims to reveal the trend in ASD literature about online education for ASD considering the following dimensions: country, publication year, journal, purpose, method, variable, target audience, instruments, results, and suggestions. In line with the purpose of the study, the following research questions were addressed to determine research trends, reveal potential gaps in the field and provide guidance for future studies:

- (1) What are the demographic characteristics of the studies? (i.e., *distribution of studies by years, countries, and journals*)
- (2) What are the purposes of the studies?
- (3) What are the methodological findings (i.e., *research design, variables, target groups, and instruments*) of the studies?
- (4) What are the findings of the studies?
- (5) What are the suggestions of the studies?

METHOD

A literature review was conducted to examine the online learning issues for ASD. Reviewed articles were analyzed by content analysis, a method widely used by researchers to classify data into certain themes and codes (Fraenkel & Wallen, 2000), to project trends in the field for the given subject.

Sampling

A systematic review of the literature published on ASD related online education between 2010 and 2019 (until the end of the year) was performed. The reason for selecting the last decade was to observe the trends and technological advancements in the field. Revealing the technologies introduced and the research methods used in ASD related online education over the recent years in light of the findings obtained from relevant studies may guide researchers in further exploring the future needs in the field.

Research Procedure

The procedure comprised three stages: planning, literature review, and reporting. The planning phase began by selecting relevant research databases, identifying the search criteria, and determining the categories required for analysis. After that, a systematic review was conducted based on the search criteria. All publications were analyzed using predetermined categories, followed by a detailed report.

Search Strategy

In this study, journals indexed in four databases that dealt primarily with educational issues, namely, Web of Science, EBSCO, Education Resources Information Center (ERIC), and Scopus were reviewed (Price & Maushak, 2000). The following keyword combination, in which AB refers to the abstract section of the articles, was employed to identify relevant studies:

AB ("distance education" OR "e-learning" OR "webbased learning" OR "online learning" OR "webbased training" OR "online education" OR "webbased education") AND AB ("ASD" OR "autism spectrum disorder" OR "autism").

As per the inclusion and exclusion criteria presented in Table 1, only the studies published in English were taken into account and proceedings, dissertations and book chapters were excluded from the scope of the study.

Table 1. Inclusion and Exclusion Criteria

Inclusion criteria	Exclusion criteria
Available in full text	Proceedings, dissertations, and book chapters
Peer-reviewed	Articles are about distance education, not about online education
Published between 2010 and 2019	Non-English
Original research article	Not available in full text
Articles must include implications for ASD-related online education	

Study Selection Process

The initial literature search yielded 117 articles in all indexes. 36 duplicate articles were excluded from the list, and the remaining 81 articles were taken into consideration. During the initial analysis procedure, the abstract sections of these articles were screened by three researchers. Following abstract screening, relevant articles were identified based on the consensus of researchers, resulting in the selection of 19 articles about the topic. The selection process is summarized in Figure 1.

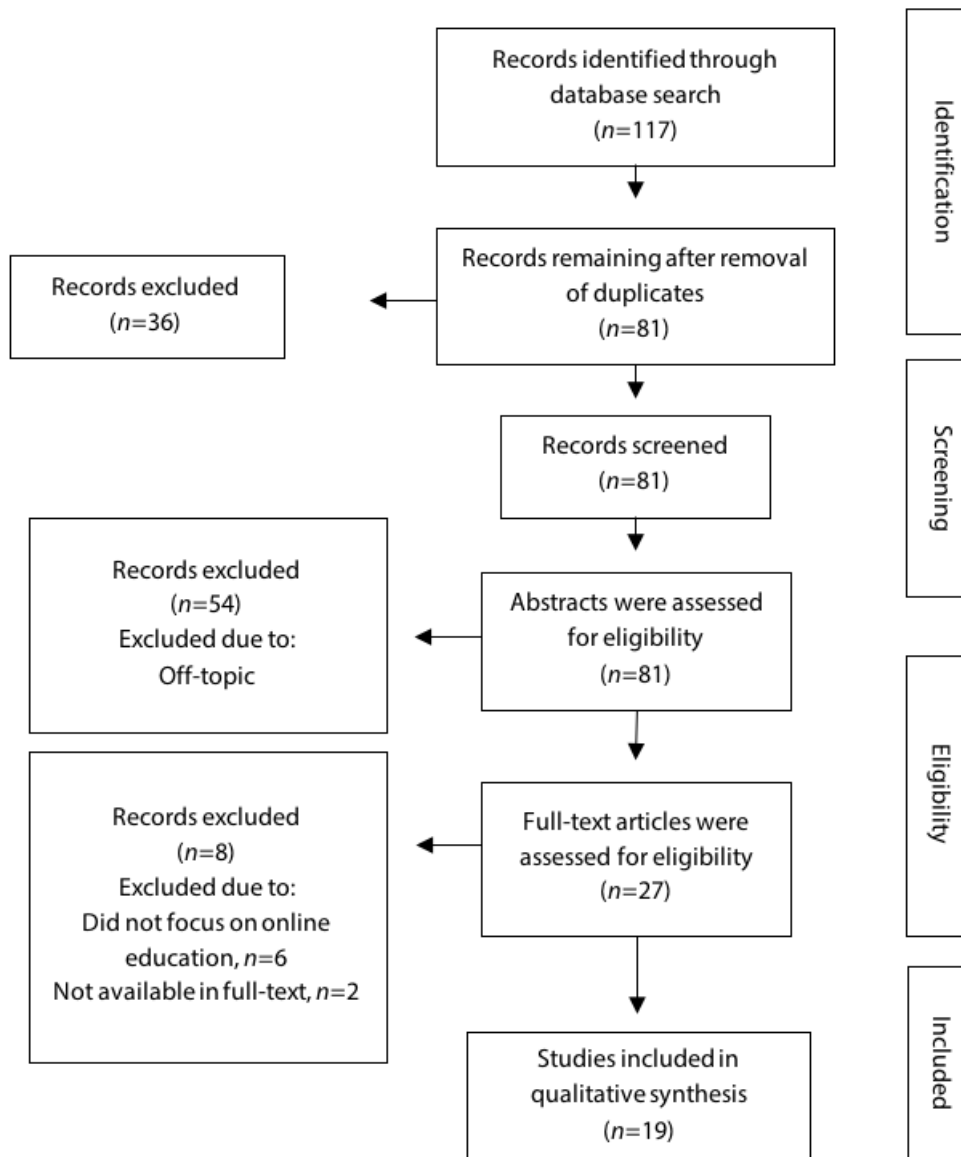


Figure 1. PRISMA Flow Diagram for Results of Systematic Review

Identifications of Categories for Qualitative Synthesis

Key categories for the topic were identified by the researchers through discussion. Subsequently, relevant articles were reviewed broadly, and the following categories were selected for evaluation: publication year, country, journal, topic, purpose, method, instruments, findings, and suggestions. These categories were selected to reveal the trend and assess further aspects of the field.

Data Analysis

Content analysis, a qualitative research technique, was employed for relevant studies based on predefined categories. Researchers jointly classified the articles and selected three different studies. Each researcher analyzed the studies separately, after which consensus was reached on the creation of the derived themes/codes. Initial codes/themes were generated from the relevant parts of the studies. The researchers then checked the reliability of the codes and themes by taking feedbacks from two experts with Ph.D. in educational sciences. The following formula calculated the percentage agreement of experts “reliability = number of agreements/ total number of agreements + disagreements) x 100” as suggested by Miles and Huberman (1994: 64). Accordingly, the agreement level of codes and themes was 96% and 92%, respectively, which were considered acceptable for the current study. The final version of the codes/themes was prepared based on the consensus of researchers. Finally, graphics, frequency and cross tables were drawn to reflect the rates of categories, reveal the trends and to better understand the matter.

FINDINGS

The results of the study were divided into five sections, including findings addressing the demographic characteristics, purposes, methodological considerations, results, and suggestions for future research. Each section was presented under a subheading and supported with figures or tables, as follows.

Demographic Characteristics of the Studies

Demographic characteristics of the studies were addressed under three groups: trend by years, distribution by countries, and distribution by journals.

The Trend of the Studies by Years

The trend curve of 19 articles is presented in Figure 2. Accordingly, the number of studies was at a minimum level between 2010 and 2013, reached its maximum level in 2014, and remained within the range of 3 to 4 in the following years.

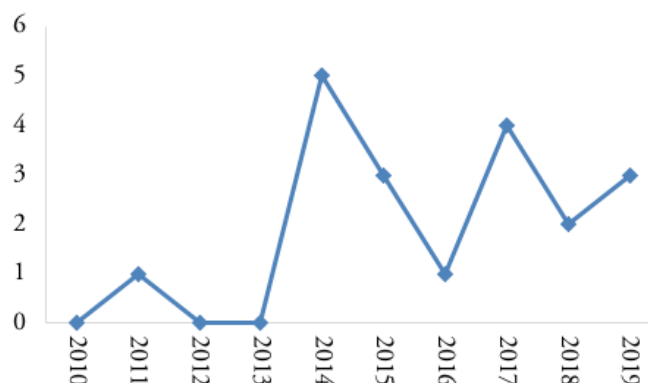


Figure 2. The Trend Curve of the Studies by Years between 2010 and 2019

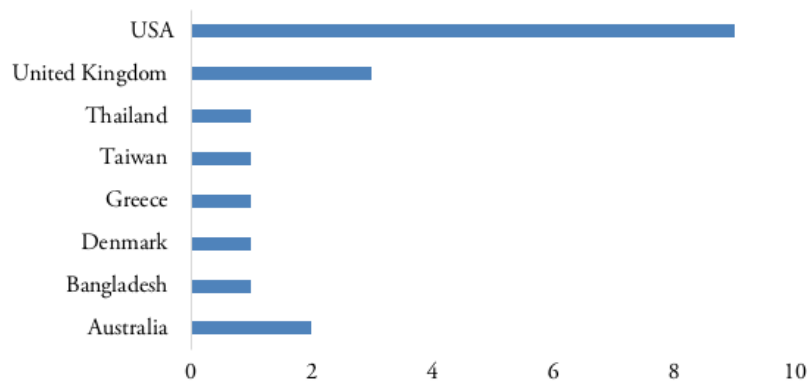


Figure 3. The Distribution of the Studies by Countries

Distribution of the Studies by Countries

The distribution of the studies by countries is presented in Figure 3. It was observed that online education solutions for ASD were employed the most in the United States of America (USA) and the United Kingdom (UK), followed by Australia. Additionally, some studies included findings for which no counties were specified.

Distribution of the Studies by Journals

The studies were indexed in journals addressing different fields including computer sciences, educational psychology, educational technology, special education, consultation, and health education. The details and distribution of journals across fields are presented in Table 2. It was found that most of the relevant studies were published in journals pertaining to special education (36%) and educational technology (36%), followed by educational psychology (10%). The share of all other fields was 5%.

Table 2. Distribution of Journals across Fields

Journal	%	Field
Soft Computing	5	Computer sciences
Psychology in the Schools	5	Educational psychology
Acta de Investigacion Psicologica	5	
Australasian Journal of Educational Technology	11	
International Journal of Web-Based Learning and Teaching Technologies	5	Educational technology
International Review of Research in Open and Distance Learning	5	
Journal of Computers in Education	5	
Open Learning	5	
Universal Access in the Information Society	5	
Journal of Autism and Developmental Disorders	11	Special education
Behavior Analysis in Practice	5	
Disability, CBR & Inclusive Development (DCIDJ)	5	
Focus on Autism and Other Developmental Disorder	5	
Research in Autism Spectrum Disorders	5	
Sexuality and Disability	5	Consultation
Journal of Educational and Psychological Consultation	5	
British Journal of Midwifery	5	Health education

Purpose Statements of the Studies

The purposes of the articles were grouped as follows; (a) revealing the attitudes or experiences of individuals with ASD towards online courses (Adams, Simpson, Davies, Campbell & Macdonald, 2019; Meyers & Bagnall, 2015; Richardson, 2017; Stichter, Laffey, Galyen & Herzog, 2014), (b) developing a tool to increase the effectiveness of online education or evaluating the existing ones formatively (Chu, Tsai, Liao & Chen, 2018; Ohrstrom, 2011; Tsiopela & Jimoyiannis, 2017), (c) providing online training for practitioners and parents of children diagnosed with ASD, who have difficulty in accessing special education services (Curtiss & Ebata, 2016; Fisher et al., 2014; Hall, 2018; Heitzman-Powell et al., 2014; Karr, Brusegaard, Koly, van Edema & Naheed, 2017; Pantermuehl & Lechago, 2015; Wilczynski et al., 2017), (d) offering online education for supporting parents of children diagnosed with ASD (Kitson-Reynolds, Kitson & Humphrys, 2015), (e) providing online education to enable individuals with ASD acquire or improve certain academic or developmental skills, (Jeekratok, Chanchalor & Murphy, 2014; Pistoljevic & Hulusic, 2019; Stichter et al., 2014), and (f) evaluating current online education initiatives from a curriculum and user perspective (Chase, 2014; Sam, Cox, Savage, Waters & Odom, 2019; Stichter et al., 2014). Furthermore, the purpose statements of the studies included a number of additional focal points and key terms such as 'individuals with ASD', 'parents', 'online learning and education', 'skill acquisition', 'intervention methods', 'experience of individuals with ASD in online learning environments', and 'online learning solutions for practitioners.' These are shown in the wordcloud given in Figure 4.



Figure 4. Word-Cloud for Purpose Statements

Methodological Issues

Methodology sections of the reviewed articles were examined and they were evaluated under four categories: research methods, variables, target group, and instruments.

Research Methods

Various research methods were used in the reviewed articles to meet different purposes. In general, it was observed that experimental studies ($n=6$) were employed to teach a particular skill or examine the effectiveness of an intervention. Additionally, some of the studies ($n=3$) used a designbased research framework to understand how to design an OLE for individuals with ASD or relevant people. There were also studies ($n=2$) that focused on the formative evaluation of a new or existing online technology. Finally, the research methods used to describe a particular situation, raise awareness towards a problematic situation, examine online learning experiences in-depth, evaluate an online learning curriculum, and understand online learning situations included surveys ($n=4$), reflection report ($n=1$), phenomenology ($n=1$), concept paper ($n=1$), and case study ($n=1$).

Variables

The independent variables of the studies were online learning programs ($n=1$), online games and social stories ($n=1$), online learning support ($n=1$), online feedback ($n=1$), ebook with serious games ($n=1$), disability rate of ASD ($n=1$), and experience in social environment ($n=1$). On the other hand, the ability of practitioners to employ applied behavior analysis (ABA) ($n=2$), the ability of practitioners providing privacy education ($n=1$), the degree of acquiring developmental skills ($n=1$), academic achievement ($n=2$), and social skills acquisition ($n=1$) were selected as dependent variables.

Target Group

Target groups were individuals with ASD, their parents and practitioners (e.g., special education teachers). The articles ($n=9$) generally focused on individuals with ASD in different developmental periods, such as children and adults. The children's age in reviewed articles ranged from 2 to 7, and the adults were between 17 and 21. However, some of the studies ($n=8$) paid more attention to practitioners who were closely related to individuals with ASD.

Table 3. The Number of Participants in Studies

Participants	$n \geq 10$	$n < 10$	N/A
Individuals with ASD	8	3	0
Parents	1	1	1
Teachers		1	1
Technicians/therapists	1	2	0
Health care providers			1

Note: n, the number of participants in a study; N/A, not available

The number of participants was categorized into three groups of 'greater than or equal to ten', 'less than ten', and 'not available' as shown in Table 3. In general, it was observed that the number of participants was greater than nine. Some studies did not report the number of participants. Additionally, both individuals with ASD and teachers took part together in two of the studies.

Instruments

A variety of qualitative and quantitative instruments were employed in the articles. While some of the studies used existing instruments developed by other researchers in the field, most of them utilized instruments specifically developed by the authors themselves. There were also two or more instruments in many of the studies. Most commonly used data collection instruments were questionnaire ($n=13$), tally sheet ($n=5$), observation form ($n=2$), survey ($n=2$), intervention protocol ($n=2$), achievement test ($n=1$), a software library for recognizing facial expressions ($n=1$), cost form ($n=1$), system logs ($n=1$), and survey including openended questions ($n=1$).

Findings on Results

The findings obtained from the reviewed articles are presented in Table 4. The results were categorized based on target audience and the variables examined, in order to increase understandability (Table 5).

Table 4. Findings on Results

Study	Findings
Adams et al., (2019)	Individuals with ASD stated that asking questions in an OLE is challenging, and such environments are more insecure compared to face-to-face education. On the other hand, they provided positive opinions regarding the flexibility and usability of the environment.
Chase, (2014)	A rubric was developed for the assessment of the elearning curriculum based on the following criteria: learning and motivation status, issues regarding data collection and reporting, use of explicit language and understandability, use of up-to-date technology, transformability, polymorphism (multimodal), focus and structure, supporting technology.
Chu et al., (2018)	The emotional state of an individual with high-functional ASD is crucial while interacting with an OLE. In this regard, this study proposes an online technology that can detect anxiety, apprehension, and anger during online training. The study reported that the proposed system provides valid results in terms of perceiving an individual's feelings.
Curtiss & Ebata, (2016)	Despite recent significant advances in social media's role in education, it was found that users preferred to access learning content via email for reasons of privacy. The study indirectly showed that online support could be useful for accessing information.
Fisher et al., (2014)	The applied behavior analysis technicians using the proposed virtual learning program have recorded significant improvement in the application of behavior reduction skills.
Hall, (2018)	This study focuses on a project called "Teleconsultation" designed to meet the consultation and transitional care needs of military parents of children diagnosed with ASD. In this context, brief information regarding recovery methods, struggle with stress, care coordination, and behavioral counseling are presented through an online learning management system.
Heitzman-Powell et al., (2014)	It was reported that parents with access to web-based education and telemedicine technology increased their knowledge of applied behavior analysis (ABA) strategies and improved their implementation of ABA strategies to their children.
Jeekratok et al., (2014)	It was reported that web-based educational games and social stories are generally useful in enabling individuals with ASD learn certain behaviors.
Karr et al., (2017)	The online family education program was found to be culturally sensitive, appropriate for learning units, and difficult in terms of learning content.
Kitson-Reynolds et al., (2015)	The study does not include specific results as it is a reflection paper. However, it emphasizes that healthcare professionals may raise significant awareness for supporting women and parents who have to live with ASD, with the help of elearning environments.
Meyers & Bagnall, (2015)	The study reveals that the characteristics of the learning environment are not suitable for the interests and learning needs of the participant with ASD.
Ohrstrom, (2011)	Focusing on the system design of the HANDS (Helping Autism-diagnosed teenagers Navigate and Develop Socially) elearning environment, the study supports that OLEs could be suitable for young people with ASD and highlights the importance of theory and practice for an effective design.
Pantermuehl & Lechago, (2015)	The study provided positively similar results in terms of the treatment of individuals with ASD with open observation methods, both verbally and online, via Skype.
Pistoljevic & Hulusic, (2019)	Serious games and elearning principles could be used for fast and effective skill and knowledge acquisition for different types of learners.
Richardson, (2017)	The study showed that students with ASD tend to perform on an equal basis with their typically developing peers in the OLE.
Sam et al., (2019)	The study focused on intervention practices and produced positive developmental and learning outcomes for individuals with autism from the AFIRM (Autism Focused Intervention Resources and Modules) project.
Stichter et al., (2014)	The study revealed that the social competence curriculum for ASD could be given in 3D through a virtual OLE.
Tsiopela & Jimoyiannis, (2017)	The study proposed a theoretical framework for an OLE, aiming to improve the performance and prevocational skill development of individuals with ASD.
Wilczynski et al., (2017)	An online training with coaching and feedback was found effective for knowledge acquisition and treatment fidelity.

Individuals with ASD. The studies conducted with individuals with ASD aimed to eliminate their daily social and communicational problems and improve their academic achievement. It was revealed that individuals with ASD positively benefited from OLEs and developed their social and communicative skills

($f=9$). However, the participants' views about OLEs revealed that they encountered various problems in communicating with teachers, understanding instructional materials, and receiving instant feedback; thus, they did not find the relevant environments to be sufficiently useful ($f=3$). Individuals with ASD reported that they preferred face-to-face learning environments for such reasons, adding that they could only trust online environments to a certain extent, on account of the difficulties of accessing the learning content. Moreover, only a few studies provided positive findings on the usefulness of these environments.

Table 5. Frequency Table Evaluating Results Based on Target Audience

	Themes of results					
	Learning/ Awareness		Experiences/ Opinions		OLEs	
	Positive	Negative	Positive	Negative	Useful	Useless
Individuals with ASD	10	1	5	1	1	3
Parents of children with ASD	2		2			1
Teachers	1		1			
Technical staff	1				1	
Healthcare providers	1					

Parents of children with ASD. The studies conducted with parents indicate that parents were supported to the greatest extent possible on certain matters including: (a) understanding their children's needs better, (b) trying to eliminate their children's behavioral problems, (b) helping them fulfill their communication needs, (iv) recognizing and fulfilling the responsibilities of having a child with ASD, and (v) stress management. Positive findings were obtained about learning ($f=2$) and parents experiences towards OLEs ($f=2$). However, one study pointed out that parents experienced learning-related problems due to inappropriate learning content. Nonetheless, parents generally supported distance and flexible curriculums.

Teachers. Teachers' views about OLEs developed for individuals with ASD were also examined. Teachers reported positive opinions about the prevalence of online education facilities designed for individuals with ASD, based on their observations of students.

Technical staff. It was revealed that the participants who provide technical support or work as technical staff in the field of special education found OLEs to be useful and beneficial ($f=1$).

Healthcare providers. A study conducted on midwifery students emphasized the importance of OLEs in informing parents about ASD, raising awareness towards ASD, and providing sufficient information on the matter. Participants of this environment were considered to understand that each individual may have different views of ASD.

Findings on Recommendations

Recommendations of the studies were examined under 7 categories. The frequencies of these categories are presented in Table 6.

Table 6. Recommendations Provided in the Studies

Recommendation category	f	References
Expanding the audience and conducting new research	6	Kitson-Reynolds et al., (2015); Karr et al., (2017); Pantermuehl & Lechago (2015); Pistoljevic & Hulusic (2019); Tsiopela & Jimoyiannis (2017); Wilczynski et al., (2017)
Development of OLEs	3	Adams et al., (2019); Karr et al., (2017); Pistoljevic & Hulusic (2019)
Making OLEs more useful	2	Meyers & Bagnall (2015); Jeekratok et al., (2014)
Evaluation of OLEs	1	Heitzman-Powell et al., (2014)
Instructional design for OLEs	1	Meyers & Bagnall (2015)
Focusing on specific and individual needs	1	Jeekratok et al., (2014)
Supporting studies for individuals with autism in higher education	1	Richardson (2017)

It was found that the recommendations mainly focused on the generalization of OLEs to a broader audience and application range, covering more participants. Other frequently emphasized recommendations included development of OLEs for ASD, and modification of OLEs to increase their usefulness for the target group.

DISCUSSION

In this chapter, certain critical results obtained in the light of the findings were classified based on research questions and discussed.

Trends in Demographic Issues

Although a remarkable increase was observed in the number of related studies after 2014, this increase may still be regarded as quite limited considering the current conditions in education, which may be explained by the fact that most special education applications depend on face-to-face instructional strategies requiring considerable planning to conduct online. Nevertheless, it may be concluded that online education provides a great opportunity for those with no access to special education services. In support of this notion, there remains the need for a paradigm shift in special education methods to be better prepared for unexpected situations such as the Covid19 pandemic. In this regard, online education could provide a pedagogical and technical infrastructure to promote learning in special education.

Most of the studies reviewed in this paper were carried out in the USA and the UK. Reports indicate that approximately one out of every 68 children was diagnosed with ASD in the USA in 2012 (CDC, 2016). This rate was increased to 1 in 54 for eight-year-old children in the USA in 2016 (CDC, 2020). From a financial point of view, it is estimated that about \$223 billion were spent on ASD-related issues in the USA in 2020, and a dramatic increase in the costs was expected in the upcoming years (Blaxill, Rogers & Nevison, 2021). Research points out that this figure may be reduced by 2/3 through early diagnosis and intervention. It may well be said that the proliferation of individuals with ASD in the society and the high cost of support packages provided for such individuals paved the way for numerous studies to be carried out in practice. As for the UK, it is estimated that public and private funding organizations invested almost £21 million in ASD-related research in the UK between 2007 and 2011 (Pellicano, Dinsmore & Charman, 2014). Studies show that both countries give prominence to academic studies aiming to raise public awareness on ASD, underlining the urgent need to evaluate personal, familial, social and economic dimensions of the increase in the number of individuals with ASD in the USA and UK (Buescher, Cidav, Knapp & Mandell, 2014).

Trends in Methodological Issues

Examining the target group and the distribution of participants in the studies reviewed revealed that most studies focused on individuals with ASD and their parents in an effort to improve communication skills,

social behaviors, and academic achievement of the growing numbers of individuals with ASD and ensure their integration into the society. As there are no known treatments for ASD other than special education (Caglayan, 2013), the studies mainly focused on offering individuals with ASD and no means to access special education services a learning opportunity via technologybased applications. These applications not only contribute to learning, but also enable individuals with ASD to access education in their homes without having to attend special education institutions (Chen, 2012).

This study revealed that online learning activities were provided for parents living in rural areas without access to healthcare centers, who generally face several challenges in stress management, struggling with obstacles and contributing to the development of their children with ASD. It may be inferred that OLEs could be a more beneficial option for these people in dealing with unexpected situations and acquiring adequate learning opportunity (Fisher et al., 2014; Karr et al., 2017).

It is known that most studies on special education are single subject studies due to low schooling rates and the difficulty of accessing the related individuals in practice (Horner et al., 2005). Most studies reviewed for this paper had more than ten participants. The relatively high number of participants may be attributable to the instruments used in OLEs (e.g., log records and online questionnaires) and the fact that OLEs facilitate accessing these individuals.

A noteworthy finding of the study in relation to the instruments was that questionnaires, tally sheets and observation forms commonly used for measuring skills were used extensively. Questionnaires offer a cost effective way to quickly collect data on a given subject from a large number of participants (Marshall, 2005), which was especially useful for obtaining views about OLEs. Thus, questionnaires were used either as an independent research instrument or in association with other instruments (Boynton & Greenhalgh, 2004). The basis of this finding may be related to the fact that individuals with ASD have social, communicational and behavioral problems which require testing of their skills and making in depth observations to determine the level of improvement achieved. In this context, the reviewed studies mostly benefited from tally sheets and observation forms, and frequently used observation as a qualitative research instrument to enable people to define their behavior before or after an intervention in a detail manner. On the other hand, achievement tests were used as a data collection instrument in experimental studies for examining the effects of OLEs on the academic achievement of individuals with ASD or on increasing the parents' awareness and knowledge, suggesting that these tests were used to measure whether OLEs were useful or not.

Evaluation of Findings

It was found that learning from OLEs and raising awareness produced positive results in terms of the experiences and opinions of individuals with ASD and those who are involved with ASD. This result may be supported by the notion that OLEs should be designed to suit to the needs of the target audience (individuals with ASD and their parents) by examining their characteristics and developing a curriculum that is appropriate (Chase, 2014; Karr et al., 2017; Kitson-Reynolds et al., 2015) and customizable for each individual (McDonald & Lopes, 2014). Today, there are several adaptable/customizable OLEs that can be personalized by users. It is of great importance to ensure that the same educational environments are customizable for individuals with ASD to achieve the highest learning efficiency. Additionally, such learning environments should offer extensive information about the subject domain while avoiding complicated user interfaces to reduce cognitive load and information density (Walkington, 2013). Therefore, to make OLEs more useful and engaging for individuals with ASD, this study suggests that designers should give up traditional design habits and carefully consider the characteristics of individuals with ASD.

Evaluation of Recommendations

It was found that most of the articles recommended increasing the number of participants in future studies. This may be related to the wide range of individual differences in ASD (Meyers & Bagnall, 2015; Wilczynski et al., 2017). Accessing more participants may help improve the external validity of studies. Another frequently made suggestion related to the usability issues of OLEs. Although usability guidelines (Zaharias & Poylymenakou, 2009) that could be employed in OLEs for typically developing individuals are available, these should be revised in consideration of the characteristics of individuals with ASD.

Limitations and Further Studies

The APA (2013) reports that individuals diagnosed with ASD make up approximately 1% of the world population, pointing out to an urgent problem that needs to be addressed on a global scale. At a time when most learning activities are shifted to OLEs due to the Covid-19 pandemic, innovative solutions are required to meet the needs of individuals with ASD and those who are involved in providing education for individuals with ASD. This study is limited to 19 articles about OLEs in ASD based on pre-pandemic data. However, largescale research is likely to be conducted after the pandemic. That said, within the available data framework, it may be suggested that studies on the subject are quite limited and new studies addressing different cultural and individual requirements are needed. Based on the results obtained here, the following recommendations may be offered for future studies:

- Before designing an OLE, a detailed need analysis should be performed to determine learning preferences of individuals with ASD, practitioners, and parents.
- OLEs used in special education should be individually adaptable.
- Special education experts should be informed about online learning solutions and encouraged to use them in practice.
- Innovative OLEs enabling all stakeholders in special education to access individuals with ASD and support their social, communicational, behavioral and academic development are needed.

CONCLUSION

Special education for individuals with ASD is a comprehensive process that requires coordination among experts from different disciplines and demands great dedication. Learning activities are provided through collaborative efforts of teachers, parents, and practitioners. A variety of interventions based on traditional strategies have been found to be useful in improving social, communicational, and academic skills of individuals with ASD. Although the articles reviewed in this study do not offer sufficient evidence to make generalizations about the proposed results, they present important clues about the trends between 2010 and 2019. Accordingly, this study concludes that OLEs can open an alternative channel in special-educational activities for individuals with ASD; however, adjustments are needed to make them more useful, flexible, and adaptable.

Hereunder, it was concluded that (a) the research trend on the subject increased after 2014, (b) most of the studies in the specified period were carried out in the USA, and (c) the research topic intersected along the axis of special education and educational technologies; hence, related studies were published in journals in these fields. Secondly, it was revealed that (a) the studies reviewed generally focused on providing online support to individuals with ASD, their parents, and practitioners who experienced problems in accessing special education services, (b) experimental, review and design-based research methods were frequently employed, (c) the variables used in empirical studies spread over a wide range, (d) the target audience of the studies comprised individuals diagnosed with ASD, their parents, and practitioners, and (e) questionnaires, tally sheets, observation forms were frequently used in the data collection process. Finally, it was found that (a) individuals with ASD had a positive learning experience towards online learning environments, but found some e-learning environments to be useless, (b) parents also had positive gains in terms of learning. Moreover, it was found that the most frequently-stated recommendation themes in the reviewed studies were (a) extending elearning environments to larger audiences and (b) increasing the usability of these environments to accommodate individual needs.

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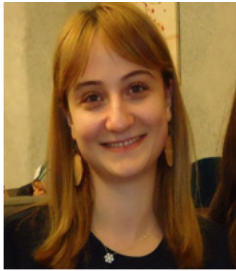
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REFERENCES

- Adams, D., Simpson, K., Davies, L., Campbell, C., & Macdonald, L. (2019). Online learning for university students on the autism spectrum: A systematic review and questionnaire study. *Australasian Journal of Educational Technology*, 35(6), 111–131. <https://doi.org/10.14742/ajet.5483>
- APA. (2013). *Diagnostic and statistical manual of mental disorders*. American Psychiatric Publishing.
- Ardic, A. (2015). *Aile egitimi uygulama modelleri*. A. Cavkaytar (Ed.), *Ozel egitimde aile egitimi ve rehberligi icinde* (3th ed., pp. 247-286). Vize Yayıncılık.
- Blaxill, M., Rogers, T., & Nevison, C. (2021). Autism tsunami: The impact of rising prevalence on the societal cost of autism in the United States. *Journal of Autism and Developmental Disorders*. <https://doi.org/10.1007/s10803-021-05120-7>
- Boynton, P. M., & Greenhalgh, T. (2004). Selecting, designing, and developing your questionnaire. *BMJ*, 328(7451), 1312-1315.
- Bronfenbrenner, U. (1992). *Ecological systems theory*. Jessica Kingsley Publishers.
- Buescher, A. V., Cidav, Z., Knapp, M., & Mandell, D. S. (2014). Costs of autism spectrum disorders in the United Kingdom and the United States. *JAMA Pediatrics*, 168(8), 721-728.
- Caglayan, A. O. (2013). Otizm karmasik bir genetik hastalik mi? *Bilim ve Teknik*, 36-39.
- Center for Disease Control and Prevention [CDC]. (2016). *Key Findings from the ADDM Network: A Snapshot of Community Report on Autism*. <https://www.cdc.gov/ncbddd/autism/addm-community-report/key-findings.html>
- Center for Disease Control and Prevention [CDC]. (2020). *Autism and Developmental Disabilities Monitoring (ADDM) Network. Community Report on Autism*. <https://www.cdc.gov/ncbddd/autism/addm-community-report/index.html>
- Chase, P. N. (2014). Gathering evidence for distance education. *Acta de Investigacion Psicologica*, 4(3), 1657–1672. [https://doi.org/https://doi.org/10.1016/S2007-4719\(14\)70972-X](https://doi.org/https://doi.org/10.1016/S2007-4719(14)70972-X)
- Chen, W. (2012). Multitouch tabletop technology for people with autism spectrum disorder: A review of the literature. *Procedia Computer Science*, 14, 198–207. <https://doi.org/10.1016/j.procs.2012.10.023>
- Chu, H.-C., Tsai, W. W.-J., Liao, M.-J., & Chen, Y.-M. (2018). Facial emotion recognition with transition detection for students with high-functioning autism in adaptive e-learning. *Soft Computing - A Fusion of Foundations, Methodologies & Applications*, 22(9), 2973–2999. <https://doi.org/10.1007/s00500-017-2549-z>
- Civril, H., Arugaslan, E., & Yakut, G. (2013). Uzaktan egitim ders iceriklerinde bilissel ergonomi ve kullanilabilirlik. *Suleyman Demirel Universitesi Sosyal Bilimler Enstitusu Dergisi*, 233-246.
- Curtiss, S. L., & Ebata, A. T. (2016). Building capacity to deliver sex education to individuals with autism. *Sexuality and Disability*, 34, 27-47. <https://doi.org/10.1007/s11195-016-9429-9>
- Fisher, W. W., Luczynski, K. C., Hood, S. A., Lesser, A. D., Machado, M. A., & Piazza, C. C. (2014). Preliminary findings of a randomized clinical trial of a virtual training program for applied behavior analysis technicians. *Research in Autism Spectrum Disorders*, 8(9), 1044–1054. <https://doi.org/10.1016/j.rasd.2014.05.002>
- Fraenkel, J. R., & Wallen, N. E. (2000). *How to design and evaluate research in education* (4th ed.). McGraw-Hill.
- Ganz, J. B., Morin, K. L., Foster, M. J., Vannest, K. J., Genc Tosun, D., Gregori, E. V., & Gerow, S. L. (2017). High-technology augmentative and alternative communication for individuals with intellectual and developmental disabilities and complex communication needs: a meta-analysis. *Augmentative and Alternative Communication*, 46(18), 1–15. <https://doi.org/10.1080/07434618.2017.1373855>

- Garbacz, S. A., McIntyre, L. L., & Santiago, R. T. (2016). Family involvement and parent-teacher relationships for students with autism spectrum disorders. *School Psychology Quarterly, 31*(4), 478–490. <https://doi.org/10.1037/spq0000157>
- Garrison, D. R., & Cleveland-Innes, M. (2005). Facilitating cognitive presence in online learning: Interaction is not enough. *American Journal of Distance Education, 19*(3), 133–148. <https://doi.org/10.1207/s15389286ajde1903>
- Hall, C. M. (2018). Parent consultation and transitional care for military families of children with autism: A teleconsultation implementation project. *Journal of Educational & Psychological Consultation, 28*(3), 368–381. <https://doi.org/10.1080/10474412.2018.1425879>
- Hanayli, M., Serbest, S., & Urekli, T. (2015). Otizmli çocukların sosyal becerilerini geliştirmeye yönelik android uygulaması. *XVII. Akademik Bilisim Konferansı. Eskisehir: Anadolu Üniversitesi.*
- Heitzman-Powell, L. S., Buzhardt, J., Rusinko, L. C., & Miller, T. M. (2014). Formative evaluation of an ABA outreach training program for parents of children with autism in remote areas. *Focus on Autism and Other Developmental Disabilities, 29*(1), 23–38. <https://doi.org/10.1177/1088357613504992>
- Horner, R. H., Carr, E. G., Halle, J., McGee, G., Odom, S., & Wolery, M. (2005). The use of single-subject research to identify evidence-based practice in special education. *Exceptional Children, 71*(2), 165–179. <https://doi.org/10.1177/001440290507100>
- Hyman, S. L., & Levy, S. E. (2013). Autism Spectrum Disorders. In M. L. Batshaw, N. J. Roizen, & G. R. Lotrecchiano (Eds.), *Children with Disabilities* (7th ed., pp. 345–367). Paul H. Brookes Publishing.
- Jeekratok, K., Chanchalor, S., & Murphy, E. (2014). Web-based social stories and games for children with autism. *International Journal of Web-Based Learning and Teaching Technologies (IJWLTT), 9*(4), 33–49. <https://doi.org/10.4018/ijwltd.2014100103>.
- Karr, V., Brusegaard, C., Koly, K., van Edema, A., & Naheed, A. (2017). Online parent training: A pilot programme for children with autism and neurodevelopmental disabilities in Bangladesh. *Disability, CBR & Inclusive Development, 28*(3), 56–70. <https://doi.org/10.5463/dcid.v28i3.616>
- Kientz, J. A., Goodwin, M. S., Hayes, G. R., & Abowd, G. D. (2013). Interactive Technologies for Autism. In R. M. Baecher (Ed.), *Synthesis Lectures on Assistive, Rehabilitative, and Health-Preserving Technologies* (Vol. 2, pp. 1–177) <https://doi.org/10.2200/S00533ED1V01Y201309ARH004>
- Kitson-Reynolds, E., Kitson, W., & Humphrys, K. (2015). Living with autism: What's your superpower? A personal reflection. *British Journal of Midwifery, 23*(11), 808–813. <https://doi.org/10.12968/bjom.2015.23.11.808>
- Klin, A., Jones, W., Schultz, R., Volkmar, F., & Cohen, D. (2002). Visual fixation patterns during viewing of naturalistic social situations as predictors of social competence in individuals with autism. *Archives of General Psychiatry, 59*(9), 809–816. <http://dx.doi.org/10.1001/archpsyc.59.9.809>.
- Marshall, G. (2005). The purpose, design and administration of a questionnaire for data collection. *Radiography, 11*(2), 131-136.
- Matson, M. L., Mahan, S., & Matson, J. L. (2009). Parent training: A review of methods for children with autism spectrum disorders. *Research in Autism Spectrum Disorders, 3*(4), 868–875. <https://doi.org/10.1016/j.rasd.2009.02.003>
- McDonald, J., & Lopes, E. (2014). How parents home-educate their children with an autism spectrum disorder with the support of the Schools of Isolated and Distance Education. *International Journal of Inclusive Education, 18*(1), 1–17. <https://doi.org/10.1080/13603116.2012.751634>
- Meyers, C. A., & Bagnall, R. G. (2015). A case study of an adult learner with ASD and ADHD in an undergraduate online learning environment. *Australasian Journal of Educational Technology, 31*(2), 208. <https://doi.org/10.14742/ajet.1600>
- Miles, M.B., and Huberman, A. M. (1994). *Qualitative data analysis (Second Edition)*. California: SAGE Publication, Inc.

- Millar, D. C., Light, J. C., & Schlosser, R. W. (2006). The impact of augmentative and alternative communication intervention on the speech production disabilities: A research review. *Journal of Speech, Language, and Hearing Research: JSLHR*, 49(April), 248–264. [https://doi.org/10.1044/1092-4388\(2006/021\)](https://doi.org/10.1044/1092-4388(2006/021))
- Mitchell, S., Brian, J., Zwaigenbaum, L., Roberts, W., Szatmari, P., Smith, I., & Bryson, S. (2006). Early language and communication development of infants later diagnosed with autism spectrum disorder. *Journal of Developmental and Behavioral Pediatrics: JDBP*, 27(2), 69–78. <https://doi.org/10.1097/00004703-200604002-00004>
- Moore, J. L., Dickson-Deane, C., & Galyen, K. (2011). E-Learning, online learning, and distance learning environments: Are they the same? *Internet and Higher Education*, 14(2), 129–135. <https://doi.org/10.1016/j.iheduc.2010.10.001>
- Odluyurt, S., & Cattik, M. (2018). Otizm spektrum bozuklugu olan bireyler icin teknoloji temelli mudahale yontemleri. *Kastamonu Education Journal*, 26(6), 1851–1861. <https://doi.org/10.24106/kefdergi.2203>
- Ohrstrom, P. (2011). Helping autism-diagnosed teenagers navigate and develop socially using e-learning based on mobile persuasion. *International Review of Research in Open and Distance Learning*, 12(4), 54–71. <http://www.irrodl.org/index.php/irrodl/article/view/878/1842>
- Pantermuehl, R. M., & Lechago, S. A. (2015). A comparison of feedback provided in vivo versus an online platform on the treatment integrity of staff working with children with autism. *Behavior Analysis in Practice*, 8(2), 219–222. <https://doi.org/10.1007/s40617-015-0059-y>
- Pellicano, E., Dinsmore, A., & Charman, T. (2014). What should autism research focus upon? Community views and priorities from the United Kingdom. *Autism*, 18(7), 756–770.
- Pistoljevic, N., & Hulusic, V. (2019). Educational e-book for children with and without developmental disorders. *Journal of Computers in Education*, 6(1), 117. <https://doi.org/10.1007/s40692-018-0126-9>
- Price, R. V., & Maushak, N. J. (2000). Publishing in the field of educational technology: Getting started. *Educational Technology*, 40(4), 47–52.
- Rad, N. M., & Furlanello, C. (2016). *Applying deep learning to stereotypical motor movement detection in autism spectrum disorders*. Paper presented at the 2016 IEEE 16th International Conference on Data Mining Workshops (ICDMW).
- Richardson, J. T. E. (2017). Academic attainment in students with autism spectrum disorders in distance education. *Open Learning*, 32(1), 81–91. <https://doi.org/10.1080/02680513.2016.1272446>
- Sagdic, Z. A. & Sani-Bozkurt, S. (2020). Otizm spektrum bozuklugu ve yapay zeka uygulamalari, *Acikogretim Uygulamalari ve Arastirmalari Dergisi*, 6(3),92-111. <https://dergipark.org.tr/en/pub/auad/issue/56247/768540>.
- Sam, A. M., Cox, A. W., Savage, M. N., Waters, V., & Odom, S. L. (2019). Disseminating information on evidence-based practices for children and youth with autism spectrum disorder: AFIRM. *Journal of Autism and Developmental Disorders*, 50(6), 1931–1940. <https://doi.org/10.1007/s10803-019-03945-x>
- Sani-Bozkurt, S. (2017). Ozel egitimde dijital destek : yardimci teknolojiler. *Acikogretim Uygulamalari ve Arastirmalari Dergisi*, 3(2), 37–60. <https://dergipark.org.tr/tr/pub/auad/issue/34117/378439>
- Shire, S. Y., Worthman, L. B., Shih, W., & Kasari, C. (2020). Comparison of face-to-face and remote support for interventionists learning to deliver JASPER intervention with children who have autism. *Journal of Behavioral Education*, 1-22.
- Stenhoff, D. M., Pennington, R. C., & Tapp, M. C. (2020). Distance education support for students with autism spectrum disorder and complex needs during COVID-19 and school closures. *Rural Special Education Quarterly*, 39(4), 211–219. <https://doi.org/10.1177/8756870520959658>

- Stichter, J. P., Laffey, J., Galyen, K., & Herzog, M. (2014). iSocial: Delivering the social competence intervention for adolescents (SCI-A) in a 3D virtual learning environment for youth with high functioning autism. *Journal of Autism and Developmental Disorders*, *44*(2), 417–430. <https://doi.org/10.1007/s10803-013-1881-0>
- Sun, P. C., Tsai, R. J., Finger, G., Chen, Y. Y., & Yeh, D. (2008). What drives a successful e-Learning? An empirical investigation of the critical factors influencing learner satisfaction. *Computers and Education*, *50*(4), 1183–1202. <https://doi.org/10.1016/j.compedu.2006.11.007>
- Telli Yamamoto, G., & Altun, D. (2020). Coronavirus ve cevrimici (Online) egitim onlenemeyen yukselisi. *Journal of University Research*, *3*(1), 25–34. <https://doi.org/10.26701/uad.711110>
- Travis, L., Sigman, M., & Ruskin, E. (2001). Links between social understanding and social behavior in verbally able children with autism. *Journal of Autism and Developmental Disorders*, *31*(2), 119–130. <https://doi.org/10.1023/A:1010705912731>
- Tsiopela, D., & Jimoyiannis, A. (2017). Pre-vocational skills laboratory: designing interventions to improve employment skills for students with autism spectrum disorders. *Universal Access in the Information Society*, *16*(3), 609–627. <https://doi.org/10.1007/s10209-016-0488-6>
- Virnes, M., Karna, E., & Vellonen, V. (2015). Review of research on children with autism spectrum disorder and the use of technology. *Journal of Special Education Technology*, *30*(1), 13–27. <https://doi.org/10.1177/016264341503000102>
- Vygotsky, L. S. (1978). *Mind in society: The Development of higher psychological processes*. M. Cole, V. John-Steiner, S. Scribner, & E. Souberman (Eds.) Harvard University Press.
- Walker, V. L., & Snell, M. E. (2013). Effects of augmentative and alternative communication on challenging behavior: A meta-analysis. *Augmentative and Alternative Communication*, *29*(2), 117–131. <https://doi.org/10.3109/07434618.2013.785020>
- Walkington, C. A. (2013). Using adaptive learning technologies to personalize instruction to student interests: The impact of relevant contexts on performance and learning outcomes. *Journal of Educational Psychology*, *105*(4), 932–945. <https://doi.org/10.1037/a0031882>
- Wilczynski, S. M., Labrie, A., Baloski, A., Kaake, A., Marchi, N., & Zoder-Martell, K. (2017). Web based teacher training and coaching/feedback: A case study. *Psychology in the Schools*, *54*(4), 433–445. <https://doi.org/10.1002/pits.22005>
- Zaharias, P., & Poylymenakou, A. (2009). Developing a usability evaluation method for e-learning applications: Beyond functional usability. *Intl. Journal of Human–Computer Interaction*, *25*(1), 75–98.

A RESEARCH ON DISTANCE EDUCATION AND ALIENATION IN ACADEMIC STAFF DURING THE COVID-19 PANDEMIC

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ABSTRACT

With the outbreak of the Covid-19 pandemic, countries have had to review their education policies and make adjustments accordingly. In this regard, distance education has been adopted in universities in Turkiye, and each university has created its own distance education strategy. Distance education, once only a complementary to education, replaced traditional education when the pandemic turned out to be unlikely to end in the short run. Although some universities are experienced in distance education, this sudden pandemic has caused disruptions (digital inequality, technological infrastructure problems, etc.) and unprecedented situations catching most universities off-guard. One of these is the emergence or the change of alienation seen in academic staff due to distance education. The aim of the study is to identify the work alienation of academics during the Covid-19 pandemic and reveal the underlying reasons, with the help of semi-structured interview technique within the framework of the phenomenological approach, one of the qualitative research methods. For this purpose, interviews through the Google Meet application were held with 12 academics. Content analysis was applied to the data obtained from these interviews. As a result, it was found that the interviewed academics were adversely affected by the distance education method and they were not competent enough to use it. It was also revealed that they were unable to identify their demands regarding their economical and technical needs yet at the same time they were not satisfied with the support provided by their institutions.

Keywords: Academics, alienation, distance education, COVID-19 pandemic, job satisfaction.

INTRODUCTION

Earthquakes, disruption of natural balance due to global warming, nuclear threats, pandemics, etc. have made us reconsider Ulrich Beck's concept of risk society. As Beck stated, risk society is the society "that cannot be insured". Considering the unpredictability of the future, fear, uncertainty and insecurity with the outbreak of Covid-19 pandemic, the idea that we live in a risk society is even more ingrained. According to the case table of the World Health Organization (WHO, 2021) dated 04.09.2021, the total number of cases in the world is 218.946.836 people and the total death toll is 4.539.723 people.

Challenges like emergent mutations of the virus, the slow pace of vaccination in some countries and the difficulty to predict the end of the pandemic have led countries to impose regional or nationwide lockdowns and therefore their citizens to continue working remotely. These lockdowns have led to significant changes in all areas of life. Daily life, shopping, tourism, travel, education etc. were either totally or partially interrupted. Especially in big cities, the situation of isolated individuals have become dire due to extremely limited natural

habitats. These people spend their days by using various learning applications, participating in certificate programs, watching movies on digital platforms and working remotely. While social media applications had already directed individuals to smart phones and social isolation, this has been worsened with lockdowns and the pandemic. While parents have continued working from home, children have started to attend online classes. The separation between home and work place, which dates back to the industrial revolution in the 19th century, has reverted in the 21st century. School, meanwhile, continues as a virtual institution.

Labor, work and production have been redefined over the centuries from Industry 1.0 to Industry 5.0 and the concept of alienation has changed altogether. Steam and machinery, electricity and assembly line, digitalization, artificial intelligence, and finally, the Internet of things, where the entire production process is done by robots and people have assumed the role of audience. This change also shows that labor has gradually changed hands or digitized. The number of blue-collar employees is gradually decreasing while white-collar employees manage the process by working remotely. Working days and leisure time are intertwined and the boundaries between work and private life are blurred in a society interconnected through smart phones. While remote working had already begun in some sectors, it has become widespread with the pandemic.

Along with the pandemic, educational institutions, particularly universities, have also transitioned to distance education and each university has adopted a distance education system based on its own experiences. In distance education, there is a transfer of content data, images, video, audio, messages and recordings through devices such as laptops, smart phones and tablets. In spite of its advantages like offering a flexible education medium without limitations of time and place enabling students to watch recorded lessons whenever they want, distance education is disadvantageous in other aspects. For instance, academics are unable to determine students' comprehension through nonverbal clues and they have less social relations and also less classroom interaction compared to face-to-face education. Furthermore, academics are merely the provider of information without the ability to use their body language while students are passive recipients seeing their teachers only as a portrait on a screen. These are some of the most important factors underlying the work alienation in academics. Besides, academics are alienated from teamwork, colleagues and even the institutions they work for.

Alienation is a concept that has been very popular in the literature for a long time being the subject of research among academics. Many researchers contributed to the literature with their articles such as Sadi Yilmaz & Pinar Sarpkaya (2009), "Alienation and Its Management in Educational Organizations", Benan Yucebalkan & Nilay Karasakal (2016), "A Study on the Relationship Between Emotional Labor and Burnout Level in Academicians: The Case of Kocaeli University", Ulfiye Celikkalp et al. (2018), "Academicians' Job Satisfaction and Affecting Factors", Sevgi Yildiz & Devrim Alici (2018) "Development of the Alienation Scale to Academician: A Validity and Reliability Study". In this study, however, distance education and resulting alienation in academics during the Covid-19 pandemic were investigated in addition to alienation and academic profession in a broader sense.

In the study, work alienation of academics teaching in distance education due to the Covid-19 pandemic was investigated based on Melvin Seeman's theory of alienation. The study consists of three parts: the concept of alienation and the work alienation in academics due to the Covid-19 pandemic in the first part, the concept of distance education in the second and finally the related research and findings.

THE CONCEPT OF ALIENATION

Alienation is a long discussed concept by sociologists, psychologists and philosophers. The term is derived from the word alienare, which means "to alienate". Previously, it was used to explain the transfer of one's property to another. Today, it still corresponds to the concept of alienable in law (Miller et al., 1995). There are three different concepts that correspond to the word alienation in Marx: Entausserung, Verausserung, Entfremdung. It is the third one that corresponds to the word "alienation" in French and it means alienation from oneself (Aron, 1989).

What does alienation disclose? Is alienation inevitable? Can it be completely eliminated? What is it like not to be alienated in a society with no alienation? The answers to these and similar questions have been thoroughly questioned by theologians, psychologists, existentialists and sociologists (Miller et al., 1995).

Rousseau was the first to write about the concept of alienation. In his book called *Social Contract*, he mentions that if the individual cannot freely determine his behavior due to social pressure, he begins to become alienated (Halacoglu, 2008). It is understood that Marx was influenced by Rousseau's statements while forming his own theory. According to Hegel, alienation has existed since the beginning of humanity because people have been gradually moving away from the world they created, leading to alienation (Tekin, 2012). According to Marx, however, if the society based on class and the division of labor disappears, there will be no alienation. Hilav (1993) states that primitive communities, where there is no division of property and labor, are the only ones where alienation does not exist (cited in Demir, 2018). According to these two comparisons, while Hegel refers to self-alienation, Marx mentions the alienation of worker from product and production process in the capitalist system. Alienation has also been discussed in literature and art. For example, Kafka effectively describes the self-alienation mentioned by Hegel in his novel, *The Metamorphosis*. The 1936 film, *Modern Times*, reflects how the worker is alienated from himself, his product and production process in the capitalist order that Marx tried to explain with the character of Charlot, who got stuck in the cogwheel and had to go to a mental hospital due to depression caused by nonstop working.

Unlike Marx, Hegel does not consider alienation as an undesirable situation. Nature is a manifestation of the absolute spirit (*geist*) and was formed by the alienation of the absolute spirit from itself. The absolute soul undergoes spontaneous changes in the dialectical process. Alienation will exist as long as humanity and nature do (Tolan, 1996). Feuerbach, on the other hand, establishes a connection between alienation and religion, and sees religion as the cause of alienation. According to him, all religious values are nothing but the reflection of the inner nature of the individual. In this case, the existence of God depends on man (Tekin, 2012).

According to Marx, alienation occurs in four stages. In the first stage, worker is separated from product. He has no control over the product. For this reason, his product is now estranged from the worker. In the second stage, the worker alienates from the production process. In the third stage, he loses his creativity and finally starts alienate from his colleagues in the competitive market (Miller et al., 1995). In this sense, according to Marx, the worker is "the crumb of his own body", "the living extension of the machine" (Ollman, 2008). According to Marx, man transforms nature by using his creativity. Individuals become alienated from the product with the prominence of exchange value i.e. with the exchange value of things (commodities) instead of the utility value of commodities (commodity fetishism). Commodity fetishism is at its highest level in a capitalist society where there is a division of labor and specialization (Tolan, 1996).

Marcuse, on the other hand, expresses Marx's alienation of worker from production process with the concepts of standardization and routine, and argues that in this enslaving order, productive and non-productive occupations are similar to each other (Marcuse, 1975). In his book, *Manuscripts*, Marx wrote, "The more the worker produces, the less he consumes. The more value he creates, the less worthy he becomes and then becomes a slave to nature" (Marks, 2013: 77). "Even the free time for a person's education, intellectual development and social, physical and mental activities is empty talk" (Marks, 2003: 236). With the division of labor put forward by Durkheim, organic solidarity has replaced mechanical solidarity, so specialization has increased. Because of specialization, the dependency between business lines has also increased proportionally (Durkheim, 1995). Organic solidarity has assumed an integrative function and helped the formation of collective consciousness (Kongar, 1995). However, can such an integration be achieved in a society struggling with the pandemic and working remotely? Due to the pandemic, people have lost their jobs in some business lines and different types of specialization have emerged in others.

With the introduction of new production technologies, production methods have also changed. After the Taylorism-supported Fordist production came to a halt, computer-assisted flexible production was launched, so new forms of work such as remote working and working from home came to the fore in the Post-Fordist production style (Kocadas, 2020). From electronics to digital, from digital to artificial intelligence and the Internet of things, both the production methods and the concept of alienation have changed. Today, with the introduction of industrial robots, the number of blue-collar workers is highly expected to decrease. Even in some sectors, projections are made that the entire production process will be coordinated by robots. The organization of the productive forces in the table below reflects this change more clearly (Fuchs, 2015: 237).

Table 1. Three Types of Organization of the Productive Forces

TYPE	WORK TOOLS	WORK OBJECTS	PRODUCTS OF THE WORK
Agricultural productive forces	Body, brain, tools, machines	Nature	Basic products
Industrial productive forces	Body, brain, tools, machines	Basic products, industrial products	Industrial products
Informational productive forces	Body, brain, tools, machines	Experiences, ideas	Informational products

ACADEMIC STAFF AND THE CONCEPT OF ALIENATION

Before explaining the concept of alienation in academic staff, it might be appropriate to refer to such questions as what an academician does and what are their job descriptions. In this sense “academics have three main duties:

- Education and instruction
- Scientific research
- To raise the awareness of their society” (Ortas, 2004).

Academics contribute to the social production process both by giving lectures and doing scientific research. However, their payments are based on their workload in teaching (Arslan & Olpak, 2020). Overloaded schedules, crowded classrooms, insufficient time to do scientific research and administrative setbacks etc. cause alienation in academics. These result in a decrease in creativity, scientific research, commitment to work and cooperation with colleagues and productivity (Alparslan, Polatci & Yastioglu, 2021). Obligation to continue education remotely during the Covid-19 pandemic and the uncertainty about the next academic year brought along some problems. Alienation experienced in this period will be explained through the theory of Melvin Seeman.

Eric Fromm and Melvin Seeman, unlike sociologists, looked at alienation from the perspective of social psychology. According to Fromm, large-scale businesses, bureaucratization and capitalism push the individual to loneliness and weakness, and he gets lost and alienated in this deadlock by consuming too much (Tekin, 2012). Moreover, although the specialization of the workforce and the disappearance of tradition, emphasized by Durkheim, liberate the individual, they also lead him to loneliness (Halacoglu, 2008).

Seeman, who approaches the concept of alienation from a socio-psychological point of view by leaving social conditions aside, has made a great contribution to the recognition of the concept in American sociology. In his article “On the Meaning of Alienation”, he divided alienation into five stages (Halacoglu, 2008).

Feeling of Powerlessness: It is the state of “a person’s lack of influence and control in the face of events that affect his life in the social system, and a low sense of control for the future” (Kirman & Atak, 2020). This situation corresponds to the concept of “reification” in Marx. In other words, the products produced by the individual begin to be detached from the individual. According to Seeman, powerlessness is used in three meanings: Efforts for an unattainable product, unfulfilled expectations, and the presence of external control. Inadequacy, lack of dominance over the work processes, the frequent changes in the rules and resulting unsolvable problems in the workplace, lack of sufficient equipment to do the job, and lack of contact with the managers cause weakness. According to Marx, employees are alienated from work because they do not have a say in the production process and the product (Tekin, 2012).

Sense of Meaninglessness: Employees want to know and understand their contribution the work, the connection between the work of other employees and their work, and their position in the work process. If employees find their work meaningless, their productivity decreases (Kocadas, 2020).

Normlessness: Seeman said that Durkheim's concept of anomie is related to meaninglessness and powerlessness (Halacoglu, 2008). It seems normlessness arises when one is obliged to resort to anomalous ways in order to do his job in a state of irregularity. The individual who experiences irregularity cannot build a bridge between the present and the future, and sees the future as uncertain (Tekin, 2012).

Self-alienation: The individual abandons his own internal dynamics and begins to act according to the norms of others. After a while, he forgets his own wishes (Kocadas, 2020). Self-alienation is seen in two ways in academics: Lack of academic environment and alienation from work. What is meant by the academic environment is colleagues coming together and exchanging information about their work. Lack of this environment results in withdrawal from work. Although the individual feels competent in his job, he withdraws from teaching and scientific research. (Aydin & Ozeren, 2019).

Alienation from Society: Seeman defines alienation from society as the individual's disregard for the values set by the society. In other words, it is the separation between the individual and the society in terms of expectations. (Tekin, 2012).

DISTANCE EDUCATION

In a study examining the history and subjects of distance education, it is reported that Pennsylvania State University organized 250 different courses in 1892 to educate rural people in agriculture, and 19,000 people enrolled in these courses designed as distance education (Banas & Emory, 1998). It is known that these and similar experiences, dating back more than a century ago, were repeated in many countries in the following years with various needs and served to build distance education. Distance education, which was initially considered to be a solution for the education of those who could not reach formal education for various reasons, has also offered alternative education opportunities over time (Karasar, 2004). In fact, many countries are trying to implement virtual or non-walled university applications, with the claim of turning every possible environment into a university education one by removing the formal education institutions which still faithfully keep their traditional structures and practices (Balyer & Gunduz: 2010).

The idea of benefiting from distance education in Türkiye and the interest in the subject dates back to the founding of the Republic. In a study about the aforementioned history, it is stated that after the studies on the development of the idea until the 1950s, early examples were seen in the forms of making use of the radio and teaching by letter (Bozkurt, 2017). It is said that visual materials in distance education applications in the world were used in the form of educational films after the second world war, and their utilization as educational material was developed by universities providing distance education. (Laaser & Toloza, 2017) Distance education studies in Türkiye also followed the same path. The experience of the Non-formal Higher Education Institution (Yaykur), which was designed to provide higher education with the distance education method, was followed by the Open Education Faculty in 1982, which differed from the previous experiences with the effective use of television (Balyer & Gunduz, 2010; Bozkurt, 2017).

Although the relationship between technology and education is undeniable in any stage and aspect of education, when it comes to distance education, it takes the form of an indispensable relationship. Because of the swift implementation of technological developments in distance education and the radical transformations in practices, this close relationship is easily evident. Distance education has evolved into a completely different process with the introduction of computer technology and the Internet to the field of education, which started to find a place in social life towards the late 1980s. Some distinctive features, listed without considering the order of importance and priority, are as follows:

- No necessity for high-cost, large organizations for distance education
- Maximum individualization of education and its organization as a learning-oriented process
- Access to information anytime and anywhere
- Application of both synchronous and asynchronous education
- Ability to use content and training materials in different formats together
- Application of quick changes and renewal opportunities

The new communication environments created by the cooperation of computer technology and the Internet have created wider and more varied presentation opportunities for educational institutions as well as creating educational environments that were not previously possible in the traditional education system. Web-based distance education via the Internet has transformed distance education, which used to operate in a one-way direction due to technical limitations despite its existence before digitization, into interactive communication mediums and this feature of web-based distance education is among the ones that should probably be emphasized the most. Systems that operated before the Internet, limited to delivering printed materials, audio and video tapes to students and mostly in the form of delayed communication flow, have rapidly turned into interactive online courses, educational conferences and meetings on the Internet. The spread of technology, its lowering costs and the diversification of its capabilities as a tool have changed the content presentation in many aspects. In a short time, it has moved the content transfer possibilities, which were limited to traditional educator himself as the source, to an educational platform where the most qualified examples can be delivered to the student anytime and anywhere. The content presented by the instructor as a narrator with limited opportunities has evolved into a form of presentation in which students virtually witness the environments where information is produced or used. The ability to store information and various contents and deliver them to anyone anywhere anytime has enabled educational institutions to offer wide educational contents as open course resources (Shepherd, 2013).

Having a complementary function for adults who are out of the traditional formal education system or who are no longer involved in it yet whose lifelong education needs continue, distance education has been gradually drawing more attention with the developments mentioned above. The technical developments mentioned so far have strengthened the idea that distance education can work effectively by reaching wider and more diverse social segments faster than it was thought in the past. There are other factors that support this point of view. Distance education is regarded not only as a support element, but also as a future alternative to traditional education, with the contribution of other factors like the predictions that technology can be effective in providing education services at lower costs and the determinations that traditional education systems are insufficient to meet the exponentially increasing education needs.

However, it is clear that the technology that has been mentioned so far and the new opportunities it creates will not be sufficient in the assessment of distance education. In order to provide the desired outcomes from distance education, the roles and functions of the educators who will use this method should also be taken into account. It is argued that the approach of educators to distance education, their knowledge and experience on distance education methods as well as their fields of expertise are/will be more effective than technology itself. (Toplu & Gokcearslan, 2012) Many opinions, remarks and data from researches about the approaches and practices of educators on distance education reveal the importance of this situation.

In this regard, one of the important and primary topics to be focused on is the staff teaching in distance education. Who is this academician undertaking the responsibility of giving higher education under the umbrella of “university”, which has hundreds of years of tradition and history? What are their common identity characteristics and their mutual grounds with distance education? What is the attitude of the academician? Such questions that can be further diversified and the background that creates them will lead to results that will directly affect the success of distance education.

In a study about the emergence and formation of academic profession, it is mentioned that there are two basic academician identities in the European tradition where on the one hand academicians are accepted and treated as civil servants such as soldiers, bureaucrats and the like and on the other hand they are regarded as professors in charge of educating the elite professional members of the society and the income and security of whom commensurate with their success in a competitive environment (Schwartzman, 1994). The academician who provides the education is also responsible for the production of the knowledge he will provide, that is, the research. Today, academics are perceived as respected people who produce and manage knowledge in the society, and they are accepted as qualified employees of the university institution where the elite of the society, both in knowledge and profession, are educated. In line with this perception, academics have various duties and responsibilities that complement each other yet differ at the same time. In the studies of Balyer and Gunduz mentioned above, these different/multiple duties and responsibilities are defined as follows under the title of the duties and responsibilities of universities.

“Universities are responsible for educating their students and conducting scientific research in accordance with the science policy of the country and the needs of the society. It is also expected from academicians to undertake social responsibilities outside campus like publishing the results of their research and investigations, contributing to the advancement of science and technology, transferring cultural values, providing social integration and promoting social change... Due to the duties it undertakes, the university is the apple of the eye of both governments and industry because no society or country can progress without adequately equipped individuals who are needed by both groups respectively and whose education the university is responsible for (Balyer & Gunduz, 2010: 35-36)”.

As summarized above, academics who undertake duties whether as the administrator of the institution they work for or the implementer of academic activities have a sense of relative autonomy when making decisions about the quality of their work. The research and studies they carry out in their areas of expertise and their decisions on subjects such as the content of the courses they give are only subject to the supervision of other academicians who have the same qualifications as themselves or occupy even higher positions in the hierarchical order within the framework of the determined academic order and rules. In this case, some premises that will determine the attitude of academicians towards distance education activities from general to specific can be listed as follows. Will the distance education be able to meet the quality standards set in the traditional education environment? In the researches, negative remarks were observed in the approaches of academics to distance education who favor traditional education methods and are suspicious of change. The academics who can be listed in this group find the idea of obtaining a bachelor’s degree through “off-campus education” ugly and may make the following remark. “These new techniques may work in other disciplines, but never in mine.” (Beaudoin, 1990).

It is claimed that behind this disinterested and even hostile attitude, which is thought to be caused by the lack of necessary knowledge and experience of the academicians about the methods and techniques of distance education, lies the fact that the educators are worried about losing their jobs to technology and being unemployed and dysfunctional. (Beaudoin, 1990) Indeed, studies have provided findings and related justifications for the reluctance of academics to prepare materials for distance education and record them to be reused. There are various reasons for this situation.

One of these is the academician’s reluctance to make his (original) content public in such a way that he can lose its control. The emphasis should be on issues such as the fact that he sees problems in terms of copyright of the content that he spends effort and time to produce, with no protection for his work given that such activities are considered to be very valuable in academic success scales. At this point, however, it is useful to look at the other side of the coin. While comfortably using the content classroom environment in traditional formal education, he avoids that in recorded content that can be used over and over again in wider environments outside his control and where copyrights may come into play. Therefore, indifference and reluctance in academics can be observed in the production and use of distance education content (Andrews & Tynan, 2012). In the meantime, it is useful to remember the existence of educators who are fascinated with technology or forget their educational purposes by completely delegating their duty to technological products, and who have a share in inefficient educational activities with excessive use of materials (Beaudoin, 1990).

What has been mentioned so far is about academics participating in distance education with planned organizations. When distance education comes to the fore, experts in the field emphasize that distance education is a team work and that it is necessary for academics who are experts on the subject to receive training on the methods and practices in this medium (Banas & Emory, 1998; Valentine, 2002). Since the spring term of 2020, when almost all universities switched to distance education due to Covid-19, academicians who had never experienced it before have had to use distance education. As a natural consequence of being unfamiliar with the field, unpreparedness due to sudden transition, inadequate infrastructure and various other inadequacies, the first thing they turned to was previous applications in the field. Thus, the presentation technique of television, which was one of the most popular tools of distance education before the Internet, has been reused via the webcam. Lessons of approximately 45 minutes, dominated by “talking heads”, where the instructor’s lecture is recorded with a fixed camera (Laaser & Toloza, 2017). Video images and graphics accompanying this form of expression in television education have been replaced by power point presentations and short graphics or small whiteboards that can be used on a web camera. Although there are differences according to the development level of educational institutions, university institutions which

are structured as the continuation of traditional formal education on campuses and their administrators in fact have not contributed much to the academics who have been in need of training and equipment support for distance education. The result is the expansion of traditional teaching and learning processes by using technological innovations without changing the basic education model. In this context, technology functions as an apparatus that provides access to large databases that are “screwed” into old teaching methods (Gumpert & Chun, 1999).

It would be appropriate to end the explanations on distance education applications, which are suitable for the context of this study and addressed in a limited way for the purpose of study, by mentioning a popular conceptualization about the effects of Covid-19 on education and the instant solutions produced for the continuation of education. This conceptualization effort that we encountered as Emergency Remote Education (ERE) seems to be derived from the necessity that the achievements of aforementioned distance education should not be compared to the emergency solution methods of this extraordinary situation (Bozkurt & Sharma, 2020; Bond, 2020). With this aspect, it exactly defines the situation of the participants of this research. However, the faculty members who are the participants of this study are academics whose fields of expertise are not distance education and who know/describe the online education they give on the Internet as distance education. Therefore, the concept of Emergency Remote Education was not brought up in the interviews with them, and the definition of distance education was used.

METHOD

Purpose of the Research

Distance education, which was previously used by a small number of universities in our country, has turned into a teaching method that all universities have had to implement due to the Covid-19 pandemic. The purpose of this research is to identify whether the faculty members working in formal education, who were not involved in distance education before, have experienced a sense of work alienation in this process, and, if they have, it is aimed to determine the scope of the alienation and its properties.

Research Method

The study was designed with phenomenology, which is one of the qualitative research methods. Phenomenology is one of the antipositivist approaches such as ethnomethodology and symbolic interaction, and it began with Husserl in the 1900s as a result of giving importance to qualitative methods rather than quantity (Erdogan, 2014). Husserl tried to show how to reveal the essence from the existent. Therefore, essence and reality are different from each other. In order to reach the area of the essence, the existing reality is taken into brackets (epoche) (Mengusoglu, 1992). This means that the researcher acts by putting his feelings, thoughts and prejudices about the phenomenon he is interviewing about in parentheses (Creswell, 2015).

“The main purpose of qualitative research is to focus on the experiences and perspectives of the participants and to reveal their perceptions and experiences” (Tekindal & Arsu, 2020). Phenomenology focuses on the phenomena that we are aware of but about which we cannot reach a detailed conclusion (Yildirim & Simsek, 2011). For this reason, efforts are made in the interviews for the participants to tell their experiences and stories as they are (Gurbuz & Sahin, 2015).

Based on these, the experiences of the faculty members in the distance education process during the Covid-19 pandemic and the question of whether distance education has an effect on alienation were found suitable to be examined using the phenomenological method, and it was aimed to reveal their perceptions and experiences in depth with the semi-structured interview. Thus, each participant was able to convey their personal experiences about alienation in the distance education process in detail.

Population of the Research

All faculty members at state universities that provide distance education during the Covid-19 pandemic in Turkiye constitute the population of the research. The target population of the research was determined as the active Communication Faculties.

Sample of the Research

While Polkinghorne stated that the number of participants in phenomenological studies could be between 5-25 (Creswell, 2015), Wilson stated that the number of participants could vary between 6 and 20, but there was no rigid rule (Tekindal & Arsu, 2020). In this study, first, all faculty members working in communication faculties of state universities in Türkiye were determined and then 4 assistant professors, 4 associate professors and 4 professors were selected by random sampling method. Universities in 7 geographical regions of Türkiye were taken into consideration while making the selections. In order to prevent the identity of the participants from being disclosed, participants were named as code 1, code 2 ... code 12.

Scope and Limitations

The interviews were held on the days and times determined between 10.06.2021 and 14.07.2021.

Data Collection and Analysis

The first data collection tool that comes to mind in phenomenological research is the interview. Interviewing has advantages (interaction, flexibility, probing with probes) to reveal the experiences of the cases (Yildirim & Simsek, 2011). Interviews with academics were conducted through Google Meet and questions were asked to faculty members in accordance with the semi-structured interview technique. Before these interviews were conducted, the selected questions were tested on a control group and necessary corrections were made. The interviews with each faculty member lasted for an hour on average.

In phenomenological research, the analysis of data is done in a reductionist order. According to the method developed by Moustakas, “a list of important phrases is developed. Next, the researcher finds statements about how individuals experience the subject and lists these important statements. It is then grouped into larger units of data called meaning units or themes” (Creswell, 2015). According to this method, first, all the interviews with the faculty members were transcribed and then the statements that were considered important in the first reading were noted. Similarities and differences were determined and interpreted with content analysis by reading the created new text again.

FINDINGS

We asked the participants the following questions:

1) Has your departure from your workplace due to the pandemic and the transition to a more isolated work environment made you think that you are alienated from your workplace? Also, has your contact and sharing with your colleagues decreased due to the pandemic? If your answer is yes, do you think this has effects on your academic productivity and sense of institutional belonging? How?

7 participants stated that they were adversely affected and 2 participants stated that they observed positive developments in various ways. 3 participants stated that they do not have a positive or negative opinion on this issue. Below are 3 examples selected from the answers given by our participants to this question.

Code 2: “(...)because it was like a ghost campus. (My) Contact with (my) colleagues decreased. We had difficulties in carrying out collective work. In this sense, we can say that we have become alienated”.

Code 9: “The lack of physical connection with the faculty affected me negatively. This situation also damaged (my) institutional belonging. Of course, there was no energy (previously) resulting from coming together with colleagues”.

Code 11: “Because I had the opportunity to conduct classes in different venues, it did not affect my productivity negatively. (Faculty) works were done online. We realized that it was more productive than our face-to-face meetings. We held our department and faculty meetings online. Frankly, I was also professionally satisfied. On the contrary, it had a positive impact”.

2) In your opinion, are students more active or passive in distance education than in face-to-face education? If you think that they are more passive and you see yourself only as a provider of information, do you think that this affects your job satisfaction? How?

While 10 of our participants gave a negative answer to the question, 1 participant gave a positive answer, and 1 participant did not comment. Below are selected examples from the answers given to this question.

Code 7: “(The students) can definitely be characterized as more passive. I have taught 5 people in classrooms of 60. These negativities affect my job satisfaction. A relationship developed between me and the laptop, a state of madness developed like I would help the laptop graduate. I used to love lecturing, but now it has turned into a torture”.

Code 11: “I noticed that students who lack self-confidence in the classroom are more comfortable online. I was more satisfied with the participation of students who were physically unable to attend the class. We had students with disabilities, students who worked professionally and followed the lessons with interest”.

3) If you are doing your lessons on video, does the limitation of being only a portrait and being unable to use your body language make you feel alienated from your job?

In response to the question, all of our participants stated that they felt alienated from work. Below are some examples of answers to this question.

Code 1: “I am also an active person when I teach. I can't use the board. We are like in the simulation world”.

Code 9: “Of course, this limitation was uncomfortable. There is no interaction like the one offered by the physical environment. Since the lessons are recorded, the teachers carefully choose and use their words”.

Code 12: “Distance education made me feel very free, my workload has decreased. If there are no students, I turn off the screen. This, too, is freedom. There is a technological limitation that alienates us and hangs over the teacher”.

4) Do you think that the lack of control over the system in distance education (the teaching of the lesson, the exams, etc.) affects your motivation in lecturing? If yes, how?

In response to the question, while 9 of our participants stated it affected them negatively, 3 of them stated that they thought it had a positive effect. Below are some examples of answers to this question.

Code 3: “I spend 2 hours typing questions (into the online system) for a test. Instead, let the student write 100 pages and I will read it”.

Code 6: “Security cannot be ensured in the exams.. They are searching for answers on (their) tablets and phones. Students who were honest got low grades while others got high. We did not have the luxury to (make them fail). The pandemic was an excuse”.

Code 9: “Our system allows us to do a lot of things because it was set up long ago. We can test in a variety of ways whether it be quiz or etc. Therefore, I did not experience its distress”.

Code 12: “Of course it did. You are not in control of the system. What the student understands about the assignment is to cut and paste. The student has no reasoning and cannot improve himself. There are many things that distract the student. You get likes to the extent that you internalize the network culture. What I teach in class does not appeal to instant enjoyment. I'm telling things to brood over. My course is not followed (by students) on their own. The student does not pay attention to classes because he knows that he will not find a job. However, on the other hand, there is the Internet to enjoy. Values from technology surpassed the reality. You give meaning to yourself according to your representation there”.

5) Do you think there has been an increase or decrease in your scientific research since your transition to distance education due to the pandemic?

While 8 of our participants stated that it had a negative effect, 2 of them stated that it had a positive effect. The other 2 participants did not comment on whether it had a positive or negative effect. Academics stated

that they could not do library research due to restrictions, and that they could not do academic research because it takes a long time to prepare courses in online education, and there was even a decline in their research. Academicians who have no dependents stated that they spend more time on research and spend their time more productively. Below are some examples of answers to this question.

Code 5: “My scientific studies decreased because I spent a lot of time preparing for the lesson”.

Code 7: “This period was my most productive academic year. I have no children, and as I have no one to look after, the time is all mine”.

6) Has there been a change in your working hours and free time since you started distance education? If so, how?

In response to the question, 6 participants stated that the identity of an academician is not suitable for separating work and leisure time. 3 of them stated that there was a change and the other 3 said that there was no change. Below are some examples of answers to this question.

Code 4: “Even 24 hours is not enough in the distance education system. The shifts are never ending. The message sent from the platforms, the messages from the administrators, the weekend messages did not end. The rules of the working culture need to be established”.

Code 11: “Online education has increased the workload. There have even been times when I rehearsed before (the class). The process of preparing for the lesson doubled. Of course I got used to it later on”.

7) Have you had any problems in allocating time to your studies due to domestic activities with the Covid-19 pandemic?

9 of our participants stated that they experienced changes in different ways. While 2 participants did not express their opinion on this issue, 1 participant stated that he did not experience any changes. Below are some examples of answers to this question.

Code 4: “Although it is not so intense, one runs out of energy to spare time for hobbies under the bombardment of technology. There is no room for hobbies due to concerns about health and the future. I think (those who claim otherwise) they are pretending”.

Code 12: “I had been experiencing this even before the pandemic. I am a subject who was socialized in the 70s. What was in that time? A Skilled woman.. Roles are already being imposed on you. I see myself as a hypocrite, a three-faced (person). You constantly experience role conflict. Not being able to leave the house has created some opportunity. Women academics have clung more tightly to their domestic roles”.

8) Has it helped you to participate in activities (online certificate, online theater, online museum, etc.) that will contribute to your hobbies and the development of your creativity, since most of your time is spent at home?

While 7 of the participants claimed that the situation caused a differentiation in their social activities, 3 of them stated that there was no change and 2 of them stated that they did not have any perception in this regard. Below are some examples of answers to this question.

Code 6: “I have subscribed to 2 platforms. I watch movies. Although I was invited to many events, I did not attend. Because the distinction between the real and the virtual has disappeared.”

Code 7: “I have had a lot of online friends that I have not met in person”.

Code 11: “I have learned a lot from free online trainings. I even moved the (physical) exercise online. I even looked at cooking videos”.

9) Do you think the contents of the courses you teach are suitable for online education?

7 of the participants stated that their courses are not suitable for online education. 4 of them stated they are suitable, and 1 participant stated that it may change according to the requirements of their courses. Most of the participants stated that the applied courses are not suitable for online education and that online education does not cause any problems in terms of theoretical courses. Below are some examples of answers to this question.

Code 8: “(For) some lessons yes, some no. It is also illegal to give the book as a pdf. Powerpoint has become the alternative. I usually tried to upload articles. It was easier to invite guests to the lecture”.

Code 9: “Some of the courses I teach are theoretical, some are applied courses. I terminated all my applied classes”.

10) Would you approve of the idea that a distance education student in your field can be taught as effectively as in formal education?

All but 1 of the participants stated that they were of the opinion that online education could not reach the quality of formal education. Below are some examples of answers to this question.

Code 6: “I disagree. The student wants to be in school, they graduate with education that lacks these (opportunities) in online education. The concept of university, however, is not this. It is campus life, sharing, self-development”.

Code 7: “They memorized, learned theories and concepts, but the discussion part was missing”.

Code 11: “They were able to get the same quality of education. My friends at the faculty also made great effort in this regard”.

11) Do you think you have sufficient training and experience in preparing materials and producing digital content for distance education?

Half of the participants said that they were competent in this regard, and the other half said that they were not, but it can be concluded from their expressions that even those who said that they were competent enough stated that they needed a training. Below are some examples of answers to this question.

Code 7: “Unfortunately, I do not think so, but our university has opened a training program for us. How will we use this system? How will we create online materials? But this new situation has turned into something we have to spend incredible time with. It has been impossible in our (daily) pace of life”.

Code 9: “Our system is very advanced. However, I think that pedagogical training should be given about this”.

12) Does the new situation (the pandemic period) make you think that you are not in control during the assessment and evaluation phase?

7 of the participants stated that they thought they were not. While 1 participant stated that he was able to maintain his control, 3 participants said that they did not have a clear opinion. Below are some examples of answers to this question.

Code 2: “Yes, this is the point where we have the most trouble. This is the most flawed part of distance education”.

Code 3: “I think students cheat in the exams. I do not believe that it is a healthy assessment”.

Code 5: “I think things have completely got out of my control. According to a formal letter we received, we were asked not to do too many tests. Even if (a student) cheats, we have to accept it as true”.

13) Do you think you need outside help in preparing course content in the new situation (the pandemic period)?

While 10 of our participants thought that they needed such support, 1 of our participants stated that they did not need support, and 1 of our participants did not make a remark on this issue. Below are some examples of answers to this question.

Code 5: “We cooperated with the instructors in the school. By teaching each other different programs.”.

Code 11: “We received training from professionals in the Training of Educators and we benefited a lot from it”.

Code 12: “My course content is what is in my head. If they had told me to prepare a visual, I would have prepared a Power Point (presentation)”.

14) Do you agree with the idea that distance education will continue for a longer period of time and with a larger scope in higher education?

To this question, 7 of our participants answered yes and 5 answered no. Below are some examples of answers to this question.

Code 8: “I think it will not work. I think it is a very suitable format for the sector. It simplifies some things. There may be hybrid models. It may be suitable in more niche areas, in areas where there is a shortage of teachers. (The whole higher education system) should not be like this.”

Code 12: “I totally agree. The control of education policies will move out of nation states and become global. Just as there have been global marriages in the field of economy, there will be similar ones in the field of education. The Bologna process is an example of this. If so, will there be quality? Education has lost ties with the field of employment”.

15) Do you think that your institution provides the necessary and sufficient economic and technical support to give distance education courses? What is your assessment in terms of its relevance to method and quality?

8 of the participants stated that support was provided and 4 of them stated that it was not provided. Below are some examples of answers to this question.

Code 4: “No, I wish they had asked if I have a computer”.

Code 8: “I think there is no support. Especially technologically. One laptop equals one salary. For the first 6 months, we could not teach via our own system”.

16) Do you think you are a good digital media literate?

9 of the participants answered yes to the question and 3 answered no.

17) Has there been any difference in your determining the schedule and content in the teaching process? Have you encountered problems in practice different than in formal education?

While 7 of the participants answered yes and 3 of them answered no to the question, 2 participants did not express an opinion. Below are some examples of answers to this question.

Code 2: “With the effect of the current socio-political climate, I had to be more careful with my sentences in terms of the contents of the recorded courses. I could not talk about everything like in the classroom environment. I think we are behind in terms of academic freedom. I think that online education has a serious place in the surveillance society discussions. I think that the panopticon system also works in the meantime”.

Code 7: “There is a thing called copyright. Due to the conjuncture in Turkiye, I gave lectures by excluding some subjects”.

Code 9: “For example, while I was showing an average of 100 photos in photography class, I had to limit it to 3 in the online (class). I was doing the lesson in a different atmosphere in the movie theater. Here, (however) on the screen...”.

18) Do you agree with the statement that even a very confident instructor is a little nervous when it is time for class? Has the distance education application you have faced affect or contribute to your assessment on this subject?

While 9 of the participants stated that it had an impact or contribution in response to the question, 3 participants did not make a remark. Below are some examples of answers to this question.

Code 9: “No matter how many years of experience you have, there is excitement and it actually feeds you. Unfortunately, this excitement is not available in online education”.

Code 12: “I felt so worthless in distance education”.

19) How would you describe yourself in terms of morale, motivation and job satisfaction (better / worse) when you give online education compared to traditional (formal) education? Are there any reasons you can identify?

In response to the question, while 11 of our participants stated that they felt worse, 1 participant did not express an opinion.

Code 1: “I feel worse. I think that efficiency, interaction and sincerity are missing. The most valuable form of communication is face-to-face. Even as communication technology improves, lessons will be best (when) face-to-face”.

Code 5: “I do not feel very motivated emotionally”.

Code 7: “My performance dropped by 50%. Worse in terms of job satisfaction. It was good only in terms of academic publications”.

DISCUSSION AND CONCLUSION

Some of the questions used in the research were designed to get clues about how sincere and consistent the answers of the participants were. This was also seen as useful in terms of questioning the existence of a meaningful relationship between the perceptions and experiences of the participants. For example, participant number 11 maintained his positive attitude about the existence and contributions of distance education applications in almost all of his answers.

Most of the participants stated that they were adversely affected by talking about the decrease in communication with their colleagues and institutions during the pandemic period. The answers to the questions about how these effects occur can be summarized as follows: It was observed that female academicians mentioned the changes in interest brought about by not being able to leave the house due to restrictions, which indicates a significant increase in housework and women's roles. For example, they stated that they had problems in accessing research materials because they could not go to the institution and library due to the lockdown. It has been determined that there is a tendency to watch television and participate in online activities under these circumstances. In addition, by mentioning the difficulty of a clear separation between work and leisure time as a result of their academic profession, they stated that the changes in the use of leisure time do not mean much to them.

Except for 2 of the participants, all of them think that students who participate in online education are more passive. This indicates a serious lack of knowledge and preparation regarding the design of online courses. In fact, this situation may be interpreted as the fact that the participating faculty members are not aware of the problems and the needs because they do not have sufficient knowledge and experience in distance education. Regarding this issue, when the participants were asked whether the quality of formal education could be achieved through distance education, all but one responded that the quality of formal education could not be achieved with distance education. This interpretation, which can be accepted as a coherent summary of the answers given to the previous questions, seems as a sign of serious lack of knowledge and preparation of the participating faculty members in the field of distance education. Of course, their thoughts and attitudes about the potential threat of distance education to the traditional education system and its possible consequences should also be taken into account in this perspective.

The participants, who believed that face-to-face communication with students was multi-channel and therefore they were deprived of a high level of impact without it, gave negative answers to the question prepared on this subject. The opinion of one of the participants (C12) that the online system makes him feel more free, and the opinion of another participant (C11) that students with low self-confidence are more participatory and productive in online education were significant findings. Again regarding this issue, the motivational effects of the participants' lack of control over the system were questioned. The participants stated that this situation led to low motivation by a wide margin and stated that they had to do extra work that was not required in formal education. They stated they were of the opinion that the assessment and evaluation was ineffective due to reasons such as the inability to ensure the security of the exam and the inability to prevent the copy-paste incidents in cases where assessment is made with homework. When it was questioned whether they made changes in the education program and content due to the necessity of transitioning to distance education,

the participants stated that they had to make the necessary changes. A remarkable point in the answers given is that the faculty members stated they did not feel free in their recorded lessons as they did in traditional classroom environments, and that they felt that they were under observation. It was seen that this issue was also mentioned in the answers given to other questions. In addition, it is observed that there were copyright concerns in the use of course material, due to the fact that the course was recorded and the limits of publicity were not known by the faculty member. In the answers to the question about the suitability of the courses conducted by the participating academicians for online education the opinion that the applied courses were not suitable for distance education emerged prominently. The answers of the participants are significant in terms of showing the relationship between quality and conformity in this study, which is limited to faculty members of communication faculties. It seems obvious that the issue of the functionality of the solution methods and techniques which are monist or target the general in the university education environment, where there are a wide variety of content and teaching requirements, should be handled rigorously.

The question about their perceptions of competence in preparing materials for distance education and producing digital content was answered as yes and no equally. However, even the participants who thought they were competent stated in their answers to other related questions that they needed support and training.

When asked about whether distance education will expand and continue, it is seen that the participants think this development will continue with a small difference. However, there is no observed belief that distance education can gain a prevalence that can eliminate the traditional education system. Instead, it is seen that the development of hybrid models and distance education can be effective and useful in niche areas.

In addition to the faculty members who say that they feel “worthless” in the online course platform, there clearly exists a participant group who thinks that distance education is far from meeting the excitement and satisfaction of traditional education. In this context, when the participant faculty members were asked to make a conclusion based on comparison, all of them expressed themselves as less productive and unhappy, except for one participant who did not express an opinion.

In this study, alienation in academic staff giving online education during the pandemic period was investigated based on Melvin Seeman’s concept of alienation. Considering the findings of the research, the following can be concluded according to Seeman’s distinction:

Due to the transition to distance education during Covid-19 pandemic, there have been problems such as lack of control of the academicians over the distance education system, changes in issues such as exams, grading and the style of teaching in distance education. The academics felt lonely in the problems they faced due to lack of in-service training in distance education. There was insufficient technical support and academics were not consulted about distance education. Furthermore, academicians who could no longer enjoy the classroom atmosphere had difficulty in communicating with their students and they were not able to teach as effectively in distance education as they did in face-to-face classes. All of these problems and issues are thought to be among the factors that cause the feeling of powerlessness in academics.

In distance education during the pandemic, there has been no active teaching as in face-to-face education and the academicians were only the provider of information and the students were passive recipients. The feedback on lesson comprehension was insufficient and there was lack of supervision in the exams made by the academicians, and cheating in the exam was easy to do but difficult to identify. Because of such problems and the like, academics cannot make sense of their work in distance education and become alienated from their jobs.

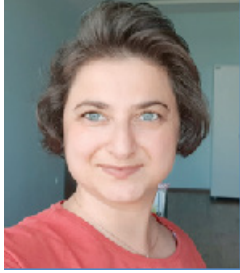
The uncertainty about when distance education will end, how lessons will be taught from now on and whether distance education will continue after the pandemic makes it difficult for academics to make plans for the future.

Due to the flexible working hours that come with distance education, academics have not had the opportunity to meet with their colleagues as they mostly work from home. Meetings were conducted remotely. With distance education, some ongoing rituals among colleagues have been interrupted.

According to the results of the research, although there is a prevalent view that distance education cannot replace face-to-face education, it is possible that hybrid models can be developed and distance education can continue in niche areas. For this reason, if this subject is researched in different disciplines and in different fields, there can be conclusions about which education will be face-to-face, hybrid or distance.

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REFERENCES

- Alparslan, A. M., Polatci, S., & Yastioglu, S. (2021). Covid-19 pandemisinin ve psikolojik dayanikliligin akademisyenlige yabancilasmaya etkisi uzerine bir arastirma [Alienation to academicianship during the covid-19 pandemic]. *Mehmet Akif Ersoy Universitesi Iktisadi ve Idari Bilimler Fakultesi Dergisi*, 8(1), 312-338. doi: 10.30798/makuiibf.805133.
- Andrews, T., & Tynan, B. (2012). Distance learners: connected, mobile and resourceful individuals. *Australasian Journal of Educational Tecnology*, 28(4), 565-579. Retrieved from <https://ajet.org.au/index.php/AJET/article/view/828>
- Aron, R. (1989). *Sosyolojik dusuncenin evreleri [Stages of sociological thinking]* Ankara: Bilgi.

- Arslan, F. P., & Olpak, M. A. (2020). Bilim emegi ve bilim emekcileri [On scientific labour and labourers of science]. *Madde Diyalektik ve Toplum Dergisi*, 3(4), 364-369. Retrieved from <http://bilimveyaydinlanma.org/bilim-emegi-ve-bilim-emekcileri/>.
- Aydin, E., & Ozeren, E. (2019). Akademide ise yabancilasma olgusu: arastirma gorevlileri uzerine nitel bir alan calismasi [The Phenomenon of work alienation in academia: a qualitative field study on research assistants]. *Uluslararası İktisadi ve İdari İncelemeler Dergisi*, 12(22), 159-176. doi: 10.18092/ulikidince.518296.
- Balyer, A., & Gunduz, Y. (2010). Degisik ulkelerde ve Turkiye'de sanal universitenin gelismisi isleyisi ve sanal universite gercegi [Development, Academic Process and Reality of virtual university in some countries and Turkiye]. *Abant İzzet Baysal Üniversitesi Dergisi*, 10(2), 27-39. Retrieved from <https://dergipark.org.tr/tr/pub/aibuefd/issue/1499/18135>.
- Banas E. J., & Emory W. F. (1998). History and issues of distance learning, *Public Administration Quarterly*, 22(3), 365-383. Retrieved from <https://www.jstor.org/stable/40862326>.
- Beaudoin, M. (1990). The instructor's changing role in distance education, *The American Journal of Distance Education*, 4(2), 21-29. Retrieved from <https://www.researchgate.net/publication/247915280>.
- Bozkurt, A. (2017). Turkiye'de uzaktan egitimin dunu, bugunu ve yarini [The past, present and future of the distance education in Turkiye]. *Acikogretim Uygulamalari ve Arastirmalari Dergisi*, 3(2), 85-124. Retrieved from <https://dergipark.org.tr/tr/pub/auad/issue/34117/378446>.
- Coban, S. (2013). Egitimde BIT kullaniminda farkli modeller: sanal universite ve acik egitim kaynaklari uzerine bir inceleme [Alternative models in usage of information and communication technologies in education: a research on e-university and open education resources]. *Turkish Studies - International Periodical For The Languages, Literature and History of Turkish or Turkic*, 8(8), 399-415. Retrieved from https://turkishstudies.net/turkishstudies?mod=makale_tr_ozet&makale_id=16835.
- Creswell, J. W. (2015). *Nitel arastirma yontemleri [Qualitative research methods]* Ankara: Siyasal.
- Demir, Z. (2018). Karl Marx'in bakis acisinden kapitalist toplumda yabancilasma ve sonuclari [Alienation in capitalist society from the viewpoint of Karl Marx]. *Abant Kulturel Arastirmalar Dergisi*, 3(5), 63-74. Retrieved from <https://dergipark.org.tr/tr/pub/akader/issue/36855/406285>
- Durkheim, E. (1995). *Toplumbilimsel yontemin kurallari [Rules of sociological method]* Istanbul: Engin.
- Erdogan, I. (2014). *Medya, teori ve arastirmalari [Media, theory and research]* Ankara: Erk.
- Fuchs, C. (2015). *Dijital emek ve Karl Marx [Digital labor and Karl Marx]* Ankara: Notabene.
- Gumport P. J., & Chun, M. (1999). Technology and higher education: opportunities and challenges for the new era, national center for postsecondary improvement, Retrieved May 09, 2021 from http://web.stanford.edu/group/ncpi/documents/pdfs/1-02_techhighered.pdf.
- Gurbuz, S., & Sahin, F. (2015). *Sosyal bilimlerde arastirma yontemleri [Research methods in social sciences]* Ankara: Seckin.
- Halacoglu, B. (2008). Universitelerde akademik personelin mesleki yabancilasma duzeylerinin cok boyutlu incelenmesi, Istanbul ili ornegi [The multi-dimensional examination of the level of professional alienation of the university academic staff (Istanbul province- case study)]. (Master's dissertation). Yeditepe University Graduate School of Social Sciences, Dissertation ID: 240260.
- Karasar, S. (2004). Egitimde yeni iletisim teknolojileri-internet ve sanal yuksek egitim [New communication technologies in education-internet and virtual higher education]. *The Turkish Online Journal of Educational Technology*, 3(4), 1303-6521. Retrieved from <http://openaccess.maltepe.edu.tr/xmlui/handle/20.500.12415/4936>
- Kirman, T., & Atak, H. (2020). Yabancilasma: kavramsal ve kuramsal bir degerlendirme [Alienation: a conceptual and theoretical evaluation]. *Kirikkale Üniversitesi Sosyal Bilimler Dergisi*, 10(2), 279-295. Retrieved from <https://dergipark.org.tr/tr/pub/kusbd/issue/56190/673811>
- Kocadas, K. A. (2020). Teknolojik yeniliklerin ise yabancilasma uzerine etkileri [The effects of technological innovations on job alienation]. *Sosyolojik Dusun Dergisi*, 5(2), 80-92. doi: 10.37991/sosdus.826584.

- Kongar, E. (1995). *Toplumsal degisme kuramlari ve Turkiye gercegi* [Social change theories and the reality of Turkiye] Istanbul: Remzi.
- Laaser, W., & Toloza, E.A. (2017). The changing role of educational video in higher distance education, *International Review of Research in Open and Distributed Learning*, 18(2), 264-276. doi: 10.19173/irrodl.v18i2.3067.
- Marcuse, H. (1975). *Tek boyutlu insan* [One dimensional man] Istanbul: May.
- Marks, K. (2003). *Kapital 1* [Capital: Volume 1] Ankara: Eris.
- Marks, K. (2013). *1844 el yazmalari* [Manuscripts of 1844] Istanbul: Birikim.
- Mengusoglu, T. (1992). *Felsefeye giris* [Introduction of philosophy], Istanbul: Remzi.
- Miller, D., Coleman, J., Connolly, W., & Ryan, A. (1995). *Blackwell'in siyasal dusunce ansiklopedisi* [Blackwell's encyclopedia of political thought] Ankara: Umit Yayincilik.
- Ollman, B. (2008). *Yabancilasma, Marx'in kapitalist toplumdaki insan arayisi* [Alienation, Marx's search for man in capitalist society] Istanbul: Yordam.
- Ortas, I. (2004). Ogretim uyesi ya da bilim insani kimdir? [Who is a lecturer or scientist?]. *Pivolka Dergisi*, 3(12), 11-16. Retrieved from <https://www.yumpu.com/tr/document/view/13809699/ogretim-uyesi-ya-da-bilim-insan-kimdir-elyadal>.
- Schwartzman, S. (1994). Academics as a profession: what does it mean? does it matter? *Higher Education Policy*, 7(2), 24-26. doi: 10.1057/hep.1994.15.
- Tekin, O. A. (2012). *Yabancilasma ve bes faktor kisilik ozellikleri arasindaki iliskiler: Antalya Kemer'de 5 yildizli otel isletmeleri calisanlari uzerine bir uygulama*, [The relationships between five factors personality traits and alienation: An examination on five-star hotel employees in Kemer, Antalya]. (Doctoral dissertation). Akdeniz University Yayinlanmamis Doktora Lisans Tezi, *Antalya: Akdeniz Universitesi Graduate School of Social Sciences*, Dissertation ID: 312616.
- Tekindal, M., & Arsu, S. (2020). Nitel arastirma yontemi olarak fenomenolojik yaklasimin kapsam ve surecine yonelik bir derleme [Review on the scope and process of phenomenological approach as a qualitative research method]. *Ufku Otesi Bilim Dergisi*, 20(1), 153-182. Retrieved from <https://dergipark.org.tr/tr/pub/uobild/issue/58856/813813>.
- Tolan, B. (1996). *Toplum bilimlerine giris* [Introduction to social sciences] Ankara: Murat.
- Toplu, M., Gokcearslan, S. (2012). E-ogrenmenin gelismesi ve internetin egitim surecine yansimalari: Gazi Universitesi ornegi [Development of e-learning and reflections of the internet on the process of education: a case study at Gazi University]. *Turk Kutuphaneciligi*, 26(3), 501-535. Retrieved from <https://dergipark.org.tr/tr/pub/tk/issue/48846/622307>.
- Valentine, D. (2002). *Distance learning: promises, problems, and possibilities*, Retrieved May 01, 2021 from <https://www.westga.edu/~distance/ojdla/fall53/valentine53.html>
- World Health Organization - WHO (2021). *World Health Organization coronavirus disease dashboard*. Retrieved September 04, 2021 from <https://who.int/>.
- Yildirim, A., & Simsek, H. (2011). *Sosyal bilimlerde nitel arastirma yontemleri* [Research methods in social sciences] Ankara: Seckin.

EMERGENCY DISTANCE EDUCATION DURING THE COVID-19 PANDEMIC: A QUALITATIVE RESEARCH FROM A SPECIAL EDUCATION PERSPECTIVE

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ABSTRACT

It is a fact that the world was caught unprepared for the Covid-19 outbreak. Especially when the epidemic broke out in many countries, educational activities were suspended for a while, and then distance education was started. Since this process is the result of a sudden transition, it has been seen that it brings with it many difficulties. Among these difficulties, perhaps the most prominent was the situation of students who need special education and special education teachers. In this direction, the aim of the study is to determine the difficulties experienced by students with special needs and special education teachers in this process. This research was carried out within the framework of the qualitative method. Within the scope of the research, 20 special education teachers were reached, and their opinions were taken with a semi-structured interview form. The responses received were divided into codes and categories, which were analyzed by content analysis, one of the qualitative analysis methods. According to the findings, special education teachers stated that they had the most difficulty in communicating with their students while negating the distance education process. Accessibility problem was also stated as an important problem and the problems caused by low parental technology literacy were emphasized. Although special education teachers find positive justifications for ensuring that education somehow continues in the distance education process, they make several valuable suggestions for structuring the system more inclusive and for all potential users. Platforms for students who need special education in the distance education process can be designed to support topics such as content, interaction, socialization. The family can take a more active role in this process as a stakeholder. For this, family members can be motivated with the necessary prior information and demands full of expectations.

Keywords: Covid-19, emergency distance education, qualitative research, special education.

INTRODUCTION

It is expected that services or processes that are questionable to provide, even in ordinary times, will be more difficult in extraordinary circumstances. However, the differences of individuals who will receive these services are not unknown. Therefore, a system should be designed with all potential users in mind (Dinc, 2017). In this sense, meeting the needs of potential participants should be one of the most basic objectives. In addition, according to the World Health Organization (WHO) data, there are more than 1 billion individuals defined as “disabled” in the world, and unfortunately this number is increasing gradually (WHO, 2021). This makes it imperative to make a potential system or transition adaptable for everyone. On the other hand, this is a situation that can be supported pedagogically. Increasing the accessibility standards of the participants is a situation that can be associated with student achievement itself (Roberts & Crittenden, 2009) and serves the equal opportunity and pedagogical purposes of education. In the 21st century, we witness that education changes with the support of technology, gains new forms and educational processes are moved to online environments (Yilmaz and Celik, 2020). At this point, although technology supports education, the level of accessibility of online systems is not as high as the accessibility of face-to-face education (Sokolik, 2018). While the limitation of access to education and training activities carried out in online environments is the subject of research, even in situations where the normal flow of life takes place, even in situations that we can define as normal life; The epidemic period in the world has deepened the negativity of this situation. Due to the Covid-19 epidemic, face-to-face education was suspended in Turkiye as well as in the rest of the world. With the decision taken by the Ministry of National Education in Turkiye, educational activities were carried out remotely through some channels of the Turkish Radio and Television Corporation (TRT). In addition, students were able to follow their lessons asynchronously through the Education Information Network (EBA). However, since this situation was not efficient, the students’ own teachers taught the lessons synchronously through distance education. Since this process requires some technological equipment, it has been a disadvantage for many students who have access to face-to-face education. Besides students who are disadvantaged due to hardware deficiencies, all potential users are far from inclusive, as the resulting system is the result of an emergency action plan. In fact, students with disabilities are among the most disadvantaged groups in this process. While the process deepened the disadvantage of students with disabilities (Lee, 2020), remote activities also made the actions of special education teachers more difficult. In this study, the difficulties and problems faced by special education teachers and students during the pandemic process were discussed. It is expected that the study will guide students with special education needs and special education teachers in the planning of distance education and in the design of a distance education system.

DISTANCE EDUCATION DURING PANDEMIC PERIOD

The Covid-19 outbreak in the world has been effective in education, as in all areas of life, and caused significant changes. At this point, Turkiye has taken some measures. In March 2019, the Ministry of National Education (MEB) decided to suspend formal education within the scope of the Covid-19 struggle. In addition, in order to ensure continuity of education, the emergency distance education period has started. Therefore, the need to change education models has arisen (Eroglu & Kalayci, 2020).

With the decision taken by the Ministry of National Education in our country during the pandemic process, educational activities were first carried out remotely through some channels of the Radio and Television Corporation (TRT). In addition, students were able to follow their own lessons asynchronously through the Education Information Network (EBA). Developed by the Ministry of National Education in the country and created as an online education environment within the scope of the Fatih Project, EBA (Education Information Network) enables students to access all course contents via the internet (Kurtdele Fidan, Erbasan & Kolsuz, 2016). In this context, lessons were given at primary, secondary and high school levels from the EBA online education platform, which was actively implemented during the pandemic period. EBA has been accessed via internet addresses and Turkish Radio Television Corporation (TRT) channels. As a result, in the Covid-19 period, the distance education process was carried out through EBA and TRT EBA channels accessed on the internet.

With the Covid-19 process, the educational perspective and interpretation of education have changed (Bozkurt & Sharma, 2020). When the studies on the distance education process during the pandemic period are examined, it is seen that they deal with distance education with its positive and negative aspects (Karaca & Kelam 2020; Fidan, 2020; Basaran, Dogan, Karaoglu & Sahin, 2020). In this process, factors such as being the best solution, the lessons passed efficiently, the visuality of the lessons, the easy access of the resources, being economical, and learning at your own pace were evaluated as the positive aspects of the distance education carried out during the pandemic process. Factors such as technical problems, quick forgetting, limited interaction, problems experienced during the pandemic process, high number of students, low motivation were also evaluated as negative aspects of distance education carried out during the pandemic process (Inci Kuzu, 2020; Sarioglan, Altas & Sen, 2020; Genc, Engin & Yardim, 2020; Keskin & Kaya, 2020).

In addition to the negative aspects of distance education, there are cases where socialization with distance education is prevented, applied lessons are not effective enough, and the necessary support cannot be provided for students who cannot achieve self-learning (Kaya, 2002). In this context, special education services, which are provided in a difficult way even in the classroom for individuals who need special education, have become even more difficult with the distance education made mandatory by the pandemic process (Mengi & Alpdogan, 2020). The COVID-19 outbreak has revealed some of the challenges faced by students, such as equality issues. However, it can be said that this situation is more pronounced for disabled students (Kaden, 2020).

DISTANCE EDUCATION PROCESS IN SPECIAL EDUCATION

Independent survival of the individual is the main purpose of special education services. Recently, the need to benefit from technology has been mentioned to achieve this primary purpose (Cavkaytar, 2012). This situation should be evaluated holistically, not only in the form of the use of tools and equipment in the field of special education, but also by taking into account the characteristics of individuals with special needs (Coklar, Ergenekon, & Odabasi, 2019). During the pandemic period, some obstacles such as the distance education process and the inequality of opportunity for individuals with special needs have emerged (Sullivan, Hillaire, Larke & Reich, 2020). Some of these include facing various challenges such as migrating to an online learning environment during the COVID-19 pandemic, as well as equality issues for students, providing online teaching and providing special education services as outlined in student individual education plans (Smith, 2020). In fact, revealing the difficulties and obstacles in this forced transition process more clearly through qualitative studies can serve as a reference for the elimination of the problems. In this regard, it is highly likely that any unprepared emergency will further deepen the deprivation of persons with disabilities.

When the literature on the subject is examined, it is seen that the studies have gained an upward momentum in the last year due to the fact that the pandemic covers the last one-year period. Kurt & Kurtoglu Erden (2020) examined the impact of the pandemic on individuals with special needs, the services provided to these individuals, their families and special education teachers. The impact of the pandemic on individuals with special needs, the services provided to individuals with special needs during the pandemic, the reflections of the pandemic on the families of individuals with special needs, and the reflection of the pandemic on the society were emphasized. teachers of individuals with special needs. The results of the research show that the distance education process has an unexpected effect on all components. This situation is interpreted as a negative situation by the researchers. In addition, Hamilton, Kaufman, and Diliberti (2020) found that 42% of teachers had difficulty getting enough support and guidance to work with students with disabilities. As a result of these challenges, educators have expressed concern that students with disabilities may experience lack of progress due to a lack of much-needed special education services. In fact, all indicators show that there is a need for a study that will clearly express the difficulties experienced in this regard. Considering the fact that the emergency transition with the epidemic still risks our lives, it is an important task for researchers to use our experiences as those living with the epidemic to provide optimum conditions and accessibility for everyone.

PURPOSE OF THE RESEARCH

This research aims to examine the opinions of special education teachers on how the distance education processes of students with special needs take place during the pandemic period. For this purpose, answers were sought for the following sub-problems:

1. How are special education activities carried out in the distance education process?
2. What are the benefits / limitations of the distance education process in special education?
3. What are the suggestions for improving the distance education process in special education?

METHOD

In this section information on the study group of the research, the research model, data collection and analysis of the data were presented.

Research Model

This research was carried out within the framework of the qualitative method. A semi-structured interview form was used to determine the opinions of special education teachers on how the distance education processes of students with special needs take place during the pandemic period. It includes features such as expressing oneself to the person interviewed and obtaining in-depth information about the question (Buyukozturk, Cakmak, Akgun, Karadeniz, & Demirel, 2018).

Participants

The study group was determined as special education teachers working in schools affiliated to the Ministry of National Education in line with the purpose of the research. In this direction, 20 special education teachers working in the relevant schools and managing the process remotely were reached and the necessary contribution was made for the realization of the study. The provinces where the special education teachers participating in the research work are: Ankara, Izmir, Kars, Istanbul and Trabzon. In order to protect participant confidentiality while presenting the research data, the participating teachers were coded as P1, P2, P3 ... P20 in accordance with the order of the data obtained from the interviews. Other information about the participants is presented in Table 1.

Table 1. Information about the working group

Participant	Gender	Professional experience (year)	Educational diagnosis(s) received by the students he/she works with
P1	Female	0-5	Dyslexia
P2	Female	5-10	Hearing impairment
P3	Male	5-10	Down syndrome
P4	Male	10-15	Mild intellectual disability
P5	Female	15-20	Dyslexia
P6	Male	10-15	Visual disability
P7	Female	5-10	Autism spectrum disorder, hearing impairment
P8	Male	10-15	Autism spectrum disorder
P9	Female	10-15	Autism spectrum disorder
P10	Male	10-15	Down syndrome
P11	Male	5-10	Visual disability
P12	Female	5-10	Dyslexia

P13	Female	5-10	Autism spectrum disorder
P14	Female	10-15	Hearing impairment
P15	Male	10-15	Down syndrome
P16	Female	5-10	Autism spectrum disorder
P17	Male	5-10	Dyslexia
P18	Female	5-10	Mild intellectual disability
P19	Male	5-10	Down syndrome
P20	Female	10-15	Hearing impairment

Data Collection and Analysis

A “Semi-Structured Interview Form” was used to determine the opinions of special education teachers about how the distance education processes of students with special needs are carried out during the pandemic period. Semi-structured interview technique is preferred because it provides rich data and is flexible (Yildirim & Simsek, 2008). In the process of forming interview questions, first of all, the relevant literature was scanned and preliminary preparation was made for the study. Then, 10 interview questions suitable for the research were written, expert opinions were taken, and the questions were rearranged. Before the interview, the participants were clearly and unequivocally explained about the purpose of the research and how the study would be carried out. After the questions were created by the researchers by examining the literature, they were checked, and opinions were received from 2 experts working in the field of special education and 2 experts working in the field of distance education. In line with the opinions of the experts, the questioning styles were clarified and the sentences were finalized by adding some examples. Since it was the pandemic period, the interviews were conducted with an online interview form, not face-to-face. 20 special education teachers were interviewed.

In the analysis of the data, “content analysis”, one of the qualitative analysis methods, was used. Through content analysis, data is tried to be defined and facts that may be hidden in the data are tried to be revealed. Basically, the process is to bring together similar data within the framework of certain concepts and themes and to interpret them in a way that the reader can understand. Qualitative research data is analyzed in four stages. The first stage is the coding of the data, the second stage is the discovery of the themes, the third stage is the arrangement of the codes and themes, and the fourth stage is the identification and interpretation of the findings (Yildirim & Simsek, 2018). During the coding phase, the data were carefully read by the researcher and codes were created based on the concepts considered important within the scope of the purpose and questions of the research. In addition, consensus was taken into account in the coding of the data. Separate coding was done by the researchers and the themes were determined based on consensus after coding. After the themes were determined, the codes determined were grouped under separate themes by the researchers. Afterwards, the Reliability = $\text{Consensus} / (\text{Consensus} + \text{Disagreement}) \times 100$ formula (Miles & Huberman, 2019) was used and a consensus of 91% was achieved. The codes with disagreement were discussed by the researchers and found under the themes. In addition, some opinions of special education teachers are presented with the abbreviation “P” in the findings section. In order to reflect the views of the participants, direct quotations were included and different opinions, explanatoriness, relevance to the subject, diversity and extreme examples were taken into account in the selection of quotations (Unver, Talu-Bumen, & Basbay, 2010).

The Scale

It was stated that a semi-structured interview form was used, which was developed with the help of two field experts and aimed to enable us to gain comprehensive experience in the process. The 10 questions asked to special education teachers in this form are presented below:

1. What do you think about the distance education during Covid-19 pandemic?
2. How did you carry out education-training activities in the distance education service implemented during the Covid-19 pandemic?

3. What problems did you experience in the distance education service applied during Covid-19 pandemic?
4. How did you interact with your students in the distance education service implemented during the Covid-19 pandemic?
5. What did you pay attention to while preparing materials in the distance education service applied during the Covid-19 pandemic process?
6. How did you provide measurement and evaluation in the distance education service implemented during the Covid-19 pandemic?
7. Have you been able to do your classes regularly in the distance education system implemented during the Covid-19 pandemic? Technical glitch, lack of staff, etc. Have you had any difficulties?
8. What are the positive / negative aspects of the distance education service implemented during the Covid-19 pandemic?
9. What are your suggestions for improving the distance education service quality applied during the Covid-19 pandemic?
10. What should be considered in designing a distance education system? What needs should it meet? What should be the features of the system?

FINDINGS

How are Special Education Activities Conducted in the Distance Education Process?

In the first sub-problem of the study, “How Are Special Education Activities Conducted During the Distance Education Process?” The answer to the question was sought. Regarding this sub-problem, the opinions of special education teachers as a result of the content analysis; teaching activities in distance education, interaction in distance education, material preparation in distance education, and measurement and evaluation in distance education. Codes were obtained according to the opinions of special education teachers and they are expressed in the relevant tables. The distribution of the opinions was stated in the form of frequency (f) and examples of the opinions of special education teachers were given.

The findings of special education teachers regarding the theme of teaching activities in distance education are presented in Table 2. The theme of teaching activities in distance education; It consists of technology-based distance education tools and teacher-family collaboration sub-themes.

Table 2. Opinions of Special Education Teachers on Distance Education Activities

Theme	Sub-Themes	f
Teaching Activities in Distance Education	Technology-Based Distance Education Tools	13
	Teacher-Family Cooperation	10

When Table 2 was examined, it was found that regarding the theme of teaching activities in distance education, special education teachers mostly stated the sub-theme of Technology-Based Distance Education Tools (f=13). It was determined that the views (f=10) on the sub-theme of Teacher-Family Cooperation followed this.

“We continued to run meetings via Zoom. This is how I worked with children diagnosed with dyslexia” (P12, Technology Based Distance Education Tools).

“I am carrying out the activities I plan to do with my 7-year-old student with mild autism by telling his parents. I convey the weekly studies and games to be played to the parents. Parents provide me with feedback by doing what they can” (P9, Teacher-Family Cooperation).

The findings of special education teachers regarding the theme of interaction in distance education are presented in Table 3. Interaction theme in distance education; It consists of sub-themes through technological support and through parents.

Table 3. Opinions on Interaction in Distance Education in Special Education

Theme	Sub-Themes	f
Interaction in Distance Education	Via Technological Support	14
	Via Parents	8

When Table 3 was examined, it was found that regarding the interaction theme in distance education, special education teachers mostly expressed their opinions about the technological support sub-theme ($f = 14$). In addition, opinions were expressed regarding the interaction in distance education through parents ($f = 8$).

“We tried to get as much visual and aural feedback as possible in online education” (P14, Via Technological Support).

“I am trying to conduct academic studies by communicating with students with autism spectrum disorder and having communication problems during the distance education process through their families” (P7, via parents).

Findings of special education teachers regarding the theme of material preparation activities in distance education are presented in Table 4. The theme of material preparation activities in distance education; It consists of sub-themes that are enriched in technological terms, socio-economic level, pedagogically enriched content, and structured with parent support, depending on the special needs status.

Table 4. Opinions of Special Education Teachers Regarding the Activities of Material Preparation in Distance Education

Theme	Sub-Themes	f
Material Preparation Activities in Distance Education	Pedagogically Enriched Content	9
	According to Special Needs Status	4
	Configured with Parent Support	4
	Technologically enriched	3
	Socioeconomic Level	3

When Table 4 was examined, it was found that regarding the theme of material preparation activities in distance education, special education teachers expressed the most pedagogically enriched sub-theme ($f=9$). In addition, it was determined that the material preparation activities in distance education were carried out with the support of parents ($f=4$), according to the special needs status ($f=4$), technologically enriched ($f=3$) and social-economic level ($f=3$).

“I chose pre-school education materials that they enjoy spending time playing with special educational materials prepared for direct target behavior that I used in the lesson. At the same time, I gave homework by sending the online versions of the textbooks prepared according to the new program published this year. The family got out and worked with the child” (P6, Pedagogically Enriched Content).

“It was explained in simple understandable expressions at home as the parents would also tell.” (P9, Configured with Parent Support).

“Considering the special needs status of the individuals I work with, I chose materials that will provide the most efficient work” (P11, According to Special Needs Status).

“The materials prepared are suitable for the type and degree of the child’s special needs, suitable for the subject to be studied and the objectives aimed to be taught, economical in terms of time and material, having features that the family can easily use, appealing to as many sensory organs as possible, teaching or reinforcing their subjects. or I am careful to use applications from other sites” (P4, Technologically Enriched).

“We are trying to prepare material taking into account the income of parents. Our priority is the materials that will increase the interaction of the student to the lesson that will attract the attention of the student” (P2, Socioeconomic Level).

The findings of special education teachers regarding the theme of measurement and evaluation in the distance education process are presented in Table 5. Measurement and evaluation theme in distance education; It consists of performance, teacher-family cooperation, participation, not provided and observation according to special needs status.

Table 5. Opinions of Special Education Teachers on Measurement and Evaluation in The Distance Education Process

Theme	Sub-Themes	f
Measurement and Evaluation in the Distance Education Process	Performance	7
	Teacher-family cooperation	7
	According to Special Needs Status	2
	Participation	2
	not provided	2
	Observation	1

When Table 5 was examined, it was found that regarding the theme of measurement and evaluation in distance education, special education teachers mostly stated their views on performance (f=7) and teacher-family cooperation sub-theme. In addition to these, special education teachers also gave opinions on sub-themes according to special needs (f=2), participation (f=2), not provided (f=2) and observation (f=1).

“We do it in the form of questions and answers for our students who can express themselves. We cannot measure and evaluate for students who cannot speak in distance education”(P8, According to Special Needs Status).

“Since I work with students with Autism Spectrum disorder, I usually do hands-on work. In the studies, I make an assessment by observing whether the child shows the desired behavior or not and applying the necessary techniques ”(P10, Performance).

“Unlike face-to-face education, parents’ knowledge was used about the development of students by receiving parent support”(P2, Teacher-Family Cooperation).

What are the Benefits / Limitations of the Distance Education Process in Special Education?

In the second sub-problem of the study, “What are the benefits / limitations of the distance education process in special education?” The answer to the question was sought. Regarding this sub-problem, the opinions of special education teachers as a result of the content analysis; perceptions of distance education, problems experienced in distance education service, difficulties experienced in distance education service, negative aspects of distance education service and positive aspects of distance education service are gathered under themes. The opinions of special education teachers were coded to be represented by meaningful coding and expressed in the relevant tables. The distribution of the opinions was stated in the form of frequency (f) and examples of the opinions of special education teachers were given.

Findings regarding the theme of special education teachers’ perceptions about distance education in the distance education process are presented in Table 6. The theme of perceptions regarding distance education consists of positive, partially positive and negative sub-themes.

Table 6. Special Education Teachers’ Perceptions of Distance Education

Theme	Sub-Themes	f
Perceptions on Distance Education	Negative	12
	Partially Positive	6
	Positive	2

When Table 6 is examined, it was determined that special education teachers mostly expressed negative opinions regarding the theme of perceptions regarding distance education (f=12). In addition, they expressed their views on partially positive (f=6) and positive (f=2) sub-themes. Sample participant views regarding these sub-themes are presented below:

“I think it has a lot of benefit for students. But it is still useful for students not to stay away from the lesson. In distance education, it is tried to teach, not education” (P1, Positive).

“Although maximum efficiency cannot be achieved, I see every contribution that can be made on behalf of education and training activities positively in the period we are going through a compulsory process. I can say that the system should be developed a little more and more support should be provided to teachers, families and students” (P5, Partially Positive).

“I do not think it is a beneficial education process for special education students. Most of my students do not have the speaking skills. In this distance education process, great responsibility was left to the family. We teachers had to give responsibility to the family” (P8, Negative).

Findings related to the theme of special education teachers’ problems experienced in distance education service are presented in Table 7. The theme of the problems experienced in distance education service consists of communication, interaction, access, insufficient parent support, focus and usability sub-themes.

Table 7. Special Education Teachers’ Opinions on Problems Experienced in Distance Education Service

Theme	Sub-Themes	f
Problems in distance education service	Communication	15
	Access	6
	Insufficient Parent Support	4
	Focus	3
	Availability	2

When Table 7 is examined, it was found that regarding the theme of problems experienced in distance service, special education teachers mostly expressed their opinions about the communication sub-theme (f=15). In addition, it was revealed that they also experienced problems in access (f=6), insufficient parent support (f=4), focus (f=3), usability (f=2). Examples of participant opinions are presented below:

“We had difficulties in understanding the literacy activities of children diagnosed with dyslexia. There were confusion in the b-d, m-n corrections.” (P1, Communication).

“My student is very closed to communication. His expressive language is very weak. I think that I could not get enough efficiency from distance education studies due to these and similar reasons” (P7, Communication).

“While I had trouble concentrating even in face-to-face education with my Down syndrome student, online education became even more difficult. We received support from the family, but it was still an inefficient work” (P19, Focus).

“My students and parents had a lot of difficulty using size and zoom. I had to define the course from size and do it from whatsapp because none of them could enter the size” (P17, Availability).

“The children could not work efficiently with their parents in the home environment, they could not spare the necessary time for the special needs person because the parents also had other children” (P10, Insufficient Parent Support).

Findings related to the theme of special education teachers’ difficulties experienced in distance education service are presented in Table 8. It consists of technical problems, access barriers, family problems, inadequate computer use and no problem experienced.

Table 8. Special education teachers' difficulties experienced in distance education

Theme	Sub-themes	f
Problems Experienced in Distance Education	Technical problems	8
	Access barrier	5
	Family-related disruptions	4
	Insufficient computer use	3
	No problem	2

When Table 8 was examined, it was determined that special education teachers mostly expressed their opinions about the sub-theme of technical problems (f=8). In addition, they also gave opinions on the sub-themes of access barrier (f=5), family-related disruptions (f=4), insufficient computer use (f=3), and no problem (f=2). Sample participant views regarding these sub-themes are presented below:

“Most of the time, I have technical difficulties such as infrastructure problems. In such cases, I pay attention to use different online programs” (P17, Technical Problems).

“Yes, there were disconnections” (P2, Access Barrier).

“The education level of the family of the student with Down syndrome is also low. When financial difficulties were added, uninterrupted and regular education became impossible” (P15, Family Related).

“I had great difficulty in getting disabled people to participate fully. At the same time, this process has become quite difficult with people who do not know how to use new educational materials” (P10, Insufficient Computer Use).

Findings regarding the theme of special education teachers' perceived positive aspects of distance education are presented in Table 9. Positive aspects of distance education service; education sustainability, increased technology literacy and no positive aspect.

Table 9. Special education teachers' perceived positive aspects of distance education

Theme	Sub-themes	f
Perceived positive aspects of distance education	Sustainability	5
	No positive aspect	4
	Increasing student-family communication	1
	Increasing technology literacy	1

When Table 9 was examined, it was found that they mostly expressed their opinions regarding the theme of perceived positive aspects of distance education (f=5) with sustainability. In addition, they gave opinions on the sub-themes of increasing technology literacy, increasing student-family communication and no positive aspect. Sample participant views regarding these sub-themes are presented below:

“The beneficial aspect is that if the training cannot be done face to face, it has become an alternative for teaching the lessons” (P2, Sustainability).

“I see the positive effects on issues such as increasing the communication time of the student and the family, and making it more comfortable to gain daily life skills outside the school.” (P20, Student-family communication).

“The good thing is that families and children have learned to use technology” (P11, Technology literacy).

Findings regarding the theme of special education teachers' perceived negative aspects of distance education are presented in Table 10. Negative aspects of distance education service; It consists of sub-themes that distance education increases limitation and inequality for disabled people.

Table 10. Special education teachers' perceived negative aspects of distance education

Theme	Sub-themes	f
Perceived negative aspects of distance education	Limitation of distance education for the special needs	16
	Increasing inequality	1

When Table 10 was examined, it was found that regarding the theme of perceived negative aspects of distance education, they mostly expressed their views on the sub-theme of limitation of distance education for the special needs (f=16). In addition, an opinion was expressed regarding the sub-theme of increasing inequality (f=1). Sample participant views regarding these sub-themes are presented below:

“For our students, there can be nothing positive. These children have short-term attention skills and are used to one-to-one education with behavioral problems” (P8, Limitation of Distance Education for the Special Needs).

“Increased the inequality between children” (P4, Increasing Inequality).

What are the Suggestions for Improving the Distance Education Process in Special Education?

In the third sub-problem of the study, “What are the suggestions for improving the distance education process in special education?” The answer to the question was sought. Regarding this sub-problem, the opinions of special education teachers as a result of the content analysis; Suggestions for improving the quality of distance education services and issues to be considered in designing a distance education system are collected under themes. According to the opinions of special education teachers, the codes were obtained and expressed in the relevant tables. The distribution of the opinions was stated in the form of frequency (f) and examples of the opinions of special education teachers were given.

Findings regarding the theme of special education teachers' suggestions for improving the quality of distance education service are presented in Table 11. Suggestions for improving the quality of distance education services; It consists of the sub-themes of developing special distance education applications according to the disability group, developing technological infrastructure, developing technological infrastructure, increasing technology literacy, increasing accessibility, not applying distance education for disabled individuals, no opinion and individualized applications.

Table 11. Special education teachers' suggestions for improving the quality of distance education service

Theme	Sub-themes	f
Suggestions for improving the quality of distance education service	Developing special distance education applications according to the special needs group	5
	Developing technological infrastructure	4
	Increasing technology literacy	3
	Increasing accessibility	3
	Not applying distance education for special needs individuals	3
	No opinion	2
	Individualized applications	1

When Table 11 is examined, it is determined that they mostly expressed their opinions regarding the theme of suggestions for improving the quality of distance education service, regarding the sub-theme of developing

special distance education applications according to the special needs group (f=5). In addition, developing technological infrastructure (f=4), increasing technology literacy (f=3), increasing accessibility (f=3), not applying distance education for special needs individuals (f=3), no opinion (f=2) and individualized applications (f=1) also expressed their views on their sub-themes. Sample participant views regarding these sub-themes are presented below:

“The system should be arranged for special education students. It should be supported visually rather than just verbally. Sign language translation should be done for our hearing impaired students” (P7, Developing special distance education applications according to the special needs group).

“It may be that the students are taught one by one and they are counted as the number of lessons, because when a few people are in front of the camera, there are difficulties in listening to each other, listening to each other and due to the level difference.” (P10, Individualized applications).

“I can suggest increasing the technical capacities related to infrastructure, providing diversity for the activities that can be applied remotely, providing special privileges for students with special needs to get involved in society and socialize” (P9, Development of technological infrastructure).

“This process has to be completely eliminated. I think there is no other solution” (P1, distance education is not applied for special needs individuals)

Findings regarding the issues that special education teachers should pay attention to in designing the distance education system are presented in Table 12. Issues to be considered in the design of the distance education system; It consists of content enrichment, Individualized training, Usability, Technological infrastructure and Accessibility sub-themes according to the handicap status.

Table 12. The opinions of special education teachers on the issues should considered in designing the distance education system

Theme	Sub-themes	f
The opinions of special education teachers on the designing the distance education system	Enrichment of content	6
	Individualized training	6
	According to special needs status	4
	Usability	3
	Technological infrastructure	3
	Accessibility	3
	In-service training	1
	Comprehensiveness	1

When Table 12 is examined, it was determined that special education teachers mostly expressed their views on the theme of enrichment of content (f=6) and individualized training (f=6) regarding the theme of issues to be considered in designing a distance education system. In addition to these, according to special needs status (f=4), usability (f=3), technological infrastructure (f=3), accessibility (f=3), in-service training (f=1) and comprehensiveness (f=1). They also expressed their opinion on the matter. Sample participant views regarding these sub-themes are presented below:

“I think it is useless to concentrate on distance education especially for students with mental problems who need special education. In addition, deprivation can be eliminated with a sustainable technological infrastructure for orthopedically disabled people. Individualized flexible education processes should be created rather than populist and wholesale education plans” (P19, individualized training).

“Designed with special education students in mind. It should not be like the system used by a normal student. It should be supported with visual symbols” (P17, Enriching the content).

“First of all, everyone should be informed about new educational materials. It should be made in the most efficient way” (P2, In-service training).

DISCUSSIONS AND CONCLUSION

In this study, the difficulties experienced by students with special education needs and special education teachers with the transition to a distance education process with the effect of the pandemic were investigated. In this direction, an interview form was prepared in order to get the opinions of special education teachers and this form was delivered to the relevant persons electronically. Scientific light has been shed on the process by analyzing the collected data.

According to the results of the study, it can be said that the experiences of the teachers participating in the process are far from a positive situation. Because 12 participants evaluated the process negatively; 6 participants were partially positive and 2 participants were positive. This can be attributed to the emergency transition to unstructured distance education. In addition, the fact that special education students need more attention and contact may be another factor in the emergence of this result. This result is consistent with the outcomes of the study conducted by Pressley and Ha (2021), in which the self-efficacy and performance of teachers involved in online education were measured.

In addition, the necessity of technology and the full support of the family in this process is another important issue. Participating special education teachers stated that they carried out educational activities by taking advantage of technological opportunities and parent cooperation in this process. While 13 of the participants stated that they used technology-based tools such as EBA, Zoom and WhatsApp in this process; 10 opinions expressed that the process is managed in cooperation with parents by strengthening the communication network with parents. Cao and Li (2020) pointed out in their study that the transition to emergency distance education causes serious problems for families; stated that the responsibilities of family members increased during this period. In addition, Stenhoff, Pennington & Tapp (2020) emphasized the importance of families' participation in distance education in their study during the coronavirus period. It is seen that the most common difficulty in this process is communication. The communication problems experienced generally came from the participants working with the hearing impaired group students. In addition, participants working with students with speech impairments also expressed similar views.

In addition, the lack of interaction, such as the inability of the students to give the desired reactions on the screen, and the difficulties in the negotiation process, were frequently emphasized. Mengi and Alpdogan (2020) also stated that as a result of the opinions they received from special education teachers during the distance education process, the limited interaction and the short-term attention were due to the fact that the materials and assistive technologies used were not suitable for students with special needs. Therefore, in this study, the participants emphasize that the interaction cannot be achieved; Failure to use appropriate materials, assistive technology and interaction tools may have caused it.

Access is another challenge in this regard. The lack of internet infrastructure or technological deprivation of families are the most basic factors that make it difficult for students to access. Studies in the literature also point to technological and instrumental accessibility in this period. Mukuka, Shumba, and Mulenga (2021) emphasized in their study that they encountered insufficient accessibility during the epidemic period.

In addition, insufficient parent support is among the difficulties experienced in this process. The fact that parents, especially families with more than one child, cannot provide sufficient support to teachers stands out as a factor that makes the process difficult. Similarly, students' on-screen focus problems and usability levels of the technologies used are also the situations that make the process difficult. In a study, Tsibidaki (2021) stated that the responsibilities of parents increased extraordinarily during the epidemic and that parents showed much more anxiety symptoms compared to normal times.

When looking at the source of the interaction realized in this process, it is seen that technology plays an important role again. Technological applications and video conversations are the most common methods used to make the process interactive during this period. Again, the family factor comes to the fore here, and we see that communication and support with parents are used to ensure interaction. A study by Smidt and Jokonya (2021) affirmed the importance of using technology in the epidemic period.

One of the subjects where the opinions of the participants varied the most was the subject of measurement and evaluation. In the process, different measurement and evaluation methods were preferred, and the most frequently used measurement method was performance evaluation. It can be said that teacher-family and family-technology cooperation is also at the forefront in assessment and evaluation. In fact, it can be said that

technology and family are the cornerstones of this process. It can be claimed that the process is carried out with technology and family support in almost every subject. It can also be said that there are statements that do not measure and evaluate and are based on observation and participation. Also, Navas, Amor, Crespo, Wolowiec & Verdugo (2021) reported results in agreement with this inference in their study.

In another issue where the difficulties experienced in the process are examined, the participants stated that the most problems are caused by technical failures such as disconnections and the inadequacy of the vehicle used. This situation is followed by the lack of infrastructure and access difficulties due to financial difficulties. Problems arising from the social structure of the family, such as parents' not paying attention to the process and family problems, are among the difficulties of the process. As a matter of fact, as a result of the study conducted by Svalina and Ivic (2020) on students with special needs during the pandemic period, they found that the social conditions experienced by the child had a significant effect on learning methods supports the result of the study. In addition, families' low technology literacy and their inability to use the tools used in the process posed a separate problem. In order to solve this problem, according to Narvekar (2020), there should be a single type of instruction regarding how to provide education in the virtual education environment. Two participants reported that they did not experience any problems in the distance education process.

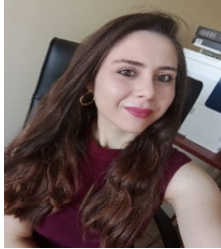
As a result of the examination of the positive and negative aspects of the process, it was found that the negative opinions that found the process mostly negative were dominant. It was observed that the limitations of distance education for special needs people were emphasized the most; it has been declared that distance education causes inequality of opportunity for students with disabilities. On the other hand, there is also a positive opinion stating that distance education ensures the sustainability of education, encourages disabled students to use technology, and gives them technology literacy. On how to increase the service quality of the process for persons with disabilities, the opinion of specialized implementation proposals regarding the special needs groups is dominant. There are also suggestions such as improving the technological infrastructure, providing low-cost internet services when necessary, organizing trainings to increase technology literacy. It is also remarkable that there are opinions stating that distance education will not be an education method for people with special needs.. As a result of the examination of the issues that need to be considered in the design of distance education applications for persons with special needs, the majority of opinions express that the content must be enriched, the system must allow individual training and support education according to the disability. In addition, usability, technological infrastructure and accessibility are among the variables declared in this regard. If the distance education process is made suitable for all special needs groups in the context of the mentioned suggestions, this process will be easy for them and they will be able to access resources easily. In this way, it can bring positive situations such as more active participation of students (Kalac, Telli & Eronal, 2020).

According to the findings of the research, it was deemed appropriate to emphasize the following recommendations:

- In order to improve perceptions about distance education, studies on distance education and its effectiveness can be increased.
- In the distance education process, more work can be carried out on separate and specialized technology-based applications for disabled individuals.
- The family can take a more active role in this process as a stakeholder. For this, family members can be motivated with the necessary prior information and demands full of expectations.
- Various situations can be employed for measurement and evaluation in the distance education process. Steps such as participation criteria can be taken to facilitate the process, especially for individuals with special needs who are already very tired in this process.
- In this process, it has been experienced once again how important the technological infrastructure is. In this sense, improving the technological infrastructure of cities can mean ensuring sustainability. In addition, lowering all connection and technological infrastructure costs to be offered can help to remove the accessibility barrier of the process.
- In this process, various studies can be carried out to increase the technology literacy of parents.
- Various scientific studies can be carried out to further develop teacher-family, family-student and teacher-student relations.

- In this process, individualized training preparations can be made for individuals with special education needs who show a better performance than their counterparts, even if they are in the same group.
- Platforms for students who need special education in the distance education process can be designed to support topics such as content, interaction, socialization. In addition, the usability of these platforms can be adjusted for students with special needs.

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REFERENCES

- Basaran, M., Dogan, E., Karaoglu, E., & Sahin, E. (2020). Koronavirus (Covid-19) Pandemi surecinin getirisi olan uzaktan egitimin etkililigi uzerine bir calisma. *Academia Egitim Arastirmalari Dergisi*, 5 (2), 368-397.
- Bozkurt, A., & Sharma, R. C. (2020), Emergency remote teaching in a time of global crisis due to corona virus pandemic. *Asian Journal of Distance Education*, 15(1), 1-6.
- Buyukozturk, S., Cakmak, E. K., Akgun, O. E., Karadeniz, S., & Demirel, F. (2018). *Egitimde bilimsel arastirma yontemleri* (25. baski). Ankara: Pegem Akademi.
- Cavkaytar, A. (2012). Ozel Egitimde Gereksinimi Olan Ogrenciler ve Ozel Egitim. I. Diken (Ed.), *Ozel egitime gereksinim duyan cocuklar ve ozel egitim*. Ankara: Pegem Akademi.
- Cohen, L., Manion, L., Morrison, K., & Morrison, K. R. B. (2007). *Content analysis and grounded theory. Research methods in education*. New York: Simultaneously Pub.
- Coklar, A., Ergenekon, Y., & Odabasi, H. F. (2019). Ozel Egitimde Teknoloji. F. Odabasi (Ed.), *Ozel egitim ve egitim teknolojisi*. Ankara: Pegem Akademi.
- Dinc, E. (2017). Web-based education and accessibility. *International Journal of Technology in Education and Science (IJTES)*, 1(1), 29-35.
- Dong, C., Cao, S., & Li, H. (2020). Young children's online learning during COVID-19 pandemic: Chinese parents' beliefs and attitudes. *Children and youth services review*, 118, 105440.
- Eroglu, F., & Kalayci, N. (2020). Universitelerdeki zorunlu ortak derslerden yabanci dil dersinin uzaktan egitim uygulamasinin degerlendirilmesi. *Turk Egitim Bilimleri Dergisi*, 18(1), 236-265.
- Fidan, M. (2020). Covid-19 belirsizliginde egitim: ilkokulda zorunlu uzaktan egitime iliskin ogretmen gorusleri. *Usak Universitesi Egitim Arastirmalari Dergisi*, 6(2), 24-43.
- Genc, S. Z., Engin, G., & Yardim, T. (2020). Pandemi (Covid-19) surecindeki uzaktan egitim uygulamalarina iliskin lisansustu ogrenci gorusleri, *Ataturk Universitesi Kazim Karabekir Egitim Fakultesi Dergisi*. 41, 134-158.
- Hamilton, LS, Kaufman, JH ve Diliberti, M. (2020). Bir pandemi boyunca ogretmek ve liderlik etmek: Amerikan egitimci panellerinden temel bulgular bahar 2020 COVID-19 anketleri. RAND.
- Inci Kuzu, C. (2020). Covid-19 pandemisi surecinde uygulanan ilkokul uzaktan egitim programi (eba tv) ile ilgili veli gorusleri. *Milli Egitim Dergisi*, 49(1). 505-527.
- Kaden, U. (2020). COVID-19 School closure-related changes to the professional life of a K–12 teacher. *Education Sciences*, 10(6), 165.
- Kalac, M. O., Telli, G., & Eronal, Y. (2020). *Covid-19 mucadelesi kapsaminda uzaktan egitim surecinde engelli ogrencilerin durumu sorunlar ve cozum onerileri*. Manisa: MCBU Rektörlük Basimevi
- Karaca, S., & Kelam, D. (2020). COVID-19 golgesinde uzaktan egitim hizmet kalitesinin incelenmesi. *Sivas Interdisipliner Turizm Arastirmalari Dergisi*, (5), 7-18.
- Keskin, M, Ozer Kaya, D. (2020). COVID-19 surecinde ogrencilerin web tabanlı uzaktan egitime yonelik geri bildirimlerinin degerlendirilmesi. *Izmir Katip Celebi Universitesi Saglik Bilimleri Fakultesi Dergisi*, 5(2), 59-67.
- Kurt, A., & Kurtoglu Erden, M. (2020). Koronavirus hastaligi 2019 surecinde ozel gereksinimli bireyler. *Milli Egitim Dergisi*, (49) 1. 1105-1119.
- Kurtdede Fidan, N., Erbasan, O., & Kolsuz, S. (2016). Sinif ogretmenlerinin Egitim Bilisim Agi'ndan (EBA) yararlanmaya iliskin gorusleri, *Journal of International Social Research*, 9(45), 626-637.
- LEE, J. (2020). Mental health effects of school closures during COVID-19. *The Lancet Child & Adolescent Health*, 4(6), 421.

- Mengi, A., & Alpdogan, Y. (2020). Covid-19 salgini surecinde ozel egitim ogrencilerinin uzaktan egitim sureclerine iliskin ogretmen goruslerinin incelenmesi. *Milli Egitim Dergisi*, 49(1), 413-437.
- Miles, M. B. ve Huberman, A. M. (2019). Genisletilmis bir kaynak: Nitel veri analizi. (Ceviri Ed.:S. Akbaba-Altun & A. Ersoy). Ankara: Pegem Akademi Yayinlari.
- Mukuka, A., Shumba, O., & Mulenga, H. M. (2021). Students' experiences with remote learning during the COVID-19 school closure: implications for mathematics education. *Heliyon*, 7(7), e07523.
- Narvekar, H. (2020). Educational concerns of children with disabilities during COVID-19 pandemic. *Indian Journal of Psychiatry*. 62(5), 603-604.
- Navas, P., Amor, A. M., Crespo, M., Wolowiec, Z., & Verdugo, M. A. (2021). Supports for people with intellectual and developmental disabilities during the COVID-19 pandemic from their own perspective. *Research in Developmental Disabilities*, 108, 103813.
- Pressley, T., & Ha, C. (2021). Teaching during a pandemic: united states teachers' self-efficacy during covid-19. *Teaching and Teacher Education*, 106, 103465.
- Roberts, J., & Crittenden, L. (2009). Accessible distance education 101. *Research in Higher Education Journal*, 4(1). 1-12.
- Sarioglan, A. B., Altas, R., & Sen, R. (2020). Uzaktan egitim surecinde fen bilimleri dersinde deney yapmaya iliskin ogretmen goruslerinin arastirilmesi. *Milli Egitim Dergisi*, 49(1), 371-394.
- Smith, A. (2020). Challenges and opportunities for teaching students with disabilities during the covid-19 pandemic. *International Journal of Multidisciplinary Perspectives in Higher Education*, 5(1), 167-173.
- Smidt, H. J., & Jokonya, O. (2021). The challenge of privacy and security when using technology to track people in times of COVID-19 pandemic. *Procedia Computer Science*, 181, 1018-1026.
- Sokolik, M. (2018). The Nexus of Accessibility and Pedagogy: What Every Online Instructional Designer Should Know. *TESL-EJ*, 21(4).
- Stenhoff, D. M., Pennington, R.C. & Tapp, M.C. (2020). Distance education support for students with autism spectrum disorder and complex needs during covid-19 and school closures. *Rural Special Education Quarterly*, 39(4), 211-219.
- Sullivan, F., Hillaire, G., Larke, L., & Reich, J. (2020). Using teacher moments during the COVID-19 pivot. *Journal of Technology and Teacher Education*, 28(2), 303-313.
- Svalina, V., & Ivic, V. (2020). Case study of a student with disabilities in a vocational school during the period of online virtual classes due to covid-19. *World Journal of Education*. 10(4). 115-123.
- Sahin, M. C. (2005). *Internet tabanlı uzaktan eğitimin etkililiği: Bir meta-analiz çalışması*. Yayınlanmamış Yüksek Lisans Tezi, Cukurova Üniversitesi, Adana.
- Tsibidaki, A. (2021). Anxiety, meaning in life, self-efficacy and resilience in families with one or more members with special educational needs and disability during COVID-19 pandemic in Greece. *Research in Developmental Disabilities*, 109, 103830.
- Unver, G., Talu-Bumen, N. ve Basbay, M. (2010). Ortaogretim alan ogretmenligi tezsiz yuksek lisans derslerine ogretim elemani bakisi: Ege Universitesi ornegi. *Egitim ve Bilim Dergisi*, 155(35), 63- 77.
- WHO (2021). *World report on disability*. Retrieved September 4, 2021 from <https://www.who.int/publications/i/item/9789241564182>.
- Yilmaz, M., Celik, E. (2020). Program gorsellestirme araciyla gerceklestirilen dijital oyuikleme etkinliklerinin yaratıcı problem cozme ve bilgisayar tutumuna etkisi. *Bayburt Egitim Fakultesi Dergisi*, 15(30), 458-481.

INVESTIGATING NURSING STUDENTS' SATISFACTION WITH THE QUALITY OF COURSES AND VIRTUAL LEARNING DURING THE COVID-19 PANDEMIC IN 2020-2021

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ABSTRACT

Education in medical sciences, including nursing, has encountered numerous challenges following the worldwide outbreak of coronavirus disease 2019 (COVID-19). Additionally, students' satisfaction with the methods of instruction can be accompanied by improved learning outcomes. This study aimed to investigate the nursing students' satisfaction with the quality of courses (SQC) and satisfaction with virtual learning (SVL) during the COVID-19 pandemic. This cross-sectional study was conducted at a nursing school (105 nursing students) in Tehran, Iran, in the first semester of 2020-2021. The individual characteristics questionnaire, the Course Experience Questionnaire (CEQ), and the e-Learning Satisfaction Questionnaire (e-LSQ) were used for data collection. More than 88% of the nursing students were satisfied with the quality of the courses. The level of SVL in 57.1% of them was moderate. Among the individual variables, only the academic semester was regarded as a predictor of SQC ($p=0.025$). There was no significant relationship between the dimensions and the total score of CEQ with students' academic achievement ($p<0.05$). Additionally, all the CEQ dimensions were significant predictors of the nursing students' SQC ($p<0.001$). Given the unknown time of eradicating COVID-19, it is necessary to adopt appropriate policies and perform proper planning to continue better nursing education and increase student satisfaction.

Keywords: COVID-19, education, learning, nursing, pandemic, satisfaction, students, virtual learning.

INTRODUCTION

The first reported outbreak of the novel severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) occurred in December 2019, and it continues to spread around the world. This condition led to the instability of many standard procedures worldwide, facing nations with considerable burdens in socioeconomic, healthcare, political, and educational domains (Chen et al., 2020). Considering the government instructions on the closures of higher education institutions and universities, medical and nursing schools worldwide, including Iran, encountered many challenges. However, given the unknown time of eradicating COVID-19 and the urgent need in healthcare systems for nursing graduates, education could not be postponed (Dewart, Corcoran, Thirsk, & Petrovic, 2020; Farsi, Sajadi, et al., 2021; Hayter & Jackson, 2020). These challenges are mainly due to the in-person, virtual, and hybrid learning courses (Hayter & Jackson, 2020).

Virtual learning (e-learning) refers to one type of planned learning wherein teaching and learning are typically performed in separate environments in which educators present course contents through learning management systems (LMS), multimedia resources, the Internet, and video conference. Video calls, video/audio conferencing, chats, and webinars; Zoom, Skype, Sky Room, Adobe Connect, Hangouts Meet, and LMS such as NAVID system (viz. an online platform for academic teaching and learning) in Iran are platforms that can be used (Alqahtani, Innab, & Bahari, 2021). Evidence also suggests that accelerated interactions between students and educators, reductions in travel costs (Bora & Ahmed, 2013), flexibility, diverse nature, and time-saving are the main benefits of virtual learning. Nevertheless, hardware and software problems, connectivity issues, financial burdens, privacy protection, technical difficulties and support, and a lack of face-to-face interactions are some of the challenges facing this type of learning (Hoq, 2020). Although cyberspace allows educators to communicate with students regardless of distances during the COVID-19 pandemic, network problems, inadequate knowledge, and no in-person communications are the drawbacks of virtual learning in times of this crisis (Arora & Srinivasan, 2020).

Medical sciences students, including nursing students, need to take clinical training courses in hospitals and medical centers to acquire the necessary skills (Phillips, Mathew, Aktan, & Catano, 2017). During the COVID-19 pandemic, educators can teach theoretical courses through distance learning and e-learning, such as the use of cyberspace and social networking platforms (Murphy, 2020). With the outbreak of this condition, some universities have also canceled clinical internships to minimize personal interactions to curb the spread of the disease. Contrastingly, others have not done so to provide clinical opportunities, improve clinical skills, facilitate students to gain more experience, help students graduate, compensate for medical staffing shortages, and provide clinical education, especially for senior students in healthcare environments (Zand S, Nejat N, Salehi omran E, & Izadi, 2020).

According to the university chancellor and organizational head decisions within the available facilities and infrastructure, teaching and learning processes have been shifted into virtual methods or a hybrid combination of in-person and virtual (viz. online and offline) methods through this pandemic. So now the main question addressed is, how satisfied are students with this type of education?

Teaching and learning based on students' satisfaction with the quality of the courses (SQC) are essential tasks of the higher education systems (Seifollahi & Eskandari, 2021). Academic satisfaction means a certain amount of positive feelings and attitudes in students towards their fields of study and their universities as an indicator for the performance improvement and success of such centers. In this regard, Hamdan et al. (2021) had reported that the levels of satisfaction in Jordanian undergraduate students during the COVID-19 pandemic were low (Hamdan et al., 2021). Kaur et al. (2020) showed a direct relationship between the education quality dimensions and satisfaction levels in graduate students in India (Kaur, Singh, & Garg, 2020). The researchers also found that 66.2% of nursing students in one of the nursing schools in Tehran, Iran, were satisfied with the quality of courses after the onset of the COVID-19 pandemic, despite the emergence of critical conditions and numerous burdens on educational systems.

Additionally, the level of satisfaction in 56.3% of the students with virtual learning was moderate. The nursing school used blended face-to-face education and virtual learning and continuing clinical internships in the wards wherein COVID-19 patients had not been hospitalized (Farsi, Aliyari, Ahmadi, Afaghi, & Sajadi, 2021). The researchers in an action research study attempted to identify and address the weaknesses

in the education system after the onset of the pandemic during different semesters. The most significant changes included utilizing virtual instead of face-to-face learning for theoretical courses, increasing the Internet speed, upgrading classroom equipment to make more and better use of online video/audio communications, developing chat rooms and webinars, and more coherent exploitation of offline LMS like the NAVID system. Instructors also tried to increase interactions between educators and students through a variety of online and offline methods. The regular presence of a physician and a psychologist in the school, increased access to personal protective equipment, and consistent decision-making by managers about time constraints and conditions were also other changes in the school.

Lastly, the student's level of SQC and satisfaction with the virtual learning (SVL) in the first semester of the 2020-2021 academic year were examined and reported in this study.

METHOD

This cross-sectional (descriptive-correlational) study was conducted in the first semester of 2020-2021.

Participants

Through the convenience sampling method, 105 nursing students were recruited in the study. The inclusion criteria were willingness to participate in the study and taking theoretical courses. The students with incomplete questionnaires were excluded.

The majority of the nursing students enrolled in this school lived in dormitories located in Tehran, Iran. The first semester of the 2020-2021 academic year began from September 5, 2020, to January 16, 2021. The students entered the university at various intervals during the course of the first four consecutive days to prevent congestion and allow for social distancing at the beginning of the semester. Before entering the students into the school, each one was examined by the physician. The students suspected of having COVID-19 were then isolated from others and tested using polymerase chain reaction in the quarantine room until the results were reported.

Moreover, the students' belongings were disinfected. These students had the experience of participating in in-person and virtual theoretical courses, clinical training in hospitals, and living in dormitories with adherence to health protocols in the second semester of 2019-2020. All the school facilities and classrooms were disinfected daily. All students and staff were also required to put on face masks and observe social distancing in all parts of the school and the dormitory. Nursing managers and educators also oversaw the proper implementation of the health protocols. Facemasks and surface disinfectants were given to the students. Also, separate locker rooms were dedicated to the students to change their internship uniforms. The students were additionally monitored daily for clinical signs and symptoms. Their body temperature was monitored daily. Furthermore, senior nursing students trained junior students on sanitation, adherence to health protocols, and provided updated information on COVID-19.

Following the third wave of COVID-19 in Iran in November, all in-person classes were canceled. At this time, virtual theoretical courses were presented through the online Sky Room platform. Some theoretical courses were additionally provided offline on the NAVID system. Thus, the educational content was developed by the educators as multimedia on the Microsoft PowerPoint software. The departments' managers checked the quality of the content.

Other teaching aids such as educational videos, audio files, and educational content in PDF format had been uploaded onto the NAVID system. Furthermore, in addition to online and offline education, the NAVID system, smartphones, short message services, emails, and other forms of telecommunication were utilized to keep in touch with the students. Although using the school network was free, students using their cellphone were subject to data surcharges. Finally, after completing the courses and following the reductions in the pandemic peak, the end-semester exams were held in person.

The Sample, their characteristics and their selection methods should be described in detail and justified.

Data Collection and Analysis

The individual characteristics questionnaire, Course Experience Questionnaire (CEQ) and e-Learning Satisfaction Questionnaire (e-LSQ) was used for data collection.

The data analysis was performed using the SPSS Statistics (ver.20) software. The Kolmogorov-Smirnov test was employed to check the normality of the data. In addition, descriptive (i.e., mean, standard deviation [SD], frequency, and percentage) and analytical (one-way analysis of variance [ANOVA], stepwise linear regression, Pearson correlation coefficient, independent-samples t-test, and Chi-square test) statistics were obtained. A linear regression model was used to predict the effects of the individual variables on the total score of the CEQ. Accordingly, the first variable was imported into the model based on the largest effect size in a stepwise manner. If other variables could significantly influence the dependent variable, they were further entered into the model in the following steps. The level of significance was set at $p = 0.05$. In addition to the significance levels, adjusted R-squared (R^2) was one of the regression analysis results. These findings suggested how much the independent variable had predicted the dependent one.

The Scale

The individual characteristics questionnaire was used for data collection. The questionnaire included age, gender, semester, previous-semester grade point average (GPA), cumulative GPA, level of education, the field of study, number of courses selected in the current semester, and accommodation.

The Course Experience Questionnaire (CEQ) was also used for data collection. The CEQ designed by Ramsden and Entwistle (1981) was used to assess the SQC. This questionnaire covered all the essential teaching and learning quality aspects that could affect students' academic success (Cheraghi & Mahjub, 2013). This 50-items questionnaire included six dimensions of teaching (items 1-15), curriculum goals and standards (items 16-19), the volume of lessons (items 20-24), teaching resources and materials (items 25-38), course evaluation (items 39-47), and satisfaction (items 48-50). The answers were on a five-point Likert scale (strongly agree, agree, neutral, disagree, strongly disagree) scored +100, +50, 0, -50, and -100, respectively. The maximum and minimum scores of this questionnaire were +4500 and -4500, respectively. Of note, items 1, 2, 4, 8, 9, 39, 40, 42, 46, and 47 were scored in reverse. The total score was also classified into low (less than -1500), satisfactory (between -1500 and +1500), and high (more than +1500). In this study, the total score of the questionnaire was considered as the overall students' SQC. The validity and reliability of this questionnaire had been previously confirmed with the Cronbach's alpha coefficient of 85% (Cheraghi & Mahjub, 2013), as well as the study's own Cronbach's alpha values of the CEQ was 96% for the internal reliability. Also, the dimensions of CEQ questionnaire Cronbach's alpha were: Teaching (91%), Curriculum goals and standards (77%), Volume of lessons (89%), Teaching resources and materials (93%), Course evaluation (81%) and Satisfaction (79%).

The e-Learning Satisfaction Questionnaire (e-LSQ) was also used for data collection. The e-LSQ developed by Sheikh Taheri et al. was used to assess the nursing students' SVL. This questionnaire included some descriptive questions about virtual learning. In addition, the questionnaire contained 26 items that were scored from 1 (strongly disagree) to 5 (strongly agree), whose scores ranged between 26 and 130. In this sense, the scores less than 45.4 indicated low levels of satisfaction, the scores from 45.5 to 90 denoted moderate levels of satisfaction, and those between 91 and 131 suggested high levels of satisfaction. The validity and reliability of this questionnaire were approved in a former study, with a content validity ratio higher than 0.6, the mean content validity index 0.92, and Cronbach's alpha coefficient 0.94 (Sheikh Taheri A, 2020), as well as the study's own Cronbach's alpha values of the e-LSQ was 0.97 for the internal reliability. The validity and reliability processes in data collection and analyses should be described sufficiently.

FINDINGS

The mean age of the nursing students was 22.27 ± 3.73 (19-36) years. The students were also taking theoretical and clinical courses in the first to seventh semesters. The students' mean previous-semester GPA was 16.66 ± 3.96 , and their cumulative GPA was 15.89 ± 4.89 . The nursing students had taken 16.98 ± 4.25 courses

in time of the study. Moreover, 67.6% of the students were female, 84.4% were living in dormitories, and 88.6% were enrolled in undergraduate programs. The mean and standard error (SE) of students' SQC was 422.86 ± 161.88 , ranged from -5000 to 4550. Thus, the quality of the courses from the students' perspectives was satisfying and at a desirable level (Figure 1).

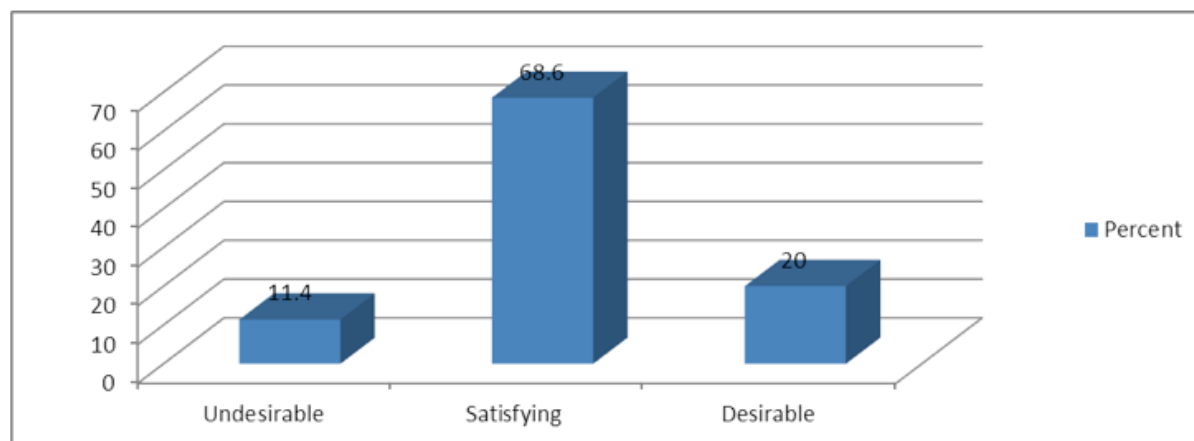


Figure 1. Quality of the academic course from the perspectives of the students

The stepwise linear regression demonstrated that only the “academic semester” was a predictor of the students’ SQC ($p=0.025$), which could explain only 5% of the variance in this regard. The significance level of other individual variables was less than 0.05, and they were not imported into the regression model. Therefore, the “academic semester” was the best predictor of the students’ SQC (Table 1).

Table 1. Relationship between satisfaction with the quality of the courses and satisfaction with virtual education according to the individual characteristics of students

Variable		Age	Semester	Previous-semester GPA	Cumulative GPA	Number of selected courses
Total CEQ score	Pearson Correlation Coefficient	-0.232	-0.364	-0.45	-0.08	-0.08
	P-Value	0.19	* <0.0001	0.684	0.494	0.449
Satisfaction with virtual education	Pearson Correlation Coefficient	-0.144	-0.027	0.119	0.102	0.183
	P-Value	0.148	0.786	0.274	0.383	0.08

GPA: grade point average; CEQ: Course Experience Questionnaire; * $P<0.05$

The independent-samples t-test outcomes revealed that the students’ SQC was not significantly different between females and males ($t= 1.041$, $p=0.301$), while SVL was significantly different in both genders ($t = -3.377$, $p = 0.001$). Moreover, the nursing students’ SQC in undergraduate and graduate students ($t = -3.445$, $p = 0.001$), as well as the fields of study ($F = 5.876$, $p = 0.004$), was significantly different, while no significant difference was observed in SVL among undergraduate and graduate students ($t = 1.349$, $p = 0.188$) as well as the fields of study ($F = 0.460$, $p = 0.632$). In addition, the students’ SQC ($F = 2.071$, $p = 0.090$) and virtual learning ($F = 1.378$, $p = 0.347$) did not differ significantly according to their accommodation (Table 2).

Table 2. Satisfaction with the quality of the course and satisfaction with the virtual education by gender, degree, fields of study and accommodation of students

Variable	Frequency	Mean	Standard Deviation	Value of test statistics, degree of freedom, level of significance	
Total CEQ score	Female	34	666.18	1876.16	t= 1.041
	Male	71	306.34	1544.67	df=103 P=0.301
Satisfaction with virtual education	Female	34	54.03	25.54	t= -3.377
	Male	71	72.06	25.62	df=103 *P=0.001
Total CEQ score	BS	93	232.26	1609.06	t= -3.445
	MSc	12	1900	1293.34	df=103 *P=0.001
Satisfaction with virtual education	BS	93	66.95	28.11	t= 1.349
	MSc	12	60.58	12.85	df=27.516 P=0.188
Total CEQ score	Nursing	93	232.26	1609.06	F= 5.876
	Emergency nursing	9	1894.44	1464.04	df=2
	Military nursing	3	1916.67	791.1	*P=0.004
Satisfaction with virtual education	Nursing	93	66.95	28.11	F= 0.460
	Emergency nursing	9	58	12.59	df=2
	Military nursing	3	68.33	12.42	P=0.632
Total CEQ score	Dormitory	89	284.83	1611.77	F= 2.071
	With Family	10	1415	1117.05	df=4
	Alone	3	2066.67	3144.17	P=0.090
	With Friends	1	-250	0	
	Other	2	-525	2156.67	
Satisfaction with virtual education	Dormitory	89	67.9	27.38	F= 1.378
	With Family	10	56.1	17.23	df=4
	Alone	3	53	4.58	P=0.347
	With Friends	1	26	0	
	Other	2	82	48.08	

CEQ: Course Experience Questionnaire; BS: Bachelor of Science; MSc: Master of Science; *P<0.05

Pearson correlation coefficient also established a significant relationship between the dimensions and the total score of the CEQ and the students' academic achievement (viz. cumulative GPA and previous-semester GPA) (Table 3).

Table 3. Relationship between dimensions and total CEQ score with students' academic achievement

Dimensions and range scores of CEQ questionnaire	Mean (SD)	Previous-semester GPA		Cumulative GPA	
		Pearson Correlation Coefficient	P-Value	Pearson Correlation Coefficient	P-Value
Teaching, 1400 to -1500	165.24 (52.39)	-0.040	0.714	-0.075	0.524
Curriculum goals and standards, 400 to -400	72.38 (15.94)	0.125	0.250	0.057	0.625
Volume of lessons, 500 to -500	-17.14 (25.16)	-0.028	0.799	-0.045	0.702
Teaching Resources & Materials, 1400 to -1400	94.29 (52.77)	-0.080	0.464	-0.119	0.309
Course evaluation, 900 to -900	97.62 (31.97)	-0.088	0.422	-0.111	0.344
Satisfaction, 300 to -300	10.48 (14.81)	0.031	0.778	0.034	0.774
Total CEQ score, 4550 to -5000	422.86 (161.88)	-0.45	0.684	-0.08	0.494

CEQ: Course Experience Questionnaire; SD: Standard Deviation; GPA: grade point average

The mean and SE of the dimensions and the total score of the CEQ are illustrated in Table 2. Except for the "volume of lessons," other dimensions had positive mean values.

A linear regression model was used to predict the effect of the CEQ dimensions on the total score of the students' SQC. The findings showed that the best predictors of SQC were "teaching resources and materials" ($p < 0.001$). The "teaching resources and materials" could predict the SQC by 0.9 units in the first step ($p < 0.001$), which meant explaining 90% of the variance in this variable. During the second step, along with the addition of the "teaching dimension," these two variables could predict SQC by 0.954 units ($p < 0.001$), denoting the prediction of 95% of the dependent variable by two independent variables. Within the third step, the "course evaluation" was entered into the model. These three variables thus could predict 0.977 units of the variable of SQC ($p < 0.001$). In the fourth step, by adding the "volume of lessons" to the model, the variable of SQC was predicted by 0.992 units ($p < 0.001$). During the fifth step, "curriculum goals and standards" were further added to the previous variables, leading to a prediction of 0.996 units of the dependent variable, i.e., SQC ($p < 0.001$). Finally, the last variable, viz. "student satisfaction," was added to the model, so the total changes in the students' SQC could be predicted with the inclusion of these six variables (Table 4). It should be noted that the "academic semester" did not have a confounding effect on the model.

Table 4. Predictors of satisfaction with the quality of the courses based on multiple linear regression by stepwise method

Predictive variables	Satisfaction with the quality of the courses						
	Step	R2	Adjusted R2	B	β	t	P-value
Teaching Resources & Materials	1	0.901	0.900	2.912	0.949	30.581	*<0.0001
Teaching	2	0.955	0.954	1.106	0.358	11.064	*<0.0001
Course evaluation	3	0.977	0.977	1.070	0.211	10.036	*<0.0001
Volume of Lessons	4	0.992	0.992	1.064	0.165	13.565	*<0.0001
Curriculum Goals and Standards	5	0.997	0.996	1.071	0.098	11.482	*<0.0001
Satisfaction	6	1.000	1.000	1.000	0.098	-	-

* $P < 0.05$

The mean±SD of the nursing students' SVL was 66.22±26.84. The levels of SVL in the majority of the students (57.1%) were also moderate, and 17.1% were very satisfied (Figure 2).

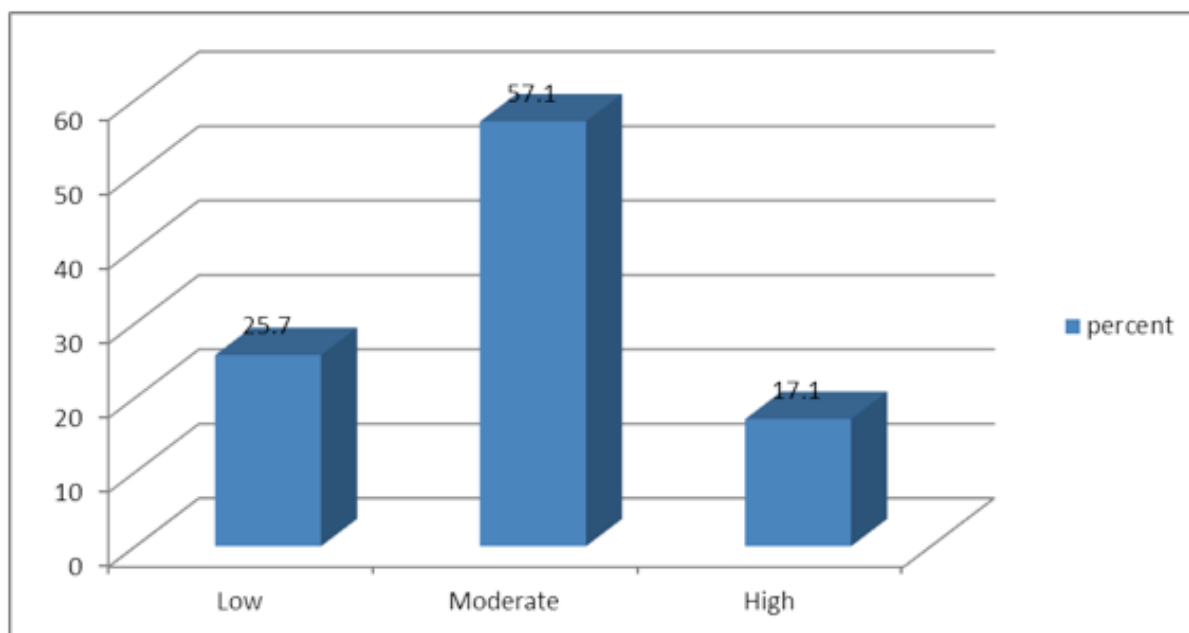


Figure 2. Satisfaction of virtual education from the perspective of students

Flexibility in course time (35.9%) and place (44%) were the important reasons some students were interested in virtual learning. However, the lack of two-way communications with educators (40.1%) and problems with the Internet connection (35.2%) were also mentioned as the most important drawbacks of virtual learning and offline courses. Furthermore, the students noted that about 14.36±7.6 Gigabytes had been added to their Internet use during this semester, mostly to download course contents via emails and virtual networks.

DISCUSSIONS AND CONCLUSION

In this study, SQC and virtual learning levels in nursing students in the first semester of the 2020-2021 academic year were examined during the COVID-19 pandemic. The majority of the students believed that the quality of training was at a satisfactory and desirable level. In addition, this study showed that SQC increased compared with that in the previous semester, indicating the effectiveness of the changes stated in the introduction section. Similar findings had been reported in other studies (Cheraghi & Mahjub, 2013; Farsi, Aliyari, et al., 2021). Fatani (2020) reported that 82% of the medical students were very satisfied with the quality of online training during the COVID-19 pandemic (Fatani, 2020). Considering the quality of educational services for the competitiveness, survival, growth, and sustainability of higher education systems (Saleem, Moosa, Imam, & Khan, 2017), ensuring students' SQC is thus an essential requirement.

This study revealed no significant relationship between the nursing students' overall SQC and the age, previous-semester GPA, cumulative GPA, and the number of courses. Similar findings had been reported in the previous studies (Cheraghi & Mahjub, 2013; Farsi, Aliyari, et al., 2021). In this study, the students' academic semester was considered as the only predictor of their SQC. There was a significant inverse relationship between the students' overall SQC and their semester. These findings were consistent with a previous survey by the researchers (Farsi, Aliyari, et al., 2021), while Noghan et al. (2013) had found no relationship between semesters and students' overall SQC (Cheraghi & Mahjub, 2013).

This study also showed that the students' overall SQC was not different in females and males, while the male students were more satisfied with virtual learning. Shahrabadi et al. (2014) had observed no significant difference between the levels of SQC in both genders (Shahrabadi, Rezaeian, & Haghdoost, 2014), while the researchers showed that the male students were more satisfied with their courses compared with their female counterparts (Farsi, Aliyari, et al., 2021). Men have been noted to demonstrate more interest in using technologies and software. Nikkhah Ghamsari and Mansourian Ravandi (2015) showed that the use of the Internet had been at higher rates in men (Nikkhah Ghamsari & Mansourian Ravandi, 2015).

The graduate students were more satisfied with their courses in the present study than undergraduate ones, while their SVL was not significantly different. In this regard, Hamdan et al. (2021) and Farsi et al. (2021) reported that there was a significant difference in the students' levels of satisfaction considering their levels of education (Farsi, Aliyari, et al., 2021; Hamdan et al., 2021). Prior experiences in graduates in education, more information about dealing safely with pandemics, and the small number of such students in each course could pave the way for their peace of mind and satisfaction.

A significant relationship was observed between the fields of study and the students' overall SQC in the present study, while there was no significant difference between their SVL and fields of study. Noghan et al. (2013) reported a significant relationship between the fields of study in the students surveyed and their overall SQC (Cheraghi & Mahjub, 2013).

In this study, there was no significant relationship between SQC and virtual learning and accommodation. Demuyakor (2020) had shown that students living in the dormitories of China had complaints about the Internet as a challenge to e-learning (Demuyakor, 2020).

This study demonstrated that all the CEQ dimensions could be significant predictors of the students' SQC. These findings were consistent with other investigations in this area (Farsi, Aliyari, et al., 2021; Shahrabadi et al., 2014). Good experience with the courses could thus include indicators such as good teaching, clear curriculum goals and standards, an appropriate volume of lessons, beneficial teaching resources and materials, proper course evaluation, and high satisfaction (Price et al., 2011). The students' failure can be thus associated with factors such as poor teaching, no clear educational goals, and inadequate evaluation methods (Shahrabadi et al., 2014).

The findings showed that the best predictors of the nursing students' SQC were "teaching resources and materials." Consistent with this, Demuyakor (2020) had reported that 315 Ghanaian international students had felt satisfied with e-learning in the higher education institutions in Beijing, China, in terms of the teaching materials available. Successful and effective e-learning mainly depended on the design of the course contents and the availability of teaching resources (Demuyakor, 2020). The researchers also recently found that "teaching resources and materials" with a positive score were the best predictors of SQC (Farsi, Aliyari, et al., 2021), while Noghan et al. (2013) had reported that the majority of students had given a negative score to this dimension (Cheraghi & Mahjub, 2013). If educators properly present the course contents, they can increase students' satisfaction and performance (Gopal, Singh, & Aggarwal, 2021).

During the COVID-19 pandemic, education is not being provided in a traditional mode but mainly in cyberspace and through e-learning; therefore, using valid e-learning resources such as digital lessons designed with educational models, online books, up-to-date software, and virtual simulations are recommended.

The findings showed that "teaching" was the second variable as a strong predictor of students' SQC. In Gopal et al.'s (2021) survey, the instructor's quality had been introduced as the most significant factor affecting students' satisfaction with online courses (Gopal et al., 2021). In the study by Shahrabadi et al. (2014), good teaching could significantly affect students' SQC (Shahrabadi et al., 2014). Contrastingly, students gave a negative score to the teaching dimension in the survey by Noghan et al. (2013), denoting their dissatisfaction (Cheraghi & Mahjub, 2013).

Education is a two-way process of teaching and learning (Rahmani Pour, Aliyari, Farsi, & Ghelich, 2020); therefore, one of the essential strategies to improve students' learning and promote the performance of educational systems is to exploit new teaching methods. The use of virtual learning environments through

web-based clinical training platforms can thus lead to students' satisfaction (Mehrdad et al., 2020). Boa (2020) had reported that educators could significantly contribute to the implementation of e-learning. However, the technology by itself was not able to replace their work (Bao, 2020). Therefore, educators' views are vital, so they must be very efficient during education because their interests lead to a better quality of e-learning.

The third predictor imported into the model was "evaluation," which obtained a positive mean score and representing the students' satisfaction with the current evaluation. Similar results had also been reported in other studies (Cheraghi & Mahjub, 2013; Farsi, Aliyari, et al., 2021). An appropriate feedback system is required to increase the efficiency of educators and help them in planning lessons and promoting strategies (Tawafak, Romli, & Alsinani, 2019). To improve the quality of education, providing performance feedback to educators can be very useful because performance awareness is a prelude to behavioral change (Shahrabadi et al., 2014). The school in question developed comprehensive evaluations during courses, providing the grounds for the students' progress and allowing managers and educators to make changes in case of unsatisfactory evaluations in every field. Reviewing the evaluation results during the COVID-19 pandemic and addressing it can accordingly increase the quality of educational services.

The fourth predictor of the students' SQC was the "volume of lessons" in this study. The students only gave a negative score to this dimension, suggesting their dissatisfaction. Other studies had further shown that the high volume of lessons could reduce student satisfaction (Cheraghi & Mahjub, 2013; Farsi, Aliyari, et al., 2021; Shahrabadi et al., 2014). Kaur (2020) showed that the volume of lessons could indirectly shape student satisfaction (Kaur et al., 2020). One of the most critical points in courses is the high volume of teaching materials, which may not be practical in some fields or may not effectively shape career prospects. Therefore, in addition to reviewing educational curricula according to community needs, educational managers should pay more attention to the quality of the educational content and students' professional competence.

The fifth predictor of the nursing students' SQC was the "curriculum goals and standards," which received a positive score, indicating the students' relative satisfaction. Similar results had been reported in other studies (Cheraghi & Mahjub, 2013; Farsi, Aliyari, et al., 2021; Shahrabadi et al., 2014). Shahrabadi (2014) found that the strongest predictor of GPA was clear goals and standards (Shahrabadi et al., 2014). Specific educational goals can lead to managing students' activities, which supervisors should consider (Haghdooost, Rafiei, Raeisvandi, & Kazemzadeh, 2015).

The last variable imported into the model was the "students' satisfaction with the courses," which received a positive score. The students' SQC occurred following the improvement in the CEQ dimensions, so the students' satisfaction with educational methods could lead to better learning outcomes. Gopal et al. (2021) reported that instructor's quality, students' expectations, prompt feedback, and course design could positively shape student satisfaction, leading to better student performance. These four factors are essential in educational management to reach more satisfaction and better performance in online courses (Gopal et al., 2021).

In this study, the majority of students had a moderate level of SVL in the current semester. Providing more equipment and developing infrastructure for e-learning during this semester compared with the previous one could thus lead to higher SVL. Oducado and Estoque (2021) revealed that 46.3% of the nursing students had a moderate level of satisfaction with e-learning during the COVID-19 outbreak (Oducado & Estoque, 2021). Moreover, Surahman and Sulthoni (2020) found that 19% of the students were very satisfied with online learning services in the Indonesian higher education system during the COVID-19 pandemic, and 41%, 30%, and 10% of them were satisfied, dissatisfied, and very dissatisfied, respectively (Surahman, 2020). Alqahtani et al. (2021) reported that prior experience and readiness for e-learning could affect the nursing students' overall SVL and evaluations in Saudi Arabia (Alqahtani et al., 2021). Some researchers found that no awareness, lack of interest, and skepticism about the usefulness of virtual courses were the main reasons for those refusing such courses in New Delhi, India (Arora & Srinivasan, 2020). Holding empowerment programs for all those involved in e-learning, including students, educators, and staff in the form of training workshops to introduce the basic concepts of virtual learning and digital content production and familiarity with online course software, would thus contribute.

Despite its advantages and disadvantages, many experts believe that e-learning is the best supplement to traditional methods and led to increasing learners' experiences (Akmayeva, 2017). However, educational managers should identify weaknesses and then provide appropriate solutions to meet the needs of students in terms of education, health, safety, and welfare.

In the present study, the nursing students also pointed out some of the problems facing e-learning, including connectivity issues, high costs of the Internet, and no two-way interactions with teachers. In a similar study, the difficulty of measuring learners' levels of attention and ensuring their quality, problems with the Internet speed and its high costs, inefficient teaching of practical courses via virtual systems, need for face-to-face interactions to fulfill thesis and dissertation requirements, technical difficulties, and inappropriate educational contents had been mentioned as the main challenges of e-learning (Rezaei, 2020). In other studies, no access to online tools and the Internet, inadequate equipment such as laptops, poor digital skills (Ahmed, Allaf, & Elghazaly, 2020), and no interactions (Ferrel & Ryan, 2020) were the most challenges facing virtual learning. The discrepancy between the results of this study and other investigations may be due to the differences in the study population and settings, the critical conditions dominating the global community, including the COVID-19 pandemic during the study.

Finally, it is suggested to reinforce the hardware and software infrastructure demanded by students, educators, and staff to produce educational content, prepare supplementary materials, develop online nursing simulations, create learning techniques based on online problem-solving techniques, and promoting virtual hospitals, which make up for the process of responsive education and help students fill educational gaps and promote their future career path through proper planning and practice. As much as possible, interactive technologies are required to present active and exciting learning through online tools.

One of the limitations of this study was assessing the nursing students' SQC using a survey, wherein the views of officials, educational managers, and educators were not assessed. Therefore, more research is suggested at other universities and higher education institutions in a survey on managers, educators, and faculty members.

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REFERENCES

- Ahmed, H., Allaf, M., & Elghazaly, H. (2020). COVID-19 and medical education. *The Lancet Infectious Diseases*, 20(7), 777-778.
- Akmayeva, G. (2017). Impact of access control and copyright in e-learning from user's perspective in the United Kingdom. Brunel University London.
- Alqahtani, N., Innab, A., & Bahari, G. (2021). Virtual Education During COVID-19: Exploring Factors Associated With E-Learning Satisfaction Among Saudi Nursing Students. *Nurse Educator*, 46(2), E18-E22.
- Arora, A. K., & Srinivasan, R. (2020). Impact of pandemic COVID-19 on the teaching-learning process: A study of higher education teachers. *Prabandhan: Indian journal of management*, 13(4), 43-56.
- Bao, W. (2020). COVID-19 and online teaching in higher education: A case study of Peking University. *Human Behavior and Emerging Technologies*, 2(2), 113-115.
- Bora, U. J., & Ahmed, M. (2013). E-learning using cloud computing. *International Journal of Science and Modern Engineering*, 1(2), 9-12.
- Chen, T., Peng, L., Yin, X., Rong, J., Yang, J., & Cong, G. (2020). Analysis of user satisfaction with online education platforms in China during the COVID-19 pandemic. Paper presented at the Healthcare.
- Cheraghi, M., & Mahjub, H. (2013). Survey on Satisfaction from Quality of Passed Educational Course from Last Year Students' Perspective of Hamadan University of Medical Sciences. *Iranian Journal of Nursing Research*, 8(1), 76-86.
- Demuyakor, J. (2020). Coronavirus (COVID-19) and online learning in higher institutions of education: A survey of the perceptions of Ghanaian international students in China. *Online Journal of Communication and Media Technologies*, 10(3), e202018.

- Dewart, G., Corcoran, L., Thirsk, L., & Petrovic, K. (2020). Nursing education in a pandemic: Academic challenges in response to COVID-19. *Nurse education today*.
- Farsi, Z., Aliyari, S., Ahmadi, Y., Afaghi, E., & Sajadi, S. A. (2021). Satisfaction of the Quality of Education and Virtual Education during the Covid-19 Pandemic in Nursing Students of Aja University of Medical Sciences in 2020. *Journal Mil Med*, 23(2), 174-185.
- Farsi, Z., Sajadi, S. A., Afaghi, E., Fournier, A., Aliyari, S., Ahmadi, Y., & Hazrati, E. (2021). Explaining the experiences of nursing administrators, educators, and students about education process in the COVID-19 pandemic: a qualitative study. *BMC nursing*, 20(1), 1-13.
- Fatani, T. H. (2020). Student satisfaction with videoconferencing teaching quality during the COVID-19 pandemic. *BMC Medical Education*, 20(1), 1-8.
- Ferrel, M. N., & Ryan, J. J. (2020). The impact of COVID-19 on medical education. *Cureus*, 12(3).
- Gopal, R., Singh, V., & Aggarwal, A. (2021). Impact of online classes on the satisfaction and performance of students during the pandemic period of COVID 19. *Education and Information Technologies*, 1-25.
- Haghdoost, A. A., Rafiei, H., Raeisvandi, A., & Kazemzadeh, Y. (2015). Satisfaction of Postgraduate Students of Kerman University of Medical Sciences Iran with their Training Program and Campus Facilities. *Strides in Development of Medical Education*, 12(2), 355-365.
- Hamdan, K. M., Al-Bashaireh, A. M., Zahran, Z., Al-Daghestani, A., Samira, A.-H., & Shaheen, A. M. (2021). University students' interaction, Internet self-efficacy, self-regulation and satisfaction with online education during pandemic crises of COVID-19 (SARS-CoV-2). *International Journal of Educational Management*.
- Hayter, M., & Jackson, D. (2020). *Pre-registration undergraduate nurses and the COVID-19 pandemic: Students or workers?* : Wiley Online Library.
- Hoq, M. Z. (2020). E-Learning during the period of pandemic (COVID-19) in the kingdom of Saudi Arabia: an empirical study. *American Journal of Educational Research*, 8(7), 457-464.
- Kaur, S., Singh, G., & Garg, A. (2020). Evaluating the relationship between the course experience questionnaire and student satisfaction: A case from India. *Journal of Public Affairs*, e2471.
- Mehrdad, S., Dadgaran, I., Taheri Ezbarmi, Z., Taheri, M., Asgari, F., & Akhoundzadeh, L. (2020). The Necessity of Move Towards Virtual Clinical Teaching in the COVID 19 Pandemic: Introducing the SAID Model for Clinical Teaching of Endocrine Diseases by Webisode Teaching Method. *Research in Medical Education*, 12(4), 1-4.
- Murphy, M. P. (2020). COVID-19 and emergency eLearning: Consequences of the securitization of higher education for post-pandemic pedagogy. *Contemporary Security Policy*, 41(3), 492-505.
- Nikkhah Ghamsari, N., & Mansourian Ravandi, F. (2015). The Relationship Between Cyber Space and Gender Identity, Case Study of the Internet Users in Kashan, Iran. *Media Studies*, 9(27), 107-120.
- Oducado, R. M., & Estoque, H. (2021). Online Learning in Nursing Education during the COVID-19 Pandemic: Stress, Satisfaction, and Academic Performance. *Journal Of Nursing Practice*, 4(2), 143-153.
- Phillips, K. F., Mathew, L., Aktan, N., & Catano, B. (2017). Clinical education and student satisfaction: an integrative literature review. *International journal of nursing sciences*, 4(2), 205-213.
- Price, L., Richardson, J. T., Robinson, B., Ding, X., Sun, X., & Han, C. (2011). Approaches to studying and perceptions of the academic environment among university students in China. *Asia Pacific Journal of Education*, 31(2), 159-175.
- Rahmani Pour, E., Aliyari, S., Farsi, Z., & Ghelich, Y. (2020). Comparing the effects of interactive and noninteractive education using short message service on treatment adherence and blood pressure among patients with hypertension. *Nursing and Midwifery Studies*, 9(2), 68-76.

- Rezaei, A. (2020). Student learning evaluation during the Corona: Challenges and Strategies. *Educational Psychology*, 16(55), 179-214.
- Saleem, S. S., Moosa, K., Imam, A., & Khan, R. A. (2017). Service quality and student satisfaction: the moderating role of university culture, reputation and price in education sector of pakistan. *Iranian Journal of Management Studies (IJMS)* [http://ijms. ut. ac. ir](http://ijms.ut.ac.ir), 10(1), 237-258.
- Seifollahi, N., & Eskandari, N. (2021). The Role of Emotional Intelligence and Social Capital in Students' Academic Satisfaction. *Social Capital Management*, 8(1), 29-51.
- Shahrabadi, E., Rezaeian, M., & Haghdoost, A. (2014). Prediction of Academic Achievement Evaluation in University of Medical Sciences Based on the Students Course Experience. *Strides in Development of Medical Education*, 10(4), 485-493.
- Sheikh Taheri A, D. A. (2020). Investigating the views of students of Iran University of Medical Sciences on the use of e-learning management system. (Research Project), Iran University of Medical Sciences.
- Surahman, E. (2020). Student Satisfaction toward Quality of Online Learning in Indonesian Higher Education During the Covid-19 Pandemic. Paper presented at the 2020 6th International Conference on Education and Technology (ICET).
- Tawafak, R. M., Romli, A. B., & Alsinani, M. (2019). E-learning system of UCOM for improving student assessment feedback in Oman higher education. *Education and Information Technologies*, 24(2), 1311-1335.
- Zand S, Nejat N, Salehi omran E, & Izadi, S. (2020). Covid19 crisis as an opportunity for medical education evolution. *JMED*, 15(2), 151-155.

FACTORS INFLUENCING ONLINE LEARNING ENGAGEMENT: INTERNATIONAL STUDENTS' PERSPECTIVE AND THE ROLE OF INSTITUTIONAL SUPPORT

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ABSTRACT

The study was intended to model online learning engagement of international students studying in Indonesia to determine which factors affect learner engagement. A survey was conducted online, and 102 international students filled the questionnaire. Partial Least Squares-Structural Equation Modeling (PLS-SEM) technique was used for data analysis. The results show that the variables: university support ($T = 2.881$, $P < 0.01$), motivation ($T = 3.411$, $P < 0.01$), and personal innovativeness ($T = 2.426$, $P < 0.05$) were the significant predictors of international students' engagement in online learning. Other variables like instructor interactivity, student-material interaction, student-student interactions, and self-regulated learning didn't significantly affect learner engagement. The findings of this exploration can be used as empirical data for higher education institutions' managers when developing support programs for international students during their studies in a destination country. Other findings' implications and recommendations are discussed.

Keywords: International students, institutional support, motivation, online learning, self-regulated learning, student engagement.

INTRODUCTION

The Covid-19 pandemic has changed various aspects of life, including the education and learning system experienced by international and local students. After the pandemic, universities adjusted the learning system by providing a distance online learning alternative (Widiasih et al., 2020). The Covid-19 consequences interrupted the education sector and added the complexity of the problems faced by international students both in academic and nonacademic matters (Cleland et al., 2020). In the new normal after the pandemic, international students from various countries find it more challenging to study in destinations like Indonesia. For international students who take online learning, their overall learning efficiency is hindered due to multiple technical and non-technical limitations (Bayham & Fenichel, 2020; Murphy, 2020). They experience various challenges to engage in online studies (Baloran, 2020). Online learning is implemented as an effective effort to manage physical and social distance to mitigate the spread of Covid-19 (Blankenberger & Williams, 2020; Murphy, 2020).

Implementing fully online learning is abrupt and novel to most students, especially international students, and of sudden for teachers in developing countries like Indonesia. Both academically and non-academically, international students adapt to the new normal after the pandemic, such as changes in learning methods, financial problems, demands to maintain physical and mental health, and the need to limit social relationships. These drastic changes affected students' psychology (Azorin, 2020). In other words, the pandemic crisis has affected students' psychological conditions such as learning motivation, discipline, and isolation feelings while adapting to changes in the learning system (Raaper & Brown, 2020). Among the crucial psychological aspects of students in the learning process is learner engagement.

A study (Susanto et al., 2020) revealed that online learning during the new normal affected the emotions of international students. Other studies indicate that there are many issues associated with learning engagement in online systems (Kahn et al., 2017), including a reduced commitment due to online technical hardships (Jaggars, 2014) and low learning retention (J. Moore, 2014). Moreover, learner satisfaction and engagement in an online context were found to be affected by factors such as learner motivation and interest loss (Basuony et al., 2020; Means & Neisler, 2021), self-regulation, and social interactions issues (Hamdan et al., 2021) as well as lack of support (Tonks et al., 2021). This situation is fascinating to empirically examine international students' online learning engagement in a developing country such as Indonesia. Therefore it's vital to understand what factors influence international students to engage in online learning.

Studies from various perspectives regarding the experiences of international students studying in Indonesia are currently still limited (Widiasih et al., 2020). The most recent researches on international students studying in Indonesia focused on Indonesian language learning experiences. Moreover, many previous studies (Ferdiansyah et al., 2020; Hastowahadi; Setyaningrum & Pangesti, 2020; Nurfaidah et al., 2020; Puspitasari et al., 2020; Widiasih et al., 2020; Widodo et al., 2020) conducted qualitative studies on non-academic elements. Meanwhile, other aspects, especially concerning educational systems and learning experiences such as online learning engagement, have not received much attention from researchers.

Based on the literature review, no study yet explains which factors influence international students in Indonesia to engage in online learning, whether before, during, or even after the pandemic. Moreover, previous studies have a methodological gap as most of them are qualitative based on conceptual modeling (Abubakari & Mashoedah, 2021), and few are quantitative studies based on descriptive analysis. Therefore, this current study aims to fill the gap by developing a model of online learning engagement for international students to determine which factors affect learner engagement in the online context.

The following questions guided the research to reach the study's objectives:

1. What factors influence international students to engage in online learning?
2. What is the role of institutional support in influencing international students' engagement in the online context?
3. What is the effect of learner motivation and personal innovativeness on online learning engagement?

LITERATURE REVIEW

Research on psychological issues of international students has been carried out by many academics, such as those related to self-esteem, psychological adaptation, life satisfaction, attitudes on help-seeking, acculturation, and depression (Li et al., 2014; Shafaei et al., 2018). Recently, a study (Khanal & Gaulee, 2019) found some typical international students' problems while studying abroad. These include financial, racism and discrimination, academic and language issues, and psychological issues. Besides those common challenges, after the pandemic outbreak, the current situation has necessitated implementing online learning as the best alternative to maintain the educational process. However, online learning after the pandemic has added another unique challenge to international students while studying abroad.

Both local and international students feel the challenges and changes brought by the aftermath of the Covid-19 pandemic; however, the latter group usually faces more challenges while studying in a foreign country (Le & McKay, 2018; McGarvey et al., 2015). Several studies show that students studying abroad face various challenges and require multiple adaptations, including language, culture, and education system (Brunsting et al., 2018; Li et al., 2018; Luo et al., 2019; Rana et al., 2020; Singh, 2019). Recently, it was

found that the abrupt changes in learning modes, especially the sudden shift to online learning systems, caused international students to miss many opportunities. Hence, they could not meet their expectations (Hastowahadi; Setyaningrum & Pangesti, 2020), such as graduating on time. A study by Widiasih et al. (2020) reviewed the experiences of international students while studying in Indonesia. The analysis results found, among others, three main points, namely differences in education systems, socio-culture, and learning challenges due to language problems.

Ferdiansyah et al. (2020) explored some Thai students' learning experiences at three universities in Indonesia during the covid-19 pandemic. This interview study revealed that the university policy to implement online learning entirely was new to most international students. Furthermore, another study related to learning the Indonesian language for foreign speakers (BIPA Program) was recently conducted exploring international students' emotional geography and experiences while studying the Indonesian language online. The research findings show that program studies carried out online affected the emotional geography of international students (Susanto et al., 2020). All these studies indicate that the current online learning situation affects the learning engagement of international students as most of them are not experienced in fully online learning. Thus, it is crucial to find out what factors affect the learning engagement of international students in a destination country, especially in Indonesia.

Student Engagement and Learning

Researchers agree that engagement is a variable with multiple dimensions. However, there is no unanimous agreement on the number of its sub-constructs (Christenson et al., 2012; Fredricks & McColskey, 2012). Student engagement is a psychological state, quantitative and qualitative, about behavioral, affective, and cognitive reactions to the educational process (Christenson et al., 2012; Gibbs & Poskitt, 2010; Gunuc & Kuzu, 2015). Some study describes engagement as a social-psychological phenomenon, particularly the attention given, interest indicated, as well as effort and investment exerted by a learner (Marks, 2000). Some scholars argue that engagement is a multidimensional variable with three dimensions: behavioral, cognitive, and affective (Fredricks et al., 2004; Jimerson et al., 2003). These three dimensions have a dynamic interaction within a learner (E. A. Skinner, Kindermann, & Furrer, 2009).

Emotional engagement pertains to the apprehension of learning norms, interest, a sense of belonging to the institution, and reactions to instructors, campus friends, and classmates (Gibbs & Poskitt, 2010). Some researchers consider this engagement dimension very significant for fostering students' sense of attachment to their educational institutions and influences students' willingness to participate in learning (Fredricks, 2011; Fredricks et al., 2016; Jimerson et al., 2003). That is even more potential to be explored in the context of international students. Meanwhile, cognitive engagement refers to students' mental process in learning and strategies used for academic work, such as liking learning challenges, self-regulated, being willing and persistent to learn (Gibbs & Poskitt, 2010; E. A. Skinner, Kindermann, James P. Connell, et al., 2009).

Lastly, the third dimension, behavioral engagement, leads to actual involvement and participation in non-academic and academic activities like obedience to institutional principles and regulations, attending classes, and performing academic tasks (Jimerson, Campos, and Greif, 2003; Fredricks and McColskey, 2012). This component is said to have three sub-dimensions: active participation, rules compliance, and involvement in the learning process like asking or answering questions and engaging in discussions (Fredricks et al., 2004). Thus, affective, behavioral, and cognitive dimensions of engagement provide characteristics of students' feelings, actions, and thinking during learning (Wang & Eccles, 2013; Wang & Holcombe, 2010) both in the traditional and online context.

Nonetheless, student engagement is not an independent variable, making it appealing for researchers to determine what possible factors influence it empirically. Furthermore, students' engagement in an online learning context needs proper attention and analysis due to some learning limitations compared to conventional learning, especially concerning social interactions. It is also more essential to analyze international students during and after the current pandemic in the online context.

Conceptual Model and Hypotheses

It is vital to explore the factors that directly or indirectly influence learner engagement and understand their causal-effect relationships in an online learning context, especially concerning international students. Following is a brief explanation of some factors which affect student engagement.

Institutional Support, Instructor Interactivity, and Student Interactions

Social interactions affect individual involvement in various social contexts (Bandura, 2001), including learning. Students who get support both morally and materially from the surrounding environment are more interested in actively engaging in activities that support their academics. Previous research revealed a direct association between social support and interactions (with instructors or friends) and student engagement in the learning process (Garcia-Reid, 2007; Ruzek et al., 2016). Students who feel that they get social support from their instructors tend to show behavior per instructors' expectations, tend to be involved from an affective, behavioral, or cognitive perspective (Patrick et al., 2007). Other findings indicate a close relationship between learner engagement and institutional environmental support (Amoozegar et al., 2017; J. W. Lee, 2010), including emotional support from academic staff, teachers, and friends on campus (Wang & Eccles, 2013).

Studies show that three forms of interactivity are essential in the online learning context: instructor-student, student-student, and student-material interactions (Anderson, 2003; Croxton, 2014; Kyei-Blankson et al., 2016; M. G. Moore, 1989). It is argued that a significant online learning experience can be attained if at least one kind of interaction is at the optimum level (Anderson, 2003, 2004). Several empirical studies support the potential of these interactions, especially in online learning (Ali & Ahmad, 2011; Johnson et al., 2000; Kuo, 2014; Kuo et al., 2014; Sher, 2009). It is crucial to understand how these interactions affect international students' engagement in online education.

- H1: Instructor interactivity (II) significantly influences student-student interactions (SSI).
- H2: Instructor interactivity significantly and directly influences student engagement (SE).
- H3: Instructor interactivity significantly influences student-material interaction (SMI).
- H9: Student-student interactions have a significant influence on student engagement.
- H13: University support (US) has direct effects on student engagement.

Personal Innovativeness in IT

Individual innovativeness in information technology (IT) is a tendency of a person willing to try and experiment with an introduced IT (Agarwal & Prasad, 1998) regardless of other peoples' experiences and perceptions (Al-Busaidi & Al-Shihi, 2012; Ngafeeson & Sun, 2015). Moreover, innovative students tend to perceive a new learning system as helpful, hence curious to explore it (Al-Busaidi & Al-Shihi, 2012; Bervell et al., 2020; Ngafeeson & Sun, 2015). Literature indicates that innovativeness is related to how a person perceives the usefulness of an innovation (van Raaij & Schepers, 2008). In the context of this study, the variable of personal innovativeness is linked to the creativity and curiosity to engage with online learning materials uploaded by an instructor in the online learning platforms.

The level of innovativeness of students determines how they interact with online systems and materials made available by an instructor (Zimmerman, 2012). It hence influences learner engagement with online content (Owusu-Agyeman & Larbi-Siaw, 2018). Furthermore, student innovativeness helps to see the online learning platforms and contents as valuable and straightforward to interact with (Bervell et al., 2020), making them try out learning technologies implemented by an instructor for curiosity (Rogers, 2003).

- H4: Personal innovativeness (PIIT) influences student-material interaction.
- H5: Personal innovativeness has a direct influence on student engagement.

Learner Motivation

Motivation determines the level of activity and general direction of human behavior. It influences an individual, arouses and directs the behavior displayed by an individual (Deci & Ryan, 1985). Learners with high motivation are more involved in academic activities than students with low achievement motivation (Akpan & Umobong, 2013). On the other hand, learners with low motivation mostly do not show maximum effort in the learning process. That means achievement motivation has an essential role in learners engaging in academic activities. The level of motivation contributes well to the degree of involvement in learning activities (Appleton et al., 2008; Soric et al., 2017).

Previous literature indicates a robust association between learner engagement and motivation (Ben-Eliyahu et al., 2018; King & Datu, 2017; Patall et al., 2016). Furthermore, motivation is the most influential factor for individuals to engage in different activities (Alivernini & Lucidi, 2008; Nguyen & Van Nguyen, 2019; Stoen Utvær & Haugan, 2016). Therefore, intrinsic and extrinsic motivations are fundamental and much needed in students to engage in the learning process, including online. Thus, the following can be hypothesized:

H6: Motivation (M) will have a positive direct effect on student engagement.

H7: Motivation positively influences self-regulated learning (SRL).

Student-Material Interaction

Interaction between learner and material is critical in online education (M. G. Moore, 1989); without this, online learning is almost impossible to carry out (Coffin Murray et al., 2012; Murray et al., 2013). Material interaction pertains to an individual engagement with online learning contents such as text handouts, videos, and other online tasks prepared by an instructor (Bervell et al., 2020; Sher, 2009). Learner interaction with online materials provides an opportunity to gain extra knowledge and comprehension and facilitate the interactions between lecturer and learner or between classmates, leading to better student engagement (McLaughlin et al., 2005). In addition, it is argued that interactive online materials and tasks based on problem-solving stimulate interactions between students (Jung et al., 2002).

H8: Student-material interaction influences student-student interactions.

H10: Student-material interaction has significant effects on student engagement.

Self-Regulated Learning

Self-regulation is an individual's ability to manage and control the concerned relevant actions, set personal goals, self-evaluate success when achieving those goals, and self-rewarding after obtaining those specified goals (Friedman & Schustack, 2016). Increased student self-regulation can increase learning engagement and, hence, students' general success (Fredricks et al., 2004). Students who are cognitively engaged have a high level of achievement (Wang & Peck, 2013). The cognitive engagement dimension is closely related to the qualitative extent of mental processes and students' learning techniques in academic works, such as being self-regulated, persistent and willing to learn, and liking learning challenges (Gibbs & Poskitt, 2010). Several studies (Cho et al., 2017; Cho & Kim, 2013; Kuo et al., 2014; Ozkan & Koseler, 2009; Safsouf et al., 2020; Shih et al., 2019) indicate the crucial role of self-regulated learning ability in the context of online education.

H11: Self-regulated learning has a significant effect on student-material interaction.

H12: Self-regulated learning has direct effects on student engagement.

Figure 1 depicts the proposed conceptual model of online learning engagement (MOLE), in which each relationship between variables indicated by arrows represents the research hypothesis.

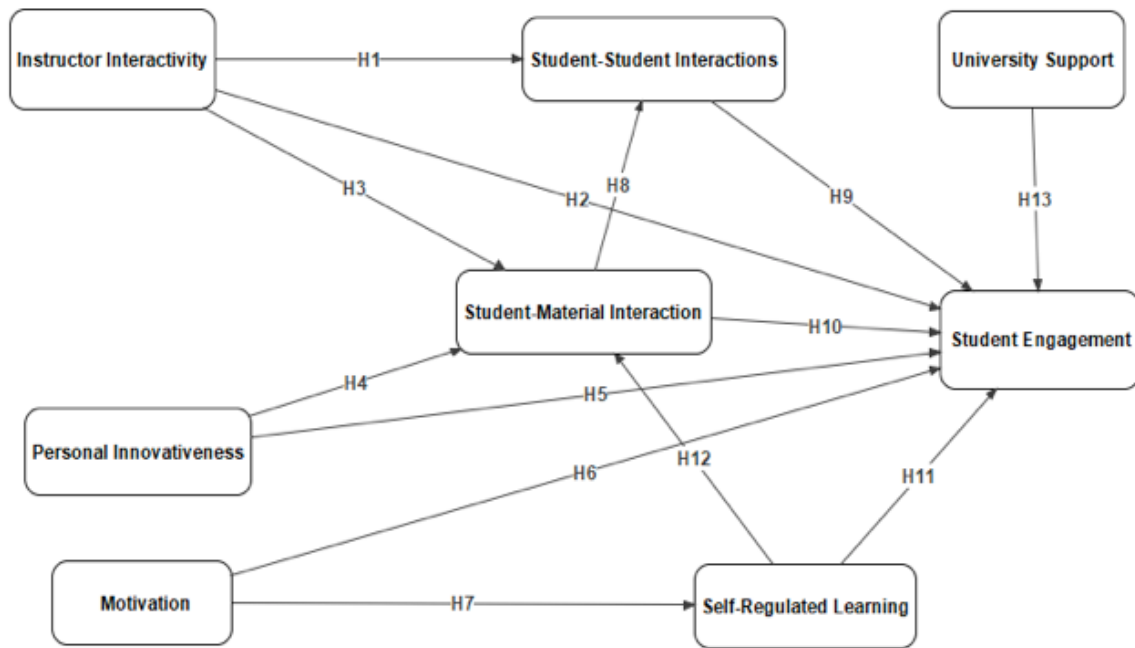


Figure 1. Conceptual Model of Online Student Engagement

METHODOLOGY

Participants and Context

This study involved International students studying in Indonesia during and after the Covid-19 breakout. Hence, respondents were from different universities in Indonesia invited to participate through WhatsApp groups and private chats. One hundred and two (102) students filled the online Google Form questionnaire voluntarily and anonymously. Seventy-two (72) out of them were males, and the rest (30) were females. The majority (73) were aged 21-30, 25 respondents were aged 31 and above, while only four were aged 20 and below.

Moreover, many respondents were from African countries (61), followed by Asian countries (30), two Europeans, and one Latino American, while eight respondents kept their country of origin anonymous. Moreover, most (74) respondents were pursuing a Master's degree, 13 took an Indonesian language course (BIPA) program, ten undertook bachelor's degrees, and five pursued Ph.D.

Instrumentation and Scale

This study is based on a quantitative survey, and the instrument to measure all variables used was formulated based on previous empirical studies. For the items of Instructor Interactivity (6-items), Student-Material Interaction (4-items), and Student-Student Interactions (4-items) variables, were adapted from (Ali & Ahmad, 2011; Kuo, 2014; Sher, 2009), with a slight modification of words to fit the study's context. Moreover, motivation (6-items; intrinsic and extrinsic motivation, three items for each) variable was adapted from (Alivernini & Lucidi, 2008; Stoen Utvær & Haugan, 2016). The University Support (4-items) variable was taken from (Amoozegar et al., 2017). Self-Regulation (4-items) adapted from (Kuo et al., 2014; Safsouf et al., 2020; Shih et al., 2019), and Personal Innovativeness (4-items) from (Agarwal & Prasad, 1998). Moreover, Student Engagement (6-items; containing all three dimensions with 2-items each) were adapted from (Appleton et al., 2006; E. Skinner et al., 2008). All items were measured in a 5-point Likert scale (from 1= Strongly Disagree to 5= Strongly Agree).

Data Collection and Analysis Methods

After the instrument was compiled, the questionnaire statements (comprising two main parts: demographic information and research statements) were put in the Google Form. Then, the link was shared in social media groups and inboxes (especially in WhatsApp) of international students in Indonesia. Meanwhile, the data collection technique was non-probabilistic based on the snowballing method since access to participants was very difficult considering the pandemic protocols and students are scattered in different universities.

The pilot study of data analysis was conducted with 30 samples for checking preliminary reliability analysis of the questionnaire items before an entire collection of data and final analysis was done. As a result, the reliability (based on Cronbach's Alpha) was found to be 0.942, which is higher than a minimum required coefficient of 0.7 (Cronbach, 1951; Hair Jr et al., 2017). Finally, the analysis of collected data was carried out using IBM-SPSS V.25.0 software for demographic data analysis. In addition, Smart-PLS V.3.3.3 (Ringle et al., 2015) was used for partial least square-structural equation modeling (PLS-SEM) analysis.

ANALYSIS AND RESULTS

Measurement Model Analysis

The first thing analyzed in PLS-SEM analysis is the outer (measurement) model for checking the reliability, validity, and internal consistency of indicators and respective constructs. Hence, the following measures were essential to be reviewed, namely, composite reliability (CR), Cronbach's Alpha (α), and convergent validity based on indicators (factor) loadings (IL) and average variance extracted (AVE) values. The discriminant validity of every construct is checked based on the Fornell-Larcker criterion (FLC) and Heterotrait-Monotrait Ratio (HTMT) criteria. Acceptable values for CR and α , minimum loading value should be 0.7, while IL should be at least 0.708 (Hair et al., 2019). Furthermore, the minimum acceptable value of AVE is 0.5, while the value of HTMT should be less than 0.9 or less than 0.85 (in a strict sense) (Hair Jr et al., 2017; Henseler et al., 2017).

As for the FLC, the value of the AVE square root of the construct itself must be higher than the correlations between the same construct and other constructs (Hair et al., 2019). Table 1 depicts the results of the IL, CR, α , and AVE. The internal consistency test (measurement model) has been justified as reliable and valid since all the criteria have been fulfilled, as shown in Table 1.

Table 1. Reliability and Validity Test Results

Factor	Item	IL	α	CR	AVE
Instructor Interactivity (II)	II1	0.754	0.818	0.88	0.647
	II4	0.845			
	II5	0.777			
	II6	0.838			
Motivation (M)	M1	0.847	0.734	0.849	0.653
	M2	0.806			
	M3	0.77			
Personal Innovativeness (PIIT)	PIIT1	0.733	0.768	0.851	0.588
	PIIT2	0.734			
	PIIT3	0.789			
	PIIT4	0.809			
Student Engagement (SE)	SE2	0.73	0.825	0.878	0.59
	SE3	0.764			
	SE4	0.776			
	SE5	0.85			
	SE6	0.714			

Student-Material Interaction (SMI)	SMI1	0.783	0.805	0.873	0.632
	SMI2	0.738			
	SMI3	0.822			
	SMI4	0.833			
Self-Regulated Learning (SRL)	SRL1	0.796	0.84	0.893	0.677
	SRL2	0.765			
	SRL3	0.887			
	SRL4	0.839			
Student-Student Interaction (SSI)	SSI1	0.851	0.779	0.873	0.697
	SSI2	0.897			
	SSI3	0.749			
University Support (US)	US1	0.888	0.874	0.922	0.798
	US2	0.903			
	US3	0.889			

The values of indicator loadings (except the items II2, II3, M4, M5, M6, SE1, SSI4, and US4 didn't load above the threshold and are not included in Table 1) are all above the threshold coefficient of 0.708 (Hair et al., 2019). At the same time, the loading values of Cronbach's Alpha and CR are all above 0.7, which is the least acceptable value (Hair et al., 2019). Moreover, the AVE coefficients are above 0.5, indicating that the convergent validity test was passed (Hair et al., 2019).

The discriminant validity test results in this study satisfy the required criteria of the Fornell-Larcker and Heterotrait-Monotrait Ratio. Discriminant validity is essential to check if all factors are distinct regarding what they measure (Henseler et al., 2017). Table 2 shows the results of FLC and HTMT (values in the brackets, in italics).

The results in Table 2 indicate that all criteria of FLC and HTMT are met. As for FLC, the values of the AVE square root of each construct are higher (values in bold) than the rest of the cross-correlation values with other constructs (values not bolded), indicating that the FLC is fulfilled (Fornell & Larcker, 1981; Hair et al., 2019). Moreover, the HTMT criterion is also established as all values (in brackets and italic) are less than the maximum cut-off of 0.9 coefficient as the highest value of HTMT in the table is 0.855, which is less than the acceptable value of 0.9 (Henseler et al., 2015, 2016, 2017).

Table 2. Fornell-Larcker Criterion and Heterotrait-Monotrait Ratio Results

Construct	II	M	PIIT	SRL	SE	SMI	SSI	US
Instructor -Interactivity (II)	0.805 (0)							
Motivation (M)	0.491 (0.637)	0.808 (0)						
Personal - Innovativeness (PIIT)	0.418 (0.503)	0.470 (0.618)	0.767 (0)					
Self-Regulated -Learning (SRL)	0.490 (0.598)	0.678 (0.855)	0.454 (0.550)	0.823 (0)				
Student Engagement- (SE)	0.608 (0.737)	0.632 (0.803)	0.541 (0.675)	0.540 (0.647)	0.768 (0)			
Student-Material- Interaction (SMI)	0.679 (0.833)	0.585 (0.767)	0.369 (0.457)	0.540 (0.657)	0.607 (0.738)	0.795 (0)		
Student-Student- Interaction (SSI)	0.543 (0.676)	0.455 (0.605)	0.416 (0.526)	0.467 (0.571)	0.512 (0.637)	0.578 (0.727)	0.835 (0)	
University Support- (US)	0.552 (0.655)	0.359 (0.451)	0.355 (0.437)	0.442 (0.513)	0.608 (0.710)	0.528 (0.627)	0.595 (0.726)	0.894 (0)

Structural Model Analysis

The next step is to assess the inner (structural) model based on the criteria of predictive relevancy (Q^2) coefficient determined by blindfolding technique in PLS, determination factor (R square, R^2), and path coefficients significance (Hair et al., 2019). The Q^2 coefficient measures whether all independent constructs are relevant in predicting a particular dependent construct within a model. Moreover, the R^2 coefficient indicates how powerful the predicting variables can explain the variance of a specific dependent variable in a structural model. For example, when the values of Q^2 are 0.02, 0.15, or 0.35, then are respectively considered weak, moderate, and strong, meanwhile, and R^2 values of 0.70, 0.50, and 0.25 indicate respectively high, medium, and low (Hair Jr et al., 2017). The assessment results of Q^2 and R^2 coefficients are depicted in Table 3.

Table 3. Predictive Relevancy and Determination Coefficients Results

Construct	SSO	SSE	$Q^2 (=1-SSE/SSO)$	R Square (R^2)
Instructor Interactivity	408.000	408.000		
Motivation	306.000	306.000		
Personal Innovativeness	408.000	408.000		
Self-Regulated Learning	408.000	284.395	0.303	0.460
Student Engagement	510.000	339.256	0.335	0.628
Student-Material Interaction	408.000	283.096	0.306	0.518
Student-Student Interaction	306.000	229.603	0.250	0.376
University Support	306.000	306.000		

From Table 3, the values of R^2 were between 0.376 (for Student-Student Interaction dependent variable) and 0.628 (for Student Engagement endogenous variable). That means that all the predicting variables in the model could explain the variance of 62.8% to the student engagement variable in online learning. The 0.628 value of the determination-coefficient is considered almost high as it is near 0.7 value (Hair Jr et al., 2017). Moreover, values of Q^2 are between 0.25 and 0.335, meaning that the prediction power of the hypothesized model is highly relevant (Hair Jr et al., 2017). Finally, for path coefficients significance analysis, a PLS bootstrapping method was applied with 5000 samples based on the significant level of 0.05, two-tailed. Figure 2 and Table 4 depict the results of path coefficients and significance level attained.

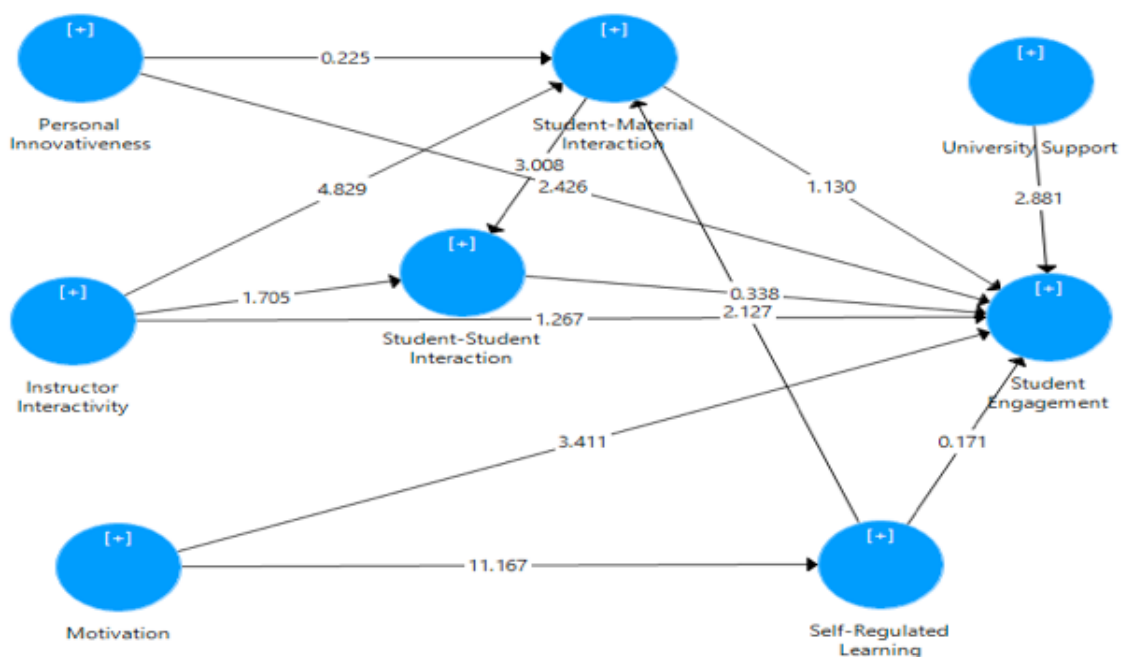


Figure 2. Path Analysis Bootstrapping Results

Table 4. Path Coefficients (T-Statistics) and Significance Results

Path	Original-Sample (O)	Standard Deviation (STDEV)	T Statistics (O/STDEV)	P-Values
II -> SE	0.149	0.117	1.267	0.205
II -> SMI	0.540	0.112	4.829	0.000
II -> SSI	0.279	0.164	1.705	0.088
M -> SRL	0.678	0.061	11.167	0.000
M -> SE	0.316	0.093	3.411	0.001
PIIT -> SE	0.203	0.084	2.426	0.015
PIIT -> SMI	0.022	0.098	0.225	0.822
SRL -> SE	-0.021	0.124	0.171	0.864
SRL -> SMI	0.265	0.125	2.127	0.034
SMI -> SE	0.116	0.102	1.130	0.259
SMI -> SSI	0.388	0.129	3.008	0.003
SSI -> SE	-0.039	0.115	0.338	0.735
US -> SE	0.311	0.108	2.881	0.004

Based on the results portrayed in Figure 2 and Table 4, it can be seen that only seven paths have significant coefficients (Bolded values) with a significance level of less than 0.05 (predefined during bootstrapping). These paths are, II -> SMI ($T = 4.829, P < 0.01$), M -> SRL ($T = 11.167, P < 0.01$), M -> SE ($T = 3.411, P < 0.01$), PIIT -> SE ($T = 2.426, P < 0.05$), SRL -> SMI ($T = 2.127, P < 0.05$), SMI -> SSI ($T = 3.008, P < 0.01$), US -> SE ($T = 2.881, P < 0.01$). The rest of the six paths were deemed not significant as their coefficient values are above 0.05 level. In other words, seven hypotheses (H3, H5, H6, H7, H8, H11, and H13) were supported, while six hypotheses (H1, H2, H4, H9, H10, and H12) were rejected.

DISCUSSION OF FINDINGS

Based on the hypothesized relationships, the study findings indicate that the potential factors that directly determined international students' online learning engagement were university (institutional) support, student motivation, and personal innovativeness in IT. The finding of significant effect of motivation on student engagement is in line with previous studies (Ben-Eliyahu et al., 2018; Fredricks et al., 2016; Gibbs & Poskitt, 2010; Jacobi, 2018; King & Datu, 2017; Nguyen & Van Nguyen, 2019; Soric et al., 2017; Stoen Urvær & Haugan, 2016; Zepke & Leach, 2010). That means participants of this study view themselves as motivated both intrinsically and extrinsically to engage in online learning. At the same time, the positive effect of university support on learner engagement corresponds with some past studies (Amoozegar et al., 2017; Zepke et al., 2012; Zepke & Leach, 2010), which argued that institutional support, both emotional and materially, is vital to boost student engagement.

Furthermore, the variable personal innovativeness in this study shows a meaningful effect on student engagement but not on student-material interaction. It is an appealing finding as some previous studies (Bervell et al., 2020; Owusu-Agyeman & Larbi-Siaw, 2018) found the significant influence of personal innovativeness on content interaction contrary to this study which indicates no significant effect. However, this study found the direct and essential impact of personal innovativeness on learner engagement of international students. Future studies should verify this finding with more samples and different contexts.

The implication of university support influence on student engagement is based on the social-psychological point of view. This viewpoint contributes to interpreting the experience of international students in dealing with new situations as international students experience an additional complex challenge due to new policies from local governments that affect the learning system and social life routines. For example, the study by Rahman & Lin (2020) reported the psychological well-being of new Indonesian students studying in Taiwan from the social, educational, and cultural dimensions. The main findings show that preparation and social support from the surroundings are needed to reduce the possibility of psychological problems such as stress and disengagement faced by international students studying in a foreign country.

Meanwhile, the motivational effect on student engagement implies that it might be caused by the fact that most participants were from African countries and few from other Asian developing countries where educational facilities and resources are inadequate compared to Indonesian universities. Therefore, the educational facilities, life status, and family background might motivate international students to engage in online learning. This argument is supported by the qualitative findings of the study by S. Lee (2017) conducted in the United States, which found the vital role of self-determination of international students in their academic activities.

Previous literature (Gibbs & Poskitt, 2010; Groves et al., 2015; Kuo, 2014; Zepke et al., 2010) shows the potential influence of three kinds of learning interactions: instructor-learner, learner-contents, and learner-learner on learning engagement and satisfaction. Conversely, the current study indicates no such significant effects. However, the present findings only indicate the considerable influence of instructor interactivity on student-material interaction, which positively affected student-student interactions. More research needs to be done to explore the effects of the three interactions on the learning engagement of international students in Indonesia and other Asian countries. Most previous studies that showed positive effects of such interactions on student engagement were conducted in different cultural contexts. The cross-cultural differences in academic experiences, including academic interactions, are reported by the recent study of Chen & Zhu (2020).

The study provides a hint about the role of the self-regulation factor on interaction with learning materials in which there is a significant influence. However, it indicates no significant direct effect of self-regulation on student engagement; meanwhile, student motivation influences self-regulation learning. More studies are needed to verify this since previous literature suggests the close association between self-regulation and engagement (Fredricks et al., 2004; Shea & Bidjerano, 2010), contrary to the current study's findings.

Finally, increasing student engagement in educational institutions is one of the efforts that educators and stakeholders should make to reduce problems to students in general and international students specifically. Issues such as low academic achievement, increased learning boredom, and increased dropout cases from colleges are caused by students' disengagement in educational activities (Fredricks et al., 2016). Although some students are well engaged in the teaching and learning activities, some are not engaged by being apathetic, casual chatting, not being excited, not focusing, or even sleeping during learning activities (Appleton et al., 2008). Thus, learner engagement in an online classroom is critical because students who feel unmotivated, bored, and uninvolved make them detached from the learning process's academic and non-academic aspects (Appleton et al., 2008; Fredricks, 2011).

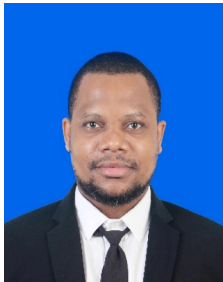
CONCLUSION, LIMITATIONS, AND SUGGESTIONS

This study explored factors that can influence international students in Indonesian universities to engage well in online learning during the new normal after the pandemic. Eight variables were modeled together based on the structural equation modeling technique to determine their causal-effect relationships and test formulated hypotheses. The study results indicate that three variables, namely motivation, personal innovativeness in IT, and University (institutional) support were the best predictors of international students' engagement in online learning. While instructor interactivity, student-student interactions, self-regulated learning, and student-material interaction had no significant effects on international students' engagement. Moreover, the study results culminate the model, which explains the 62.8% variance of online learning engagement, suggesting that modeling student motivation, personal innovativeness, and institutional support variables can provide a good explanation of online learning and promote engagement for international students.

This study has some limitations that need to be considered for future replication of findings. First, the sampling technique was based on the non-probabilistic method in which not all international students had an equal chance of participation. Additionally, the sample used was small compared to the total population (more than a thousand) of international students studying in Indonesia amid the pandemic. Hence, the generalizability should be with caution. Nonetheless, the data sample established the reliability and validity of the proposed SEM model. Furthermore, the study's primary aim was to verify the proposed hypotheses in which more than half of the proposed hypotheses were satisfied. That means the model can be replicated in future studies with different contexts.

Moreover, the study didn't hypothesize the relationships between university support and motivation variables and instructor interactivity and motivation. Future studies can consider those essential relationships and additional variables such as self-efficacy and family support to explore their effects on online learning engagement. Lastly, more longitudinal research on online learning in international students in Indonesia is needed to verify the reliability of the current findings, whose study is based on a cross-sectional approach.

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REFERENCES

- Abubakari, M. S., & Mashoedah. (2021). Online Learning Engagement Model for International Students in Indonesia amid Covid-19 Period: A Conceptual Model Proposal. *International Journal of Distance Education and E-Learning*, 6(2), 15–30. <https://doi.org/10.36261/ijdeel.v6i2.1859>
- Agarwal, R., & Prasad, J. (1998). A Conceptual and Operational Definition of Personal Innovativeness in the Domain of Information Technology. *Information Systems Research*, 9(2), 204–215. <https://doi.org/10.1287/isre.9.2.204>
- Akpan, I. D., & Umobong, M. E. (2013). Analysis of Achievement Motivation and Academic Engagement of Students in the Nigerian Classroom. *Academic Journal of Interdisciplinary Studies*, 2(3), 385–390. <https://doi.org/10.5901/ajis.2013.v2n3p385>
- Al-Busaidi, K. A., & Al-Shihi, H. (2012). Key factors to instructors' satisfaction of learning management systems in blended learning. *Journal of Computing in Higher Education*, 24(1), 18–39. <https://doi.org/10.1007/s12528-011-9051-x>
- Ali, A., & Ahmad, I. (2011). Key Factors for Determining Student Satisfaction in Distance Learning Courses: A Study of Allama Iqbal Open University. *Contemporary Educational Technology*, 2(2), 118–134. <https://doi.org/10.30935/cedtech/6047>
- Alivernini, F., & Lucidi, F. (2008). The academic motivation scale (AMS): Factorial structure, invariance, and validity in the Italian context. *TPM - Testing, Psychometrics, Methodology in Applied Psychology*, 15(4), 211–220.
- Amoozegar, A., Mohd Daud, S., Mahmud, R., & Ab Jalil, H. (2017). Exploring Learner to Institutional Factors and Learner Characteristics as a Success Factor in Distance Learning. *International Journal of Innovation and Research in Educational Sciences*, 4(6), 2349–5219.
- Anderson, T. (2003). Getting the Mix Right Again: An Updated and Theoretical Rationale for Interaction. *The International Review of Research in Open and Distributed Learning*, 4(2), 126–141. <https://doi.org/10.19173/irrodl.v4i2.149>
- Anderson, T. (2004). Towards a theory of online learning. *Theory and Practice of Online Learning*, 2, 109–119. <https://doi.org/10.1145/588053.588057>
- Appleton, J. J., Christenson, S. L., & Furlong, M. J. (2008). Student engagement with school: Critical conceptual and methodological issues of the construct. *Psychology in the Schools*, 45(5), 369–386. <https://doi.org/10.1002/pits.20303>
- Appleton, J. J., Christenson, S. L., Kim, D., & Reschly, A. L. (2006). Measuring cognitive and psychological engagement: Validation of the Student Engagement Instrument. *Journal of School Psychology*, 44(5), 427–445. <https://doi.org/10.1016/j.jsp.2006.04.002>
- Azorin, C. (2020). Beyond COVID-19 supernova. Is another education coming? *Journal of Professional Capital and Community*, 5(3/4), 381–390. <https://doi.org/10.1108/JPCCC-05-2020-0019>
- Baloran, E. T. (2020). Knowledge, Attitudes, Anxiety, and Coping Strategies of Students during COVID-19 Pandemic. *Journal of Loss and Trauma*, 25(8), 635–642. <https://doi.org/10.1080/15325024.2020.1769300>
- Bandura, A. (2001). Social Cognitive Theory: An Agentic Perspective. *Annual Review of Psychology*, 52(1), 1–26. <https://doi.org/10.1146/annurev.psych.52.1.1>

- Basuony, M. A. K., EmadEldeen, R., Farghaly, M., El-Bassiouny, N., & Mohamed, E. K. A. (2020). The factors affecting student satisfaction with online education during the COVID-19 pandemic: an empirical study of an emerging Muslim country. *Journal of Islamic Marketing*, 12(3), 631–648. <https://doi.org/10.1108/JIMA-09-2020-0301>
- Bayham, J., & Fenichel, E. P. (2020). Impact of school closures for COVID-19 on the US health-care workforce and net mortality: a modelling study. *The Lancet Public Health*, 5(5), e271–e278. [https://doi.org/10.1016/S2468-2667\(20\)30082-7](https://doi.org/10.1016/S2468-2667(20)30082-7)
- Ben-Eliyahu, A., Moore, D., Dorph, R., & Schunn, C. D. (2018). Investigating the multidimensionality of engagement: Affective, behavioral, and cognitive engagement across science activities and contexts. *Contemporary Educational Psychology*, 53, 87–105. <https://doi.org/10.1016/j.cedpsych.2018.01.002>
- Bervell, B., Umar, I. N., & Kamilin, M. H. (2020). Towards a model for online learning satisfaction (MOLS): re-considering non-linear relationships among personal innovativeness and modes of online interaction. *Open Learning*, 35(3), 236–259. <https://doi.org/10.1080/02680513.2019.1662776>
- Blankenberger, B., & Williams, A. M. (2020). COVID and the impact on higher education: The essential role of integrity and accountability. *Administrative Theory and Praxis*, 42(3), 404–423. <https://doi.org/10.1080/10841806.2020.1771907>
- Brunsting, N. C., Smith, A. C., & Zachry, C. E. (2018). An Academic and Cultural Transition Course for International Students: Efficacy and SocioEmotional Outcomes. *Journal of International Students*, 8(4), 1497–1521. <https://doi.org/10.32674/jis.v8i4.213>
- Chen, J., & Zhu, J. (2020). Cross-Cultural Adaptation Experiences of International Scholars in Shanghai. In *Shanghai Jiao Tong University Press*. Springer Singapore. <https://doi.org/10.1007/978-981-15-4546-7>
- Cho, M. H., & Kim, B. J. (2013). Students' self-regulation for interaction with others in online learning environments. *Internet and Higher Education*, 17(1), 69–75. <https://doi.org/10.1016/j.iheduc.2012.11.001>
- Cho, M. H., Kim, Y., & Choi, D. H. (2017). The effect of self-regulated learning on college students' perceptions of community of inquiry and affective outcomes in online learning. *Internet and Higher Education*, 34(April), 10–17. <https://doi.org/10.1016/j.iheduc.2017.04.001>
- Christenson, S. L., Wylie, C., & Reschly, A. L. (2012). Handbook of Research on Student Engagement. In S. L. Christenson, A. L. Reschly, & C. Wylie (Eds.), *Handbook of Research on Student Engagement*. Springer US. <https://doi.org/10.1007/978-1-4614-2018-7>
- Cleland, J., McKimm, J., Fuller, R., Taylor, D., Janczukowicz, J., & Gibbs, T. (2020). Adapting to the impact of COVID-19: Sharing stories, sharing practice. *Medical Teacher*, 42(7), 772–775. <https://doi.org/10.1080/0142159X.2020.1757635>
- Coffin Murray, M., Perez, J., Geist, D., & Hedrick, A. (2012). Student Interaction with Online Course Content: Build It and They Might Come. *Journal of Information Technology Education: Research*, 11(1), 125–140. <https://doi.org/10.28945/1592>
- Cronbach, L. J. (1951). Coefficient alpha and the internal structure of tests. *Psychometrika*, 16(3), 297–334. <https://doi.org/10.1007/BF02310555>
- Croxton, R. (2014). The role of interactivity in student satisfaction and persistence in online learning. *Journal of Online Learning and Teaching*, 10(2), 314.
- Deci, E. L., & Ryan, R. M. (1985). *Intrinsic Motivation and Self-Determination in Human Behavior*. Springer US. <https://doi.org/10.1007/978-1-4899-2271-7>
- Ferdiansyah, S., Supiastutik, & Angin, R. (2020). Thai Students' Experiences of Online Learning at Indonesian Universities in the Time of the COVID-19 Pandemic. *Journal of International Students*, 10(S3 (2020)), 58–74.

- Fornell, C., & Larcker, D. F. (1981). Evaluating Structural Equation Models with Unobservable Variables and Measurement Error. *Journal of Marketing Research*, 18(1), 39. <https://doi.org/10.2307/3151312>
- Fredricks, J. A. (2011). Engagement in school and out-of-school contexts: A multidimensional view of engagement. *Theory into Practice*, 50(4), 327–335. <https://doi.org/10.1080/00405841.2011.607401>
- Fredricks, J. A., Blumenfeld, P. C., & Paris, A. H. (2004). School engagement: Potential of the concept, state of the evidence. *Review of Educational Research*, 74(1), 59–109. <https://doi.org/10.3102/00346543074001059>
- Fredricks, J. A., Filsecker, M., & Lawson, M. A. (2016). Student engagement, context, and adjustment: Addressing definitional, measurement, and methodological issues. *Learning and Instruction*, 43, 1–4. <https://doi.org/10.1016/j.learninstruc.2016.02.002>
- Fredricks, J. A., & McColskey, W. (2012). The Measurement of Student Engagement: A Comparative Analysis of Various Methods and Student Self-report Instruments. In *Handbook of Research on Student Engagement* (pp. 763–782). Springer US. https://doi.org/10.1007/978-1-4614-2018-7_37
- Friedman, H. S., & Schustack, M. W. (2016). *Personality: Classic Theories and Modern Research: Sixth Edition*.
- Garcia-Reid, P. (2007). Examining social capital as a mechanism for improving school engagement among low income hispanic girls. *Youth and Society*, 39(2), 164–181. <https://doi.org/10.1177/0044118X07303263>
- Gibbs, R., & Poskitt, J. (2010). Student engagement in the middle years of schooling (year 7-10): A literature review. Report to the Ministry of Education. In *Ministry of Education, New Zealand: www.educationcounts.govt.nz/publications*
- Groves, M., Sellars, C., Smith, J., & Barber, A. (2015). Factors Affecting Student Engagement: A Case Study Examining Two Cohorts of Students Attending a Post-1992 University in the United Kingdom. *International Journal of Higher Education*, 4(2), 27–37. <https://doi.org/10.5430/ijhe.v4n2p27>
- Gunuc, S., & Kuzu, A. (2015). Student engagement scale: development, reliability and validity. *Assessment and Evaluation in Higher Education*, 40(4), 587–610. <https://doi.org/10.1080/02602938.2014.938019>
- Hair, J. F., Risher, J. J., Sarstedt, M., & Ringle, C. M. (2019). When to use and how to report the results of PLS-SEM. *European Business Review*, 31(1), 2–24. <https://doi.org/10.1108/EBR-11-2018-0203>
- Hair Jr, J., Hult, G. T., Ringle, C., & Sarstedt, M. (2017). A Primer on Partial Least Squares Structural Equation Modeling (PLS-SEM) - Joseph F. Hair, Jr., G. Tomas M. Hult, Christian Ringle, Marko Sarstedt. In *Sage*.
- Hamdan, K. M., Al-Bashaireh, A. M., Zahran, Z., Al-Daghestani, A., AL-Habashneh, S., & Shaheen, A. M. (2021). University students' interaction, Internet self-efficacy, self-regulation and satisfaction with online education during pandemic crises of COVID-19 (SARS-CoV-2). *International Journal of Educational Management*, 35(3), 713–725. <https://doi.org/10.1108/IJEM-11-2020-0513>
- Hastowahadi, Setyaningrum, R. W., & Pangesti, F. (2020). Forced Remote Learning during the COVID-19 Outbreak: International Students' Stories from a Bahasa Indonesia (the Indonesian Language) for Foreigners Classroom. *Journal of International Students*, 10(S3 (2020)), 180–197. <https://www.ojed.org/index.php/jis/article/view/3206>
- Henseler, J., Hubona, G., & Ray, P. A. (2016). Using PLS path modeling in new technology research: updated guidelines. *Industrial Management & Data Systems*, 116(1), 2–20. <https://doi.org/10.1108/IMDS-09-2015-0382>
- Henseler, J., Hubona, G., & Ray, P. A. (2017). Partial Least Squares Path Modeling: Updated Guidelines. In *Partial Least Squares Path Modeling* (pp. 19–39). Springer International Publishing. https://doi.org/10.1007/978-3-319-64069-3_2

- Henseler, J., Ringle, C. M., & Sarstedt, M. (2015). A new criterion for assessing discriminant validity in variance-based structural equation modeling. *Journal of the Academy of Marketing Science*, 43(1), 115–135. <https://doi.org/10.1007/s11747-014-0403-8>
- Jacobi, L. (2018). What motivates students in the online communication classroom? An exploration of self-determination theory. *Journal of Educators Online*, 15(2). <https://doi.org/10.9743/jeo.2018.15.2.1>
- Jaggars, S. S. (2014). Choosing Between Online and Face-to-Face Courses : Community College Student Voices. *American Journal of Distance Education*, 28(1), 27–38. <https://doi.org/10.1080/08923647.2014.867697>
- Jimerson, S. R., Campos, E., & Greif, J. L. (2003). Toward an Understanding of Definitions and Measures of School Engagement and Related Terms. *The California School Psychologist*, 8(1), 7–27. <https://doi.org/10.1007/BF03340893>
- Jung, I., Choi, S., Lim, C., & Leem, J. (2002). Effects of Different Types of Interaction on Learning Achievement, Satisfaction and Participation in Web-Based Instruction. *Innovations in Education and Teaching International*, 39(2), 153–162. <https://doi.org/10.1080/14703290252934603>
- Kahn, P., Everington, L., Kelm, K., Reid, I., & Watkins, F. (2017). Understanding student engagement in online learning environments: the role of reflexivity. *Educational Technology Research and Development*, 65(1), 203–218. <https://doi.org/10.1007/s11423-016-9484-z>
- Khanal, J., & Gaulee, U. (2019). Challenges of international students from pre-departure to post-study: A literature review. *Journal of International Students*, 9(2), 560–581. <https://doi.org/10.32674/jis.v9i2.673>
- King, R. B., & Datu, J. A. D. (2017). Materialism does not pay: Materialistic students have lower motivation, engagement, and achievement. *Contemporary Educational Psychology*, 49, 289–301. <https://doi.org/10.1016/j.cedpsych.2017.03.003>
- Kuo, Y. C. (2014). Accelerated Online Learning: Perceptions of Interaction and Learning Outcomes Among African American Students. *American Journal of Distance Education*, 28(4), 241–252. <https://doi.org/10.1080/08923647.2014.959334>
- Kuo, Y. C., Walker, A. E., Schroder, K. E. E., & Belland, B. R. (2014). Interaction, Internet self-efficacy, and self-regulated learning as predictors of student satisfaction in online education courses. *Internet and Higher Education*, 20, 35–50. <https://doi.org/10.1016/j.iheduc.2013.10.001>
- Kyei-Blankson, L., Blankson, J., Ntuli, E., & Agyeman, C. (2016). *Handbook of Research on Strategic Management of Interaction, Presence and Participation in Online Courses: Vol. i*.
- Le, H., & McKay, J. (2018). Chinese and Vietnamese international students in Australia. *International Journal of Educational Management*, 32(7), 1278–1292. <https://doi.org/10.1108/IJEM-08-2016-0180>
- Lee, J. W. (2010). Online support service quality, online learning acceptance, and student satisfaction. *Internet and Higher Education*, 13(4), 277–283. <https://doi.org/10.1016/j.iheduc.2010.08.002>
- Lee, S. (2017). Exploring the Social and Academic Experiences of International Students in Higher Education Institutions. *Journal of International Students*, 7(1), 160–162. <https://doi.org/10.32674/jis.v7i1.251>
- Li, J., Wang, Y., Liu, X., Xu, Y., & Cui, T. (2018). Academic Adaptation Among International Students from East Asian Countries: A Consensual Qualitative Research. *Journal of International Students*, 8(1), 194–214. <https://doi.org/10.32674/jis.v8i1.160>
- Li, J., Wang, Y., & Xiao, F. (2014). East Asian International Students and Psychological Well-Being: A Systematic Review. *Journal of International Students*, 4(4), 301–313. <https://ezproxy.library.astate.edu/login?url=http://search.proquest.com/docview/1642598044?accountid=8363%5Cnhttp://linksource.ebsco.com/linking.aspx?sid=ProQ:education&fmt=journal&genre=article&issn=21623104&volume=4&issue=4&date=2014-12-01&spage=301&tit>

- Luo, Z., Wu, S., Fang, X., & Brunsting, N. (2019). International Students' Perceived Language Competence, Domestic Student Support, and Psychological Well-Being at a US University. *Journal of International Students*, 9(4), 954–971. <https://doi.org/10.32674/jis.v0i0.605>
- Marks, H. M. (2000). Student engagement in instructional activity: Patterns in the elementary, middle, and high school years. *American Educational Research Journal*, 37(1), 153–184. <https://doi.org/10.3102/00028312037001153>
- McGarvey, A., Brugha, R., Conroy, R. M., Clarke, E., & Byrne, E. (2015). International students' experience of a western medical school: A mixed methods study exploring the early years in the context of cultural and social adjustment compared to students from the host country. *BMC Medical Education*, 15(1), 1–13. <https://doi.org/10.1186/s12909-015-0394-2>
- McLaughlin, M., McGrath, D. J., Burian-Fitzgerald, M. A., Lanahan, L., Scotchmer, M., Enyeart, C., & Salganik, L. (2005). *Student Content Engagement as a Construct for the Measurement of Effective Classroom Instruction and Teacher Knowledge*. American Institutes for Research. http://www.air.org/sites/default/files/downloads/report/AERA2005Student_Content_Engagement11_0.pdf
- Means, B., & Neisler, J. (2021). Teaching and learning in the time of covid: The student perspective. *Online Learning Journal*, 25(1), 8–27. <https://doi.org/10.24059/olj.v25i1.2496>
- Moore, J. (2014). Effects of online interaction and instructor presence on students' satisfaction and success with online undergraduate public relations courses. *Journalism and Mass Communication Educator*, 69(3), 271–288. <https://doi.org/10.1177/1077695814536398>
- Moore, M. G. (1989). Editorial: Three Types of Interaction. In *American Journal of Distance Education* (Vol. 3, Issue 2, pp. 1–7). <https://doi.org/10.1080/08923648909526659>
- Murphy, M. P. A. (2020). COVID-19 and emergency eLearning: Consequences of the securitization of higher education for post-pandemic pedagogy. *Contemporary Security Policy*, 41(3), 492–505. <https://doi.org/10.1080/13523260.2020.1761749>
- Murray, M., Perez, J., Geist, D., & Hedrick, A. (2013). Student interaction with content in online and hybrid courses: Leading horses to the proverbial water. *Informing Science*, 16(1), 99–115. <https://doi.org/10.28945/1779>
- Ngafeeson, M. N., & Sun, J. (2015). The effects of technology innovativeness and system exposure on student acceptance of e-textbooks. *Journal of Information Technology Education*, 14(1), 55–71. <https://doi.org/10.28945/2101>
- Nguyen, Q. N., & Van Nguyen, L. (2019). Assessing the construct validity and reliability of the academic motivation scale in the Vietnamese context. *Current Issues in Personality Psychology*, 7(1), 64–79. <https://doi.org/10.5114/cipp.2019.82752>
- Nurfaidah, S., Tambunan, A. R. S., Yonata, F., Kurniawati, D., & Lestariyana, R. P. D. (2020). International Students' Perceptions of Virtual Service Learning Program amidst COVID-19 Pandemic. *Journal of International Students*, 10(S3 (2020)), 198–208.
- Owusu-Agyeman, Y., & Larbi-Siaw, O. (2018). Exploring the factors that enhance student–content interaction in a technology-mediated learning environment. *Cogent Education*, 5(1). <https://doi.org/10.1080/2331186X.2018.1456780>
- Ozkan, S., & Koseler, R. (2009). Multi-dimensional students' evaluation of e-learning systems in the higher education context: An empirical investigation. *Computers & Education*, 53(4), 1285–1296. <https://doi.org/10.1016/j.compedu.2009.06.011>
- Patall, E. A., Vasquez, A. C., Steingut, R. R., Trimble, S. S., & Pituch, K. A. (2016). Daily interest, engagement, and autonomy support in the high school science classroom. *Contemporary Educational Psychology*, 46, 180–194. <https://doi.org/10.1016/j.cedpsych.2016.06.002>
- Patrick, H., Ryan, A. M., & Kaplan, A. (2007). Early adolescents' perceptions of the classroom social environment, motivational beliefs, and engagement. *Journal of Educational Psychology*, 99(1), 83–98. <https://doi.org/10.1037/0022-0663.99.1.83>

- Puspitasari, D., Rahayu, W. W., Rohmatunnazilah, & Suwarno. (2020). Exploring the Feelings of International Students : When We Learn Virtually during the COVID-19 Pandemic. *Journal of International Students*, 10(S3 (2020)), 142–160.
- Raaper, R., & Brown, C. (2020). The Covid-19 pandemic and the dissolution of the university campus: implications for student support practice. *Journal of Professional Capital and Community*, 5(3/4), 343–349. <https://doi.org/10.1108/JPCC-06-2020-0032>
- Rahman, F. F., & Lin, K. (2020). The Psychological Well-Being of Newly-Arrived Indonesian Students in Taiwan Kesejahteraan Psikologis Mahasiswa Baru Indonesia di Taiwan. *Journal of International Students*, 1(S3), 44–57.
- Rana, M., Bhasin, J., & Mushtaq, S. (2020). Measurement of Cultural Intelligence and Its Impact on Psychological Adaptation of International Students in India. *Vision: The Journal of Business Perspective*, 24(4), 452–459. <https://doi.org/10.1177/0972262920939789>
- Ringle, C. M., Wende, S., & Becker, J.-M. (2015). *SmartPLS 3*. SmartPLS GmbH. www.smartpls.com
- Rogers, E. M. (2003). *Diffusion of Innovations* (5th Editio). Free Press.
- Ruzek, E. A., Hafen, C. A., Allen, J. P., Gregory, A., Mikami, A. Y., & Pianta, R. C. (2016). How teacher emotional support motivates students: The mediating roles of perceived peer relatedness, autonomy support, and competence. *Learning and Instruction*, 42(April), 95–103. <https://doi.org/10.1016/j.learninstruc.2016.01.004>
- Safsouf, Y., Mansouri, K., & Poirier, F. (2020). An Analysis to Understand the Online Learners' Success in Public Higher Education in Morocco. *Journal of Information Technology Education: Research*, 19, 087–112. <https://doi.org/10.28945/4518>
- Shafaei, A., Nejati, M., & Abd Razak, N. (2018). A model of psychological well-being among international students. *Educational Psychology*, 38(1), 17–37. <https://doi.org/10.1080/01443410.2017.1356447>
- Shea, P., & Bidjerano, T. (2010). Learning presence: Towards a theory of self-efficacy, self-regulation, and the development of a communities of inquiry in online and blended learning environments. *Computers and Education*, 55(4), 1721–1731. <https://doi.org/10.1016/j.compedu.2010.07.017>
- Sher, A. (2009). Assessing the relationship of student-instructor and student-student interaction to student learning and satisfaction in Web-based Online Learning Environment. *Journal of Interactive Online Learning*, 8(2), 102–120.
- Shih, M., Liang, J. C., & Tsai, C. C. (2019). Exploring the role of university students' online self-regulated learning in the flipped classroom: a structural equation model. *Interactive Learning Environments*, 27(8), 1192–1206. <https://doi.org/10.1080/10494820.2018.1541909>
- Singh, M. K. M. (2019). Academic reading and writing challenges among international EFL master's students in a Malaysian university: The voice of lecturers. *Journal of International Students*, 9(4), 972–992. <https://doi.org/10.32674/jis.v9i3.934>
- Skinner, E. A., Kindermann, T. A., & Furrer, C. J. (2009). A Motivational Perspective on Engagement and Disaffection. *Educational and Psychological Measurement*, 69(3), 493–525. <https://doi.org/10.1177/0013164408323233>
- Skinner, E. A., Kindermann, T. A., James P. Connell, A., & Wellborn, J. G. (2009). Engagement and disaffection as organizational constructs in the dynamics of motivational development. In *Handbook of motivation at school* (pp. 223–245). Routledge/ Taylor & Francis Group.
- Skinner, E., Furrer, C., Marchand, G., & Kindermann, T. (2008). Engagement and Disaffection in the Classroom: Part of a Larger Motivational Dynamic? *Journal of Educational Psychology*, 100(4), 765–781. <https://doi.org/10.1037/a0012840>
- Soric, I., Penezic, Z., & Buric, I. (2017). The Big Five personality traits, goal orientations, and academic achievement. *Learning and Individual Differences*, 54, 126–134. <https://doi.org/10.1016/j.lindif.2017.01.024>

- Stoen Utvær, B. K., & Haugan, G. (2016). The Academic Motivation Scale: Dimensionality, Reliability, and Construct Validity Among Vocational Students. *Nordic Journal of Vocational Education and Training*, 6(2), 17–45. <https://doi.org/10.3384/njvet.2242-458x.166217>
- Susanto, G., Suparmi, & Rahayu, E. Y. (2020). The Emotional Geography of International Students in Online Bahasa Indonesia Learning during the COVID-19 Pandemic. *Journal of International Students*, 10(S3 (2020)), 161–179. <https://doi.org/10.32674/jis.v10iS3.3205>
- Tonks, D., Kimmons, R., & Mason, S. L. (2021). Motivations among Special Education Students and their Parents for Switching to an Online School: Survey Responses and Emergent Themes. *Online Learning*, 25(2), 171–189. <https://doi.org/10.24059/olj.v25i2.2141>
- van Raaij, E. M., & Schepers, J. J. L. (2008). The acceptance and use of a virtual learning environment in China. *Computers and Education*, 50(3), 838–852. <https://doi.org/10.1016/j.compedu.2006.09.001>
- Wang, M.-T., & Eccles, J. S. (2013). School context, achievement motivation, and academic engagement: A longitudinal study of school engagement using a multidimensional perspective. *Learning and Instruction*, 28, 12–23. <https://doi.org/10.1016/j.learninstruc.2013.04.002>
- Wang, M.-T., & Holcombe, R. (2010). Adolescents' Perceptions of School Environment, Engagement, and Academic Achievement in Middle School. *American Educational Research Journal*, 47(3), 633–662. <https://doi.org/10.3102/0002831209361209>
- Wang, M.-T., & Peck, S. C. (2013). Adolescent educational success and mental health vary across school engagement profiles. *Developmental Psychology*, 49(7), 1266–1276. <https://doi.org/10.1037/a0030028>
- Widiasih, R., Hermayanti, Y., & Ermiami. (2020). International Students ' Experience of Studying at Indonesian Universities : A Systematic Review. *Journal of International Students*, 10(S3 (2020)), 24–43. [https://doi.org/https://doi.org/10.32674/jis.v10iS\(2\).2710](https://doi.org/https://doi.org/10.32674/jis.v10iS(2).2710)
- Widodo, H. P., Ferdiansyah, S., & Fridani, L. (2020). Introduction to International Students and COVID-19. *Journal of International Students*, 10(S3 (2020)), i–xii.
- Zepke, N., Butler, P., & Leach, L. (2012). Institutional research and improving the quality of student engagement. *Quality in Higher Education*, 18(3), 329–347. <https://doi.org/10.1080/13538322.2012.730338>
- Zepke, N., & Leach, L. (2010). Improving student engagement: Ten proposals for action. *Active Learning in Higher Education*, 11(3), 167–177. <https://doi.org/10.1177/1469787410379680>
- Zepke, N., Leach, L., & Butler, P. (2010). Student engagement: what is it and what influences it. In *Teaching and Learning Research Initiative*. (Vol. 1).
- Zimmerman, T. D. (2012). Exploring learner to content interaction as a success factor in online courses. *International Review of Research in Open and Distance Learning*, 13(4), 152–165. <https://doi.org/10.19173/irrodl.v13i4.1302>

THE EFFECT OF CLUSTER TEACHING WITH WORKSHEETS ON STUDENTS' ACADEMIC ACHIEVEMENT IN DISTANCE EDUCATION

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ABSTRACT

The aim of this study is to examine the effect of teaching with worksheets prepared for the 6th grade clusters in distance education on the academic achievement of students. The research was conducted with 39 students studying in a public secondary school in eastern Turkiye in the first semester of the 2020-2021 academic year. In the study, a quasi-experimental design with pretest-posttest control group was practiced to collect data. In the experimental group, the subject of cluster was taught with worksheets prepared in accordance with the constructivist teaching, and in the control group, with general teaching methods. After the practice, the "Clusters Achievement Test" was applied to the experimental and control group students as pre-test and post-test. The academic achievement of the experimental and control groups were compared and it was determined that there was a statistically significant difference in favor of the experimental group. Data analyzes showed that the worksheets prepared for the subject of clusters in distance education increased the academic achievement of the students. At the end of the practice carried out within the scope of the study, semi-structured interviews were conducted with 5 students in the experimental group who fully participated in the studies and activities. The findings obtained from the interviews showed that the students adopted the lessons taught with the worksheets. In addition, it was determined from the statements of the students that they were satisfied with the teaching of the lessons using worksheets in the distance education process, they participated more actively in the online lessons, and they made extra efforts in using materials and completing the activities.

Keywords: Distance education, mathematics teaching, cluster teaching, worksheets.

INTRODUCTION

National or international pandemic periods affect education and training fields as well as living conditions. In this sense, the effects of the new type of corona virus, which emerged in Wuhan, China in 2019, on the education and training process accelerated the digitalization process in education and highlighted distance education. Many countries around the world, using various education portals (UNESCO, 2020), have decided that students continue their education with distance education during the Covid-19 process. Online lessons and online courses have started to be run by teachers and school administration in almost every

country to support communication with students and parents (Chang & Satako, 2020). With the detection of Covid-19 cases in Türkiye, face-to-face education was suspended and distance education was started as of March 23, 2020. Thus, the distance education process began at all education levels. In this process, the Ministry of National Education [MEB] started to carry out distance education activities through the Education Information Network [EBA] platform and TRT EBA TV (Primary, Secondary and High School) channels.

Distance education is a planned open access learning method that requires special instructional designs and technologies, where learners and instructors are in different environments (Moore & Kearsley, 2011). At the same time, it is a learning activity that provides flexibility of time and space with special communication methods (Altıparmak, 2011). According to Zhou, Wu, Zhou and Li (2020), distance education is a method of disseminating content and fast learning through information and internet technologies. The increase in digital communication opportunities in today's conditions has been effective in the web-based conduct of distance education. Web-based distance education activities; synchronous (synchronous), asynchronous (asynchronous) and mixed education models are used (Sen, Atasoy & Aydin, 2010). Thus, students with different characteristics and backgrounds can continue their education. Particularly in the synchronous model, there is an interactive learning, and the instructor and learners attend online classes at the same time, even though they are in different environments. Eventually, interacting with students helps students understand the course content and structure their knowledge. However, there are studies showing that the lack of sufficient interaction (student-content, student-teacher, student-student) in distance education causes various negativities such as lack of motivation, lack of participation in the course, and decrease in success (Demir & Gologlu Demir, 2021; Kilit & Guner, 2021; Niemi & Kousa, 2020; Uzoglu, 2017).

The pandemic process forces educators, students and parents to work collaboratively, communicate, solve problems and be active (Anderson, 2020). In addition, this process reveals that more investments should be made in open and distance education systems in order to continue education and training without interruption, and that alternative learning approaches should be given importance instead of traditional education approaches (Can, 2020). One of the basic elements that create success in distance education is the use of active learning methods (Cagiltay, 2001). As a matter of fact, many studies show that teachers mostly prefer the lecture method in distance education (Bakioglu & Cevik, 2020; Basaran, Dogan, Karaoglu, & Sahin, 2020; Ozdemir Baki & Celik, 2021). In addition, these studies reveal that the materials that teachers use most in distance education are documents (slides, tests, books) and z-books. However, it is necessary for a quality distance education process to prefer methods and materials with high student interactions in mathematics teaching. It is very important to use materials that embody the subjects in mathematics teaching (Inan & Erkus, 2017).

Worksheets are a material used in modern teaching methods with their ease of use in mathematics teaching, the possibility of being prepared in accordance with the content and the way to save the lesson from stagnation (Demirel, 2004). At the same time, they are important tools that include the steps of the process in which students are told what to do, help them to establish their knowledge in their own minds, and enable the whole class to participate in the given activity at the same time (Sands & Ozcelik, 1997). According to Mortensen and Smartt (2007), worksheets are a strategy that allows students to control their own learning. Lee (2014) stated that using worksheets for different purposes (in addition to textbooks and adding information for certain grade levels) may be beneficial for academic success. In addition, the researcher emphasized that the activities in the worksheets are an opportunity for students to build their knowledge. Because worksheets guide the student about what to do, make the student active in the lesson, and enable the student to access information by making them think. In addition, it has a special importance as it is a material that teachers and students can prepare themselves in accordance with the conditions and situations. Thus, since teachers get to know their students better, they can prepare worksheets suitable for students' levels by predicting what they like and how they can learn more easily (Isik & Ozdemir, 2014). At this point, the most important thing is to associate the learned information with daily life and transfer it to the student successfully. This highlights the design of the worksheets.

Lee (2014), who stated that the basic way of conveying the message given in the worksheets to the students correctly, is the order, and suggested that when well-designed questions are matched with appropriate teaching methods, they can attract the attention of the students. For example, Trisnowati and Sumardi (2019) examined students' critical thinking and conceptual understanding skills by using worksheets developed with a problem-solving approach in their research. It was observed that the experimental group

using worksheets had higher critical thinking and conceptual understanding. The researchers suggested that student worksheets are a student guide used for conducting research activities or solving problems. Similarly, many studies reveal that worksheets increase students' interest in the lesson, enable them to take responsibility for their own learning (Kisiel, 2003), provide effective concept teaching (Aktepe, 2012; Aydina, 2015; Isik & Ozdemir, 2014; Keskin, 2019), eliminate students' misconceptions (Atasoy, Kucuk & Akdeniz, 2011) and increase academic success (Buniel & Monding, 2021; Celikler, 2010; Ev, 2003; Gocer, 2012; Saka ve Akdeniz, 2001). There are also studies showing that e-learning-based worksheets used in recent years improve mathematical problem solving and mathematical problem posing skills (Putra, Herman & Sumarno, 2017). However, related studies point out that worksheets have some limitations. In this direction, Bozdogan (2007) stated that visuality is important in worksheets, but the student should not focus only on visuality. At the same time, she emphasized that the duration of the lesson should be well-arranged and suggested that the paragraphs should not be long so that the interest of the student does not decrease. Tan (2008), on the other hand, stated that when students see themselves as inadequate due to their individual learning speed, their motivation decreases. Lesley and Labbo (2003) observed that improper preparation and use of worksheets hinders learning. Researchers noted quality issues such as lack of free space for students to write, complex language, only one correct way, and difficult tasks.

In distance education, keeping students' attention for a long time, motivating them and making them willing to learn is more difficult than face-to-face education. While some studies conducted in this direction reveal that online learning has many advantages for students and teachers and is as effective as face-to-face learning (Bernard et al., 2004; Ward, Peters & Shelley, 2010; Zhao, Lei, Yan, Lai & Tan, 2005), while others show that online learning limits face-to-face classroom interactions (Demir, & Gologlu Demir, 2021; Murphy, 2020; Sengil Akar & Kurtoglu Erden, 2021; Xu & Jaggars, 2014). For this reason, worksheets, which are one of the interactive teaching materials; It is estimated that it will increase the participation, interest and motivation of the students in the online lesson and may have positive effects on the development of distance mathematics teaching. There are also studies suggesting that preparing worksheets for subjects that students have learning difficulties may be beneficial (Atasoy, Akdeniz & Baskan, 2007; Demircioglu & Atasoy, 2006). In this respect, since the subject of cluster is one of the abstract concepts in mathematics (Baki, 2001), it is obvious that students may experience some learning difficulties in learning this concept. There are studies that show that students have various misconceptions about basic concepts (different representations of cluster, element, number of elements, empty set, union, intersection) in cluster teaching and therefore make basic mistakes (Gur, 2009; Yazici, Albayrak & Aslan, 2020). Regarding this, Ipek, Albayrak, and Isik (2009) argued that it is necessary to give examples of the concepts based on daily life in teaching the concept of cluster. Although cluster is one of the important subjects of mathematics, numbers and operations take place in the field of learning in the curriculum (MEB, 2018). In cluster teaching, which is associated with many mathematical concepts, it is very important to associate it with concretization and daily life. Therefore, the use of visually rich tools will enable the concept of cluster to be learned in a meaningful way (Baykul, 1999) and will guide the effective organization of distance education activities.

Considering all these situations, cluster teaching with worksheets is important for this research as it will attract the attention of 6th grade students and make them willing to learn and provide effective teaching. In addition, the fact that there is no study in which worksheets are used for teaching the basic concepts of the cluster subject in distance education reveals the importance of the study. In addition, it is thought that the use of worksheets in distance education will contribute to the execution of synchronous and asynchronous education activities. In synchronous lessons, worksheets will be used to teach the concept of set, to motivate students and to receive feedback at the end of the lesson, while in asynchronous applications, they will be used to provide pre-preparation and reinforcement for the lesson. As a result, it is thought that a high-quality interaction will be ensured through both synchronous and asynchronous applications in the study and this situation will also improve the students' sense of belonging to a web-based classroom environment. The aim of the study under this perspective is to examine the effect of the worksheets prepared for the 6th grade "understands the basic concepts of the cluster subject" acquisition in distance education on the academic achievement of the students. The research problems that guide the study are as follows:

What is the effect of teaching 6th grade clusters with worksheets in distance education on students' academic success?

What are the opinions of the 6th grade students about the worksheets prepared for the cluster teaching?

METHOD

In this research, the effect of the worksheets prepared in accordance with the constructivist approach to the subject of “Cluster” in the 6th grade mathematics lesson on the academic achievement of the students was examined. For this reason, a quantitative research approach was adopted in the study. In the study, a quasi-experimental design with pretest-posttest control group was used. The “Clusters Achievement Test” prepared by the researchers was applied to the experimental and control groups as a pre-test before the experiment and as a post-test after the practice. In other words, the effects of worksheets prepared in accordance with constructivist teaching, which are independent variables, and general teaching on student achievement, which is the dependent variable, were determined.

Participants

The study group of the research consists of 39 students studying in the 6th grade of a secondary school located in Turkiye. The school where the researcher worked was chosen as the practice school. The research was conducted in the first semester of the 2020-2021 academic year. In this research, there is an experimental group, which is taught with worksheets prepared in accordance with constructivist teaching, which is formed by neutral assignment, and a control group, where the methods approved by the Ministry of National Education are practiced. During the practice, 6A class students, who were selected by impartial assignment, continued their distance education with online lessons as the control group and 6B class students, who were chosen randomly, as the experimental group.

Data Collection

As a data collection tool in the research, the Cluster Achievement Test related to the teaching cluster of the 6th grade mathematics course was used as pre-test and post-test. Before the question items of the Cluster Achievement Test were created, the achievements related to the cluster in the 6th grade mathematics program in the 2020-2021 academic year were taken into account. In addition, different sources, especially the school textbook, were examined. The Cluster Achievement Test consists of 21 questions in total. The prepared questions were examined by two branch teachers and two field experts. A pilot study was conducted with eighth grade students in order to determine the deficiencies of the test items prepared according to the achievements determined by the Ministry of National Education. As a result of the examinations in the item analysis, it was decided to exclude one question from the test, since the discrimination of one question in the test was low, and the Cluster Achievement Test containing 20 question items was prepared. The scoring of this test, which consists of 20 items, was made with 5 points for each correct answer, and zero points for the items that were incorrectly made or left blank. With this scoring, the highest score that can be obtained from the test is 100, and the lowest score is 0. The KR-20 technique was used in the reliability calculation of the achievement test and the reliability coefficient was found to be 0,86. Therefore, it was concluded that the test has a level of reliability that can be used in this study. In addition, at the end of the practice, semi-structured interviews were conducted with 5 students determined among the students who participated in the studies and activities completely in the experimental group. Volunteering was taken into account in the selection of students. Since five of the students were volunteers, the interviews were limited to five students. Since the studies were carried out during the pandemic period, students who volunteered to be interviewed were selected in the interviews. In order to determine the effect of the worksheets on the students, an interview form consisting of five questions was developed by the researchers. In order to decide whether the questions in the interview form are clear, understandable and suitable for the level of the student, the opinions of a faculty member and two teachers were taken.

In the research, it was investigated whether the worksheets to be created are suitable for the subject of cluster by examining the literature studies on cluster, worksheets and constructivist learning approach. In addition, a plan was created on how to prepare the cluster subject according to the steps in accordance with the constructivist approach using worksheets. At this stage, worksheets prepared by experts on many different subjects and practiced to different samples were examined (Aktepe, 2012; Aydina, 2015; Ev, 2003; Ozdemir, 2012; Keskin, 2019). How the cluster subject was handled in the textbook was examined, and the

acquisitions that were deemed appropriate by the Ministry of National Education and appropriate questions, problems and activities were determined. After the researches, it was decided to prepare 11 worksheets. The worksheets have been prepared by taking into account the students' prior knowledge, learning processes and development levels. In order to check whether the prepared worksheets are suitable for the language development of the students, the Turkish teacher was contacted and some corrections were made in line with the teacher's warnings. In order for the worksheets prepared in this context to be more understandable for the students, words suitable for the level of the students who will use the worksheet were used and the sentences were kept as short as possible. In addition, the final version of the prepared worksheets was discussed with two mathematics educators who are experienced in preparing worksheets. At this stage, it has been determined that some visuals in the designed worksheets can distract students. For this reason, some images have been reduced in size, and some have been completely removed from the worksheets. An example of the changes made in the worksheets is given below.

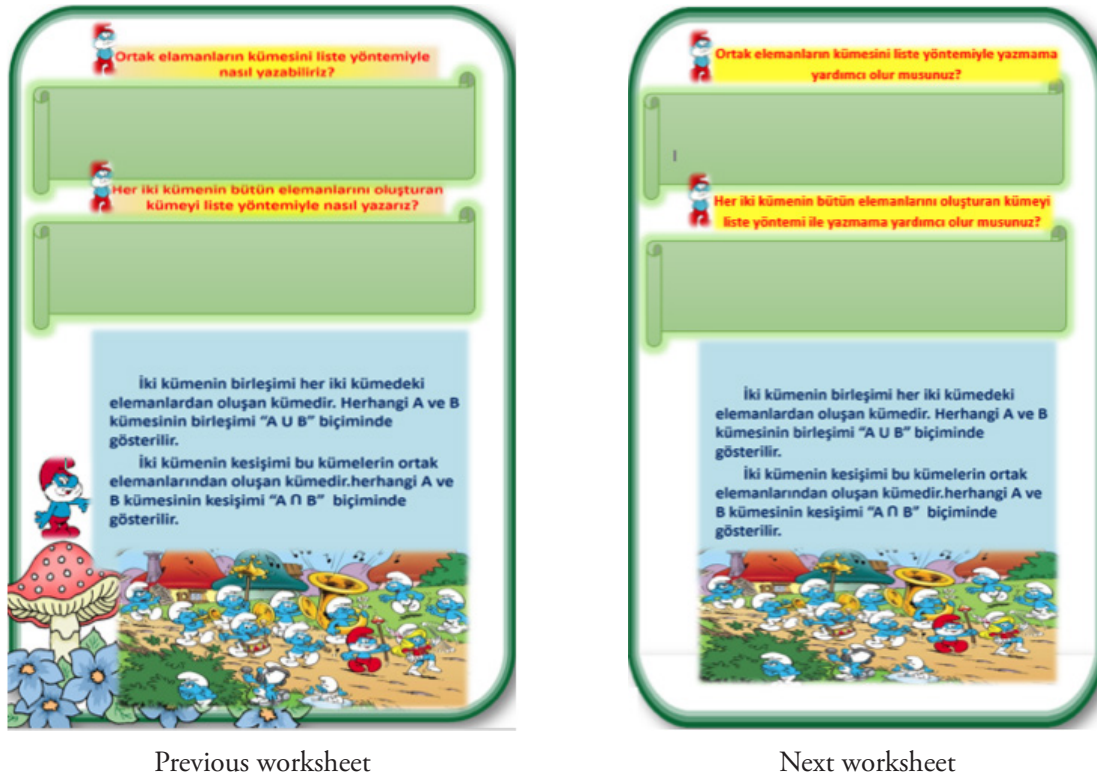


Figure 1. Changes to worksheets

After the changes, the page layout of the worksheets was redesigned and an interesting look was tried to be given to the worksheets. In line with the suggestions of the experts, the representations were made simpler. In addition, attention was paid to the order of the instructions in the worksheets and to give only one instruction at a time. Students' participation in the lessons during online lessons in distance education was taken into account. In this context, it has been tried to create worksheets that provide opportunities for individual activities or group work in accordance with the way of teaching. Before applying the worksheets, a pilot study was conducted by the researcher in a different class and with different students. According to the feedback from this study, due to the fact that the students attend classes from home and their teachers cannot be with them in distance education, care has been taken to make the instructions more understandable. In addition, due to time constraints, some guidelines have been revised and shortened.

Before starting the lesson teaching processes in the experimental and control groups, it was investigated whether there was a significant difference between the two groups and the previously prepared Cluster Achievement Test was applied. In terms of Cluster Achievement Test results, it was determined that the experimental and control groups were homogeneous and there was no significant difference between the

two groups, and the lessons were started. In both the experimental and control groups, the practice lasted for two weeks, that is, 10 lesson hours. The subject was explained to the experimental group with worksheets prepared in accordance with constructivist teaching, and to the control group with the methods approved by the Ministry of National Education. At the end of the two-week teaching period, the Cluster Achievement Test was applied to both groups as a post-test. Before the practice, the preliminary information that should be explained before the achievements intended to be given in the worksheets was given to both groups. For this purpose, powerpoint presentations prepared by the researcher on Clusters were shared with all of the experimental and control group students before the lecture, via the EBA program. The students' reports of completing the power point presentations sent as homework were followed by the researcher.

When the practice was started, a brief information was given to the students in the first lesson about the teaching method, learning and teaching processes and worksheets. Later, distance education lessons were taught to students via EBA and Zoom. In these lessons, worksheets were opened on the screen with screen sharing and students were asked to try to do the activities mentioned in the instructions. They were told that they could get help from their teachers when they did not understand. While giving answers to the questions of the students, care was taken to give small clues that would lead them to the correct answer instead of saying the answer directly. The answers from the students in the activities given in the worksheets were taken from each student one by one, thanks to the 'chat' button available in the program (zoom). From this point of view, it was observed that the students generally achieved the intended gains. Private messages were sent to the students who could not reach the result, necessary directions were made, and they were provided to reach the answer with their own efforts. One of the students who gave the correct answer wrote the answer in the blank on the worksheet by using the pen feature in the online lesson. Below are examples of the worksheets made by the experimental group students.

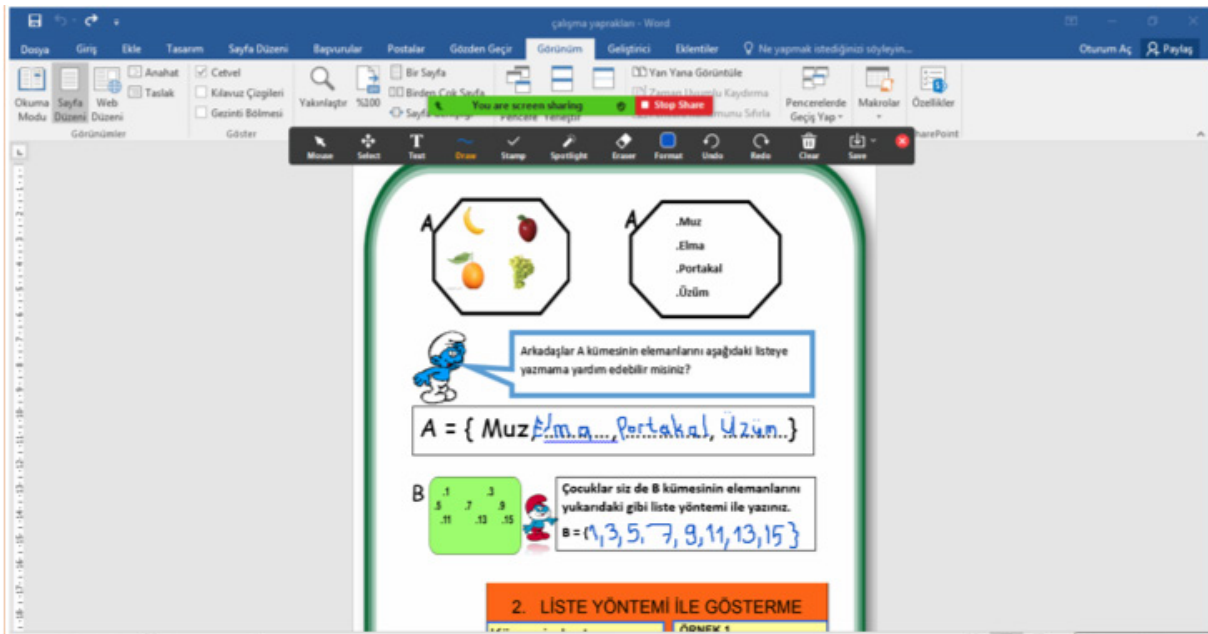


Figure 2. Experimental group cluster worksheet 1

In the control group, general teaching methods approved by the Ministry of National Education were used. In line with the current gains in the research, the desired behaviors were tried to be formed. During the research process, concepts were explained to the experimental and control groups in equal time. The videos and tests in the eba program were used in the online lessons in the control group. In the visuals given below, the activities performed by the students in the online lessons taught with the control group are shown.

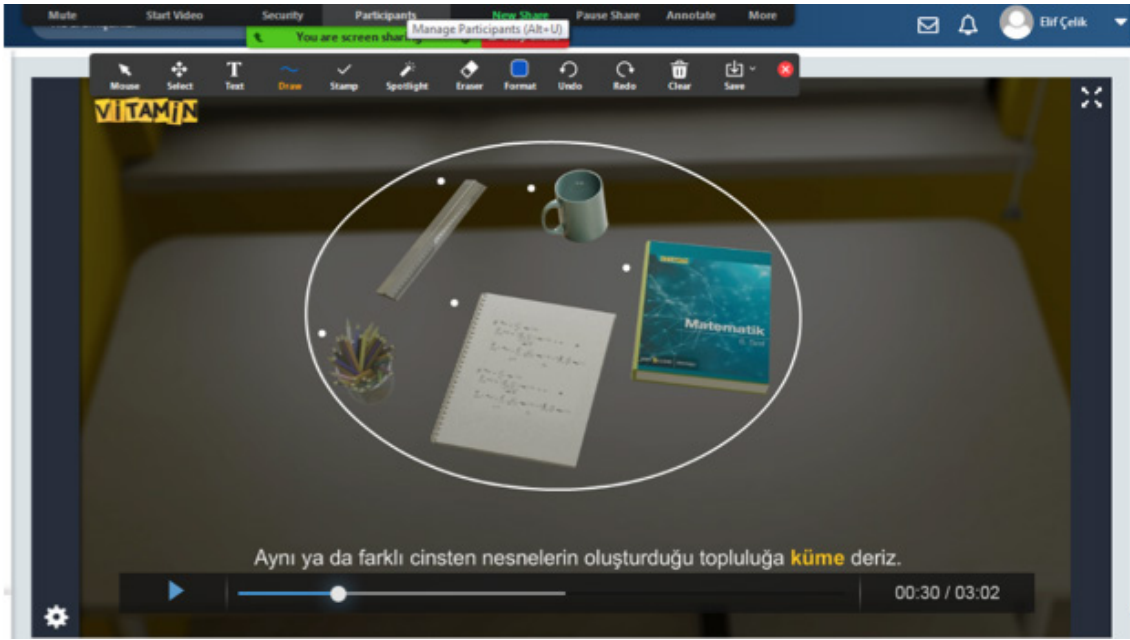


Figure 3. Control group cluster activity 1

Above are the images of the cluster-related activities of the experimental and control groups, whose screenshots were taken during the online lessons.

After the practice, semi-structured interviews were conducted to get opinions from the students about the worksheets. The researcher's participation in the lessons of the same students before the practice had a positive effect in terms of creating a trust-building environment. In addition, the researcher gave information about the interview before interviewing the students and emphasized that the interviews would not be evaluated with grades, they would not be used for any purpose other than the research, their identity information would be kept confidential and code names would be used in the research. In this way, the students, who were relieved of their uneasiness, willingly participated in the interview. During the interview, the student's answers were listened carefully, the points that were considered important were noted, and a voice recorder was used during the whole process. Interviews lasting 5-10 minutes were converted into written text and analyzed. Codings were created for each student to be used instead of students' names.

Data Analysis

In the analyzes made after the pilot study of the achievement test prepared by the researchers to be used in the research; Item difficulty index, item discrimination index, variance, standard deviation, KR 20 reliability, mean, maximum and minimum value, range, skewness and kurtosis were calculated. SPSS (Static Package Social Science) 20.00 statistical package program was used to analyze the data obtained from the Cluster Achievement Test. The results obtained were evaluated according to the 0.05 significance level, and comparisons of the pre-test and post-test scores applied to the experimental and control groups were made. In order to determine the applicability of the t-test, which is one of the parametric tests, it was checked whether the data, which is one of the assumptions of the parametric hypothesis tests, had a normal distribution and the variances were homogeneous. In the research, the data were analyzed using the t-test, as it met the assumptions of the parametric hypothesis tests. Descriptive analysis technique was used in the analysis of the qualitative data obtained in the research. At this stage, the data were described, explained and interpreted in a clear and systematic way. In addition, direct quotations were included in order to reflect the ideas of the interviewed students in a striking way.

FINDINGS

In the study, it was tried to determine whether there was a significant difference between the academic achievements of the students in both groups before the practice by using the t test. For this purpose, descriptive statistics of students' pre-test scores were examined first.

Table 1. Descriptive statistics of cluster achievement test pre-test scores

Groups	Experimental Group	Control Group
N	19	20
Mean	35.53	33.50
Median	35	27.50
Mode	35	30
Standart Deviation (SD)	18.7	21.649
Variance	349.7	468.7
Max	80	80
Min	10	5
Range	70	75
Skewness	.891	.642
Kurtosis	.545	-.567

The fact that mode, median and arithmetic mean values in all groups in the pre-test scores of the Cluster Achievement Test are close to each other can be interpreted as the scores show a normal distribution in all groups. In addition, skewness and kurtosis values in all experimental and control groups are between -1 and +1, which seems to be in accordance with the normal distribution. In the study, the histogram graphs of the achievement test were also examined, and since it was determined that they had a bell-shaped frequency curve, it was seen that the data were suitable for normal distribution. The Shapiro-Wilks Test was used as the third method for normality, since the group size was less than 50. The data of the Shapiro-Wilk Test applied for the Cluster Achievement Test pretest scores are shown in the table below.

Table 2. Shapiro-Wilk test results for cluster achievement test pretest

Group	Test	Statistic	df	p
Experiment	Pre Test	.934	19	.202
Control	Pre Test	.927	20	.137

In the Shapiro-Wilk test, the p value for the experimental group was $p=0.202$, and $p>.05$ was obtained. The p value for the control group was $p=0.137$, $p>.05$. This was interpreted as the scores were normally distributed. After these studies, when the pre-test results of the Cluster Achievement Test were examined, it was seen that the assumptions of the applicability of the t-test, which is one of the parametric tests, were met. For this reason, the pre-test scores of the experimental and control groups were compared with the t-test.

Table 3. T-test results for cluster achievement test pretest

Group	N	\bar{X}	SD	t	df	p
Experiment	19	35.53	18.7	.313	36.68	.756
Control	20	33.5	21.649			

When the t-test results applied to the pre-test mean scores of the Cluster Achievement Test given in Table 3 are examined, $t(36.68)=0.313$ and $p=0.756$, there is no statistically significant difference between the groups since $p>0.05$. In order to decide on the test to be used in comparing the post-test scores of the students in the experimental and control groups, it was checked whether the parametric hypothesis tests met the assumptions. For this purpose, descriptive statistics of students' post-test scores were examined first.

Table 4. Descriptive statistics of cluster achievement test pre-test scores

Groups	Experimental Group	Control Group
N	19	20
Mean	77.89	58.50
Median	80	55
Mode	85	55
Standart Deviation (SD)	12.836	13.089
Variance	164.77	171.32
Max	95	80
Min	55	40
Range	40	40
Skewness	-.487	.129
Kurtosis	-.894	.992

The fact that mode, median and arithmetic mean values in all groups in the post-test scores of the Cluster Achievement Test are close to each other can be interpreted as the scores show a normal distribution in all groups. In addition, skewness and kurtosis values in all experimental and control groups are between -1 and +1, which seems to be in accordance with the normal distribution. In the study, the histogram graphs of the achievement test were also examined, and since it was determined that they had a bell-shaped frequency curve, it was seen that the data were suitable for normal distribution. The Shapiro-Wilks Test was used as the third method for normality, since the group size was less than 50. The data of the Shapiro-Wilk Test applied for the Cluster Achievement Test pretest scores are shown in the table below.

Table 5. Shapiro-Wilk test results for cluster achievement test post-test

Group	Test	Statistic	df	p
Experiment	Post Test	.924	19	.133
Control	Post Test	.919	20	.097

In the Shapiro-Wilk test, the p value for the experimental group was $p=0.133$, and $p>.05$ was obtained. The p value for the control group was $p=0.097$, $p>.05$. This was interpreted as the scores were normally distributed. After these studies, when the post-test results of the Cluster Achievement Test were examined, it was seen that the assumptions of the applicability of the t-test, which is one of the parametric tests, were met. For this reason, the post-test scores of the experimental and control groups were compared with the t-test.

Table 6. T-test results for cluster achievement test post-test

Group	N	\bar{X}	SD	t	df	p
Experiment	19	77.89	12.836	4.671	36.96	.000
Control	20	58.50	13.089			

The t-test results applied to the Cluster Achievement Test Post-Test mean scores given in Table 6 are $t(36.96)=4.671$ and $p=0.00$, and since $p<0.05$, there is a statistically significant difference between the groups. The data in Table 6 show that the academic achievement scores of the students in the experimental group, who were taught with worksheets prepared in accordance with constructivist teaching, were higher than the students in the control group.

At the end of this study process, semi-structured interviews were conducted with a total of 5 students selected from among the students who participated in the activities in the experimental group, which were taught with worksheets prepared in accordance with constructivist teaching. In the interviews, it was first asked whether the worksheets prepared for the cluster in distance education were productive. It is understood from the answers given by the students to this question that they understand the subjects better thanks to the worksheets, and that they think that the lessons taught with the worksheets are fun and productive for them. In addition, the students stated that they did not want this method, which they encountered for the first time, because it was difficult at first, but they got used to the activities and studies over time. From the answers given, it was determined that the students thought that the worksheets were good for them and that they felt that their self-confidence increased when they could successfully complete the activities given on these sheets. In this regard, one of the students said that the worksheets were useful. Because he stated that he did not understand the subject much before, but he started to understand it thanks to the examples in the worksheets. He also stated that he felt that his responsibilities increased while learning with this method, he was happy when he could do the activities individually, and the time passed very quickly when he studied with worksheets. Another student stated that he had a little difficulty in the beginning because he was not used to learning with worksheets, but then he started to study very well, he understood the subject of cluster better than other subjects, and that the problems related to cluster were easier for him when he learns with worksheets. He also stated that when he started to be able to answer the questions, his self-confidence increased and the lessons taught with the worksheets were fun and enjoyable.

Secondly, during the interviews, the students were asked which activity they liked most in the worksheets and the reasons for liking them. When the student answers were examined, it was seen that each of the students liked different activities according to their interests in the worksheets. For example, one student stated that she liked the event where Ms. Aysel prepared food for her guests because she loved to eat and cook. The student coded S1 stated that he liked the cluster building activities because it was fun to create clusters. On the other hand, the student coded S3 stated that he liked the activity of writing the elements of the set with the list method because he could easily find the elements of the set in this activity. The answer given by the student coded S2 to this question is as follows:

“Who is smarter I liked the activity. In fact, when I said I am smarter, you asked me why. My other friends objected. They claimed that they were smarter. There was no definite result. I got a better understanding of that subject.”

When the students' opinions were examined, it was determined that the students were more active in the lessons taught with the worksheets, they did the activities with their own efforts and they put more effort to do the activities. For this reason, it is understood that the students like to solve the questions in the worksheets and therefore they think that the lessons are more fun.

When the answers of the students given to the question asked to determine where they had difficulties in the worksheets were examined, it was seen that most of the interviewed students did not have any activity in the worksheets that they had difficulty in. On the other hand, it was determined that a student had difficulty in creating a Venn diagram and finding the common properties of the elements in the list in the common property method activity. It was observed that some students had difficulties because they were not used to the worksheets at first, but they got used to it over time. It was observed that some students had difficulties in the activities but they understood the subject in the continuation of the studies.

As the fourth question in the interviews, the students were asked whether they wanted the worksheets to be used in the teaching of other subjects, along with the reasons. The students stated that they understood better than the worksheets in general, and therefore they wanted to learn other subjects in this way. Sections of the students' explanations in this direction are presented below:

“...I think it could be useful. While our teachers were lecturing on the board or in online meetings, we were just watching. But we make an effort in this method, we need to do something to make our minds work. We read the activities and try to find the answer that best suits us. We try to understand the questions together, we ask where we do not understand. In this case, we understand better because we try harder. I would like to learn about other subjects by this method.” (S1)

“After I started doing these activities, some of my friends started to be more successful. Even my friends who do not study much began to ask the teacher for tasks and to have a say while making these worksheets. That’s why I was more willing to do homework and participate in studies. Their energy was also reflected in me. I would like to study further topics with worksheets in order to learn more willingly and energetically.” (S3)

S4, on the other hand, stated that she could not understand some subjects and that she could understand it more easily when she taught with worksheets and she thought that the worksheets were more efficient. S4 also said, “*I felt that I became more social when I studied with worksheets. As we do the activities on the worksheets by taking the ideas of our other friends and try the methods they say, we both see a different perspective and feel more like in a classroom environment in online lessons.*” he stated. The student coded S5 stated that he liked the fact that he could do the operations on the worksheets individually, and that he could not solve the math questions on his own before the worksheets, but that he could easily find the answers without the need for help, thanks to the questions being asked in the worksheets gradually. S5 also stated that this situation increased his self-confidence. When the answers given by the students to the fourth question are examined, it is seen that some students think that it would be beneficial for them to use this method on different subjects, as they produced different ideas during the activities in the worksheets, discussed these. The students stated that they felt more like in a classroom environment in online lessons because they did the activities on the worksheets by taking the ideas of their other friends and trying the methods they said. The students stated that they felt that they were more socialized in this situation.

As the fifth question in the interviews, ‘Which subject would you like to be treated with these leaves? Why?’ was asked to the students. When the answers given by the students to the fifth question were examined, it was seen that some students wanted to handle the subjects they had difficulty in understanding with this method. These students think that they can understand these subjects more easily with worksheets. For example, S1, who said that he wanted to deal with decimal notation and polygons with worksheets, had difficulties in decimal notation, he thought he could understand better with worksheets, and he also liked polygons. He stated that he guessed that it would be fun to deal with this subject with leaves. Some students stated that it would be more enjoyable to process their favorite subjects with this method. Similarly, student coded S4 said, “*I want the subject of fractions and data collection methods to be covered with these leaves. I think I can understand better with worksheets because I have difficulty with fractions. I think data collection methods will also be visually rich worksheets. It would be fun to learn with pictures and rich leaves.*” made statements. S5 stated that he wanted to deal with the subject of angles with worksheets because he thought it would be more fun. On the other hand, the student coded S2 stated that he wanted this subject to be explained with worksheets because he could not understand decimal notation very well. The student coded S3 said, “*I would like to deal with the subjects of fractions and polygons with worksheets. Because I love fractions. I am very happy when I do activities related to this subject on my own. Unraveling leaves is just as enjoyable as fractions. Last year, I prepared homework on polygons, it was very nice. I think the worksheets will be good in this regard as well.*” expressed as.

DISCUSSIONS AND CONCLUSION

In the current study, the effect of teaching with worksheets prepared for the 6th grade clusters in distance education on the academic achievement of students was examined. There was no statistically significant difference between the pre-test scores of the experimental group, in which the worksheets were taught, and the control group, in which the general teaching methods were applied. When Figure 4 is examined, it can be said that the experimental and control group students’ prior knowledge about the subject of

clusters is close to each other. It is natural for the control and experimental group students who do not have sufficient prior knowledge about the subject of clusters before the instruction to acquire information about the subject during the instruction. When the post-test achievement scores of the groups are compared, it is seen in Table 6 that there is a statistically significant difference between the experimental and control group students. It was determined that this observed difference was in favor of the experimental group taught with worksheets. This increase in the post-test scores of the experimental group students shows that teaching with worksheets is more effective in distance education. This result supports many research results (Ihwan, Prasetyo & Septiyono, 2020; Isik & Ozdemir, 2014; Trisnowati & Sumardi, 2019) showing that teaching with worksheets increases the academic success of students. Isik and Celik (2017) concluded in their research that teaching algebraic equations with worksheets increased student achievement more than teaching with general teaching methods. Similarly, Aydina (2015) revealed that teaching fractions with worksheets significantly increased the academic achievement of 6th grade students. Inan and Erkus (2017), on the other hand, stated that mathematics worksheets prepared based on the theory of multiple intelligences positively affect the academic achievement of primary school 4th grade students.

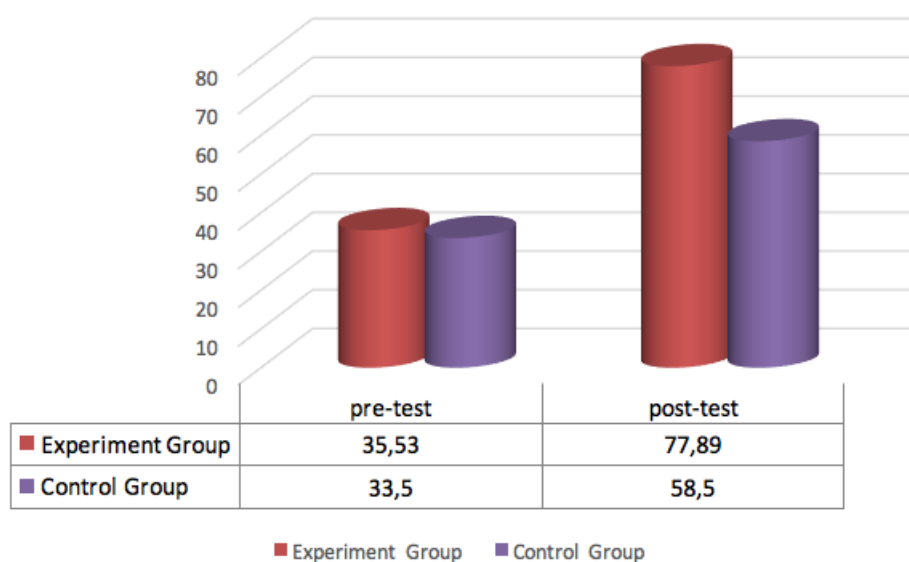


Figure 4. Comparison of the pretest and posttest scores of the groups

In the study, students' individual responses to the activities in the worksheets and developing discussions enabled the students to be more active in online lessons. Therefore, worksheets in distance education have been one of the ways for students to express their thoughts. Considering the high level of interaction for an effective distance education, it can be said that the worksheets take the student away from the position of a passive listener in this process. This finding, made in the relevant field; It is consistent with the results of many studies such as Ceyhan and Turnuklu (2002), Celikler (2010), Isik and Ozdemir (2014). In addition, teaching with worksheets helped students to reveal their ideas and to be responsible for their own learning (Kisiel, 2003). The findings obtained from the students' opinions reveal that they are satisfied with the worksheets in the online lessons, that the worksheets make the online lessons fun and that they make more effort to complete the activities in the worksheets outside of the classroom. Similar findings are also found in Keskin (2019) study. The researcher stated that the students enjoyed studying with the worksheets very much and they developed a positive attitude towards mathematics. In addition, studies (Atasoy & Akdeniz, 2006; Isik & Celik, 2017; Kurt & Akdeniz, 2002) show that worksheets make learning enjoyable and increase students' interest and motivation. From this point of view, it can be said that teaching with worksheets prepared in accordance with the constructivist approach is effective in increasing student success in distance education and making learning fun. Using worksheets through synchronous and asynchronous practices can improve the student's sense of duty and responsibility in distance education. For this reason, it may be useful to apply the worksheets prepared

for teaching different concepts through mixed education models. An important point is that the worksheets can be used not only for teaching a concept or eliminating misconceptions, but also for providing process-based evaluation in distance education. As a matter of fact, teaching practices can be developed with worksheets in order to provide different types of interaction in distance education.

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REFERENCES

- Aktepe, E. (2012). 7. sınıflarda cebirsel denklemlerin yapılandırmacı öğretim yaklaşımına uygun hazırlanmış çalışma yapraklarıyla öğretimin öğrenci başarısına etkisi. [The effects of worksheets prepared on the basis of constructivist approach about the subject of algebraic equations taught in seventh grade classes on student achievement]. (Master's dissertation). Ataturk University Graduate School of Educational Sciences, Erzurum, Türkiye. Available from the Council of Higher Education, National Dissertation Center, Dissertation ID: 319689.
- Altıparmak, M. (2011). E-öğrenme ve uzaktan eğitimde açık kaynak kodlu öğrenme yönetim sistemleri. Malatya: *Akademik Bilisim'11 - XIII. Akademik Bilisim Konferansı Bildirileri Kitabı*, 319-327.
- Anderson, J. (2020). *Brave New World The coronavirus pandemic is reshaping education*. Retrieved October 23, 2021 from <https://qz.com/1826369/how-coronavirus-is-changing-education>.
- Atasoy, S., & Akdeniz, A. (2006). Yapılandırmacı öğrenme kuramına uygun geliştirilen çalışma yapraklarının uygulama sürecinin değerlendirilmesi. *Milli Eğitim Dergisi*, 34 (170). Retrieved September 16, 2021 from <https://dergipark.org.tr/tr/pub/milliegitim/issue/36942/422512>.
- Atasoy, S., Akdeniz, A., & Baskan, Z. (2007). Çalışma yapraklarının öğrenme sürecine katkıları yönünden değerlendirilmesi. *Yedi Tepe Üniversitesi Eğitim Fakültesi Dergisi*, 2(2), 1893-1908.
- Atasoy, S., Kucuk, M., & Akdeniz, A. (2011). Remedying science student teachers' misconceptions of force and motion using worksheets based on constructivist learning theory. *Energy Education Science and Technology Part B: Social and Educational Studies*, 3(4), 519-534.
- Aydina, S. (2015). Çalışma yapraklarıyla kesirler konusunun öğretiminin 6. sınıf öğrencilerinin akademik başarılarına etkisi. [The effects to achievement of sixth grade classes student teaching with worksheets the subject of fractions]. (Master's dissertation), Ataturk University Graduate School of Educational Sciences, Erzurum, Türkiye. Available from the Council of Higher Education, National Dissertation Center, Dissertation ID: 394786.
- Baki, A. (2001). Bilisim teknolojisi isigi altında matematik eğitiminin değerlendirilmesi. *Milli Eğitim Dergisi*, 149, 26-31.
- Bakioglu, B., & Cevik, M. (2020). COVID-19 pandemisi sürecinde fen bilimleri öğretmenlerinin uzaktan eğitime ilişkin görüşleri. [Science teachers' views on distance education in the COVID-19 pandemic process]. *Turkish Studies*, 15(4), 109-129.
- Basaran, M., Dogan, E., Karaoglu, E. & Sahin, E. (2020). Koronavirus (covid-19) pandemi sürecinin getirisi olan uzaktan eğitimin etkililiği üzerine bir çalışma. [A study on effectiveness of distance education, as a return of coronavirus (covid-19) pandemic process]. *Academia Eğitim Araştırmaları Dergisi*, 5(2), 368-397.
- Baykul, Y. (1999). *İlköğretimde matematik öğretimi*. Öğretmen El Kitabı: Modul 6. Ankara: Milli Eğitim Yayınları.
- Bernard, R. M., Abrami, P.C., Lou, Y., Borokhovsk, E., Wade, A., Wozney, L., Walseth, P.A., Fiset, M. & Huang, B. (2004). How does distance education compare with classroom instruction? A meta-analysis of the empirical literature. *Review of Educational Research*, 74(3), 379-439. Retrieved July 6, 2021 from <https://www.learntechlib.org/p/70109/>.
- Bozdoğan, A. (2007). Fen bilgisi öğretiminde çalışma yaprakları ile öğretimin öğrencilerin fen bilgisi tutumuna mantıksal düşünme becerilerine etkisi. [The effects of worksheets on the logical thinking abilities on the education of science lessons.] (Master's dissertation). Cukurova University Graduate School of Social Sciences, Adana, Türkiye. Available from the Council of Higher Education, National Dissertation Center, Dissertation ID: 206441.
- Buniel, J. M. C., & Monding, V. A. (2021). Effectiveness of developed worksheets to the academic achievement of students in science 9 concepts. *International Journal for Innovation Education and Research*, 9(4), 210-214. <https://doi.org/10.31686/ijer.vol9.iss4.3041>

- Cagiltay, K. (2001). Uzaktan eğitim: Basariya giden yol teknolojide mi yoksa pedagojide mi? Retrieved September 27, 2021 from <https://ocw.metu.edu.tr/file.php/118/Week10/Cagiltay.pdf>.
- Can, E. (2020). Coronavirus (covid-19) pandemisi ve pedagojik yansimalari: Turkiye'de acik ve uzaktan eğitim uygulamalari. *Acikogretim Uygulamalari ve Arastirmalari Dergisi*, 6(2), 11-153.
- Celikler, D. (2010). The effect of worksheets developed for the subject of chemical compounds on student achievement and permanent learning. *Educational Research Association the International Journal of Research in Teacher Education*, 1(1), 42-51.
- Ceyhan, A., & Turnuklu, E. (2002). Matematik ogretiminde kullanilabilecek bir materyal: Calisma yapraklari. *Cagdas Egitim Dergisi*, 292, 37-46.
- Chang, G. C., & Satako, Y. (2020). *How are countries addressing the Covid-19 challenges in education? A snapshot of policy measures*. Retrieved December 17, 2021 from <https://gemreportunesco.wordpress.com/2020/03/24/how-are-countries-addressing-the-covid-19-challenges-in-education-a-snapshot-of-policy-measures/>
- Demir, E., & Gologlu Demir, C. (2021). Investigation of parents' opinions about distance education during the covid-19 pandemic. *Turkish Online Journal of Distance Education*, 22 (2), 42-57.
- Demircioglu, H., & Atasoy, S. (2006). Calisma yapraklarinin gelistirilmesine yönelik bir model önerisi. *Dokuz Eylul Universitesi Buca Egitim Fakultesi Dergisi*, (19), 71-78.
- Demirel, O. (2004). *Ogretimde planlama ve degerlendirme-ogretme sanati*. Ankara: Pegem A Yayıncılık.
- Ev, E. (2003). İlkogretim matematik ogretiminde calisma yapraklari ile ogretim ogrenci ve ogretmenlerin derse iliskin gorusleri ve ogrenci basarisina etkisi. [Use of worksheets in primary maths teaching and the effect of pupils and teachers' view of the lesson]. (Master's dissertation). Dokuz Eylul University Graduate School of Education Sciences, Izmir, Turkiye. Available from the Council of Higher Education, National Dissertation Center, Dissertation ID: 128143.
- Gocer, A. (2012). The assessment of usage of worksheets in turkish education according to the opinions of the student teachers. *Karadeniz Arastirmalari*, 8(32), 155-170.
- Gur, H. (2009). 8. ve 9. sinif ogrencilerinin kumeler konusundaki temel hatalari ve kavram yanilgilarinin belirlenmesi. *e-Journal of New World Sciences Academy Education Sciences*, 4 (3), 678-694.
- Inan, C., & Erkus, S. (2017). The effect of mathematical worksheets based on multiple intelligences theory on the academic achievement of the students in the 4th grade primary school. *Universal Journal of Educational Research*, 5(8), 1372-1377.
- Ipek, A., Albayrak, M., & Isik, C. (2009). Sinif ogretmeni adaylarinin kume kavramıyla ilgili algilari. *Erzincan Egitim Fakultesi Dergisi*, 11(1), 221-230.
- Isik A., & Celik E. (2017). Calisma yapraklariyla cebir ogretim ogrenci basarisina etkisi [Effect on student achievement of teaching algebraic equations with worksheets]. *Kastamonu Egitim Dergisi*, 25(5), 1893 - 1908.
- Isik, A., & Ozdemir, G. (2014). Effect on student achievement of teaching probability with worksheets. *Middle Eastern & African Journal of Educational Research*, 12, 4-16.
- Keskin, S. (2019). Calisma yapraklariyla ortaokul 8. Siniflarda ucgenler konusunun ogretim akademik basariya etkisinin incelenmesi [Examining the effect on academic achievement of teaching triangles with worksheets for 8th grade in junior high school]. (Doctoral dissertation). Ataturk University Graduate School of Education Sciences, Erzurum, Turkiye. Available from the Council of Higher Education, National Dissertation Center, Dissertation ID: 600560.
- Kilit, B., & Guner, P. (2021). Matematik derslerinde web tabanlı uzaktan eğitime ilişkin matematik öğretmenlerinin görüşleri [Perspectives of mathematics teachers regarding web-based distance education in mathematics courses]. *Anemon Mus Alparslan Universitesi Sosyal Bilimler Dergisi*, 9(1) 85-102.
- Kisiel, J. F. (2003). Teachers, museums and worksheets: A closer look at a learning experience. *Journal of Science Teacher Education*, 14(1), 3-21.

- Kurt, S., & Akdeniz, A. R. (2002). Fizik ogretiminde enerji konusunda gelistirilen calisma yapraklarinin uygulanmasi, *V. Ulusal Fen Bilimleri ve Matematik Egitimi Kongresi Bildiriler Kitabi*, Orta Dogu Teknik Universitesi, Ankara.
- Lee, C. (2014). Worksheet usage, reading achievement, classes' lack of readiness, and science achievement: A cross-country comparison to cite this article: worksheet usage, reading achievement, classes' lack of readiness, and science achievement: A cross-count. *International Journal of Education in Mathematics, Science and Technology*, 2(2), 96-106.
- Lesley, M., & Labbo, L. D. (2003). A pedagogy of control: Worksheets and the special need child. *Language Arts*, 80(6), 444.
- Milli Egitim Bakanligi [Ministry of National Education] (2018). *Matematik dersi ogretim programi*. (2018). Ankara.
- Moore, M. G., & Kearsley, G. (2011). *Distance education: A system view of online learning* (3rd Edition.). Boston, MA: Wadsworth Publishing.
- Mortensen, M. F. & Smart, K. (2007). Free-choice worksheets increase students' exposure to curriculum during museum visits. *Journal of Research in Science Teaching*, 44 (9), 1389-1414.
- Murphy, M. P. A. (2020). COVID-19 and emergency eLearning: Consequences of the securitization of higher education for post-pandemic pedagogy. *Contemporary Security Policy*, 41(3), 492-505. <https://doi.org/10.1080/13523260.2020.1761749>
- Niemi, H. M., & Kousa, P. (2020). A case study of students' and teachers' perceptions in a Finnish high school during the COVID pandemic. *International Journal of Technology in Education and Science (IJTES)*, 4(4), 352-369.
- Putra, H. D., Herman, T., & Sumarno, U. (2017). Development of student worksheets to improve the ability of mathematical problem posing. *International Journal on Emerging Mathematics Education*, 1(1), 1-10.
- Saka, A. & Akdeniz, A. R. (2001). *Biyoloji ogretmenlerine calisma yapragi gelistirme ve kullanma becerileri kazandirmak icin bir yaklasim*, Yeni Bin Yilin Basinda Turkiye'de Fen Bilimleri Egitimi Sempozyumu, Istanbul: Maltepe Universitesi Yayinlari, 176-182.
- Sands, M., & Ozcelik, D. A. (1997). *Okullarda uygulama calismalari*, Ogretmen Egitimi Dizisi, YOK/ Dunya Bankasi Milli Egitimi Gelistirme Projesi, Hizmet Oncesi Ogretmen Egitimi, Ankara.
- Sen, B., Atasoy, F. & Aydin, N. (2010). Düsük maliyetli web tabanlı uzaktan egitim sistemi uygulaması. *XII. Akademik Bilisim Konferansi*, Sitki Kocman Universitesi, Mugla.
- Sengil Akar, S., & Kurtoglu Erden, M. (2021). Distance education experiences of secondary school math teachers during the pandemic: A narrative study. *Turkish Online Journal of Distance Education*, 22(3), 19-39. Retrieved from <https://dergipark.org.tr/en/pub/tojde/issue/63556/961809>.
- Ozdemir, G. (2012). Yapilandirmaci ogretim yaklasimina uygun olarak hazirlanmis calisma yapraklariyle 7. siniflarda olasilik ogretimi [Teaching of probability by worksheets based on the constructivist approach at the 7th grade]. (Master's dissertation). Ataturk University Graduate School of Educational Sciences, Erzurum, Turkiye. Available from the Council of Higher Education, National Dissertation Center, Dissertation ID: 319664.
- Ozdemir Baki, G., & Celik, E. (2021). Secondary mathematics teachers' mathematics teaching experiences in distance education. *Western Anatolia Journal of Educational Sciences*, 12 (1), 293-320.
- Tan, E. (2008). İlkogretim 7. sinif dil bilgisi ogretiminde zarflar konusuyla ilgili yapilandirmaci yaklasima gore hazirlanmis calisma yapraklarinin ogrenci basarisina etkisi [The effects of worksheets prepared on the basis of constructive approach about the subject of adverbs which is taught in primary school grade seven classes on student achievement]. (Master's dissertation). Ataturk University Graduate School of Social Sciences, Erzurum, Turkiye. Available from the Council of Higher Education, National Dissertation Center, Dissertation ID: 254889.

- Trisnowati, E., & Sumardi, Y. (2019). Developing the student worksheet with problem-solving approach to improve critical thinking skills and the concept understanding of physics. *Momentum: Physics Education Journal*, 3(1), 32-41. <https://doi.org/10.21067/mpej.v3i1.3344>
- UNESCO [United Nations Educational, Scientific and Cultural Organization] (2020). *COVID-19 educational disruption and response*. Retrieved December 12, 2021 from <https://en.unesco.org/covid19/educationresponse>.
- Uzoglu, M. (2017). Fen bilgisi ogretmen adaylarinin uzaktan egitime iliskin gorusleri [Perceptions of science teacher candidates on distance education] *Karadeniz Sosyal Bilimler Dergisi*, 9(16), 335-351.
- Ward, M. E., Peters, G., & Shelley, K. (2010). Student and faculty perceptions of the quality of online learning experiences. *The International Review of Research in Open and Distributed Learning*, 11(3), 57-77.
- Xu, D., & Jaggars, S. (2014). Performance gaps between online and face-to-face courses: Differences across types of students and academic subject areas. *The Journal of Higher Education*, 85(5), 633–659.
- Yazici, N., Albayrak A., & Aslan, Y. (2020). Determining the common student difficulties through the eyes of mathematics teachers: basic concepts in sets. *Eurasian Journal of Teacher Education*, 1(1), 25-36.
- Zhao, Y., Lei, J., Yan, B., Lai, C., & Tan, H. S. (2005). What makes the difference? A practical analysis of research on the effectiveness of distance education. *Teachers College Record*, 107(8), 1836-1884. <https://doi.org/10.1111/j.1467-9620.2005.00544.x>.
- Zhou, L., Wu, S., Zhou, M., & Li, F. (2020). “School’s out, but class’s on”, the largest online education in the world today: Taking China’s practical exploration during the COVID-19 epidemic prevention and control as an example. *Best Evid Chin Edu*, 4(2), 501-519. Retrieved July 22, 2020 from https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3555520.

ENHANCING STUDENTS' ENGLISH AND DIGITAL LITERACIES THROUGH ONLINE COURSES: BENEFITS AND CHALLENGES

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ABSTRACT

This study aims to examine the benefits of incorporating online courses, MyELT, for General English (GE) curricula and to investigate the challenges that negatively affect the expediency of the courses in improving the students' English proficiency and digital literacy. 351 participants were randomly selected and responded to a questionnaire and out of which 15 were conveniently selected for a semi-structured interview. Qualitative data was also collected through personal journaling to record hidden challenges for the expediency of MyELT. The data were analyzed through descriptive statistics and content analysis. The findings correlated and revealed that MyELT courses were beneficial in their flexibility as they helped fulfilling GE courses' description and proportionately improved students' English proficiency and digital literacy. Neither students' perceptions nor teachers' roles and background were challenging factors. The expediency of MyELT was, thus, challenged by four factors namely: teachers' teaching practices, their inability to mentor students' performance which further instigated some students to do unethical practices, the company system of accessibility, and MyELT courses content.

Keywords: Online course, blended learning, ICT, flexibility, digital literacy, English proficiency.

INTRODUCTION

To become a global citizen in the 21st century, English proficiency and digital literacy are essential skills for survival. Qualifying Tests of English for International Communication (TOEIC) and Internet Core Competency Certification (IC3) are prerequisite graduation requirements for The Ministry of Higher Education in Thailand. The government has been endeavoring to promote and develop its educational system by incorporating English and ICT in universities' curricula in a way to meet the global demands. The Thai government is supporting these prospects by providing equipped educational facilities that make the students' learning more practical, expedient, and meaningful. The administrators and lecturers are working collaboratively to enhance students' English proficiency and digital literacy. They unwaveringly adopt the

latest teaching methods and policies that will effectively develop the students' 21st-century learning skills.

Nowadays, students need English proficiency and digital literacy to obtain sustainable jobs and/or further their education. English proficiency refers to "the ability of students to use English language to make and communicate meanings in spoken and written contexts" (Murray, 2016, p. 70). Meanwhile, digital literacy describes "the ability to understand and use information in multiple formats from a wide range of sources when it is presented via computers" (Gilster, 1997, p. 1). Online course refers "to a period of instruction lasting one academic period in which all course materials, student deliverables, and human interactions take place via a digital or electronic medium" (Kiriakidis et al., 2011, p. 119). Adapting online learning courses enhances students' both English and digital literacies. Online learning courses prove to be beneficial for students as they are flexible in terms of accessibility (Kumi-Yeboah, 2015), unexpansive (Samsuri et al., 2014), and suitable for students' needs and context (Gillett-Swan, 2017). Appana (2008) and Gilbert (2015) explain that online learning courses help to solve the problem of large classes, develop students' problem-solving skills, enhance students' language and digital literacies and encourage students' interaction. Nevertheless, there are different challenges (e.g. teachers' and students' lack of digital literacy (Jacobs 2013) digital divide (Journell, 2007) unsuitability of online courses' content with the students' needs and context (Lichtman, 2010), the complexity of the online system (Jacob, 2013) and students' poor time management (Adams & Blair, 2019) that considerably have affected the expediency of EFL learners' online learning experience. However, there is no conclusive empirical evidence about the benefits and challenges of online learning courses in the Thai context, particularly while using MyELT.

In the academic year 2019-2020, English lecturers at Nakhon Si Thammarat Rajabhat University (NSTRU) selected and utilized World Link commercial textbook series along with MyELT platform provided by Cengage to enhance the Thai EFL learners English and digital literacies. This type of blended learning was meant to allow the students to independently practice what they learned in class at home. Their exercises address the macro and micro-skills of English. The students utilized MyELT for a full academic year but in the end, no significant improvement was perceived in their test results. Therefore, a detailed investigation was needed to unveil the challenges that negatively affected the expediency of MyELT.

The present study is significant as it exposes the challenges of online learning among the Thai EFL learners. The findings of this study will add new knowledge and some suggestions for lecturers and administrators to reconsider the integration of online courses to improve the learners' English proficiency and digital literacy. The study will contribute to a deeper understanding of the challenges that negatively affect the expediency of online learning courses. The present study specifically attempts to answer these questions:

1. What are the benefits of incorporating MyELT online courses in the English GE curricula?
2. What are the challenges that negatively affected the expediency of MyELT?

LITERATURE REVIEW

The Benefits of Online Learning Courses

Online learning can be divided into three categories, fully web-based learning, blended learning, and traditional learning with web-based supplements (Gilbert, 2015). The present study focuses on a type of blended learning in which teachers deliver regular classes utilizing different ICT tools and thereafter assign students to practice the language independently via (MyELT), class-based online courses to enhance their English proficiency and digital literacy. Through the system, teachers can assign group and/or individual tasks and trace students' performance. Incorporating online courses in the EFL learning context is beneficial as it fits students' diverse academic needs and contexts (Cater et al., 2012; Gilbert, 2015; Gillett-Swan, 2017). Their flexibility provides different pathways and opportunities for students who want to continue and/or improve their education with no restrictions of time and location.

The flexibility of online learning cannot be overstated as it is prevalent in all online courses. The effectiveness of these courses depends chiefly on the students, who can choose convenient times to concentrate on learning (Cater et al., 2012). Online courses help the students to learn and improve their English proficiency and digital literacy at any time and in any place suitable for their learning needs. The learners can choose

“when, where and how to learn” (Hartnett, 2016, p. 2). This flexibility helps particular students to continue their education while fulfilling other obligations like having a part-time job. Students always have positive perceptions of online learning courses as they reduced logistic demands, increased learning adaptability, and technology-enhanced learning, promoting a more enjoyable and successful academic experience (Gillett-Swan, 2017). Online learning courses contradict the belief that ‘learning is one size that fits all students’. It gave the students the freedom to overcome the time and location restrictions (Hartnett, 2016).

Online learning courses are beneficial for students who want to improve their English proficiency through self-regulated learning (Phanchanikul, 2015; Gilbert, 2015). Those students utilize various “cognitive and metacognitive strategies to accomplish their learning goals” (You & Kang, 2014, p. 126). They can manage their time, initiate a conversation with their teachers when they encounter difficulties, and reflect skillfully on their learning (Gilbert, 2015). Online courses improve students’ English as they encourage them to learn, practice the language independently and develop their autonomy (Skibba, 2013). Comparably, Gilbert (2015) found that online courses “not only taught students course material but also how to be “an independent and responsible student.” (p. 23). They help reducing students’ anxiety which emanates from their fear of making mistakes, peers’ reactions, and teachers’ unsupportive feedback while using the language in traditional face-to-face learning (Martin, & Valdivia, 2017). The virtual reality of online learning makes “students feel safe” (Chien et al., 2020 p. 26) and more motivated to practice the language without fear of others’ reactions. Appana (2008) found that “the benefit of the online delivery method is that the associated anonymity can result in greater participation from all students, including “shy” ones” (p. 9). Students’ digital literacy is also a causative factor for students’ anxiety.

McGuinness and Fulton (2019) believe that the adoption of online learning modes develops students’ information and digital literacy skills “particularly when the courses in question are embedded within academic curricula and delivered at point-of-need” (p. 3). This literacy assists students’ education especially in today’s situation where only “digitally literate students can search and manage, scrutinize and integrate digital information (Tang & Chaw, 2014). They will have the ability to read, understand and gather information from different digital sources (Spires & Bartlett, 2012). Therefore, incorporating online courses open pathways for students who develop digital literacies as an integral part of their learning to become “more effective in their study and more employable on graduation” (McGuinness & Fulton, 2019, p. 3). According to Vinogradova and Shin (2020) “helping students to develop digital literacy in English classroom is no longer optional” (p. 223) as they need to adjust with today’s digital culture (Gkonou et al, 2016). Online courses are cheaper than face-to-face courses as they fit students’ time and needs (Annetta et al., 2010).

Online learning courses have the potential to create educational opportunities for students with a cheaper cost. Samsuri et al. (2014) significantly assert that online courses are “cost-effective than traditional learning because less time and money is spent by learners on traveling. This means when students embark on e-learning, they can be thrifty” (p. 140). This feature has proven to be of great value, particularly for students with irregular schedules due to parenting obligations or work (Idrizi et al., 2018). Besides, avoiding the frequent commute to university reduces expenses and saves students’ time. It is beneficial especially for those who live in far areas from the campus (Bryan, 2007). Online learning courses “offer a more flexible and personalized form of education, allowing the students to progress at their pace and on their time” (Kumi-Yeboah, 2015, p. 140). They help students to save money spent on house rent and food especially those who come from low-income families. In the Thai context, there is still a dearth of literature about the benefits and challenges of online learning.

The Challenges of Online Learning among EFL Learners

Online learning courses among EFL learners are always liable to some challenges which affect students’ learning experience. Students nowadays are digital natives (Kennedy et al., 2008) yet some of them have negative attitudes and perceptions about online learning (Smidt et al., 2014) as it limits personal interaction with peers and teachers and increases students’ sense of isolation (Croft et al., 2010). The digital divide and the lack of digital literacy are persistent challenges for online learning among EFL learners (Journell, 2007). Jacobs (2013) rejected the perception that today’s EFL learners are ‘tech savvy’, commenting that they are not well-acquainted with basic desktop applications and use technology for entertainment but not for

educational purposes. The teachers' inability to mentor students' performance in online learning instigated some students to do some unethical practices such as copying or cheating (Gamage et al., 2020). Chami (2020) attributed these unusual practices to the pressure of study and the difficulty of assigned tasks.

Teachers' roles in online learning are not different from those in traditional face-to-face learning (e.g. Aggarwal & Bento, 2000; Cowan, 2006). In the classroom, teachers play roles as facilitators, guides, mentors, tutors... etc.) to assist students to overpass learning difficulties and enhance their understanding (Cullingford, 2016). However, during online learning teacher plays similar roles (Collison et al., 2000; Cowan, 2006) but with dissimilar spontaneity particularly in terms of interaction, support, and feedback (Craig et al., 2008). Nir-Gal (2002) found that students in online courses expect guidance in four domains: "the technical-operational domain, the task-oriented domain, the personal-emotional domain, and the social domain" (p. 1). Nevertheless, teachers cannot copy traditional classroom teaching roles and teaching practices to an online learning experience. For successful teaching and learning to take place, Craig et al. (2008) thus suggest that "both teachers and students need to be clear on the roles that they are expecting of each other. A mismatch between these expectations can lead to frustration and a less than satisfactory teaching or learning experience" (p. 206). Regardless, teacher's lack of digital literacy and online teaching experience, and online courses' content are some other challenges that impair the expediency of online learning (Zawacki-Richter & Anderson, 2014).

Online learning courses' content and system of accessibility are frequently called into question when it comes to investigating the challenges of an online learning experience (Gilbert, 2015; Dashtestani, 2014). The unsuitability of online courses' content with the students' needs and/or context negatively affects their experience of online learning (Gilbert, 2015). Lichtman (2010) finds out this as a "common problem in e-learning domain and happens not only in MOOCS but also in any web-based learning system" (p. 198). According to Appana (2008) course content is an essential factor that determines its success or failure and thus the online courses designers put into account the students' needs and context. Besides, the students expect online courses' content and system of accessibility to be easy to understand and navigate (Yang & Cornelius, 2004) as the students feel discouraged and sometimes opt to drop out of the courses due to the difficulty of the system and/or the online courses' content (Kyei-Blankson et al., 2019). Therefore, Jacob (2013) suggests "they must be comfortable with the technology. That means that the technology employed must be user-friendly. The course should be easy to navigate to the links provided" (p. 7).

METHOD

Research Design

The study employed a mixed-methods design including a questionnaire, semi-structured interview, and journaling to get a full picture and deep understanding of a phenomenon under study (Kumar, 2019). Mixed methods refer to the integration of quantitative and qualitative methods in a single study (Flewitt & Ang 2020). Mixed-methods research "provides strengths that offset the weaknesses of both quantitative and/or qualitative research and helps in answering questions that cannot be answered by quantitative or qualitative approaches alone" (Creswell & Clark, 2017, p. 12).

Research Context

The context of the study was MyELT online courses for Thai undergraduate students who studied English GE courses at NSTRU, Thailand. In 2020 English teachers at the Language Center selected and utilized commercial textbook series along with MyELT platform for five GE courses (Intensive English, English for Daily Life, English for Communication, English for Application, and English for Working Skill) to enhance students' English proficiency and digital literacy. The students utilized MyELT online courses for an academic year in two semesters. The syllabus in MyELT platform consists of three levels Intro, level 1, and level 2. Each level contains 12 units and each unit contains exercises that address the four skills i.e. listening, speaking, reading, and writing. In our context, we offer 5 English courses i.e. (Intensive English course, English for Daily Life, English for communication, English for application English for working skill) and we use one level of MyELT courses for two subjects, for example, online Intro course will be used for Intensive English and English for Daily Life due to the limit of time. These courses are classroom-based online courses that

give the students chance to practice at home what they have learned in class. The duration for each course is one semester. The teacher can assign all the units at one time or unit by unit. They also can extend the time if some students could not finish the assigned tasks on time. For evaluation, the students' performance will be assessed automatically by the system. At the end of each unit or all the units, the teachers will download the detailed progress report which shows the students' names, emails, number of assigned exercises, number of completed exercises, and grade for the correct answers that the students have done during the course.

Participants

The study involved 354 Thai undergraduate students at NSTRU who studied GE courses from five faculties as shown in Table 1. A simple random sampling strategy was employed. It gave a chance for all members of the population to be chosen in the sampling group and helped in getting reliable findings (Lamb, et al., 2011). The sample size was determined through Krejcie and Morgan's formula (1970). $N = 4156$, $x^2 = 3.184$, $p = 0.5$, $e = 0.05$.

$$n = \frac{x^2 N p (1 - p)}{e^2 (N - 1) + x^2 p (1 - p)}$$

$$n = \frac{3.814 \times 4156 \times 0.5 \times (1 - 0.5)}{0.05^2 \times (4156 - 1) + 3.841 \times 0.5 \times (1 - 0.5)}$$

$$= \frac{3990.799}{10.3875 + 0.96025} = \frac{3990.799}{11.34775} = 351.6819634$$

$$\approx 352, \quad \text{Thus, } n = 352$$

For the semi-structured interview, 15 students; three from each faculty, were voluntarily selected from the questionnaire sampling group.

Table 1. Demographic data

Faculties	Population	Percentage	Sampling group
Humanities and Social Sciences	1,101	26	92
Education	1,005	24	85
Management Sciences	715	18	64
Science	598	14	49
Industrial Technology	737	18	64
Total	4,156	100	354

Instruments

A questionnaire, semi-structured interview, and journaling were employed.

Questionnaire

A questionnaire with 34 items through 5 Likert scales was used to collect quantitative data. Likert Scale helped in gathering data "about affective dimensions of teaching and learning, such as beliefs, attitudes, motivations, and preferences" (Richards & Lockhart, 1994, p.10). The questionnaire was utilized to reach

students and find out the benefits and challenges of incorporating online courses. First, the questionnaire was adapted from Lai and Aksornjarung, (2018); Noom-Ura, (2013); Yunus et al. (2013); Ngampornchai and Adams, (2016), who similarly explored the benefits and challenges of online courses in EFL pedagogy. Second, the questionnaire was revised by language experts in the field to enhance its inclusiveness and reliability. Third, it was translated into Thai to help the students to overpass the language barrier and understand the meaning of each item correctly. Finally, it was adjusted in Google Form and prepared in Quick Response Code (QRC) to be shared with the students.

Semi-structured Interview

A semi-structured individual interview was employed to give the students chances to express the benefits and challenges of online courses. A semi-structured interview was flexible and “offered great latitude in data collection” (Galletta, 2013, p. 104) as it allowed the respondents to express their opinions and ideas in their way (Chevalier et al., 2014). It “enabled the researchers to obtain an in-depth understanding of the interviewees’ attitudes, behavior, and perceptions” (Christiansen, 2014, p. 517). Meanwhile, it gave the interviewees chance to disclose other hidden issues which were not asserted in the questionnaire (Austin & Pinkleton, 2015). It contained a list of pre-determined and follow-up questions that covered the main important aspects and attempted to answer the research questions. Taking the research objectives as the main criteria, the interview questions were prepared using the questionnaire findings which helped us to explore some of the issues in greater depth and further correlate the quantitative and qualitative findings (Ruhe & Zumbo, 2008).

Journaling

Journaling or personal journal is “a formal personal writing that expresses perceptions, experiences, dreams, and creativity from the perception of the self” (Hemphill-Pearson, 2008, p. 61). A personal journal was employed in this study as it added more depth in understanding the challenges that impaired the usefulness of MyELT in improving students’ English proficiency and digital literacy. It gave the researchers a chance to include other related issues that were not included in the previously utilized instruments. For personal journal, the researchers acted as human instruments to capture the tacit challenges and benefits of utilizing online courses to augment students’ language learning and digital literacy skills. The main sources of data for the personal journal were notes from real-life experience as the researchers worked as teachers at NSTRU and from the ‘LINE Group’ that connected all the GE teachers and the company coordinators.

Data Collection

The quantitative data were collected through a questionnaire from January 18 to March 26, 2020, at NSTRU, Thailand. A set of survey was adapted and administered using Google Form. and QR code. Seven teachers distributed the questionnaire by sharing the QR code or link in their classes after explaining to the students the purpose of the study. In the end, we received 354 responses and after cleaning the data 351 were considered suitable for data analysis.

The qualitative data was collected through semi-structured interview and personal journal. 15 students, three from each faculty had the interview in March 2020 at Language Center. The researchers made appointments with the participants at a time they preferred. Before the interview, the researchers explained the purpose and procedure of the interview. The interviewees were also informed that their interviews will be recorded for the sake of data accuracy. For personal journal, the researchers observed and noted down their experiences while teaching and utilizing MyELT for a full academic year. They took into consideration the benefits and challenges that the students and other teachers faced whilst utilizing MyELT. They also collected data from LINE Group which was created to connect the teachers and the company coordinators if they would face any problems. Journaling guidelines and issues were pre-determined based on the research questions.

Data Analysis

The questionnaire data was analyzed descriptively using means, percentage, and standard deviation through Excel 2016. The data were carefully input, doubled checked, and then cleaned the incomplete or repeated responses to minimize the errors and get reliable findings. After that, the data was inputted into SPSS 22 and the normality of the data was confirmed with skewness and kurtosis between -2 and +2 for all items (George & Mallery, 2003). Further, to examine the reliability of the questionnaire statements, Cronbach's alpha was used. Items with less than .70 were excluded from the data analysis. The findings show that all the items have higher than .70. Therefore, all the items were included in the data analysis. Descriptive statistics were used to "summarize sets of numerical data to conserve time and space" (Mackey & Gass, 2011 p. 85). In course of this study, the key themes were identified by comparing the means value across the tables in all questionnaire items.

The qualitative data obtained from semi-structured interviews and personal journals were analyzed through qualitative content analysis. Harding (2018) gave three steps for content analysis, first, to "transcribe the data" (p. 56). Then researchers familiarized themselves by reading the transcripts thoroughly and repeatedly to be immersed with the data and become more informed. Second, "codes were used and initial categories were identified" (Ibid, pp.83-84). The researchers double-checked the transcripts again to identify the emerging themes that would fulfill the research objectives. The researchers picked up and grouped some of the themes which made a significant contribution to answer the research questions. Third, the major themes were listed, grouped, and titled in a cohesive manner to be matched with the quantitative findings.

FINDINGS

The present study aims to examine the benefits of incorporating online courses in GE curricula. MyELT was incorporated to enhance students' English and digital literacies.

Table 2. Benefits of MyELT ($\alpha = .950$)

Subject Matters	\bar{x}	SD
MyELT is beneficial as it is flexible for our schedules and also meets the course[s] description.	4.10	0.80
MyELT makes studying English easy as we can study anywhere and anytime.	4.08	0.86
It saves our time as we can do it at home instead of in class.	4.15	0.76
MyELT is helpful as it solves the issue of our big classes.	4.03	0.85
MyEIT eliminates anxiety and shyness which we experience in the big diverse classes.	4.02	0.89
MyELT is useful for us as it enhances our digital literacy skills.	4.10	0.83
MyELT simplifies learning English because we can access it from our mobile and no need for carrying books.	4.06	0.86
MyELT enhances our understanding of English as we get enough time to practice and enjoy learning English.	4.07	0.85
This MyELT was specifically designed for Thai students to improve their English proficiency.	4.06	0.87

Table 1 indicates that MyELT is beneficial in its flexibility ($\bar{x} = 4.10$, $SD=0.80$) as it fulfills courses' descriptions and objectives. MyELT was useful as it improved to some extent students' digital literacy ($\bar{x} = 4.10$, $SD = 0.83$) and simplified their language learning by using their mobile ($\bar{x} = 4.06$, $SD = 0.86$) instead of carrying the book. Besides, MyELT ameliorated students' English Proficiency ($\bar{x} = 4.07$, $SD = 0.85$) as they got enough time to enjoy and practice the language independently.

The interview data similarly showed that MyELT was useful as it covered course descriptions and objectives. It helped the students to revise and practice the language independently anytime and anywhere as some interviewees stated:

“MyELT can be used anytime and anywhere” (IV5, IV8). “I can make use of my free time through it. MyELT helps us to review what I have studied in the classroom or what I have learned from the class again. So we can develop our English skills to use in the classroom. We like MyELT. We can revise our lessons wherever we want.” (IV3)

The data also indicated that MyELT assisted them to develop their English macro and micro-skills as two interviewees asserted:

“MyELT helped us to improve life skills and micro-skills of English” (IV2). “It assisted us to string words/vocabulary into a sentence with correct grammar rules. MyELT videos helped us to improve critical and analytical skills as well” (IV6).

The students were aware that MyELT was meant to enhance their digital literacy and develop their language abilities as some interviewees explained:

“MyELT emphasized the fundamental of English language practice. It helped me to revise my background knowledge of English in all skills. I learned a lot of vocabulary from MyELT” (IV15). “MyELT improved my technology skills and language skills like speaking, listening, writing, and reading skills.” (IV9, IV12)

Journaling data comparably exposed that:

The students liked MyELT as it fit their time. The assignments are available on their mobiles, they could do it anytime and anywhere. It enhanced their English proficiency and digital literacy as both are integrated into online course learning. They could practice the language independently and repetitively as the company added the chance for doing each assignment many times, until ten attempts. (Personal Journal, Feb. 15, 2020)

The study also investigated the challenges that negatively affect the usefulness of MyELT. It debated whether students’ perception, teachers’ role, and background, teachers’ teaching practices, and the company system and its online course content were the factors that challenged its effectiveness.

Table 3. Students perception ($\alpha = .818$)

Subject Matters	\bar{x}	SD
MyELT is one of the best options to improve our English at the CEFR level.	4.09	0.84
MyELT gives us a better model than that of the teacher in the class.	3.80	1.05
MyELT helps to develop our English proficiency as its exercises cover the four skills.	4.06	0.90
MyELT is an excellent option as it improves our digital literacy skills.	3.98	0.93
MyELT takes into account the students’ needs as it is updated and planned to improve our 4 Cs.	4.01	0.86
It wastes our time that we can use to do other home works given by other teachers.	3.62	1.08
It creates stress on us and affects our focus on other subjects.	3.53	1.15
It is boring as we study things two times in class and online.	3.51	1.17

Table 3 exposed that the usefulness of MyELT was not negatively affected by students’ perceptions. They perceived MyELT as the best option to improve their CEFR level ($\bar{x} = 4.09$, SD = 0.84) as it took into account their needs ($\bar{x} = 4.01$, SD = 0.86) and helped them to develop their English proficiency ($\bar{x} = 4.06$, SD = 0.90). They also discerned MyELT as an excellent option to improve their digital literacy ($\bar{x} = 3.98$, SD = 0.93) with its pedagogical design.

The interview data similarly showed that the students' perception affected positively the expediency of MyELT. The students had a sound conception that MyELT was included into their GE curricula to enhance their digital literacy and develop their language abilities as some interviewees explained:

"MyELT helped us to improve life skills and micro-skills of English" (IV2). "It assisted us to string words/vocabulary into a sentence with correct grammar rules. MyELT videos helped us to improve critical and analytical skills as well" (IV6).

The students were cognizant that MyELT would develop their English macro and micro-skills as two interviewees asserted:

"MyELT emphasized the fundamental of English language practice. It helped me to revise my background knowledge of English in all skills. I learned from MyELT so many vocabularies" (V15). "MyELT improved my speaking, listening, writing, and reading skills." (IV12)

Teachers' roles (e.g. as a guide, mentor, facilitator, etc.) and educational background were investigated in Table 3 as they were doubted as one of the challenges that negatively impact the usefulness of MyELT and the students' improvement.

Table 4. Teachers roles and background ($\alpha = .933$)

Subject Matters	\bar{x}	SD
Teachers have a good idea of MyELT.	4.10	0.82
They teach all the language skills and areas in class and give us a few exercises to practice at home what we have learned in the class.	4.08	0.88
They prepare and plan to improve our English proficiency in the CEFR.	4.10	0.91
They guide us to solve the difficult exercises in MyELT.	4.08	0.90
The mentor closely checks our progress in English through MyELT.	4.05	0.93

Table 3 revealed that the usefulness of MyELT was neither challenged by the teachers' role nor background. In contrast, they had a clear idea about the English subject ($\bar{x} = 4.10$, $SD = 0.82$). The data indicated that the teachers played different positive roles as facilitators ($\bar{x} = 4.10$, $SD = 0.91$), guides ($\bar{x} = 4.08$, $SD = 0.90$), and mentors ($\bar{x} = 4.05$, $SD = 0.93$) which in return benefited the students from practicing the language and improved the utility MyELT.

The Interview data identically confirmed that the teachers' role and educational backgrounds were supportive for the students' access to MyELT as some interviewees stated:

"No problems, the teacher explains clearly in class so that we can do everything" (IV4). "They help us in explaining every problematic matter before doing exercises" (IV11). "The teacher helps and explains what we don't understand. They help us to solve the problems we have. We can contact our teachers to consult them directly at any time". (IV1, IV8, IV10)

The teachers played different supportive roles (e.g. facilitator and guide) as several interviewees stated:

"Some teachers help us right from the start, from getting MyELT code to login into the program or when some students who have not finished the exercises, teachers will remind us or keep contacting us for individual alert" (IV1, IV8). "Teachers help us to solve problems we have encountered and explain in detail if we don't understand". (IV2, IV6, IV7, IV8, IV12).

Journaling data likewise showed that the teachers played indispensable roles in facilitating and helping the students to access MyELT platform as shown in Figure 1 and noted that:

The teachers created courses in their account, took the students to the computer room, shared their course keys with the students, guided them to create their accounts and access the platform. They checked the percentage of completion and if any student encountered problems they contacted the company as shown in Figure 1 and solved the problem. (Personal journal, Feb. 19, 2020)

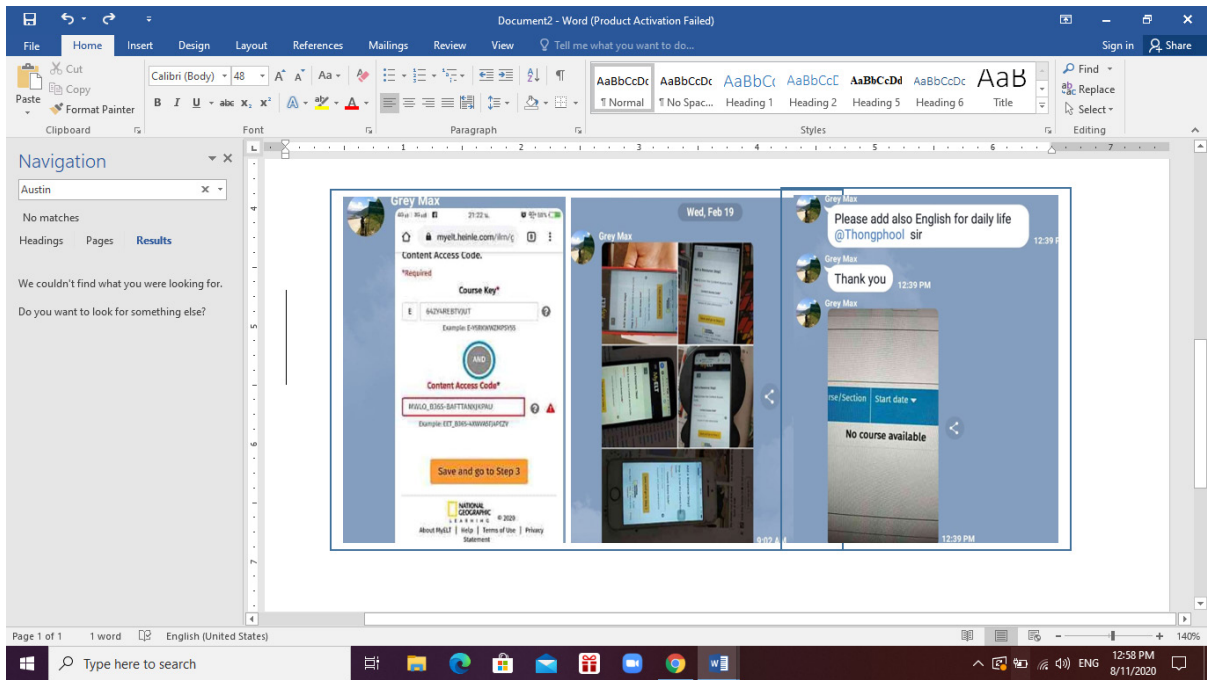


Figure 1. Examples of the teacher contact with the company

However, an interviewee unveiled the fact that teachers' role was limited to technical support only as the interviewees explained:

“Teacher helps me in all the problems I have faced, helps me to solve all the technical problems but they cannot teach us to understand the contents in the textbook” (IV8).

Journaling data similarly documented that:

The teachers used to assign exercises in every unit without checking the content in each exercise and whether the students could do it or not. Thereafter, the teachers did not follow up on who and how do the students practice and answered those assignments (Personal Journal, Feb. 2, 2020).

Teachers teaching practices were also essential, yet a questionable element of the online teaching and learning processes. Teaching practices provide a safe and orderly environment that enables students to acquire and reflect new knowledge.

Table 5. Teachers' teaching practices ($\alpha = .924$)

Subject Matters	\bar{x}	SD
It is very challenging for us because we sometimes get difficult exercises and the teachers don't help.	3.57	1.10
It is confusing as the exercises are different from those teachers teach in the class.	3.73	1.05
There is no close mentoring the teacher in the improvement of students' language and digital literacy skills.	3.53	1.12
The students' improvement is not the teachers' priority, the teacher focuses on the percentage of completion despite who did it.	3.47	1.21
It is useless as it accommodates the teachers' needs and not the students' needs.	3.50	1.18
It is ineffective and inaccurate as some students copy the answer from friends which is beyond the teacher's inspection or reach.	3.62	1.13

Table 5 indicated that the usefulness of MyELT was affected to some extent by teachers' teaching practices. The students got confused as MyELT assignments were different from those which the teacher taught in class ($\bar{x}=3.73$, $SD=1.05$). The teachers' used to assign some exercises without checking their content ($\bar{x}=3.47$, $SD=1.21$) and/or whether the students could do it or not. The difficulty of some assignments and teachers'

inability to mentor the students' improvement (\bar{x} =3.53, SD=1.12) instigated some students to copy the answers from their friends (\bar{x} =3.62, SD=1.13) and do some unethical practices to finish MyELT.

The qualitative data comparably confirmed that teachers teaching practices negatively affected the practicality and usefulness of MyELT. Teachers did not mentor the students' performance and improvement. Journaling data revealed that:

The teachers assigned all online exercises for all the units at once without checking the assignment content. They left the students without follow-up who and how they did MyELT. The students accumulated all their assignments until few days before the deadline then started searching how to do those assignments. (Personal Journal, Feb 25, 2020).

The interview data explicitly exposed that the students got confused as the teachers assigned a lot of exercises and some of them are very difficult i.e. unlike those they studied in class. These challenges urged some students to revert to unethical practices such as copying and paying money to friends as some interviewees stated:

“Some students don't do it by themselves. They just ask their friends who finished it to take pictures and send them via smartphone for copying” (IV6). “There are answers to all the exercises. No need for students to use their efforts to finish them all” (IV12).

Further, the absence of teacher mentoring of the students' performance challenged the usefulness of MyELT as a few interviewees stated that:

“Some students paid for doing some exercises because the teacher assigns too many units at a time and the contents are difficult to gain expected score” (IV1). “Some students paid for doing the excises. Teachers cannot control” (IV12).

Both teachers teaching practices and students' performances challenged the expediency of MyELT which was aimed to improve students' English and digital literacies. The company's system and the content of MyELT were also contentious challenges that had a negative impact on the expediency of MyELT.

Table 6. The company's system and MyELT content ($\alpha = .927$)

Subject matter	\bar{x}	SD
It has many problems with the accounts, codes, login, and evaluation system.	3.47	1.17
It is overloaded with exercises which made the online practice a kind of punishment for us.	3.36	1.23
It is difficult for those who are technologically deficient or don't have smart mobiles.	3.62	1.11
It is complicated because we don't have enough technological competence.	3.60	1.11
MyELT is difficult because it gives only exercises.	3.82	0.94
It was not prepared for the Thai students as we cannot do the speaking exercises due to our accent.	3.53	1.13

Table 6 showed that MyELT system and the content of the online course were inevitable challenges that critically affected its usefulness. The students encountered many problems in creating the account and using the access code ($\bar{x} = 3.47$, SD = 1.17). It system is difficult for the students ($\bar{x} = 3.62$, SD = 1.11) due to their lack of digital literacy and devices. Its expediency was negatively affected by its complicated system ($\bar{x} = 3.60$, SD = 1.11) and the unsuitability of its content with the Thai context ($\bar{x} = 3.53$, SD = 1.13).

The interview data identically confirmed that MyELT system was one of the major challenges that brought about the ineffective of MyELT several interviewees explained:

*“The login process is too long. The program is difficult and seems to be complicated” (IV2, IV8, IV9)
“If we type wrong password twice, we cannot log in to our exercises. It is very annoying especially with the codes” (IV13).*

The personal journal data similarly documented constant complaints about the content access codes. Many books used to be equipped with access codes that were either not working or irremovable as shown in Figure 2. In such cases, the teachers would seek the company's coordinator's help to get new codes through the LINE Group.

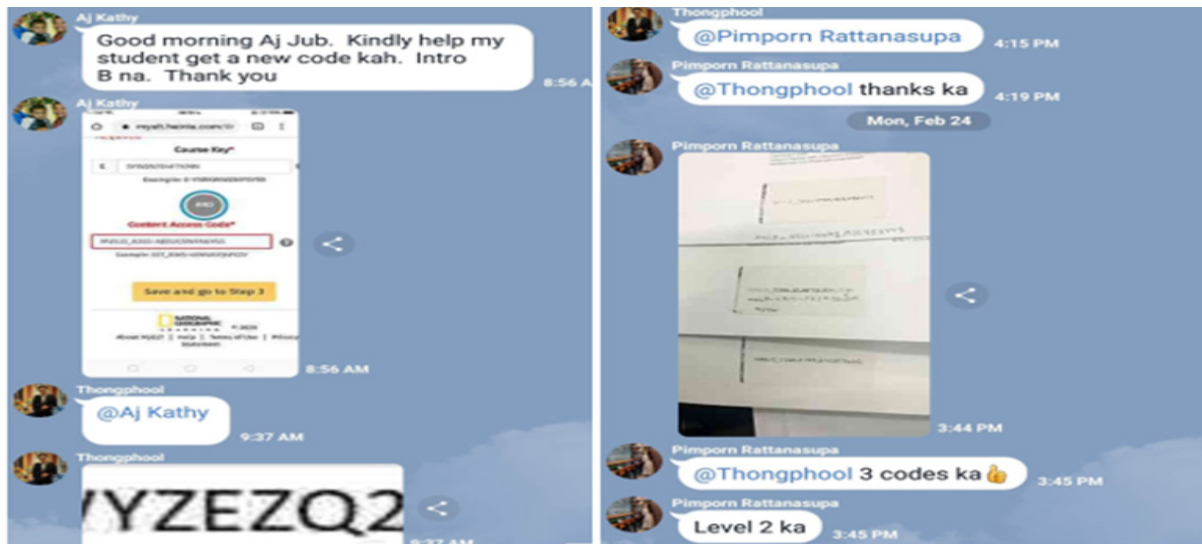


Figure 2. Content codes problems (either irremovable or not working)

Journaling data in Figure 1 and Figure 2 also reflected that the usefulness of MyELT was affected to a great extent by the company's long and complicated system as it was noted:

The company has a long process of registration; however, it is normal for publication international companies. Despite this, the students find it demotivating and challenging. The teacher has to guide the students in the registration process otherwise students will not be able to access the platform (Personal journal, Feb 10, 2020).

Besides, journaling data exposed that the content of MyELT did not fit the students' context. The system denied accepting students' voice recording repetitively because of their accent. Whilst arguing with the teachers' and course coordinators, it was documented that:

The teachers evaded assigning any speaking exercises to their students despite their level as the system could catch the student accent; only the native accent, forgetting about the varieties of World Englishes and the actuality of English as a lingua franca (Personal Journal, Feb 20, 2020).

DISCUSSIONS

Lecturers at NSTRU incorporated commercial series along with MyELT platform to improve GE curricula and enhance students' English proficiency and digital literacy. The students utilized MyELT for a full academic year but in the end, no significant improvement was perceived in the students' test results. A mixed-methods design was used and the quantitative and qualitative findings correlated and revealed that MyELT was beneficial in its flexibility as it helped fulfilling courses' description and proportionately improved students' English proficiency and digital literacy. Students' perceptions, teachers' roles, and backgrounds were not challenging factors. The expediency of MyELT was thus challenged by four factors namely: teachers teaching practices, teachers' inability to mentor students' performance which further instigated some students to do unethical practices, company system of accessibility, and MyELT courses' content.

To address the first research question, the quantitative and qualitative findings revealed that MyELT was beneficial particularly with its flexibility in fulfilling English GE courses' description. Cater et al., (2018) comparably explained that online courses were effective to achieve particular goals especially for students who can choose a convenient time to concentrate on learning. Gillett-Swan, (2017) also found that integrating online courses enhanced learning, promoted a more enjoyable and successful academic experience. Besides, the findings indicated that MyELT improved to some extent the students' English proficiency and digital literacy. Phanchanikul (2015) and Gilbert (2015) had a similar view that online courses improve English proficiency for students who had self-regulated learning. These students had time-management skills, cognitive and metacognitive strategies to accomplish their learning goals. Gilbert (2015) found also that online courses "not only taught students course material but also

how to be “an independent and responsible student.” (p. 23). In our context, MyELT inadequately improved the students’ English and digital literacies as its expediency was impaired by challenges related to the teachers’ teaching practices students’ performance, MyELT system, and online courses content.

To address the second research question, the findings exposed that the usefulness of MyELT was neither differently-abled by students’ perceptions, nor teachers’ roles and background. The students’ perceived MyELT as a good option to improve their CEFR level as it addressed the language macro and micro-skills. Skibba (2013) upheld the same idea with Chien et al., (2020) that online courses encouraged the students to learn, practice the language independently and develop their autonomy. The students feel safe and more motivated to practice the language without fear of peers’ reactions. Besides, the students considered MyELT as a good tool for enhancing their digital literacy. McGuinness and Fulton (2019) similarly found that the integration of online learning modes develops students’ information and digital literacy skills especially when the courses are employed within academic curricula and delivered at point-of-need. On the teachers’ part, the findings showed that they played different supportive roles (e.g. as guides, facilitators, and mentors) in an attempt to enhance students’ English and digital literacies. Both Collison et al., (2000) and Cowan (2006) shared a similar view that the teachers’ roles during online teaching were similar with those in the classroom but dissimilar in the spontaneity of interaction, support, and feedback. However, teachers teaching practices were indicated as one of the challenges that negatively affect the usefulness of MyELT.

The data significantly exposed that the expediency of MyELT was critically affected by four factors: first, teachers teaching practices, teachers’ inability to mentor students’ performance which instigated some students to do some unethical practices, MyELT system, and courses content. Regarding teaching practices, the respondents stated that teachers’ support was confined to the technical issues (e.g. login, changing the access code, the password, and the course key) but not the pedagogical aspects. They teach something different while MYELT exercises are different and more difficult. They simply selected a number of exercises with no knowledge of their content. Nguyen et al., (2014) pertinently found that the students’ improvement would be hindered by different factors including “giving unclear instructions” (p.94). Besides, they exposed that the teachers did not help when students faced difficult online exercises. Second, the expediency of MyELT was critically affected by teachers’ inability to mentor students’ performance. This instigated some students to do some unethical practices (e.g. copy from classmates and/or pay money for English major students to do MyELT tasks for them) to finish the assigned exercises and get the score. Diego (2017) attributed this unusual phenomenon to “the difficulty of the subject and the peer influence” were some of the vibrant factors for those unethical practices. In addition, Chami (2020) referred the students’ copying or paying money to other students to do their assignments to the “stress, interruption, the lack of study skills and the pressure of exams and grades” (p. 112). The findings of this study mirrored Diego (2017) and Chami (2020) findings that the students resorted to these practices due to the pressure of plenty of assignments of other subjects, the difficulty of MyELT online tasks, and the scarcity of the teachers’ follow-up.

Third, the expediency of MyELT in improving students’ English proficiency and digital literacy was challenged by its system of accessibility. The students encountered problems with the content access codes as most of those codes were either viscid (sticky and would be destroyed when trying to be removed) or not working as in Figure 2. In such cases, the teachers would contact the company for providing alternative codes as in Figure 1. Some students especially those who did not have computers and laptops detested MyELT due to its long and complicated system of registration. Jacob (2013) found a similar problem with online learning courses and thus suggested that “the technology employed must be user friendly. The course should be easy to navigate to the links provided” (p. 7) to help students to develop their English and digital literacy skills. Fourth, MyELT courses content was another challenge that negatively affect the evolvement of students’ English proficiency and digital literacy. The students explained that MyELT courses content was inappropriate for their context especially in the practicing speaking skill. The system used to reject repetitively the students’ recorded answers due to their accent which did not match with the native accent. According to Appana (2008), online course content is an important factor that determines its success or failure. The online course designers must consider students’ needs and context (Dashtestani, 2014). Regardless, Lichtman (2010) similarly found the unsuitability of online course content as a “common problem in e-learning domain and happens not only in MOOCS but also in any web-based learning system” (p. 198).

CONCLUSION

The present study examined the benefits of incorporating online courses in the English GE curricula. It also investigated the challenges that negatively affected the expediency of MyELT. The quantitative and qualitative findings correlated and indicated that MyELT was beneficial in its flexibility as it helped fulfilling courses' descriptions and to some extent improved students' English proficiency and digital literacy. Neither students' perception, nor teachers' role and background were challenging factors for the usefulness of MyELT in improving the students' English proficiency and digital literacy. The expediency of MyELT was thus challenged by four factors namely: teachers teaching practices, teachers' inability to mentor students' performance which further instigated some students to do unethical practices, company system of accessibility, and MyELT courses content. These quantitative and qualitative findings inform teachers that enhancing the students' English proficiency and digital literacy can be accomplished by incorporating online learning courses in a blended learning design. To cope up with the current challenges, teachers must go through the online course exercises before teaching and be assigned to evade the contradictions between what is assigned and what has been taught. They have to assign the online exercises unit by unit with a regular strategy of following up the students' performance in view of avoiding the students' unethical practices and contract cheating or copying. Assigning all the course tasks and exercises at once demotivates the students and incites them to search for alternative ways to finish their assignments rather than improving their English and digital literacies. To assist the students to learn, practice the language, and achieve the desired specific goals the teachers must improve their teaching strategies and effectively play the roles of being facilitators, guides, mentors, and resource teachers. They have also to reconsider incorporating online courses that fit their context and embrace varieties of world Englishes. However, it is essential to mention that the study was limited to NSTRU context only. Therefore, further studies are suggested to include more universities within Thailand. It would be fruitful if researchers consider exploring teachers' points of view and what challenges they believe impaired the expediency of MyELT.

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REFERENCES

- Adams, R. V., & Blair, E. (2019). Impact of time management behaviors on undergraduate engineering students' performance. *Sage Open*, 9(1), pp. 1-11.
- Aggarwal, A. K., & Bento, R. (2000). Web-based education. In A. Aggarwal (Ed.), *Web-based learning and teaching technologies: Opportunities and challenges* (pp. 2-16). Hershey, PA: Idea Group.
- Annetta, L. A., Folta, E., & Klesath, M. (2010). *V-Learning: Distance education in the 21st century through 3D virtual learning environments*. North Carolina: Springer Science & Business Media.
- Appana, S. (2008). A review of benefits and limitations of online learning in the context of the student, the instructor, press the tenured faculty. *International Journal on E-learning*, 7(1), 5-22.
- Austin, E. W., & Pinkleton, B. E. (2015). *Strategic public relations management: Planning and managing effective communication campaigns*. New York: Routledge.
- Bryan, V. C., Musgrove, A. T., & Powers, J. R. (Eds.). (2017). *Handbook of Research on Human Development in the Digital Age*. Hershey: IGI Global.
- Cater III, J. J., Michel, N., & Varela, O. E. (2012). Challenges of online learning in management education: An empirical study. *Journal of Applied Management and Entrepreneurship*, 17(4), 76.
- Chami, H. (2020). *Reframing education*. Beirut: Dar Al Kalam.
- Chevalier, A., Marinova, E., & Pena-Chocarro, L. (Eds.). (2014). *Plants and people: choices and diversity through time* (Vol. 1). Oxford: Oxbow Books.
- Chien, S. Y., Hwang, G. J., & Jong, M. S. Y. (2020). Effects of peer assessment within the context of spherical video-based virtual reality on EFL students' English-Speaking performance and learning perceptions. *Computers & Education*, 146, 103751, 1-48.
- Christiansen, B. (Ed.). (2014). *Handbook of research on global business opportunities*. Hershey: IGI Global.
- Collison, G., Elbaum, B., Haavind, S., & Tinker, R. (2000). *Facilitating online learning: Effective strategies for moderators*. Madison, WI, USA: Atwood Publishing.
- Cowan, J. (2006). Introduction. In J. O'Donoghue, *Technology supported learning and teaching - A staff perspective* (pp. 1-13). London: Idea Group.
- Craig, A., Goold, A., Coldwell, J., & Mustard, J. (2008). Perceptions of roles and responsibilities in online learning: A case study. *Interdisciplinary journal of e-learning and learning objects*, 4(1), 205-223.
- Creswell, J. W., & Clark, V. L. P. (2017). *Designing and conducting mixed methods research*. California: Sage publications.

- Croft, N., Dalton, A., & Grant, M. (2010). Overcoming isolation in distance learning: Building a learning community through time and space. *Journal for Education in the Built Environment*, 5(1), 27-64.
- Cullingford, C. (Ed.). (2016). *Mentoring in education: An international perspective*. New York: Routledge.
- Dashtestani, R. (2014). English as a foreign language—teachers' perspectives on implementing online instruction in the Iranian EFL context. *Research in Learning Technology*, -(22). 1-15.
- Diego, L. A. B. (2017). Friends with Benefits: Causes and Effects of Learners' Cheating Practices during Examination. *IAFOR Journal of Education*, 5(2), 121-138.
- Flewitt, R., & Ang, L. (2020). *Research methods for early childhood education*. Bloomsbury Publishing.
- Galletta, A. (2013). Mastering the semi-structured interview and beyond: From research design to analysis and publication (Vol. 18). New York: NYU Press.
- Gamage, K. A., Silva, E. K. D., & Gunawardhana, N. (2020). Online delivery and assessment during COVID-19: Safeguarding academic integrity. *Education Sciences*, 10(11), 1-24.
- George, D., & Mallery, P. (2003). *SPSS for Windows step by step: A simple guide and reference*. 11.0 update (4th ed.). Allyn & Bacon.
- Gilbert, B. (2015). Online learning revealing the benefits and challenges. *Unpublished doctoral dissertation. School of Education St. John Fisher College*, New York. Available from Fisher Digital publication.
- Gillett-Swan, J. (2017). The challenges of online learning: Supporting and engaging the isolated learner. *Journal of Learning Design*, 10(1), 20-30.
- Gilster, P. (1997). *Digital literacy*. New York: Wiley Computer Pub.
- Gkonou, C., Tatzl, D., & Mercer, S. (Eds.). (2016). *New directions in language learning psychology*. New York, NY: Springer.
- Harding, J. (2018). *Qualitative data analysis: From Start to Finish*. Los Angeles: SAGE Publications Limited.
- Hartnett, M. (2016). *Motivation in online education*. Singapore: Springer.
- Hemphill-Pearson, B. J. (Ed.). (2008). *Assessments in occupational therapy mental health: An integrative approach*. New Jersey: Slack Incorporated.
- Idrizi, E., Filiposka, S., & Trajkovik, V. (2018, September). Character Traits in online education: Case Study. *In International Conference on Telecommunications*, 3 (21) 247-258. Springer, Cham.
- Jacobs, P. (2013). The challenges of online courses for the instructor. *Research in Higher Education Journal*, 1(18), 1-18.
- Journell, W. (2007). The inequities of the digital divide: is e-learning a solution? *E-Learning and Digital Media*, 4(2), 138-149.
- Kennedy, G. E., Judd, T. S., Churchward, A., Gray, K., & Krause, K. L. (2008). First-year students' experiences with technology: Are they really digital natives? *Australasian Journal of educational technology*, 24(1) 108-122.
- Kiriakidis, P., Decosta, J. W., & Sandu, A. (2011). What is the effect of grade point average (GPA) on courses taken either face-to-face or online by undergraduate working adult students? *Revista de cercetare si interventie sociala*, 33, 7-26.
- Krejcie, R. V., & Morgan, D. W. (1970). Determining sample size for research activities. *Educational and Psychological Measurement*, 30(3), 607-610.
- Kumar, R. (2019). *Research Methodology: A step-by-step guide for beginners*. London: Sage Publications Limited.
- Kumi-Yeboah, A. (2015). Learning theory and online learning in K-12 education: Instructional models and implications. In *Curriculum Design and Classroom Management: Concepts, Methodologies, Tools, and Applications* (pp. 167-187). Hershey: IGI Global.
- Kyei-Blankson, L., Ntuli, E., & Blankson, J. (Eds.). (2019). *Handbook of research on creating meaningful experiences in online courses*. Hershey: IGI Global.
- Lai, Y., & Aksornjarung, P. (2018). Thai EFL learners' attitudes and motivation towards learning English through content-based instruction. *MOJES: Malaysian Online Journal*. 6 (1) 34-56

- Lamb, C. W., Hair, J. F., & McDaniel, C. (2011). *Essentials of marketing*. New York: Cengage Learning.
- Lichtman, M. (2010). *Understanding and evaluating qualitative educational research*. California: Sage Publications.
- Mackey, A., & Gass, S. M. (Eds.). (2011). *Research methods in second language acquisition: A practical guide* (Vol. 7). Malden: John Wiley & Sons.
- Martin, A., & Madigan, D. (Eds.). (2006). *Digital literacies for learning*. London: Facet Publishing.
- Martin, S., & Valdivia, I. M. A. (2017). Students' feedback beliefs and anxiety in online foreign language oral tasks. *International Journal of Educational Technology in Higher Education*, 14(1), 1-15.
- McGuinness, C., & Fulton, C. (2019). Digital literacy in higher education: A case study of student engagement with e-tutorials using blended learning. *Journal of Information Technology Education: Innovations in Practice*, 18, 001-028.
- Murray, N. (2016). *Standards of English in higher education: Issues, Challenges, and Strategies*. London: Cambridge University Press.
- Ngampornchai, A., & Adams, J. (2016). Students' acceptance and readiness for e-learning in northeastern Thailand. *International Journal of Educational Technology in Higher Education*, 13(1), 1-13
- Nguyen, H. T., Warren, W., & Fehring, H. (2014). Factors affecting English language teaching and learning in higher education. *English Language Teaching*, 7(8), 94-105.
- Nir-Gal, O. (2002). Distance learning: The role of the teacher in a virtual learning environment. *Ma'of u-Ma'aseh*, 8, 23-50.
- Noom-Ura, S. (2013). English-teaching problems in Thailand and Thai teachers' professional development needs. *English Language Teaching*, 6(11), 139-147.
- Phanchanikul, N. (2015). Using E-learning to Improve English Communication Skills of Thai Undergraduate Students. *Unpublished Doctoral dissertation, Thammasat University, Thailand*. Available from thesis archive.library.tu.ac.th.
- Richards, J. C. & Lockhart, C. (1994). *Reflective teaching in second language classrooms*. New York: Cambridge: Cambridge University Press.
- Ruhe, V., & Zumbo, B. D. (2008). *Evaluation in distance education and e-learning: The unfolding model*. Guilford Press.
- Samsuri, N. N., Nadzri, F. A., & Rom, K. B. M. (2014). A study on the student's perspective on the effectiveness of using e-learning. *Procedia-Social and Behavioral Sciences*, 123, 139-144.
- Skibba, K. (2013). Adult learning influence on faculty learning cycle: Individual and shared reflections while learning to teach online lead to pedagogical transformations. *In Virtual Mentoring for Teachers: Online Professional Development Practices*, 263-291.
- Smidt, E., Bunk, J., McGrory, B., Li, R., & Gatenby, T. (2014). Student attitudes about distance education: Focusing on context and effective practices. *The IAFOR Journal of Education*, 2(1), 40-64.
- Spires, H. A., & Bartlett, M. E. (2012). Digital literacies and learning: Designing a path forward. *Friday Institute White Paper Series*, 7 (2) 1-3.
- Tang, C. M., & Chaw, L. Y. (2016). Digital literacy: A prerequisite for effective learning in a blended learning environment?. *Electronic Journal of E-learning*, 14(1), 54-65.
- Vinogradova, P., & Shin, J. K. (Eds.). (2020). *Contemporary foundations for teaching English as an additional language: pedagogical approaches and classroom applications*. New York: Routledge.
- Yang, Y., & Cornelius, L. F. (2004). Students' perceptions towards the quality of online education: A qualitative approach. *Association for Educational Communications and Technology*. 861-877.
- You, J. W., & Kang, M. (2014) The role of academic emotions in the relationship between perceived academic control and self-regulated learning in online learning. *Computers & Education*, 77, 125-133.
- Yunus, M. M. et al. (2013). Pros and cons of using ICT in teaching ESL reading and writing. *International education studies*, 6(7), 119-130.
- Zawacki-Richter, O., & Anderson, T. (Eds.). (2014). *Online distance education: Towards a research agenda*. Edmonton: Au Press.

APPENDIX 1

Questionnaire

The Language Center
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Title: Enhancing Students' English and Digital Literacies Through Online Courses: Benefits and Challenges.

The study aims to examine the benefits of incorporating online courses, MyELT, for General English (GE) curricula. It also aims to investigate the challenges that negatively affect the expediency of the courses in improving the students' English proficiency and digital literacy. Below is a questionnaire on a Likert Scale about the utility of Cengage online course or what is known as MyELT and its contribution to improve the student English proficiency aligns with the CEFRRRL

Note:

1. This questionnaire is not for commercial purposes, but rather for academic quest and inquiry, as we aim to help our students' pedagogical development
2. All the responses will be kept confidential and no names will be disclosed
3. Please select only one option in each row

No	Questions	Strongly agree (5)	Agree (4)	No opinion (3)	Strongly disagree (2)	Disagree (1)
Benefits of MyELT.						
1	MyELT is beneficial as it is flexible for our schedules and also meets the course[s] description.					
2	MyELT makes studying English easy as we can study anywhere and anytime.					
3	It saves our time as we can do it at home instead of in class.					
4	MyELT is helpful as it solves the issue of our big classes.					
5	MyEIT eliminates anxiety and shyness which we experience in the big diverse classes.					
6	MyELT is useful for us as it enhances our digital literacy skills.					
7	MyELT simplifies learning English because we can access it from our mobile and no need for carrying books.					
8	MyELT enhances our understanding of English as we get enough time to practice and enjoy learning English.					
9	This MyELT was specifically designed for Thai students to improve their English proficiency.					
Students' perception						
10	MyELT is one of the best options to improve our English at the CEFR level.					
11	MyELT gives us a better model than that of the teacher in the class.					
12	MyELT helps to develop our English proficiency as its exercises cover the four skills.					

13	MyELT is an excellent option as it improves our digital literacy skills.					
14	MyELT takes into account the students' needs as it is updated and planned to improve our 4 Cs.					
15	It wastes our time that we can use to do other home works given by other teachers.					
16	It creates stress on us and affects our focus on other subjects.					
17	It is boring as we study things two times in class and online.					
Teachers' roles and background						
18	Teachers have a good idea of MyELT.					
19	They teach all the language skills and areas in class and give us a few exercises to practice at home what we have learned in the class.					
20	They prepare and plan to improve our English proficiency in the CEFR.					
21	They guide us to solve the difficult exercises in MyELT.					
22	The mentor closely checks our progress in English through MyELT.					
Teachers' teaching practices						
23	It is very challenging for us because we sometimes get difficult exercises and the teachers don't help.					
24	It is confusing as the exercises are different from those teachers teach in the class.					
25	There is no close mentoring the teacher in the improvement of students' language and digital literacy skills.					
26	The students' improvement is not the teachers' priority, the teacher focuses on the percentage of completion despite who did it.					
27	It is useless as it accommodates the teachers' needs and not the students' needs.					
28	It is ineffective and inaccurate as some students copy the answer from friends which is beyond the teacher's inspection or reach.					
The company's system and MyELT contents						
30	It has many problems with the accounts, codes, login, and evaluation system.					
31	It is overloaded with exercises which made the online practice a kind of punishment for us.					
32	It is difficult for those who are technologically deficient or don't have smart mobiles.					
33	It is complicated because we don't have enough technological competence.					
34	MyELT is difficult because it gives only exercises.					

Thank you very much

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APPENDIX 2

Interview Guide

Research question	Predetermined questions	Follow up questions	Other remarks
Introduction	First of all, thank you so much for sparing few minutes of your time. We are conducting research entitled: Enhancing Students' English and Digital Literacies Through Online Courses: Benefits and Challenges. The study aims to examine the benefits of incorporating online courses, MyELT, for General English (GE) curricula. It also aims to investigate the challenges that negatively affect the expediency of the courses in improving the students' English proficiency and digital literacy. We assure you that no names will be disclosed and the findings will be used for this study only. We are going to record the interview on our mobile for transcribing it later.		
1. What are the benefits of incorporating MyELT online courses in the English GE curricula?	<ol style="list-style-type: none"> 1. What are the main advantages of MyELT that you experienced in terms of flexibility and easiness to practice the language? 2. What are the main advantages of MyELT that you experienced in terms of digital literacy? 3. What are the main advantages of MyELT that you experienced in terms of improving your English micro and macro language skills? 4. How did it help you to save time and improve your English? 5. Did it make learning English easier or more challenging, How and why? 6. Do you think MyELt fits your situation in learning English as a foreign language, how and why? 7. Why do some students consider it the best option to practice the language? 	Class size Anxiety Shyness Learn more vocabulary Enhanced digital literacy!!	
2. What are the challenges that negatively affected the expediency of MyELT?	<ol style="list-style-type: none"> 1. What do you think about MyELT? 2. Do you perceive it improves your English skills? 3. What exercise do you prefer to do in MyELT? 4. Does it help to improve your English listening and reading skills? Why/why not? 5. Does it mean to enhance your digital literacy skills? How, why, and why not? 6. What areas did you think MyELT help you to improve? 7. Why do you think the LC included MyELT in your GE courses? <p>*****</p> <ol style="list-style-type: none"> 1. What about the teachers, do they have good knowledge about MyELT? 2. Do they help you to improve your 4 skills, speaking, listening, reading, and writing? 3. Have you ever asked the teacher to help in MyELT, what was the reply? 4. If you face difficulty in MyELT, do the teachers help or what do you do? 5. Who follows up your improvement in MyELT? <p>*****</p> <ol style="list-style-type: none"> 1. Does MyELT effectively improve your English skills, or just gave extra work for you? 2. If your classmates face difficult exercises what do they use to do? 3. What about your speaking skill, does it get any improvement? 4. What about the rumor that some students saying some students spay money for other students to do their assignments? 5. Is it true that some students copy their friends' answers by sharing their responses in FB messenger groups? 	Save your time Give a better model than the teacher? Is wasting time? Needs a lot of effort? Teachers don't help They teach something different MyELt exercises are something different from the things you study in class? Company codes problems? The system is easy to access? Content is hard? Does the system reject my speaking assignments? Accent issue	

Appendix 3: Sample if Observation

The journaling used to be done by the researchers i.e. the teachers in their daily life interaction with the students. Here I typed them from my notebook for these samples.

Personal journal.

This purpose of this journaling is to collect data about the role of MyELT in enhancing the students digital and literacies and English skills.

Feb. 15, 2020

Saturday afternoon, the time in which the teachers have to present monthly their progress report in a meeting with the head of the language center. In this regular meeting, teachers present their teaching progress, teaching method and strategies as well as the issues and challenges which they have faced and how do they tackle them. During the meeting, some teachers raised different issues about MyELT, and the constant problem of the codes. They also explored how it helps developing the students' language skills.

One teacher disclosed the fact that, MyELT is practical in some skills but not all. He asserted that the students complained to him saying that, they can do the reading, vocabulary and grammar exercise but not the speaking ones. He appended that, the system rejects the students answer even they do it many time. He hypothesized that the system accepts only the native accent and not the Thai students accent, suggesting that the teachers should not assign any speaking exercise because students waste a lot of time with no benefits or outcomes.

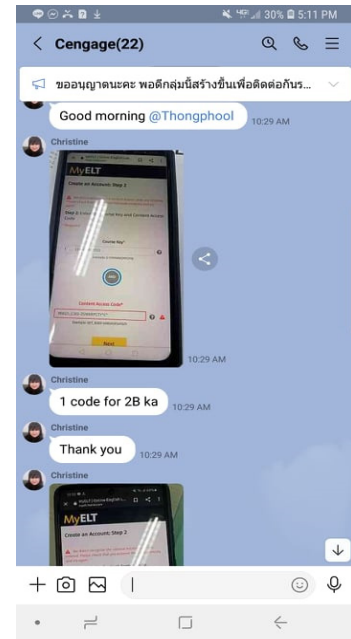
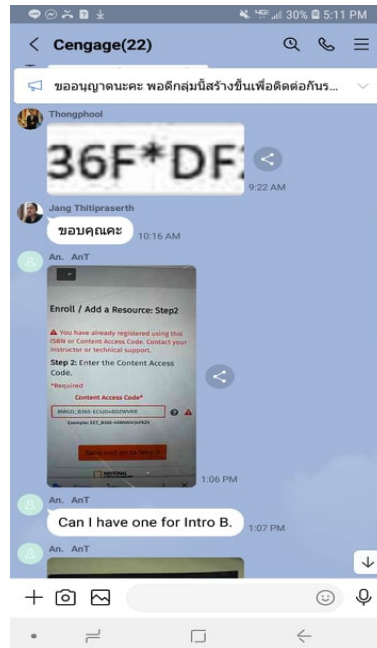
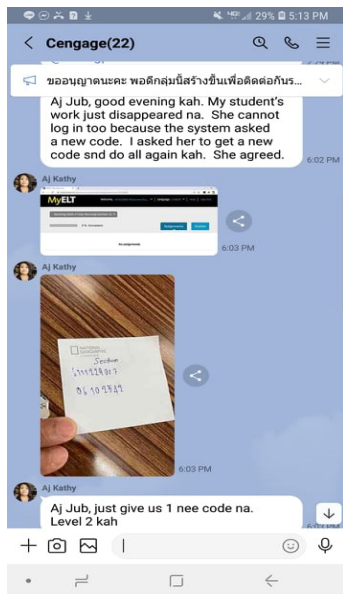
Another teacher, acknowledged the contribution of MyELT in enhancing their English proficiency and digital literacy as both are integrated into online course learning, as it fits the students digital age and the shy nature of the Thai students, giving them chance to practice the language independently at home. He explained that it also helped in fit the students' time by its flexibility. The assignments are available on their mobiles, they could do it anytime and anywhere. They could practice the language independently and repetitively as the company added the chance for doing each assignment many times, until ten attempts. Meanwhile, he explained a concern about the students' performance because they get the same grades 370, 370, 370. He postulated that the students created a Facebook messenger group in which the good students answer the exercises and make screen shoot and share it with all the students. That is why they get similar score. It is very difficult for the teachers to trace back the students' performance because MyELT was meant to be done at home not under the teachers' supervision. It cannot be done in class because the teacher is required to move on in the syllabus and teach new lessons in very session. This put a question mark on how to improve it practicality and whether it develop the students' English and digital skills or not!!

Feb. 16. 2020

It is very tiresome and we are helpless as teacher 55555. The practicality of MyELT is very fragile. In the office some teachers talking to the secretary of the Language Center about the issue of some students pay money for English major students to do the exercises for them so that they will get the grades of MyELT.

Feb. 19. 2020

Apart from my class, I saw in LINE group three teachers asking the company coordinator to give them new codes as there are a number of students who bought the codes and the codes are not working. The company coordinator replied immediately and gave them new codes to help the students to create their access account and start practicing the language.



Feb. 20, 2020

Thursday class, English for communication, feeling exhausted in long class for 3:20 minute standing and teaching a class with 75 mixed abilities students. As soon as I finished the class three students came over and asked me, teacher speaking exercises we cannot do. System refuses. I said let me have a look in the office. I am so tired now na. Another student came and asked for my help as he forgot his password. I took his email address and told him that I am going to reset it for him from my system and send him the new password.

During the lunch I discussed with my colleagues, they said they assigning any speaking exercises to their students whether they are English major or from other faculties because the system could catch the student accent; as if they don't take into account World Englishes.

Feb. 21, 2020

Students like MyELT and they don't like it, it helps but it does not help, I don't understand, we are confused.

APPENDIX 4

Tabular findings.

Research objective	Questionnaire findings	Interview findings	Personal journal findings	Other remarks	
Objective one: The study aims to examine the benefits of incorporating online courses, MyELT, for General English (GE) curricula.	1.1. MyELT is beneficial in its flexibility ($\bar{x} = 4.10$, $SD = 0.80$) as it fulfills courses' descriptions and objectives.	1.1. It helped the students to revise and practice the language independently anytime and anywhere as some interviewees stated: "MyELT can be used anytime and anywhere" (IV5, IV8). "I can make use of my free time through it. MyELT helps us to review what I have studied in the classroom or what I have learned from the class again. So we can develop our English skills to use in the classroom. We like MyELT. We can revise our lessons wherever we want. (IV3)	Journaling data comparably exposed that: The students liked MyELT as it fit their time. The assignments are available on their mobiles, they could do it anytime and anywhere. It enhanced their English proficiency and digital literacy as both are integrated into online course learning. They could practice the language independently and repetitively as the company added the chance for doing each assignment many times, until ten attempts (Personal Journal, Feb. 15, 2020)		
	1.2. MyELT was useful as it improved to some extent students' digital literacy ($\bar{x} = 4.10$, $SD = 0.83$) and simplified their language learning by using their mobile ($\bar{x} = 4.06$, $SD = 0.86$) instead of carrying the book	1.2. MyELT assisted them to develop their English macro and micro-skills as two interviewees asserted: "MyELT helped us to improve life skills and micro-skills of English" (IV2). "It assisted us to string words/vocabulary into a sentence with correct grammar rules. MyELT videos helped us to improve critical and analytical skills as well" (IV6).			
	1.3. Besides, MyELT ameliorated students' English Proficiency ($\bar{x} = 4.07$, $SD = 0.85$) as they got enough time to enjoy and practice the language independently.	1.3. MyELT was meant to enhance their digital literacy and develop their language abilities as some interviewees explained: "MyELT emphasized the fundamental of English language practice. It helped me to revise my background knowledge of English in all skills. I learned a lot of vocabulary from MyELT" (IV15). "MyELT improved my technology skills and language skills like speaking, listening, writing, and reading skills." (IV9, IV12)			
Objective two, It also aims to investigate the challenges that negatively affect the expediency of the courses in improving the students' English proficiency and digital literacy.	2.1. The usefulness of MyELT was not negatively affected by students' perceptions. They perceived MyELT as the best option to improve their CEFR level ($\bar{x} = 4.09$, $SD = 0.84$) as it took into account their needs ($\bar{x} = 4.01$, $SD = 0.86$) and helped them to develop their English proficiency ($\bar{x} = 4.06$, $SD = 0.90$).	2.1. The interview data similarly showed that the students had a sound conception that MyELT was included into their GE curricula to enhance their digital literacy and develop their language abilities as some interviewees explained: "MyELT helped us to improve life skills and micro-skills of English" (IV2). "It assisted us to string words/vocabulary into a sentence with correct grammar rules. MyELT videos helped us to improve critical and analytical skills as well" (IV6). 2.2. The students were cognizant that MyELT would develop their English macro and micro-skills as two interviewees asserted: "MyELT emphasized the fundamental of English language practice. It helped me to revise my background knowledge of English in all skills. I learned from MyELT so many vocabularies" (V15). "MyELT improved my speaking, listening, writing, and reading skills." (IV12)			

	<p>2.2 The usefulness of MyELT was neither challenged by the teachers' role nor background. In contrast, they had a clear idea about the English subject ($x = 4.10$, $SD = 0.82$). The data indicated that the teachers played different positive roles as facilitators ($x = 4.10$, $SD = 0.91$), guides ($x = 4.08$, $SD=0.90$), and mentors ($x = 4.05$, $SD = 0.93$) which in return benefited the students from practicing the language and improved the utility MyELT.</p>	<p>2.2. The teachers' role and educational backgrounds were supportive for the students' access to MyELT as some interviewees stated:</p> <p>"No problems, the teacher explains clearly in class so that we can do everything" (IV4). "They help us in explaining every problematic matter before doing exercises" (IV11). "The teacher helps and explains what we don't understand. They help us to solve the problems we have. We can contact our teachers to consult them directly at any time". (IV1, IV8, IV10)s</p>	<p>2.2 The teachers played indispensable roles in facilitating and helping the students to access MyELT platform as shown in Figure 1 and noted that:</p> <p>The teachers created courses in their account, took the students to the computer room, shared their course keys with the students, guided them to create their accounts and access the platform. They checked the percentage of completion and if any student encountered problems they contacted the company as shown in Figure 1 and solved the problem. (Personal journal, Feb. 19, 2020)</p>
<p>----- -----</p>	<p>----- -----</p>	<p>----- -----</p>	<p>2.3. The data also unveiled the fact that teachers' role was limited to technical support only as data exposes</p> <p>The teachers used to assign exercises in every unit without checking the content in each exercise and whether the students could do it or not. Thereafter, the teachers did not follow up on who and how do the students practice and answered those assignments (Personal Journal, Feb. 2, 2020).</p>
	<p>2.3.1. The students got confused as MyELT assignments were different from those which the teacher taught in class ($x= 3.73$, $SD =1.05$). The teachers' used to assign some exercises without checking their content ($x = 3.47$, $SD = 1.21$) and/or whether the students could do it or not. The difficulty of some assignments and teachers' inability to mentor the students' improvement ($x= 3.53$, $SD = 1.12$) instigated some students to copy the answers from their friends ($x= 3.62$, $SD = 1.13$) and do some unethical practices to finish MyELT</p>	<p>2.3.1. The utility of MyELT was affected by teachers' teaching method as they assigned a lot of exercises and some of them are very difficult i.e. unlike those they studied in class. These challenges urged some students to revert to unethical practices such as copying and paying money to friends as some interviewees stated:</p> <p>"Some students don't do it by themselves. They just ask their friends who finished it to take pictures and send them via smartphone for copying" (IV6). "There are answers to all the exercises. No need for students to use their efforts to finish them all" (IV12).</p> <p>2.3.2. The absence of teacher mentoring of the students' performance challenged the usefulness of MyELT as a few interviewees stated that:</p> <p>"Some students paid for doing some exercises because the teacher assigns too many units at a time and the contents are difficult to gain expected score" (IV1). "Some students paid for doing the excises. Teachers cannot control" (IV12).</p>	<p>2.3.1. Teachers' teaching practices negatively affected the practicality and usefulness of MyELT. Teachers did not mentor the students' performance and improvement. Journaling data revealed that:</p> <p>The teachers assigned all online exercises for all the units at once without checking the assignment content. They left the students without follow-up who and how they did MyELT. The students accumulated all their assignments until few days before the deadline then started searching how to do those assignments. (Personal Journal, Feb 25, 2020).</p>

	<p>2.4.1. MyELT system and the content of the online course were inevitable challenges that critically affected its usefulness. The students encountered many problems in creating the account and using the access code ($\bar{x} = 3.47$, $SD = 1.17$). It system is difficult for the students ($\bar{x} = 3.62$, $SD = 1.11$) due to their lack of digital literacy and devices. Its expediency was negatively affected by its complicated system ($\bar{x} = 3.60$, $SD = 1.11$) and the unsuitability of its content with the Thai context ($\bar{x} = 3.53$, $SD = 1.13$).</p>	<p>2.4.1. MyELT system was one of the major challenges that brought about the ineffectiveness of MyELT several interviewees explained:</p> <p>“The login process is too long. The program is difficult and seems to be complicated” (IV2, IV8, IV9) “If we type the wrong password twice, we cannot log in to our exercises. It is very annoying especially with the codes” (IV13).</p>	<p>2.4.1. The usefulness of MyELT was affected to a great extent by the company's long and complicated system as it was noted:</p> <p>The company has a long process of registration; however, it is normal for publication international companies. Despite this, the students find it demotivating and challenging. The teacher has to guide the students in the registration process otherwise students will not be able to access the platform (Personal journal, Feb 10, 2020).</p> <p>2.4.2. The usefulness of MyELT was affected by its system. It denied accepting students' voice recording repetitively because of their accent. Whilst arguing with the teachers' and course coordinators, it was documented that:</p> <p>The teachers evaded assigning any speaking exercises to their students despite their level as the system could catch the student accent; only the native accent, forgetting about the varieties of World Englishes and the actuality of English as a lingua franca (Personal Journal, Feb 20, 2020).</p>
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ANALYSIS OF ONLINE TEXT-BASED DISCUSSIONS FOR SECONDARY SCHOOL STUDENTS IN THE FRAMEWORK OF THE COMMUNITY OF INQUIRY

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ABSTRACT

This study examines influence of online text-based discussions for secondary school students. It aims to analyze students' shares and views with the goal of exploring the implications of online synchronous text-based discussions held in the Information Technology and Software lessons. It was carried out as a case study in which 10 discussion sessions were held involving 26 students enrolled in a state secondary school. The case study was chosen because it makes it possible to examine a situation in detail and in depth. The findings were discussed in relation with the "Community of Inquiry" (CoI). It was found that with online synchronous text-based discussions, the students experienced building of meaning or collaboratively verified mutual understanding in line with the predetermined objectives. Online text-based discussions helped achieve a meaningful learning experience through development of social, cognitive and teaching presence. Student-student interactions in formal educational environments facilitated the formation of social presence in the online learning environment. Peer reviews concerning the discussion topics, shared contents and the teacher feedback contributed to the development of the students' views on the subject. Off-topic or irrelevant shares in the discussion sessions might cause a negative impact on the students.

Keywords: Online learning, text-based discussions, secondary school, community of inquiry.

INTRODUCTION

Rapid developments in information and communication technologies have changed the classrooms of the 20th century. 20th century classrooms have a structure where the teacher directs the teaching, and learning is limited to four walls and a bell. Classrooms, where other communication and interaction opportunities are not common, have changed dimensions with the opportunities offered by today's technology (Yang et al., 2019). Learning in today's classrooms has gone beyond four walls. Access to learning resources at any time and place, flexible communication or interaction opportunities, individualized learning paths are listed as general characteristics of 21st century classrooms. The roles of teachers and students, which are the most important components of these classrooms, are also transforming depending on the possibilities offered by technology. This situation has changed the expectations from today's teachers. Hence the International Society for Technology in Education (ISTE) (2017) defines the 21st century teachers as individuals who are able to (i) build online connection and communities for students, and (ii) manage student learning in the digital platform. As for the standards for students, ISTE (2016) emphasizes collaboration and communication

skills. It assumes that the 21st century students will be able to (i) build networks, (ii) use collaborative technologies to work with others (peers, experts, or community members), and (iii) communicate clearly by using digital tools suitable for their goals and exhibit competences that can express themselves creatively. These all signal increased tendency towards models where learning activities take place over the network and intenser influence of the Internet network in shaping the classrooms of the future (Turnbull et al., 2020). The idea of online education has expanded, no longer being seen as a limited time trend in education (Kim & Gurvitch, 2020). The Internet has become one of the main resources for teachers, students and institutions. The understanding the nature of online learning and designing quality online learning experiences are attracting more and more educators and researchers' attention (Akyol et al., 2009; Huang et al., 2019).

Online learning is becoming increasingly common in professional education programs in K-12, higher education and beyond. Researchers have attempted to create guidelines, explore or develop models to understand the complex nature of online learning and develop educational technologies that support online learning (Akyol et al., 2009; Huang et al., 2019). According to researchers studying online learning, the essential element of a deep and meaningful educational experience is students' community. In a functional CoI, students engage in a combination of dialogue and reflection to question their current assumptions about a topic and ultimately generate new knowledge (Stewart, 2019). CoI provides a framework for integrating the constructivist approach into course design, implementation and evaluation (Kilinc, 2020). CoI is widely used by researchers as a theoretical framework when analyzing online learning environment.

COI

CoI has a history of nearly 20 years and continues to be of interest to researchers working in the field of online learning. Garrison (2011) defines CoI as a group of individuals participating in critical discourse and thinking in a collaborative way to construct personal meaning and validate mutual understanding. The CoI framework suggests that collaborative learning process can be constructed to encourage student engagement and learning, and this can be achieved by promoting three elements: teaching presence, social presence, and cognitive presences (Choy & Quek, 2016).

Social presence is about participants' feeling effectively connected to each other. It is defined as the degree to which individuals are perceived real in online communication. The ability of individuals to present themselves as real individuals by reflecting their personal characteristics to the community makes it easier to experience meaningful online learning (Rourke & Kanuka, 2009). Many studies have confirmed so far that interpersonal connection perception of individuals participating in online learning experience is an important factor in the success of online learning (Swan et al., 2009). Creating a safe learning environment is essential in social presence (Junus et al., 2014). Social being is a key element for collaboration and is built on 3 sub-components: "emotional expression", "open communication" and "group cohesion" (Garrison & Arbaugh, 2007).

Teaching presence means designing, facilitating and guiding cognitive and social processes to ensure realization of successful online learning experiences (Kozan & Caskurlu, 2018). Teaching presence refers to the presence of a teacher or the teacher's moderator role in the research community. The duty of managing the process provides the teacher with various ways in which s/he can affect the development of cognitive and social presence (Stewart, 2019). Teaching presence consists of 3 sub-components as "teaching management", "meaning construction", and "direct teaching". Teaching management is about the process of planning and organizing the online learning experience (Anderson et al., 2001). It emphasizes the active role of the teacher, from determining the contents to the method, assessment and even time management. Meaning-construction is the process of creating an effective group consciousness that aims to create a collaborative learning environment, to identify the participants' areas of meaning sharing, agreement and disagreement, and to reach consensus finally. Direct teaching is defined as the teacher's facilitating thinking and discourse by presenting content, questions, and orienting and summarizing discussion, and providing curative or diagnostic feedback to student responses (Garrison et al., 1999).

Cognitive presence is concerned with the extent at which individuals experience online learning are able to construct meaning through communication and discourse. The component of cognitive presence indicates the success of an online learning experience (Kozan & Caskurlu, 2018). Cognitive presence consists of 4 sub-components: "the trigger event", "discovery", "integration" and "analysis" (Swan et al., 2009; Pifarre et

al., 2014). Inquiry begins with a trigger event that can be expressed as a problem or dilemma that needs to be solved in an educational context. This event will understandably lead the participants to “discovery”, which is seeking a solution and knowledge for understanding the challenge. This phase is characterized by brainstorming, inquisition and information exchange. Integration refers to the process of starting to construct meaning from the ideas generated during the previous phase. The last phase is the resolution of the dilemma or problem through direct or indirect action. In many non-educational settings, it means applying the proposed solution or testing the hypothesis through practical application. Still, the concept is slightly more challenging in the context of education. In educational terms, the end of this phase may require moving to a new problem with the assumption that students have acquired useful information (Garrison et al., 2010).

The profile of 21st century individuals is shaped by interaction and sharing, and CoI refers to individuals who come together in the online environment. The framework, which provides a roadmap for how to build collaborative learning, especially based on text-based communication, continues to guide educator and researchers in the process of designing and implementing successful learning experiences in synchronous and asynchronous environments.

Text-Based Communication

Text-based communication has become more accessible to an increasing number of people around the world due to advanced technologies. Text-based online remote group works have become a phenomenon rapidly becoming more widespread among organizations operating in educational and global contexts (Robinson et al., 2019). Gonzales (2014) has highlighted the important role of text-based technologies and meaningful social interaction on self-esteem. Weigel (2019) has researched whether the use of voice or video discussion communities yield higher scores than text-only discussions in an online lesson environment, but she has found no statistically significant difference.

Humphry and Hampden-Thompson (2019), in their study examining the effects of one-to-one synchronous educational interventions on primary school students’ emotional experiences, have revealed that text-based communication reduces emotional and social stress. It has been stated that some of the students who previously received individual education through voice-based communication from a teacher they did not know, were initially nervous about talking to their teachers but they could overcome this by using text-based communication. The students preferred to communicate with their teachers through text-based communication until they were confident enough to engage in verbal conversation. The researchers have underlined the positive effect of text-based communication on alleviation of social distance and social stress. In an attempt to refute the claim that socio-emotional climate is compromised, other group members are experienced less real, and sub-optimal outcomes of group work are more likely in online remote group discussions engaging text-based communication, Robinson et al. (2019) have used neuroscience methods and tools. In their study carried out with undergraduate students who were supposed to carry out a group-based project, who did not know each other and did not communicate face to face, the researchers used computer-mediated text-based communication only. They collected data with two neuroscience methods, which are electroencephalogram (EEG) and electromyogram (EMG). As a result, they rejected the alleged handicaps of text-based communication,” (i) the absence of non-verbal communication cues jeopardizes the emotional experience, and (ii) other people in the group are experienced as ‘unreal’ when they are foreign”. It has emphasized that discourse is an important component of human social interaction.

Synchronous and asynchronous computer-mediated communication is used as the tool to promote discourse in the online learning environment. It is defined clearly the advantages and disadvantages of using asynchronous or synchronous tools in online learning environments (Oztok et al., 2013). According to Sotillo (2000), both modes are important tools that can be used to encourage interaction, collaboration, the formation of the learner communities among participants.

On the other hand, Kilic et al. (2016) emphasized that many studies have been conducted on CoI, mostly in asynchronous online environments, and in recent years, studies have been carried out in blended learning environments, but studies conducted directly in synchronous online environments are not common. It is clear that structured studies on how CoI is created in synchronous learning environments will contribute to the field, and it is one of the motivations for this study.

Synchronous Discussions

Approaches where traditional classrooms are enriched with online learning experiences are becoming widespread. Lessons followed face to face by teachers can be integrated with various synchronous and asynchronous tools offered by digital platforms (Wolverton, 2018). Among these approaches that offer significant added value to the learning process, online discussions have an important place (Blankson & Kyei-Blankson, 2008; Butz & Stupnisky, 2017; Kilinc, 2020). Keles (2018) points out that discussions in online learning environments enrich lessons through different infrastructures and experiences. Kilinc (2020) thinks that group discussion should be used more in online learning environments and should be the subject of more scientific studies. According to Beckett (2019), discussions or discussion boards are the heart of online learning environments, and they are an interaction space for teachers and students. Online discussions offer students with the opportunity to adapt, correct, accommodate and extend each other's learning while allowing teachers to encourage in-depth exploration of important concepts. Most online learning research focuses on asynchronous forms of interaction that allow text-based discussion to take place. However, the literature is hosting increasingly more studies examining the potential of synchronous discussions in learning environments (Baker & Hjalmarson, 2019).

There are studies examining the benefits of simultaneous discussions to the learning environment. Kung (2004) has placed emphasis on the emotional, linguistic and cognitive advantages of synchronous discussions. The abovementioned study has indicated strengths of synchronous discussions such as (i) more equal participation, (ii) taking more initiative (iii) feeling of freedom in initiating, following and managing discourse (iv) encouraging the collaborative spirit, (v) enhanced motivation for language practice, and (vi) more time for commenting and improving. According to Kim (2014), text-based synchronous communications is vital for instant feedback and development of reasoning and critical thinking. Participants can present their views instantly without losing the context, similar and different views can be raised and addressed quickly, and misunderstandings can be corrected. According to the same researcher, as another positive feature of synchronous discussions, participants can express their thoughts without any conflict with other participants. All opinions are displayed chronologically in the stream, and participants may be exposed to widely differing views on the topic. Different views and arguments can help students to develop their own thoughts.

Ferrara et al. (1991) define the transmission of texts electronically through communication networks as "interactive written discourse". When text-based synchronous discussions are looked at from this perspective, it can be said that participants are involved in a collaborative discourse in the direction of a specific goal. According to Harasim (2012), knowledge can be built through discourse. In her theory put forward as learning based on online collaboration, she emphasizes the role of peer discourse as the key to learning and defines learning as the construction of knowledge derived from three successive phases of group discourse: (i) Idea Generating, (ii) Idea Organizing, and (iii) Intellectual Convergence. Idea generating is the brainstorming phase where participants' thoughts are brought together. During idea organizing, different ideas generated by participants are compared and contrasted, debated, resolved and classified. Lastly, intellectual convergence refers to reach a level of intellectual synthesis, understanding, and compromise (including the willingness to be in dispute) (Bates, 2015). Studies are still ongoing to find out how to improve discourse, how to contribute to learning in online learning environments, and how educators and students can improve the strengths and weaknesses of this mode of learning (Qiu & McDougall, 2013; Derin et al., 2020). In this context, CoI provides a framework for constructing meaning through collaborative discourse.

The Importance of the Study

CoI continues to be a topic of interest in current research. Educators and researchers studying online learning have mostly directed their attention to higher education context (Seaman et al., 2018; Medeiros et al., 2019; Tratnik et al., 2019). Yet, studies at the K12 level are also increasing rapidly (Arnesen et al., 2019). According to Haavind (2007), social, cognitive and teaching presence components of the CoI framework can be useful for understanding collaborative constructivist approaches at the K-12 level. Although there are studies showing that the CoI framework can provide significant benefits at the K-12 level, there are few studies using the CoI framework at the K-12 level. Jackson et al. (2013) have concluded that the CoI framework improves

the educational experience for many higher education students and some secondary school students, but further research is needed before deciding whether it can be applied to primary and secondary schools seeking to exploit the potential of the online environment. Garrison (2017) has emphasized that the CoI framework has significant potential in shaping online and blended learning at the K-12 level, and there is an enormous need for research into online and blended learning at the K-12 level. From this point of view, the present study aims to analyze online text-based discussions for secondary school students. The study was built on CoI as the theoretical background.

The Aim of the Study

It is aimed to examine the effect of online text-based discussions on secondary school students within the framework of CoI, and answer was sought to the follows questions:

1. What is the nature of the shares in online synchronous text-based discussions?
2. What do students think of the online synchronous text-based discussions?

METHOD

The study was implemented as a case study owing to the fact that this method makes it possible to scrutinize a case in detail and in depth (Yildirim & Simsek, 2013). According to Creswell (2007), a subject that is explored through one or more cases within a limited system such as a setting or context can be examined with a case study. It allows the researcher to look into a limited system or multiple limited systems through detailed, in-depth data collection that includes multiple sources of information, and to report a case definition and case-based themes. It is a transparent method that allows for an elaborate definition of the phenomenon for which evidence is collected (Vanwynsberghe & Khan, 2007). A virtual classroom was created as an online learning environment for the work performed within the Information Technology and Software course. Students participated in online synchronous discussions managed by the teacher in a virtual classroom environment and shared their opinions regarding the topic.

Participants

Purposive sampling method was used in the study. It is preferred when one or more special cases that meet certain criteria or have certain characteristics are wanted to work in (Buyukozturk et al., 2020). The aim here is to study in depth by considering a sample of participants with similar characteristics in terms of age, culture and life experiences (Oral & Coban, 2020). The study participants are 26 secondary school students (13 girls and 13 boys) from the same classroom in a Turkish public secondary school. It was a class with students whose academic achievement was high. All students have their own study room. The education level of the parents was generally undergraduate. All participants had internet access at home so they could participate in online synchronous discussions scheduled outside of school hours. Students had access to technology (computer or tablet) and their use skills were sufficient. Online synchronous discussions were led by their Information Technology and Software teacher. The teacher was took part as a researcher at the same time. All necessary permissions for the study were obtained from the relevant persons and institutions in advance. The participants were given nicknames as S1, S2, S3... during the analysis stage.

Procedure

The overall procedure lasted about 10 weeks starting with the determination of the weekly discussion topics, followed by outlining of the scope and content, and lastly collection of data from the students after the online synchronous discussions. Online synchronous discussions were held for 5 weeks.

Bulbul et al., (2016) proposed a roadmap based on the CoI for educators who implement and intend to implement online learning applications. This study is based on the roadmap proposed by the researchers. Accordingly, the various steps to be followed in the context of cognitive, social and instructional presence before, during and after online courses are as follows: (i) planning, (ii) presenting the environment, (iii)

course process and (iv) evaluation. Planning, recognizing the student profile, determining/providing the hardware requirements, developing a suitable method - technique - strategy for online learning, determining the online learning environment and tools, recognizing the learning environment and tools, developing content, risks and time management, syllabus creation and piloting and reviewing includes steps. The presenting the environment includes the steps of, orientation, resource sharing, and presenting ethical situations. The course process includes the steps of starting the lesson with a conversation, reporting the course agenda and its operation, introducing the topic, starting the discussion by presenting a question/ambiguity, enabling research or discussion, following/focusing/directing the discussion, making sense of the discussion/concluding it. Evaluation includes giving and asking for feedback to the student, tasks and assignments to be done inside or outside the classroom.

The online synchronous discussions took place on Google Classroom. A virtual classroom was created and the students were added. Face-to-face training was given to the students on the use of the virtual classroom, tasks, rules by the teacher of the course in two 40-minute sessions.

Discussion topics were determined by the researchers to be brought up in online synchronous discussions. The topics were selected from the curriculum of the 6th grade Information Technology and Software course. Each of the 10 sessions was planned by the researchers. Then the relevant materials were selected or designed. The activities were built on the constructivist approach and 5E model. The plans and materials were discussed in face-to-face and online asynchronous online interaction environments attended by 20 students in the 3rd grade of Computer Education and Instructional Technology, who had already taken the undergraduate courses “Instructional Principles and Methods” and “Instructional Design”. At the end of these steps, the plans and materials were revised for their final version.

Before the synchronous discussions start, the course flow chart is shared by the teacher. Online synchronous discussions begin with a informing by the teacher. This informative text mainly aims to inform the target audience and it is followed by questions asked by the teacher. These questions are often accompanied by multimedia materials such as documents, audio, video, animation, images or photographs. Next, the participant students write their opinions or share their views about the topic in the questions. The students have a chance to both express their own opinions and read the others’ opinions. In this way, brainstorming occurs, and the students can now think on, reflect on, interact, enquire, criticize, explain, accept, reject, or see the connections between ideas. As a result, the students reach a common understanding on the topic or reach agreement on disputed ideas. The teacher maintains the role of guide, support or encouragement throughout the discussion. Harasim (2012) schematizes the pedagogy of group discussions with a diagram consisting of 3 key steps. In this context, the model examined in the study was structured as in Figure 1.

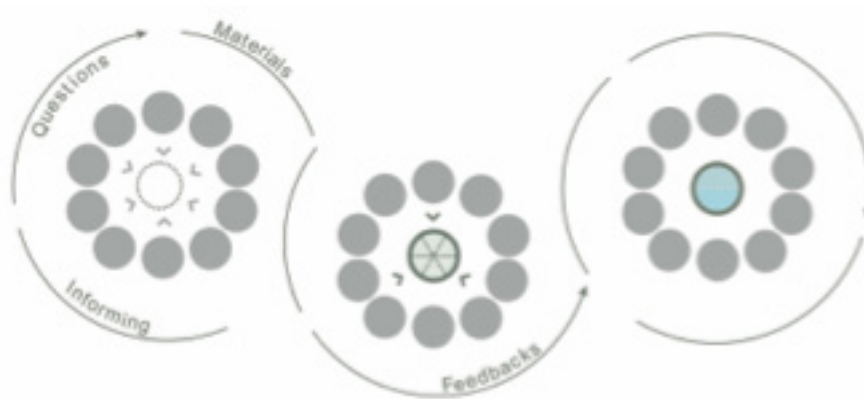


Figure 1. Diagram of online synchronous text-based discussions

The online synchronous discussions were held twice a week in 40-minute sessions at 20:00 in the evening. The students attended from their homes. Participation in discussion sessions was on a volunteer basis and was not mandatory. Students who participated in the discussions were not given extra score. The total number of sessions attended by the students is shown in Figure 2.

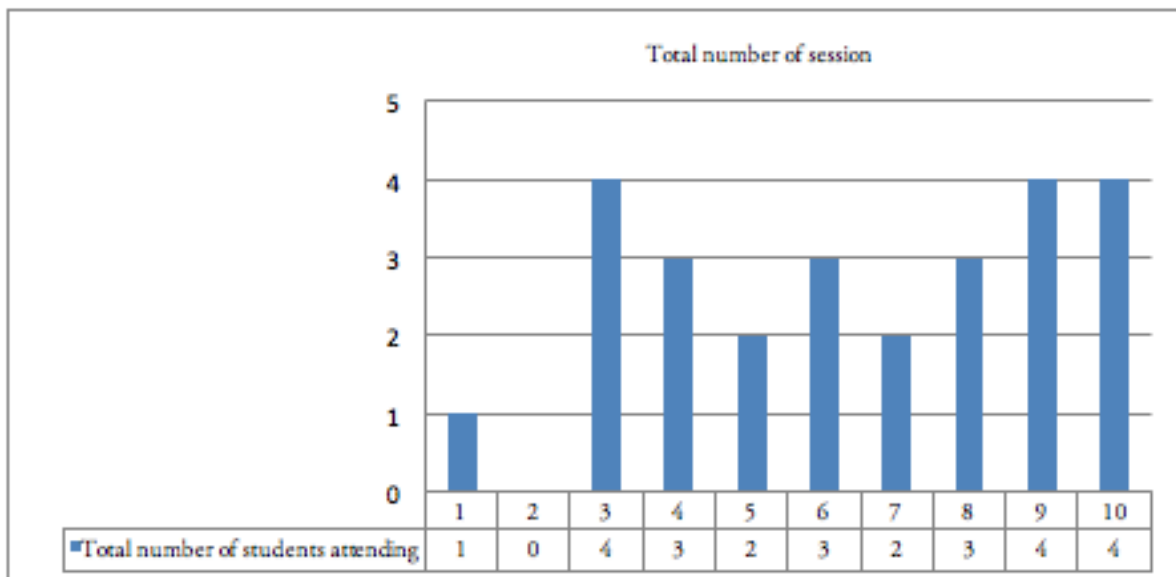


Figure 2. Total number of sessions attended by students

Data Collection and Analysis

Semi-structured interview questions were prepared as data collection tools. The questions were drafted through literature review and shaped by taking expert opinion. The interview questions were used in the focus group interviews conducted with students who were volunteer to take part at the end of the process. The main purpose of the focus group interview is to focus on the participants' attitudes, feelings, beliefs, experiences and reactions. Such attitudes, feelings and beliefs are more likely to arise in an interactive environment. Interaction facilitates the participants' re-evaluating their own understanding of their experiences, asking each other questions, and reconsidering their own attitudes. It also enables the participants' proposing more than one explanation for their behaviors and to express their attitudes more easily (Gibbs, 1997). For these reasons, focus group interview was applied as the most eligible method in this context.

Some of the questions asked during the meeting were as follows: What is the most important reason for your participating in online discussions? What were the most intriguing things for you in online discussions? Was there a forum for discussing, sharing and commenting on ideas? Were you able to learn the topics? How do you think the learning took place? How did presentation of different ideas and everyone's presenting their own opinions affect you? What was your teacher's role in the virtual lesson? Was the feedback helpful? How? How did you feel emotionally overall during virtual lessons? What was the effect of communication by writing?

The data obtained through focus group interviews were presented after being processed with content analysis. The data was read repeatedly and common phrases, words and expressions were elicited to explain all aspects of the content. Then, the categories were created, similar or relevant data were combined and classified under one separate heading (Bazeley, 2013). The results were presented in terms of themes, codes and frequencies in tables (Yildirim & Simsek, 2013). Reliability was ensured through coding and calculation of frequencies by two independent coders, who are the researchers themselves. The formula suggested by Miles and Huberman (1994) was used to calculate the inter-coder agreement, and reliability of 0.85 was found as a result. An agreement rate of 0.80 is considered sufficient to prove reliability.

In the virtual classroom, all shares on the wall were examined. Frequency as well as other quantitative measures are frequently used to evaluate the content and results of discussion boards, which are accepted to be an important component of online learning (Marra et al., 2004). Therefore, the types and frequency of the teacher and the students' shares and the number of students participating in the discussions were found. In addition, screenshots of the discussion board were included in the study data.

FINDINGS

In order to see the effect of online synchronous text-based discussions, this section is devoted to the findings regarding the shares on the discussion board. Additionally, the students' thoughts on the applied process are given as below.

Teacher and Student Shares in Online Synchronous Text-Based Discussions

The online discussions encouraged the teachers and students to make synchronous shares on the discussion topics. Table 1 shows the findings regarding these posts. The materials shared by the teacher in the discussions were gathered under the headings of "documents", "images or photographs", "videos", "audio", "animations", "poems", "stories" and "other" (news, interactive materials and such). It was seen that the teacher shared the materials at various stages of the discussion process in order to draw attention to the topic of discussion, to recycle the preliminary information, to give information about the subject, to help the students concentrate on the topic and to motivate proposing of different ideas.

The teaching presence emphasizes the role of the teacher in designing and guiding the process, and online synchronous discussions begin and end with brief shares made by the teacher. Approximately one hour before the synchronous discussion, the teacher briefed on the discussion time, topic/attainments, course flow and good wishes. Likewise, the process was winded up with posts indicating the end of the discussion and good wishes. By the time the next discussion session started, posts were made to announce the teachers' expectations from the students or requirements of the assignment set earlier. The materials in the posts were also supported with informing and questions. All kinds of posts of the teacher received feedback from the students. For instance, the start and end time of discussions were posted by the teacher in advance, and dozens of students replied by typing "OK", "All right, teacher", "We are ready." each time. The same was true for the shares on the end of the sessions. The teacher's material shares and accompanying notifications such as "Please analyze the material." were also replied as "OK", "I have analyzed" or heaps of comments with the same effect. Including all these, the total number of comments made by the students in each session is presented in Table 1. Some student posts were created as a countdown activity while waiting for the start time of the session in the virtual classroom. Similarly, there were some instances during the discussion process where two or more students exchanged posts relevant or irrelevant to the topic of discussion.

The questions asked by the teacher act as The trigger event, which is one of the sub-components of cognitive presence, and are used to initiate and maintain discussions. The average number of responses generated by the students are presented in Table 1. It was seen that each question stimulated sharing of different opinions. The average number of comments by students and the average number of comments on questions are scaled to the number of students in each discussion are presented in Figure 3.

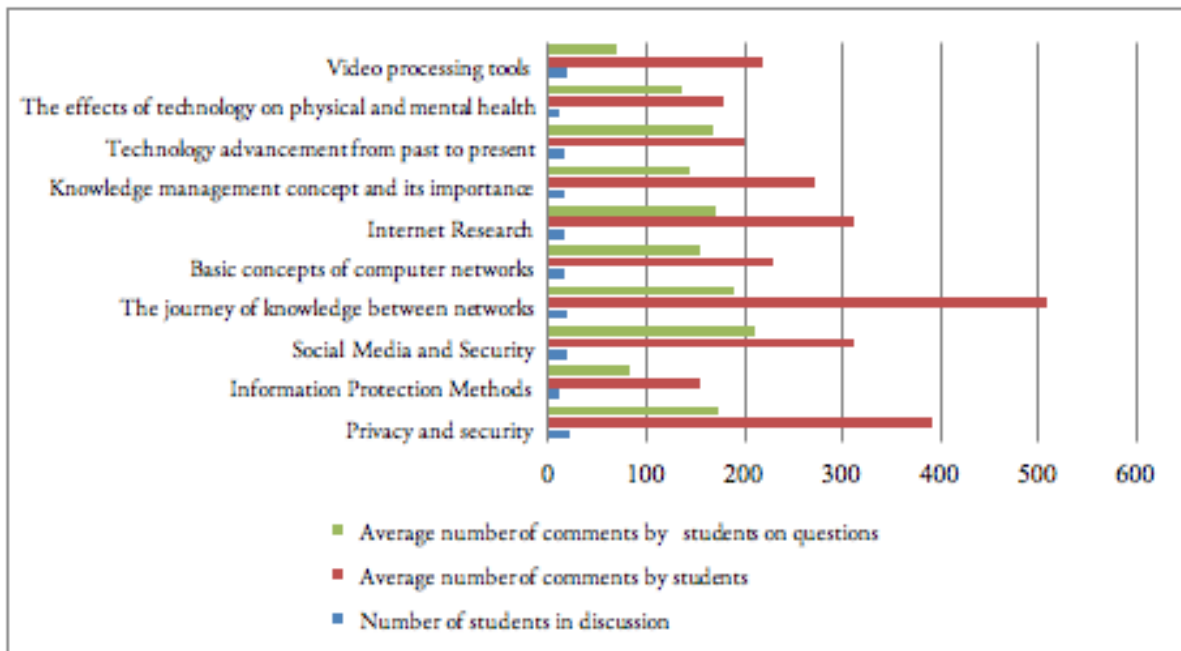


Figure 3. The average number of comments by students and the number of students in each discussion

Every student in the discussion shared their own opinion in response to the question, and this was promoted by the teacher. For example, after a lot of comments were made on a video shared by the teacher, one of the students wrote “I have just watched the video.” The teacher invited in remarks by typing “Let’s hear your thoughts.”

In terms of content, the students’ posts were generally in the form of answer to a question, explaining an opinion or asking a question. It was observed that the teacher paid regard to every single student comment and hearted the students by giving feedback. In some cases, the teacher added extra question to the main question to steer the discussion. To exemplify, the teacher posted an animation along with the question “How has technology affected our social life and our overall life?” The students were seen to report positive or negative thoughts in varying percentages, the teacher provided feedback asking for detailing of the expressed thoughts, and the students were seen to struggle to explain their views in detail.

It is important for students to feel safe and to express their opinions comfortably in terms of social presence. The analysis of the wall showed that the students read each other’s posts, made positive or negative comments accordingly, addressed questions to each other and answered each other’s questions. Another finding from the wall analysis was the frequent comments implying the students’ agreement with their friend(s) during or after the discussions.

Table 1. Findings about discussion topics and shares

Discussion Topic		Type of material posted by teacher										Analysis of discourse in discussion					
Learning Module	Learning Topic	Document	Image or photograph	Video	Animation	Audio	Poem	Story	Other	Assignment	Number of informings made by teacher	Number of questions asked by teacher	Number of feedback given by teacher	Number of students in discussion	Average number of comments by students	Average number of comments by students on questions	Number of submitted assignments
Ethics and Security	Privacy and security	1	1	-	-	-	-	-	-	1	5	7	14	22	393	172	11
	Information Protection Methods	-	4	-	-	1	1	1	1	1	4	6	10	12	156	83	7
	Social Media and Security	1	-	2	-	-	-	-	1	1	5	7	34	18	313	211	5
Communication, Research and Collaboration	The journey of knowledge between networks	-	1	-	1	-	-	-	-	1	7	5	31	20	508	190	4
	Basic concepts of computer networks	2	1	-	-	-	-	-	-	1	7	4	19	17	228	154	7
	Internet Research	2	-	1	-	-	-	1	1	1	6	7	28	16	312	170	7
Information Technologies	Knowledge management concept and its importance	3	-	1	-	-	-	-	-	-	5	2	18	16	273	144	-
	Technology advancement from past to present	-	-	-	2	-	-	-	-	1	3	5	26	16	201	168	5
	The effects of technology on physical and mental health	-	6	1	1	-	-	-	-	-	3	7	23	12	178	137	-
Product Creating	Video processing tools	2	-	1	-	-	-	-	-	-	5	2	29	19	218	70	-

As a supplementary effort, the teacher was seen to post specific questions or contents to steer the discussion in a particular way or to motivate quiet participants to “speak”, and the teacher summarized the topic of discussion in the end. It was found that some of the participants searched the topic on the Internet while the discussion was going on and pasted the search result as it was. In an occasion when such posts took up a lot of space in the flow, the teacher warned the participants by saying “Why don’t you post your own comments?” It was also revealed that some students often sent off-topic posts in the discussion sessions. Some others were seen to deal with the subject in a humorous language and act informally. While a serious discussion was ongoing on the main topic, some participants were seen to be annoyed and thus warn their classmates because of their irrelevant posts. The teacher did not prefer warning individual students for such shares but occasionally making notices such as “Let’s stop share up off-topic (stuff).”

Upon the ending of 7 of 10 discussion sessions, the students were given assignment. They were asked to submit their works online. Table 1 shows the number of assignments submitted by the students via the online platform. When the students’ posts about the first assignment were examined, they were seen to ask questions about how to do the assignment, where to upload it, and whether it would be marked with points.

Technical troubles occurred from time to time. In the discussion session titled “The Journey of Knowledge Between Networks”, the students had difficulty accessing an animation presented by the teacher to the students’ attention. The wall analysis revealed dozens of comments saying that the animation could or could not be opened and asking how it would be opened. Due to the students’ shares seeking alternative ways and technical support for access to the video content, this session witnessed the highest number of comments. It was noticed that the discussion process was interrupted by a student’s shares insistently saying that they could not open the shared materials. Meanwhile, the teacher meticulously provided technical support to the student who faced this challenge. In the follows discussion sessions, it was realized that the teacher directly addressed to the same student to comfort them by saying “If you cannot open it, let me know so that I can send you a link” as soon as the relevant material was posted. In other sessions, there were students who referred to the problem of accessing the Internet or the shared materials, but not at an extent disrupting the discussion process.

Students’ Views on Online Synchronous Text-Based Discussions

The data obtained from the students in focus group interviews about synchronous online text-based discussions were subjected to qualitative analysis. The codes assigned to student responses and the number of students who responded in relation with these codes were clustered under specific themes. The findings from the content analysis are presented in Table 2. The results fall under the follows themes: “participation”, “learning”, “feeling”, “text-based communication”. The section below presents each theme, the codes covered by each theme, the number of students representing each theme, and verbal quotations from the students.

Participation

The theme of participation was developed based on the students’ views regarding their rationale for participating in online synchronous text-based discussions. The students’ views in this regard were coded as “desire to learn” (13), “peers’ existence” (6), “interest in technology” (4), “teacher’s existence” (3) and “examination” (3). Almost all of the students in the focus group interviews stated the desire to learn as their main motive for participation. Approximately half of the students mentioned their classmates’ participation in the sessions as their main drive for participating, while some others stated that their teachers’ presence in the environment convinced them to participate. Apart from these, there were students who attended the sessions just because they were interested in technology. It was also found out that some students participated in the discussion sessions expecting to deal with the discussion topics in the examinations to be taken as a part of the formal education. The statements of the students called S7 and S13 regarding their reasons for participation are as follows:

- S7: The online discussion topics might come as questions in the exam, so I participated in the sessions. Also I participated because most of my friends did so.
- S13: We did not take Information Technologies and Software lessons in the 5th grade. So We didn’t learn much. That’s why it is beneficial for us to log in here.

Learning

The theme of learning was based on students' views about the effect of discussion sessions on their learning and how it took place. Under this theme, the students' views were coded as "peer comments" (13), "contents" (10), "teacher feedback" (9) and "assignments set" (2). Almost all of the students attached importance to the effect of peer comments. This relates to CoI's cognitive presence, which emphasizes able to construct meaning through communication and discourse. Besides, some students emphasized that the contents shared by the teacher were instructive and the teacher feedback was influential. Moreover, there were students who found the assignments given at the end of the sessions to be instructive. The students named S1 and S9 described their own learning processes as follows:

- S1: The teacher assigns a topic and we discuss it with our mates. Everyone has a different opinion on the topic. The teacher evaluates all what we have said. It turns out to be right or wrong, and we learn in this way.
- S9: When I checked the contents the teacher shared, I was able to understand the topic more or less. It was also reinforced when my friends sent comments. When the teacher asked questions, we answered them. We were able to learn the topic as a result.

Feeling

The theme feeling was developed from the student views on the students' reported emotions during the discussion sessions which is related to social presence. Under this theme, the views were coded as "curiosity" (9), "comfortable" (8), "excitement" (7), "boredom" (7), "happy" (3) and "anxiety" (2). It is worth noting that the students expressed not only positive feelings such as curiosity, comfort, excitement and happiness but also negative feelings such as boredom and anxiety. As an example of positive feelings, the statements of S11 and S14 are cited below:

- S11: I was getting excited at the start, wondering what we would learn that day. We could learn the content of the day and we felt happy with that lesson.
- S14: It was fine at first. I was active, I was curious. I generated ideas by myself and typed them. I was happy when my opinion was liked. Towards the end of each lesson, my excitement decreased a bit because everything already was set in my mind, while the lesson was slowly coming to end.

On the other hand, unfavourable feelings such as boredom and anxiety were reported by students as exemplified below:

- S1: When someone wrote something, I, too, wrote but only if I agreed with her/him. I wrote very little of my personal views. I only wrote when I was sure.
- S13: Sometimes a student posted a negative comment, and then disrupts the lesson. As a reaction I left the course.

Text-Based Communication

The students' views on using text-based communication as a communication mode in discussions were analyzed and this theme was reached. The relevant views were combined under codes "generating new ideas" (7), "enhancing participation" (6), "ease of classroom management" (6), "inability to express oneself adequately" (5), "better self-expression" (4), "permanence" (3) and "improvement of writing skills" (2). It was noticed that the students heavily regarded the use of written communication in online synchronous text-based discussions as favourable. According to some students, the fact that all participants were allowed to write their views on the given matter was particularly useful for encouraging generation of new ideas. It even proved to be the most frequently repeated code under the theme of text-based communication. It was revealed that some students had the opportunity to express themselves more easily thanks to text-based communication, whereas some others reported the opposite. As an example, the student named S13 explained the effect of text-based communication on themselves as follows:

- S13: We can make more than one comment. There is no need for the teacher to invite us to speak. You are allowed to write whatever you want, there is nothing to prevent us from expressing our views.

But as for the disadvantages, our pace of our typing is low and we cannot fully explain ourselves. I sometimes get tired of typing. Lessons last something like forty minutes and our hands get tired, but we are getting used anyway.

Table 2. Content analysis results

Theme	Code	Frequency	Participants' remarks
Participation	desire to learn	13	"I participated to learn the topics of the lesson." (S11)
	peers' existence	6	"My friends are there. Why am I not there?" (S8)
	interest in technology	4	"I participated because it is about technology." (S9)
	teacher's existence	3	"The teacher did this for us to be able to learn and we understand that the teacher values us, so we attend the lesson." (S2)
	examination	3	"Questions from topics may arise in the exam." (S8)
Learning	peer comments	13	"I was typing but what my friends wrote also helped my what to write to improve." (S5)
	contents	10	"I reviewed the contents the teacher shared not only during the lesson but several times afterwards." (S11)
	teacher feedback	9	"During the discussion, the teacher talked about the key points when necessary, and they caught my attention." (S1)
	assignments set	2	"The teacher gave homework. I enjoyed doing it very much." (S6)
	curiosity	9	"It was feeling nice when the teacher started the discussion and shared various contents. While someone was typing, the system sent notification about it it and I wondered what s/he would write." (S1)
Feeling	comfortable	8	"When we typed there, our teacher read them all. But s/he can't give everyone a voice in the classroom, so it's more comfortable here." (S11) "When I raised my hand in the classroom and expressed my opinion, the reactions of others disturbed me more. But I was feeling better on this platform." (S7)
	excitement	7	"It was exciting. It was exciting when it was called virtual lessons for the first time." (S8) "I was always excited as my friends were there." (S13)
	boredom	7	"While discussing a topic someone just wrote something ridiculous. It spoiled everything and I was bored." (S10) "I was bored while waiting because of technical problems." (S2)
	happy	3	"You enjoy it when writing your thoughts on a topic. When people like your opinion, you feel happy." (S2)
	anxiety	2	"I sometimes waited for others to type with the fear of giving an incorrect answer." (S10)
Text-based communication	generating new ideas	7	"Everyone was suggesting a new idea. I was thinking by looking at those ideas." (S13)
	enhancing participation	6	"When the whole class raises hand in the real classroom, the teacher receives a person's comment, but here s/he can get everyone's comment." (S11)
	ease of classroom management	6	"Everyone makes noise in the classroom. The teacher speaks, but nobody catches it. Contrarily, here, when the teacher shares posts, everyone focuses on her/him and there is no noise then." (S1)
	inability to express oneself adequately	5	"We can't make much emotion felt when we write, but it can be understood differently because of the way we speak and our tone of voice." (S2)
	better self-expression	4	"If I raise my hand in the classroom, everyone looks at me and I get a little nervous. If I say something wrong, they respond to me by adjusting their tone of voice. Unlike in that setting, I can express myself better by typing here." (S5)
Text-based communication	permanence	3	"When you can't listen to a lecture in the real classroom, there is no make-up. But you can review the online classes recorded there. So it is more beneficial because it stays there." (S9)
	improvement of writing skills	2	"It helped us to master the keyboard by typing." (S12)

DISCUSSIONS AND CONCLUSION

The results obtained here were analyzed in connection with CoI, which constitutes the theoretical rationale of the study. A special case was reached through participation of secondary school students in online synchronous text-based discussions, and it was analyzed in relation to teaching presence, social presence and cognitive presence.

Teaching Presence

The students participating in the activities in this study posted a significant number of comments during the discussions. The materials in the form of contents shared by the teacher, the questions posed, the students' replies and teacher feedback within the scope of the discussion topics brought in student-student, student-content and student-teacher interaction. The students stated that the peer comments made within the scope of the discussion topics and the shared contents helped them to develop their views on the topic of discussion. This finding is consistent with the thesis of Miyazoe and Anderson (2010) that student-student and student-content interaction matters for learning. It was added that the contents shared by the teacher (text, video, animation, audio, story) were interesting. Similar studies confirm the positive effect of using contents such as text, video, photographs, cartoons and web links within the scope of online discussions (Baran & Correia, 2009; Keles, 2018). The teacher is responsible for creating conditions in which learners feel connected, supported and safe to build meaning (Rehn et al., 2016). The present study confirms the previous findings that the teacher initiated discussions, shared contents, promoted the participation of all students, read all of the student comments and provided feedback.

The results of the wall analysis showed that the discussion topics and contents were planned before the discussion, all students were expected to concentrate on and be involved in the discussion as a single group, the start and end time of the discussion and the time or share order of the contents were planned beforehand, and guidance for the effective use of the environment was performed actively by the teacher. It is known that students' motivation and perceptions of learning benefit from online discussion groups effectively guided by teachers (Kilinc, 2020).

According to Anderson et al. (2001), the category of facilitating the discourse is crucial for maintaining students' interest, motivation, and participation in active learning. The current findings show that the teacher could encourage all participating students to share their opinions on the topic, asked additional questions to deepen the shared ideas or reach consensus, enabled acceptance or reinforcement of ideas through feedback and make evaluations. The teacher's guide or facilitator role is important (Garrison & Cleveland-Innes, 2005); however, the current study revealed that peer comments and contents also affected students' interest. The analysis of the wall demonstrated that there was a flexible classroom climate where students could share their ideas without any obstacles. What is more, the focus group interviewed revealed that some participants were able to express their ideas more comfortably in the text-based discussion sessions compared to the real classroom environment. On the other hand, it was understood that there were students who waited to see the posts of their classmates before writing their own opinions with the fear of giving wrong answers. As a result of the discussion sessions, consensus was generally reached on the topic of discussion. Again, according to the focus group interviews, the students ranked teacher feedback as one of the most important factors boosting their learning of the subject. Providing feedback in the online learning environment is critical for students to be motivated and interested in tasks, to eliminate misunderstandings, to prevent them from getting lost and to meet their needs (Kilis & Yildirim, 2019).

The teacher posted questions and contents on the topic with the purpose of elaborating the discussion, tried to bring specific issues into focus in this way, made particular shares to summarize the topic of discussion, provided affirmative feedback, and put efforts to solve technical problems at once. The teacher did not attempt to inject information from various sources during the discussion process, apart from the predetermined instruction materials or activities. However, the students made such attempts. As a conclusion, it can be said that the conditions (Rehn et al., 2016) for meaningful participation of students in the discussion sessions were met to a great extent in this study.

Social Presence

The findings of this study seem to extend considerable support to the view that social presence can be established in online synchronous text-based discussions with secondary school students. It was revealed that dialogue was encouraged around the discussion topics in a meaningful way, participation was ensured, and qualified conversation could be generated. Garrison et al. (2010) define social presence as participants' ability to identify with society, to communicate consciously in an environment of trust and to develop interpersonal relationships by reflecting their individual personalities. In the case of this study, it was observed that the students could express their opinions freely and felt responsible to express their opinions for each topic. Most of the participating students stated that they were able to express themselves comfortably in the discussion sessions. Still, there were students who were anxious about expressing themselves. But the level of anxiety was low enough for them to recall their responsibility to share their views. It can be suggested that online synchronous text-based discussions are an effective way of promoting active participation, generating ideas, and meaningful dialogue for secondary school students.

Lowenthal and Dunlap (2020) have stated that people who communicate outside of online sessions can spend time online more readily than those who do not, and having a past relationship with class members helps create a social presence in online courses. For students who have successful past experience with their peers, it is possible to get to know their peers better, and it is similarly easier to establish and maintain social presence among specific peers in the future (Lowenthal & Dunlap, 2018). The findings of this study are in congruence with the statements of the researchers since the students transferred their classroom interactions during their formal education into the online discussion environment.

Jiang (2017) argues that lesson designs that unveil critical questions and participants' perspectives will boost students' participation in online discussions. In this respect, some of the students in this study stated that text-based discussions fostered participation, facilitated their self-expression, proposed them the opportunity to experience multiple perspectives on the subject and to generate new ideas or to rearrange their existing ideas. These findings are in conformity with the findings of Jackson et al. (2013). Contrarily, there were students who could not fully express themselves emotionally in online text-based discussions as text-based communication deterred doing so.

According to Kilis & Yildirim (2019), it is vital for social presence that the course teacher is kind, uses a simple and easy-to-understand language, and produces timely responses to student needs. In this study, there were found students who accounted for their participation in discussion sessions with the presence of the teacher. In addition to this, some students pointed out the importance of the teacher's reading all comments, duly giving feedback and drawing attention to the main points. Furthermore, the wall analysis became a witness of the friendly classroom climate created by the teacher. Particularly, the teacher's attentive attitude to the students who shared off-topic posts and efforts to help the students facing technical problems seem to have contributed to the formation of social presence in the discussion sessions.

Cognitive Presence

In synchronous online text-based discussions, teacher questions and accompanying content generally started the cycle of critical inquiry. It was interesting for students and provided background information on the question. All students were expected to share their opinions and express their personal thoughts about the question or problem. Synchronous discussions made it possible for students to share their ideas, reflect on shared ideas, exchange ideas, and brainstorm. As a result, meaning could be constructed from the ideas put forward in this context. Share proving students' approval of each other's ideas were frequently encountered in the wall analysis. In order to apply the solution in the real world and test the experience, an assignment was set about the subject at the end of many sessions. The number of assignments submitted by students was smaller than the number of students attending the sessions. Bates (2015) has claimed that online discussions should be an essential component of teaching, not an additional tool such as a textbook, lecture recording or text. If discussions are not used for grading students' performance, the students consider the discussions as optional or extra work, and the researcher pointed out that marking for attendance in discussions should be an essential principle to rely on in instructional design. In this study, the structured discussion sessions were

appointed as optional activities; thus, the students were not given marks for participating. It can be said that the effect of discussion sessions would change once they are placed as the basic component of instruction.

Chen et al. (2019) have revealed that facilitative roles such as questioning, explaining, encouraging connections, summarizing, providing information, and using positive social cues in discussions affect the development of cognitive presence. In the current study, the teacher usually realized these roles, and the students did the same in some cases. The teacher strictly followed all student posts and provided feedback, guidance, explanation, informing and summarizing as needed. The students were seen to sometimes improvise similar responsibilities. In this regard, they contributed to generation of new knowledge by sharing their own opinion about the question or topic of discussion, endorsed other participants' opinions, gave positive feedback, conducted Internet search to provide more detailed information about the topic, and shared the results through "copy-paste". On the contrary, there were students who made off-topic or irrelevant postings causing many other participants to be negatively affected. The literature mentions irrelevant shares and the difficulty of controlling them. According to Keles (2018), in social networks where many people try to send content concurrently, an excessive amount of information accumulates in the learning environment, it becomes difficult for participants to follow all posts regularly and quickly, the possibility of developing a high-quality discussion is reduced and cognitive presence is affected negatively.

In this study, the online synchronous text-based discussions were helpful for students' focusing on specific aspects of the subject, holding discussions around these and sharing information accordingly. Online learning can be beneficial for introverted students (Reilly et al., 2012). Some students enjoyed online text-based discussions due to the inclusion of non-verbal communication, while some others underlined the difficulty of learning through non-verbal communication. In a similar vein, some of the participants in this study were content with the relaxing environment where they could express their opinions, while some others stated that purely text-based communication prevented them from expressing themselves adequately. The literature asserts that text-based communication offers a communication and dialogue environment for many online students, and stands as a useful instrument for social presence and communication among students as long as it is effectively integrated into an online classroom and used for well-defined goals (DuVall et al., 2007).

Discussion sessions designed to uphold progression through the stages of cognitive presence enable higher-level learning to take place (Darabi et al., 2011). In this study, the wall analysis shows that discussion sessions progressed through the stages of cognitive presence and the teacher put efforts to this end. In the focus group interviews, the students stated that they learned the topics discussed in the sessions. They listed peer comments, shared content and teacher feedback as the most influential factors in their learning, respectively. However, Maddrell et al. (2017) have pointed out that empirical data regarding the relationship between social, instructional and cognitive presence and learning outcomes in the learning environment are scarce, and there is a significant shortage of significant correlation between the learning perceived by the student and the success criteria assessed by the instructor.

Suggestions

It was concluded that CoI can be used as a conceptual framework for an online learning experience or discussion activity designed for secondary school students. Analyzes of the discussion sessions revealed the social, cognitive, and teaching presence and its sub-components. Teacher-student, student-student and student-content interactions took place. Significant effects were validated in the context of student opinions. Online discussions can offer important potentials for secondary school students. Departing from this, educational activities for K12 teachers blending theory and practice can provide significant benefits. Moreover, it is emphasized that more research is needed to confirm the applicability of the CoI framework for all subject areas in K-12 (Sanders, & Lokey-Vega, 2020).

In this study, discussion sessions were not designed as a basic component of instruction. Rather, participation was based on voluntariness, participation was graded by no means, the students were not told that the assignments given in the discussion sessions would be used for assessing their success and converted into grades. In the future, a similar setting can be formed and monitored to see the results after fixing discussion sessions for secondary school students as the main component of instruction and determining a set of criteria for assessing the participation. Students pointed out the positive and negative effects of synchronous

discussion sessions with text-based communication. The effect of using other communication modes besides text-based communication can also be looked at.

This study was designed within the framework of the components of teaching, social and cognitive presence, and collected obtained were analyzed within this scope. Many researchers say that CoI can be further developed. There are researchers who articulate new presences such as learning, feeling and autonomy. Future studies can be planned in a way to cover new areas of presence.

The learning presence is discussed by researchers and it is suggested that it may be one of the component of CoI (Shea et al., 2014). Zhang and Lin (2020) confirmed that the learning presence plays an important role in explaining the online learning experience of K-12 learners, different from but complementary to the original CoI presence. In this study, it is revealed in the context of student views that new learning takes place in text-based discussions. However, Maddrell et al. (2017), empirical data on the relationship between social, teaching and cognitive presence and learning in the learning environment are insufficient. In this context, it is recommended to conduct empirical studies.

It is hoped that the design and results of this study will be useful to educators and researchers interested in online learning in K-12. More research is needed on the K-12 online learning in the CoI framework.

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REFERENCES

- Akyol, Z., Garrison, D. R., & Ozden, M. Y. (2009). Development of a community of inquiry in online and blended learning contexts. *Procedia-Social and Behavioral Sciences*, 1(1), 1834-1838.
- Anderson, T., Liam, R., Garrison, D. R., & Archer, W. (2001). Assessing teaching presence in a computer conferencing context, *JALN*, 5(2), 1-17.
- Arnesen, K. T., Hveem, J., Short, C. R., West, R. E., & Barbour, M. K. (2019). K-12 online learning journal articles: Trends from two decades of scholarship. *Distance Education*, 40(1), 32-53.
- Baker, C. K., & Hjalmanson, M. (2019). Designing purposeful student interactions to advance synchronous learning experiences. *International Journal of Web-Based Learning and Teaching Technologies*, 14(1), 1-16.
- Baran, E., & Correia, A. P. (2009). Student-led facilitation strategies in online discussions. *Distance Education*, 30(3), 339-361.
- Bates, A. T. (2015). *Teaching in a digital age: Guidelines for designing teaching and learning*. <https://openlibrary-repo.ecampusontario.ca/jspui/handle/123456789/276>
- Bazeley, P. (2013). *Qualitative data analysis: Practical strategies*. Sage.
- Beckett, K. S. (2019). Dewey Online: A Critical Examination of the Communities of Inquiry Approach to Online Discussions. *Philosophical Studies in Education*, 50, 46-58.
- Blankson, J., & Kyei-Blankson, L. (2008). Nontraditional Students' Perception of a Blended Course: Integrating Synchronous Online Discussion and Face-to-Face Instruction. *Journal of Interactive Learning Research*, 19(3), 421-438.
- Butz, N. T., & Stupnisky, R. H. (2017). Improving student relatedness through an online discussion intervention: The application of self-determination theory in synchronous hybrid programs. *Computers & Education*, 114, 117-138.
- Bulbul, A. H., Tugtekin, U., Ulas, I. L. I. C., A, Kuzu., & Odabasi, F. (2016). Cevrimici ortamlarda arastirma topluluklari: Ogretim uyeleri icin bir yol haritasi. *Abi Evran Universitesi Kirsehir Egitim Fakultesi Dergisi*, 17(2), 171-190.
- Buyukozturk, S., Cakmak, E. K., Akgun, O. E., Karadeniz, S., & Demirel, F. (2017). Bilimsel arastirma yontemleri. *Pegem Akademi*, 2020, 1-370.
- Chen, Y., Lei, J., & Cheng, J. (2019). What if Online Students Take on the Responsibility: Students' Cognitive Presence and Peer Facilitation Techniques. *Online Learning*, 23(1), 37-61.
- Choy, J. L. F., & Quek, C. L. (2016). Modelling relationships between students' academic achievement and community of inquiry in an online learning environment for a blended course. *Australasian Journal of Educational Technology*, 32(4).
- Creswell, J. W. (2007). *Qualitative inquiry and research design: Choosing among five approaches* (2nd ed.). U.S.A.: Sage Publications.
- Darabi, A., Arrastia, M. C., Nelson, D. W., Cornille, T., & Liang, X. (2011). Cognitive presence in asynchronous online learning: A comparison of four discussion strategies. *Journal of Computer Assisted Learning*, 27(3), 216-227.
- Derin, T., Putri, N. S., Nursafira, M. S., & Hamuddin, B. (2020). Discourse Analysis (DA) in the Context of English as a Foreign Language (EFL): A Chronological Review. *ELSYA: Journal of English Language Studies*, 2(1), 1-8.
- DuVall, J. B., Powell, M. R., Hodge, E., & Ellis, M. (2007). Text messaging to improve social presence in online learning. *Educause Quarterly*, 30(3), 24.
- Ferrara, K., Brunner, H., & Whittemore, G. (1991). Interactive written discourse as an emergent register. *Written communication*, 8(1), 8-34.

- Garrison, D. R. (2011). *E-learning in the 21st century: A framework for research and practice*. Taylor & Francis.
- Garrison, D. R. (2017). *E-learning in the 21st century: A community of inquiry framework for research and practice*. Taylor & Francis.
- Garrison, D. R., & Arbaugh, J. B. (2007). Researching the community of inquiry framework: Review, issues, and future directions. *Internet and Higher Education, 10*(3), 157-172.
- Garrison, D. R., & Cleveland-Innes, M. (2005). Facilitating cognitive presence in online learning: Interaction is not enough. *The American Journal of Distance Education, 19*(3), 133-148.
- Garrison, D. R., Anderson, T., & Archer, W. (1999). Critical inquiry in a text-based environment: Computer conferencing in higher education. *The internet and higher education, 2*(2-3), 87-105.
- Garrison, D. R., Anderson, T., & Archer, W. (2010). The first decade of the community of inquiry framework: A retrospective. *The internet and higher education, 13*(1-2), 5-9.
- Garrison, D. R., Cleveland-Innes, M., & Fung, T. S. (2010). Exploring causal relationships among teaching, cognitive and social presence: Student perceptions of the community of inquiry framework. *The internet and higher education, 13*(1-2), 31-36.
- Gibbs, A. (1997). Focus groups. *Social research update, 19*(8), 1-8.
- Gonzales, A. L. (2014). Text-based communication influences self-esteem more than face-to-face or cellphone communication. *Computers in Human Behavior, 39*, 197-203.
- Haavind, S. (2007). An Interpretative Model Of Key Heuristics That Promote Collaborative Dialogue Among Online Learners. *Journal of Asynchronous Learning Networks, 11*(3).
- Harasim, L. (2012). *Learning theory and online technologies*. Taylor & Francis.
- Huang, K., Law, V., & Lee, S. J. (2019). The role of learners' epistemic beliefs in an online Community of Inquiry. *British Journal of Educational Technology, 50*(4), 1882-1895.
- Humphry, D., & Hampden-Thompson, G. (2019). Primary school pupils' emotional experiences of synchronous audio-led online communication during online one-to-one tuition. *Computers & Education, 135*, 100-112.
- International Society for Technology in Education (2016). *ISTE Standards For Students*. Retrieved December 19, 2020 from <https://www.iste.org/standards/downloads>
- International Society for Technology in Education (2017). *ISTE Standards For Educators*. Retrieved December 19, 2020 from <https://www.iste.org/standards/downloads>
- Jackson, L. C., Jackson, A. C., & Chambers, D. (2013). Establishing an online community of inquiry at the Distance Education Centre, Victoria. *Distance Education, 34*(3), 353-367.
- Jiang, W. (2017). Interdependence of roles, role rotation, and sense of community in an online course. *Distance Education, 38*(1), 84-105.
- Junus, K., Sadita, L., & Suhartanto, H. (2014, October). Social, cognitive, teaching, and metacognitive presence in general and focus group discussion: Case study in blended e-learning Linear Algebra class. In *2014 IEEE. Frontiers in Education Conference (FIE) Proceedings* (pp. 1-6). IEEE.
- Keles, E. (2018). Use of Facebook for the Community Services Practices course: Community of inquiry as a theoretical framework. *Computers & Education, 116*, 203-224.
- Kilic, S., Cakiroglu, U., & Horzum, M. B. (2016). Investigating teaching, social and cognitive presence of students in synchronous online environments. *Turkish Journal of Computer and Mathematics Education (TURCOMAT), 7*(2), 350-364.
- Kilinc, H. (2020). Cevrimici Grup Tartismalarinin Ogrenenler Uzerindeki Etkisinin Cesitli Degiskenler Acisindan Incelenmesi: Anadolu Universitesi Acikogretim Fakultesi Ornegi [Investigation of the effects of online group discussions on learners in terms of various variables: the case of Anadolu University Open Education Faculty] (Master's dissertation). Eskisehir Anadolu University Graduate School of Social Sciences, Eskisehir. Available from the Council of Higher Education, National Dissertation Center, Dissertation ID: 627077

- Kilis, S., & Yildirim, Z. (2019). Posting Patterns of Students' Social Presence, Cognitive Presence, and Teaching Presence in Online Learning. *Online Learning*, 23(2), 179-195.
- Kim, G., & Gurvitch, R. (2020). Online Education Research Adopting the Community of Inquiry Framework: A Systematic Review. *Quest*, 72(4), 395-409.
- Kim, I. H. (2014). Development of reasoning skills through participation in collaborative synchronous online discussions. *Interactive Learning Environments*, 22(4), 467-484.
- Kozan, K., & Caskurlu, S. (2018). On the Nth presence for the Community of Inquiry framework. *Computers & Education*, 122, 104-118.
- Kung, S. C. (2004). Synchronous electronic discussions in an EFL reading class. *ELT Journal*, 58(2), 164-173.
- Lowenthal, P. R., & Dunlap, J. C. (2018). Investigating students' perceptions of instructional strategies to establish social presence. *Distance Education*, 39(3), 281-298.
- Lowenthal, P. R., & Dunlap, J. C. (2020). Social presence and online discussions: a mixed method investigation. *Distance Education*, 41(4), 490-514.
- Maddrell, J. A., Morrison, G. R., & Watson, G. S. (2017). Presence and learning in a community of inquiry. *Distance Education*, 38(2), 245-258.
- Marra, R. M., Moore, J. L., & Klimczak, A. K. (2004). Content analysis of online discussion forums: A comparative analysis of protocols. *Educational Technology Research and Development*, 52(2), 23.
- Medeiros, E., Cruz, K. D., Lucena, J. P. O., & Da Silva, L. A. (2019). Student Satisfaction and Causes of Abandonment in Distance Education in Undergraduate Courses in a Public Institution of Higher Education in Northeastern Brazil. *International Journal of Business Management & Economic Research*, 10(4).
- Miles, M. B., & Huberman, A. M. (1994). *Qualitative data analysis: An expanded sourcebook* (2nd ed.). Thousand Oaks: CA: Sage Publications.
- Miyazoe, Terumi & Anderson, Terry. (2010). The interaction equivalency theorem. *Journal of Interactive Online Learning*, 9(2), 94-104.
- Pifarre, M., Guijosa, A., & Argelagos, E. (2014). Using a blog to create and support a community of inquiry in secondary education. *E-Learning and Digital Media*, 11(1), 72-87.
- Qiu, M., & McDougall, D. (2013). Foster strengths and circumvent weaknesses: Advantages and disadvantages of online versus face-to-face subgroup discourse. *Computers & Education*, 67, 1-11.
- Oral, B., Coban, A. (2020). Kuramdan Uygulamaya Egitimde Bilimsel Arastirma Yontemleri. *Pegem Akademi*, 2020, 1-498.
- Oztok, M., Zingaro, D., Brett, C., & Hewitt, J. (2013). Exploring asynchronous and synchronous tool use in online courses. *Computers & Education*, 60(1), 87-94.
- Rehn, N., Maor, D., & McConney, A. (2016). Investigating teacher presence in courses using synchronous videoconferencing. *Distance Education*, 37(3), 302-316.
- Reilly, J. R., Gallagher-Lepak, S., & Killion, C. (2012). "Me and my computer": emotional factors in online learning. *Nursing education perspectives*, 33(2), 100-105.
- Robinson, K., Wehner, T., & Millward, H. (2019). Is the outcome of remote group work using text based CMC suboptimal? A psychobiological perspective. *Computers & Education*, 134, 108-118.
- Rourke, L., & Kanuka, H. (2009). Learning in communities of inquiry: A review of the literature. *Journal of Distance Education*, 23(1), 19-48.
- Sanders, K., & Lokey-Vega, A. (2020). K-12 Community of Inquiry: A case study of the applicability of the Community of Inquiry framework in the K-12 learning environment. *Journal of Online Learning Research*, 6(1), 35-56.

- Seaman, J. E., Allen, I. E., & Seaman, J. (2018). *Grade Increase: Tracking Distance Education in the United States*. Babson Survey Research Group.
- Shea, P., Hayes, S., Uzuner-Smith, S., Gozza-Cohen, M., Vickers, J., & Bidjerano, T. (2014). Reconceptualizing the community of inquiry framework: An exploratory analysis. *The Internet and Higher Education*, 23, 9-17.
- Sotillo, S. M. (2000). Discourse functions and syntactic complexity in synchronous and asynchronous communication. *Language learning & technology*, 4(1), 77-110.
- Stewart, M. K. (2019). The Community of Inquiry Survey: An Assessment Instrument for Online Writing Courses. *Computers and Composition*, 52, 37-52.
- Swan, K., Garrison, D. R., & Richardson, J. C. (2009). A constructivist approach to online learning: The community of inquiry framework. In *Information technology and constructivism in higher education: Progressive learning frameworks*, 43-57. IGI global.
- Tratnik, A., Urh, M., & Jereb, E. (2019). Student satisfaction with an online and a face-to-face Business English course in a higher education context. *Innovations in Education and Teaching International*, 56(1), 36-45.
- Turnbull, D., Chugh, R., & Luck, J. (2020). Learning management systems: a review of the research methodology literature in Australia and China. *International Journal of Research & Method in Education*, 1-15.
- VanWynsberghe, R., & Khan, S. (2007). Redefining case study. *International Journal of Qualitative Methods*, 6(2), 80-94.
- Weigel, C. (2019). A Comparison between VoiceThread and Text-Only Discussions in an Online Course. *Radiologic Science & Education*, 24(1), 29-38.
- Wolverton, C. C. (2018). Utilizing synchronous discussions to create an engaged classroom in online executive education. *The International Journal of Management Education*, 16(2), 239-244.
- Yang, J., Yu, H., & Chen, N. S. (2019). Using blended synchronous classroom approach to promote learning performance in rural area. *Computers & Education*, 141, 103619.
- Yildirim, A. and Simsek, H. 2013. *Nitel veri analizi: Sosyal bilimlerde nitel araştırma yöntemleri* (Genişletilmiş 9.Baskı). Ankara: Seckin Yayıncılık.

A MIXED-METHODS STUDY OF THE CORRELATION BETWEEN IRANIAN UNIVERSITY STUDENTS' SATISFACTION AND ANXIETY IN ONLINE CLASSES DURING THE COVID-19 PANDEMIC

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ABSTRACT

The present study aims to investigate the correlation between university students' satisfaction and anxiety in online classes during the COVID-19 pandemic in Iran. To this aim, using a random sampling method, a sample of 430 male (n=150) and female (n=230) university students were selected at Ayatollah Borujerdi University. They filled out two questionnaires: one measuring their satisfaction and the other one measuring their anxiety in online classes. To triangulate the quantitative data, 22 university students completed a reflective written statement. To analyze the collected data, a Pearson correlation analysis, a multiple regression analysis, and a thematic coding analysis were used. Findings evidenced a moderate negative correlation between the participants' satisfaction and anxiety in online classes. Additionally, results documented that instructor, technology, and outcomes factors had the largest effects on the participants' anxiety in online classes. Complementary with the quantitative findings, the results of the reflective written statements yielded four overarching themes, including 'instructors are facilitators', 'technology makes learning easier', 'outcomes are more promising', and 'interacting with others is poor'. Finally, in light of the findings, a range of implications is suggested.

Keywords: Satisfaction, anxiety, online classes, the COVID-19 pandemic, university students, thematic coding analysis.

INTRODUCTION

In the past decades, there has been a sustainable growing interest in online classes. The reason for this explosive development is the notable advantages that online classes bring about for individuals. For example, two key advantages of online classes are flexibility and convenience (Bolliger & Hapula, 2012). Online education has opened up this invaluable opportunity for learners to access learning without any limitation of

time and place (Bower & Kamata, 2000). One of the crucial factors in the assessment of the quality of online classes is students' satisfaction. In a sense, the quality of online education is tied with students' satisfaction (Kuo et al., 2013). In the literature, some factors affecting students' satisfaction with online classes have been verified. They include instructor behavior, reliable technology, and interactivity (Bolliger & Martindale, 2004). Moreover, Kuo et al. (2013) found that students' satisfaction in online classes was closely related to student-instructor interaction, student-content interaction, and the Internet self-efficacy.

Another factor that should be considered to assess the quality of online classes is student anxiety. In fact, identifying the sources of anxiety among online students may be useful to improve the quality of online classes (Abdous, 2019). It is easy to imagine that when university students attend online classes, they have to unlearn long-lasting learning habits in traditional classes. In these new learning environments, they are pressed to involve in new learning ways (Abdus, 2019). That may be the major reason for the previous studies' findings, indicating that online students get more anxious compared to traditional classes at the beginning of the online classes (DeVaney, 2010; Zembylas, 2008). When online students do not have a clear course roadmap and do not know where to start and what to do, they get anxious. As Zembylas (2008) notes, the students who do not have the required confidence in using technological skills may lose their satisfaction during online courses and consequently may lower their performance.

Due to the abrupt dissemination of the COVID-19 pandemic, online classes have exploded across Iran. This unique situation calls for studies to disclose the relationship between students' satisfaction and anxiety in online classes. In this way, the university officials may take up urgent steps to increase the Iranian university students' satisfaction and, in turn, control their anxiety in online classes. The hope is that the current study's findings can further our understanding of the correlation between Iranian university students' satisfaction and anxiety in online classes, as well as the satisfaction factors determining students' anxiety. By meeting this aim, the Iranian university officials can control the satisfaction factors affecting university students' anxiety.

LITERATURE REVIEW

Student Satisfaction with Online Classes

One of the important factors determining the quality of online courses is student satisfaction. It is students' perceptions about their abilities to achieve success and their feelings about the outcomes achieved (Keller, 1983). As Knox et al. (1993) note, since university students aim to obtain a quality education, they spend noticeable time, effort, and money. Thus, they expect to perceive their educational experiences as satisfactory and to be of high value. Student satisfaction is a very important concept because it may ultimately lead to higher levels of motivation, engagement, learning, performance, and success (Sahin & Shelley, 2008; Wickersham & McGee, 2008).

Researchers need to develop an understanding of the factors affecting student satisfaction in online courses (Jurkowitsch et al., 2006). Appleton-Knapp and Krentler (2006) stress that identifying these factors can be of great help for universities to know how to offer their online programs. Due to this urgent need, there has been a growing body of research on student satisfaction with online courses (Abdous, 2019; Banks & Faul, 2007; Bolliger & Halupa, 2012; Walker & Kelly, 2007). For example, Ortiz-Rodrigues et al. (2005) discovered that student satisfaction with online classes is affected by some factors, including communication and timely feedback, good course design with rich media for course materials, administrative issues including good software, and support service. Additionally, Bolliger and Martindale (2004) found that student satisfaction with online courses was linked to the instructor, set-up, technology, interaction, and outcomes. Furthermore, Evans (2009) concurred that faculty satisfaction, curriculum, student engagement, and flexibility correlate to student satisfaction in online classes.

In sum, the previous studies' findings documented that student satisfaction with online courses is related to persistence (Allen & Seaman, 2008), retention (Debourgh, 1999), course quality (Moore & Kearsley, 1996), and student success (Noel-Levitz, 2011). High satisfaction leads to lower attrition rates, higher persistence in learning, and higher motivation in pursuing additional online courses (Allen & Seaman, 2008; Biner, et al., 1994). As Bolliger and Halupa (2012) note, that's why higher education institutions consider student satisfaction as one of the pillars in determining the quality of online programs.

Anxiety in Online Classes

With the dissemination of modern social technologies, university students are supposed to have good digital literacy to maximize their learning in online courses (Bolliger & Hapula, 2012). Some basic technology skills required to benefit from online classes include being familiar with operating systems, using word processing, spreadsheets, and databases, working with communication and presentation software programs, and navigating the Internet (Kay, 2008). One of the factors that may act as a hindrance to the development of these basic technology skills is student anxiety.

According to Bolliger and Hapula (2012), anxiety is considered as “a conscious fearful emotional state” (p. 83). Concerning the relation of anxiety with computer use, it can be defined as a person’s uneasiness, apprehensiveness, and fearfulness when using computers (Igbaria & Parasuraman, 1989). According to Beckers and Schmidt (2001), computer-related anxiety is a multi-dimensional construct, including positive and negative beliefs about computers, insecurity, nervousness, apprehension, fear, intimidation, and hesitation. The investigations on computer-related anxiety led to the emergence of the conceptualization of internet anxiety (e.g., Heinssen et al., 1987). The findings of Presno (1998) disclosed that the internet anxiety covers some factors, such as internet terminology anxiety, net search anxiety, internet delay anxiety, and general fear of internet failure. Later, Bolliger and Hapula (2012) developed a course anxiety scale. They considered three elements: computer anxiety, the internet anxiety, and online courses. According to Bolliger and Hapula (2012), their scales include some constructs, such as insecurity/confidence, anxiety, relaxation/nervousness, excitement/apprehension, enjoyment/aversion/fear, intimidation, confusion, and empowerment.

From the perspective of the socio-cognitive theory, anxiety may affect adversely thought, behavior, and physiological state of students (Banduara, 1988; Paul & Glassman, 2017). According to Paul and Glassman (2017), when a student has a high level of anxiety, they may experience maladaptive thought processes (e.g., I cannot learn in online classes), suffer physical discomfort (e.g., racing heartbeat), and avoid attending online classes altogether (e.g., avoiding online classes to learning something new). The previous study’s findings evidenced that anxiety in online classes can create some detrimental effects (Bolliger & Hapula, 2012; Paul & Glassman, 2017).

When a student suffers from anxiety accompanying negative self-evaluative thoughts, they cannot keep the task-related cognitive processing. The reason, as Derakshan and Eysenck (2009) note, is that students’ attentional resources are given to suppress intrusive thoughts than doing the task. The previous studies’ findings (e.g., Brosnan et al., 2012; Joiner, et al., 2005; Rezai & Shams, 2014; Susskind, 2004) demonstrated that avoidance behavior is of paramount importance since high levels of anxiety result in lower attendance in online classes. To close, if the importance of anxiety in online classes be overlooked, students will be at a continuous learning disadvantage (Paul & Glassman, 2017).

Related Studies in the Literature

In the literature, a few studies have been carried out to reveal the relationship between students’ satisfaction and anxiety in online classes. We review critically some of them here to lay the groundwork for the present research. In a study, Herbert (2006) investigated university students’ perceptions of online learning quality. His findings revealed that the participants’ satisfaction with the online learning was highly correlated with the university teachers’ responsiveness to their needs and wants. Moreover, Sun et al. (2008) examined the key factors influencing student satisfaction in online courses. Their findings unveiled that student satisfaction with online courses was determined by student computer anxiety, instructor attitude toward online learning, online course flexibility, online course quality, perceived usefulness, perceived ease of use, and diversity in assessments. Further, in another study by Bolliger and Hapula (2012), the relationship between university students’ computer, the Internet, and online course anxiety and overall course satisfaction was investigated. Her results evidenced a significant negative correlation between online course anxiety and the students’ satisfaction. Likewise, Abdous (2019) examined the factors influencing students’ anxiety in online classes. His findings disclosed that lack of clear guidelines and explanations on what to do, technical difficulties, lack of face-to-face time with faculty, risk of online distraction (waste time on social media),

lack of immediate classroom interaction with faculty and students, lack of feedback from faculty, and lack of classroom environment were associated with anxiety among online students. Additionally, his results revealed that more than half of the students (n=2127, 60.3%) placed the lack of clear guidelines at the top of their worry list, followed by technical difficulties (n=1789, 50.9%) and the lack of face-to-face time with faculty (n=1791, 50.7%).

In the Iranian context, Rezai and Shams (2014) explored the Internet anxiety of agricultural students in Zanzan University. Their findings disclosed that 24.5 percent of their participants had a low level, 45.8 percent had a medium level, and 29.7 percent had a high level of the Internet anxiety. In addition, their results revealed that the female students suffered from a higher level of anxiety compared to the male students. Moreover, their findings disclosed a significant relationship between the students' internet anxiety with their internet experience, internet self-efficacy, and internet usage. The review of the above-alluded studies revealed that there is a paucity of research on the correlation between university students' satisfaction with and anxiety in online classes in the Iranian context during the COVID-19 pandemic. To bridge this gap, the present study purported to answer the following research questions:

1. Is there any significant correlation between Iranian university students' satisfaction and anxiety in online classes during the COVID-19 pandemic?
2. Which satisfaction factors determine anxiety of Iranian university students in online classes during the COVID-19 pandemic?
3. In which ways can Iranian students' satisfaction with online classes impact their anxiety?

METHOD

Research Design

As the required data were gathered through two questionnaires and a reflective written statement, the present study is considered a mixed-methods study. In a sense, an embedded mixed-methods design was used to complement quantitative data with qualitative ones. The underlying reason to use a mixed-method design was to achieve triangulation. As Mackey and Gass (2016) note, triangulation helps researchers to delve into the diverse aspects of a topic under scrutiny by using different data collection approaches. Thus, to further our understanding of the relationship between Iranian university students' satisfaction and anxiety in online classes during the COVID-19 pandemic, a mixed-methods design was used.

Setting and Participants

The present study was run at state Aytollah Borujerdi University, Iran in spring 2021. A total of 430 undergraduate university students majoring in applied linguistics, mathematics, physics, social sciences, law, electronics, and mechanics were selected using a random sampling method. According to Dornyei (2007), a random sampling is a sampling technique where each individual in a population has an equal chance to be selected in the sample. The sample included both male (n = 150) and female (n = 280) undergraduate students, their age ranged from 18 to 25 years old, and they were freshman (n = 140), sophomore (n = 160), and junior (n = 130). To achieve the participants, the first researcher referred to the Education Deputy of Aytollah Borujerdi University and explained the present study's objectives in detail. With the agreement of the Education of Deputy, the first researcher visited the heads of departments and explained the present study's purposes. The heads of the departments agreed the first researcher to send the digital formats of the questionnaires in the WhatsApp groups which have been established with the emergence and development of the COVID-19 pandemic. It should be noted the questionnaires started with digital written consent (In Persian). First, the participants read the consent and if they agreed with its content, they were guided to the next stage to answer the questionnaires' items. The participants were ensured that their responses would remain confidential and they would be kept informed about the final findings.

Concerning the qualitative part, a sample of 22 participants was chosen randomly with the help of the heads of the departments. The sample included both male (n = 9) and female (n = 11) students and they were freshman (n = 6), sophomore (n = 8), and junior (n = 8). A digital reflective written statement along with

a written consent was sent to 28 students via WhatsApp. In total, 22 students agreed to complete willingly the reflective written statement.

Instruments

As pointed out above, to gather the required data, two questionnaires and a reflective written statement were used. The first questionnaire was Satisfaction with Online Courses Questionnaire (SWOCQ), developed and validated by Bolliger and Martindale (2004). SWOCQ assesses students' satisfaction with online classes in terms of six factors: instructor (6 items), technology (4 items), course setup (5 items), interaction (5 items), outcomes (4 items), and overall satisfaction (4 items). It consisted of five-point Likert scale items ranging from 1 (strongly disagree) to 5 (strongly agree).

The second questionnaire was Anxiety in Online Classes (AIOC), developed and validated by Bolliger and Halupa (2012). AIOC assesses students' anxiety in online classes with aspects of three factors: computer (6 items), internet (5 items), and online course (6 items). The instrument included five-point Likert scale items ranging from 1 (strongly disagree) to 5 (strongly agree).

The third instrument was a reflective written statement exploring the participants' perceptions of the effects of satisfaction with online classes on their anxiety. To prepare the reflective written statement, based on SWOCQ, the participants were invited to reflect on the following prompt:

Dear student,

You are kindly invited to write a report of your perceptions and experiences of the effects of satisfaction with online classes on your anxiety. In a sense, your report is supposed to be a comprehensive reflection on the effects of the instructor, technology, course setup, interaction, and outcomes on your anxiety in the online classes. A report with nearly 300-500 words in length would be enough.

It should be noted that to ensure that differences in the students' English proficiency did not affect the given responses, the questionnaires were translated into Persian by a expert in translation. In addition, a back translation was done to make sure that the translated and origin version elicited the same data. Then, the questionnaires were piloted on 40 university students to measure their reliability and validity. The internal consistency of SWOCQ and AIOC scales was 0.87 and 0.91, respectively. Next, regarding the face and content validity, they were given to two associate professors in applied linguistics at Lorestan University to comment on the face and content validity of the scales. Some minor modifications were applied in accordance with their comments. Finally, to ensure that all items of the scales are comprehensible enough to the participants, the researchers asked 10 students to complete each form and inform any kind of ambiguity with their items.

Data Collection Procedures

Some distinct steps were taken to collect the required data. In the first step, the scales were translated into Persian by a professional translator. In the second step, the scales were given to two associate professors in applied linguistics to examine their face and content validities. Based on their comments, some items were modified in terms of wording, ambiguity, content, and question sequencing. In the third step, the scales were piloted on 40 undergraduate university students to measure their reliability. In the fourth step, the scales were filled out by 10 students to ensure the comprehensibility and clarity of their items. In the fifth step, the scales including the written consent and the items in digital format were sent to WhatsApp groups of the students. The researchers provided the students with a voice in which they explained the present study's objectives, noted that participation in the current study is voluntary, and instructed how they can complete the scales. In the last stage, the reflective written statement in digital format was sent to twenty eight students via WhatsApp and they were asked to reflect on their perceptions in line with the given prompt.

Data Analysis Procedures

To answer the first two research questions, the collected data were entered SPSS version 23. Along with the common descriptive statistics, the inferential statistical methods, including a Pearson correlation analysis and a multiple regression analysis were run. The Pearson correlation analysis was run to examine if there was a significant correlation between the Iranian university students' satisfaction and anxiety in the online classes. Additionally, the multiple regression analysis was used to disclose how much of the variance in the Iranian university students' anxiety in the online classes during the COVID-19 pandemic can be explained by the dimensions of their satisfaction.

About the qualitative part, the participants' responses were meticulously translated into English by an expert in translation. Followed the principles and procedures introduced and validated by Braun and Clarke (2006), the researchers identified and classified the recurring themes through a thematic coding analysis. In doing so, at first, the first researcher read the students' responses over and over to understand them. Next, along with coding the responses carefully to diagnose and verify particular features in the collected data, adequate attention was given to intended factors. This, in turn, set the ground for recurring concepts and themes to emerge. Considering the central concepts coded previously and presented in the respondents' answers, the themes were identified. Then, the prevalence of the themes was demonstrated through relevant coded data that emerged from the database. Next, to go beyond the description of the data to make correct interpretive judgments about the prominent themes, the first researcher referred to the already-existing theoretical foundations. It should be noted that the accuracy and the internal validity of the coding processes were checked out through the member checking method. For this, a copy of extracted themes along with the relevant excerpts were given to five participants to see if they matched with their intended meaning. In general, the participants confirmed that there existed a high level of correspondence between the extracted themes and excerpts and their intended meanings. Concerning reliability, two analysts were recruited to examine the consistency of the coding procedures. The result of their inter-rater reliability was 0.87 which considered acceptable for the current study's objectives.

RESULTS

Results of the First Research Question

The first research question explored if there was any significant correlation between the Iranian university students' satisfaction and anxiety in the online classes during the COVID-19 pandemic. Before running the Pearson Correlation, the normality assumption was checked out using Kolmogorov-Smirnov test. The results of Kolmogorov-Smirnov statistic on the satisfaction scale ($KS_{(430)} = .42, p > .05$) and anxiety scale ($KS_{(430)} = .46, p > .05$) showed that the assumption of normality of the collected data was met. Afterward, the descriptive statistics of satisfaction and anxiety were calculated, which are summarized in Table 1. As observed, for the university students' satisfaction, \bar{X} (81.20) and SD (16.54), and for their anxiety, \bar{X} (105.03) and SD (20.45) were calculated, respectively.

Table 1. Descriptive statistics of the university students' satisfaction and anxiety in online classes

	N	Mean	Std. Deviation
Satisfaction	430	81.20	16.54
Anxiety	430	105.03	20.45

The correlation between the university students' satisfaction and anxiety in the online classes is reported in Table 2.

Table 2. Correlation between students' satisfaction and anxiety in the online classes

Satisfaction	Pearson Correlation	Anxiety
	Sig. (2-tailed)	-.33
	N	.000
		430

As Table 2 shows, there was a negative moderate correlation between the university students' satisfaction and anxiety in the online classes with the coefficient of 33% ($r = -.033, p < 0.01, N = 430$). This implies that the more satisfied the university students were with the online classes, the less they feel anxious in them.

Results of the Second Research Question

Another research question examined how much of the variation in the university students' anxiety in the online classes could be attributed to the factors composing their satisfaction. For this purpose, a multiple regression analysis was run. Prior to proceeding with the main analysis, the data were checked for the assumptions. First of all, to assess for outliers, the value of the Mahalanobis distance was compared against a critical value using a chi-square table. The maximum value of Mahalanobis distance (19.49) was less than the critical value (22.46), showing no outliers. To check the assumption of linearity, the relationship between the sub-components of satisfaction was checked on the scatterplot matrix, and no curvilinear relationship was observed. In addition, Kolmogorov-Smirnov test was used to check the normality of the collected data from the sub-components of the satisfaction scale. The calculated results are *instructor* (KS = .61), *technology* (KS = .52), *set-up* (KS = .46), *interactions* (KS = .39), *outcomes* (KS = .42), and *overall satisfaction* (KS = .58), which were all above the significance level ($P > .05$). Therefore, this assumption was also met. After checking all the assumptions, the multiple regression analysis was run to assess the effects of the satisfaction factors on the participants' anxiety.

Table 3. The summary of multiple regression analysis on the effects of satisfaction dimensions on anxiety

	Sum of Squares	df	Mean Square	F	Sig.	R	R ²
Regression	43328.775	6	7221.46	21.791	.000	.47	.22
Residual	386644.401	423	914.53				
Total	429973.17	429					

As Table 3 indicates, ANOVA analysis revealed that the regression model in this question reached the statistical significance ($F = 21.791, p < 0.001$). In addition, the value of R^2 (0.22) is significant, which implied that 22% of the variance in the university students' anxiety in the online classes could be accounted by the satisfaction dimensions. The next step was to determine the factors which highly contributed to the prediction the university students' anxiety in the online classes.

Table 4. The results of multiple regression analysis for university students' satisfaction dimensions

Dimensions	Unstandardized Coefficients		Standardized Coefficients		Sig.
	B	Std. Error	Beta	t	
(Constant)	14.12	8.07		19.01	.000
Instructor	4.96	.81	.36	11.00	.000
Technology	4.52	.75	.28	8.56	.000
Set-up	3.96	.66	.21	7.20	.091
Interactions	2.00	.40	.17	4.72	.101
Outcomes	2.28	.30	.19	4.05	.000
Overall satisfaction	3.86	.72	.28	6.68	.083

Dependent variable: Anxiety

As seen in Table 4, concerning the Beta values of satisfaction sub-components, the university students' anxiety was mainly affected by *instructor* ($\beta = .36, p < .001$), *technology* ($\beta = .28, p < .001$), and *outcomes* ($\beta = .19, p < .001$), respectively. Further, the factors of *set-up*, *interactions*, and *overall satisfaction* did not make a significant unique contribution to the prediction of the participants' anxiety because the Sig. value of these variables was greater than 0.05.

Results of the Third Research Question

The third research question explored in which ways satisfaction with online classes can affect anxiety in online classes from university students' perspectives. To answer this research question, the participants' words were subjected to a thematic coding analysis. The results yielded four overarching themes, including 'instructors are facilitators', 'technology makes learning easier', 'outcomes are more promising', and 'interacting with others is poor'.

Instructors are Facilitators

The participants stressed that instructors play a crucial role in increasing their satisfaction with and decreasing their anxiety in online classes. In this respect, one of the university students commented:

"When my teachers communicate the expectations of the online courses with me, I know the course objectives and requirements. In this way, I don't get confused and, accordingly, I don't get anxious during the course."

Corroborating with the previous statement, the university students highlighted that the university teachers who allow students to be a part of the courses reduce the students' anxiety. The following excerpt shows this clearly:

"One of my teachers has created a positive climate in our classes. She allows us to have a role in the class activities. We can express our concerns and ideas about the course. Therefore, we feel relaxed in her class."

Another point related to the significant role of instructors is the feedback they offer on university students' performance. In support of this, one of the university students quoted:

"One of the factors that may have an adverse effect on my anxiety in online classes is the feedback given by my teachers. The teachers who offer clear and timely feedback on my performance make me have a good feeling in their classes."

Technology Makes Learning Easier

Another theme received considerable attention by the university students was ‘technology makes learning easier’. The university students noted that by using technology, they have more opportunities to learn. In support of this, one of the university students commented:

“Learning is less demanding with the help of the modern social technologies. In online classes, my teachers and classmates are easily accessible. For example, when I have a question, I can put forward it in the WhatsApp group. Then, my teachers and classmates answer it immediately. This makes me feel less anxious in the online classes.”

Another point raised by the university students was the flexibility of the online classes. In this regard, one of the university students quoted:

“Online classes are really comfortable. I don’t need to commute to the university every day. I save lots of time and energy. We can manage our classes and hold them when it is okay with us. In this way, a large part of my stress has really removed.”

Additionally, the participants stressed that with the help of the modern social technologies, university teachers provide more useful educational materials. In this respect, one of the university students stated:

“Learning in online classes is more interesting. The reason is that in the online classes my teachers offer more useful educational materials. For example, they can use interesting PowerPoints, short videos, pictures, etc. In this way, all students with different learning styles can benefit from the online classes. Therefore, they get more satisfied and feel less anxious.”

Outcomes Are More Promising

The next theme catching the university students’ attention was ‘outcomes are more promising’. They opined that the outcomes they have got in the online classes are satisfactory. To support this, one of the participants remarked:

“I’m satisfied with the online classes because my scores are good. I feel that my scores correspond to my effort. I know that the more I try, the better results I can get. In this way, I can handle my stress.”

Corroborating with the previous statement, one of the university students noted:

“In the online classes, every student receives the results of his/her effort. I mean that there is a tangible difference between hardworking students and lazy students. The students who spend more time and energy get much better results.”

Interacting with Others is Poor

The next theme emerged from the collected data was ‘interacting with others is poor’. The university students’ responses disclosed that one of the factors making students be dissatisfied with the online classes and get anxious is the poor interactions. In this regard, one of the university students opined:

“One of the biggest problems with the online classes is the poor interactions with my teachers and students. I cannot interact with my teachers freely and I have to wait for my teachers to connect my microphone. Sometimes, my questions remain unanswered.”

In consistent with the previous remark, one of the university teachers stated:

“Unfortunately, in the online classes, we don’t have enough opportunities to do group works. I mean that we cannot interact with each other freely to do a joint task. This deprives me of other students’ assistance.”

DISCUSSIONS

The present study investigated the correlation between university students' satisfaction and anxiety in online classes during the COVID-19 pandemic. The findings evidenced a moderate negative correlation between the university students' satisfaction and anxiety in online classes. In a sense, the study's results indicated that the higher satisfaction the university students felt in the online classes, the less anxious they were. The study's findings provide support to the previous studies (Abdous, 2019; Bolliger & Halupa, 2012; Cheng et al., 2016; Levy, 2007; Muller, 2008; Park & Choi, 2009; Saade & Kira, 2007), which affirmed a decisive role of students' satisfaction in their persistence and in handling their feelings of anxiety in online classes. For example, the study's findings are consonant with those of Bolliger and Halupa (2012) and Saade and Kira (2007), reporting that students who were less anxious, experienced more satisfaction than those students with a higher level of anxiety in online learning settings.

A possible explanation of the study's findings may be attributed to this view that student satisfaction and student anxiety are closely correlated such that the former affects and determines the latter (Bolliger & Hapula, 2012). The more a higher education center can satisfy students in terms of their expectations, the less anxious are students in doing their academic duties. In a sense, in alignment with Sinclair (2011), it can be argued that when university students are more satisfied, their feelings of anxiety decrease such that it can work as a great impetus for them to continue learning. In addition, another possible explanation for the study's findings can be ascribed to this view that the more satisfied university students, the higher rate of retention and the probability of students taking more classes in the future (Booker & Rebman, 2005). By taking more online classes, university students can control their feelings of anxiety.

Besides, the study's findings documented that the instructor, technology, and outcomes factors were the strongest predictors of the participants' anxiety in online classes. A possible explanation of the study's findings, as Belanger and Jordan (2000) note, can be partly attributed to the limitations in online access and unfamiliarity with technological equipment. That is, the university students with unlimited online access might be at a less disadvantage than those with limited access. Further, the university students who might be capable of embarking upon online learning platforms might have efficiently regulated, monitored, and self-managed their learning processes (Sun & Rueda, 2012). Indeed, this explanation is in line with Hara and Kling (2000) who argue that pertinent online access is a crucial factor influencing student satisfaction. Similarly, the study's findings align with Bower and Kamata (2000), pinpointing that frustration with technology could highly result in lower satisfaction levels. Besides, the study's findings are in congruent with those of Liang and Tsai (2008) and Tsai et al. (2011), reporting that students' lack of preparedness in the use of the Internet may lead to less interaction with the instructor or classmates; hence, resulting in dissatisfaction with online learning. Further, the study's results lend credence to the perspectives of Zembylas (2008), noting that students with a low confidence level and preparedness in using technological tools may encounter some issues in online learning and, consequently, may experience low satisfaction with online courses. Likewise, the study's findings are compatible with Biner et al.'s (1994) point of view that affective factors, together with cognitive factors, are worthy of attention in predicting students' learning in online courses.

The results pertaining to the thematic coding analysis on reflective written statements of participants revealed that the students emphasized a determining role of instructors in increasing their satisfaction with and decreasing their anxiety in online classes. The same results were also found by Sun et al. (2008). Their findings evidenced that student computer anxiety, instructor, online course quality and flexibility, and diversity in assessments were crucial factors affecting students' satisfaction with online courses. Also, the study's findings are in agreement with Herbert (2006), who states that the learning quality and satisfaction with online learning are largely influenced by university teachers' responsiveness to their needs and wants. Following this line of argument, it could be argued that owing to the lack of face-to-face communication, instructors play a decisive role in online learning environments as they should elucidate the expectations and objectives of the online courses for students, motivate students to participate in online discussions, provide support, guidance, and assistance to students in every stage of learning, and monitor student progress. (Alqurashi, 2016; Moore, 1989; Sahin, 2007).

In addition, the study's qualitative findings unveiled that the quality of interactions in online courses were truly poor as it led to students' anxiety in and dissatisfaction with the online classes. The reason for this might be ascribed to the fact that the university students in online classes might not have been able to

aptly embark on group activities and class projects. They also might have had no an enough time to share and discuss viewpoints with one another, and received feedback from their peers or teachers (Bolliger & Martindale, 2004; Bray et al., 2008). The study's findings gain support from prior research (Abdous, 2019; Aman, 2009; Davis & Quick, 2001; Sampson et al., 2010). For example, Abdous (2019) posited that the risk of online distraction, technical difficulties, and lack of immediate interaction with faculties and students were of paramount reasons associated with anxiety among online students. Also, the study's findings accord with Aman (2009), reporting that learner-learner interaction as well as learner-instructor interaction were significant predictors of low satisfaction throughout the online learning process. In congruent with the study's findings, it may be posed that if the pertinent interactions were reinforced in online courses, it might have fostered students' motivation to learn, developed verbal communication, facilitated meaningful learning experiences, and spurred creative thinking (Bonk & Cunningham, 1998; Cheung & Huang, 2005).

CONCLUSIONS

With the outbreak of the COVID-19 pandemic, all universities have replaced the face-to-face classes with online classes in Iran. As online classes have expanded across the county, so does the need for research to disclose the correlation between university students' satisfaction and anxiety. To answer this urgent call, the present mixed-methods study purported to investigate the correlation between university students' satisfaction and anxiety in online classes during the COVID-19 pandemic. Findings evidenced a moderate negative correlation between the participants' satisfaction and anxiety in online classes. Additionally, results documented that the instructor, technology, and outcomes factors had the largest effects on the participants' anxiety. Complementary with the quantitative findings, the results of the reflective written statements yielded four overarching themes, including 'instructors are facilitators', 'technology makes learning easier', 'outcomes are more promising', and 'interacting with others is poor'. Based on the study's findings, it can be concluded that the more satisfied university students are, the less anxious they are in online classes.

In light of the study's findings, some implications are suggested for different stakeholders. First, the Iranian university officials need to give particular attention to university students' satisfaction in online classes. For this purpose, university instructors should be trained on how to run the online classes effectively, technology facilities should be improved, interactions among university students should be facilitated, course management should be satisfactory, and online classes' outcomes should be promising for university students. Second, the Iranian university officials need to improve university students' computer- and Internet self-efficacy by providing appropriate training before online courses start. Third, university teachers should be aware of the fact that to reduce university students' anxiety in online classes, they should provide a setting in which university students feel satisfied. To meet this aim, they should rethink their ways of teaching by attending professional development training courses. Fourth, if university teachers aim to mitigate student anxiety in online classes, they need to integrate online student orientations, planned interventions, and student-centered approaches (Bolliger & Hapula, 2012). When university students get involved actively in online classes, their anxiety reduces. This, in turn, impacts positively their learning outcomes (Brosnan et al., 2012). Fifth, university teachers should give particular attention to interactions among students. They need to offer feedback to students' performance in a timely manner and encourage university students to ask their questions and get in touch with their classmates in different ways (Kuo et al., 2013). Additionally, to increase interactions among online university students, university teachers can design and implement more collaborative tasks in their classes. Finally, university students should improve their self-efficacy in using technological skills if they want to become successful in higher education and play an active role in the evolving society (Paul & Glassman, 2017). As the previous studies documented, university students' academic performance is positively correlated with their information seeking-skills on the Internet (Zhu et al., 2011) and university students' civic engagement is highly linked with their participation in online community discussions (Moy et al., 2005).

In light of the limitations imposed on the current study, some suggestions for further research are recommended. As the participants of the current study were limited to one state university (Ayatollah Borujerdi University), future studies can include larger samples of university students at other universities to increase the generalizability of the current study's findings. Additionally, as the present study's participants were university students, further studies are needed to explore the correlation between students' satisfaction

and anxiety in online classes in elementary schools and high schools in Iran. Furthermore, a longitudinal study can be carried out to disclose how the correlation between students' satisfaction and anxiety changes over online classes. Moreover, follow-up research can explore if university students like to attend online classes after the COVID-19 pandemic. Finally, future studies can explore the correlation between university students' computer self-efficacy and anxiety in online classes.

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REFERENCES

- Abdous, M. (2019). Influence of satisfaction and preparedness on online students' feelings of anxiety. *The Internet and Higher Education*, 41, 34-44. <https://doi.org/10.1016/j.iheduc.2019.01.001>
- Allen, I. E., & Seaman, J. (2010b). *Learning on demand: Online education in the United States, 2009*. Babson Park, MA: Babson Survey Research Group. Retrieved from <http://sloanconsortium.org/sites/default/files/pages/learningondemand-7.pdf>
- Alqurashi, E. (2016). Self-efficacy in online learning environments: A literature review. *Contemporary Issues in Education Research*, 9(1), 45-52. <https://doi.org/10.19030/cier.v9i1.9549>
- Aman, R. R. (2009). *Improving student satisfaction and retention with online instruction through systematic faculty peer review of courses*. (Unpublished doctoral dissertation). Oregon State University.
- Appleton-Knapp, S. L., & Krentler, K. A. (2006). Measuring student expectations and their effects on satisfaction: the importance of managing student expectations. *Journal of Marketing Education*, 28(3), 254-264. <https://doi.org/10.1177/0273475306293359>
- Bandura, A. (1988). Self-efficacy conception of anxiety. *Anxiety Research*, 1(2), 77-98. <https://doi.org/10.1080/10615808808248222>
- Banks, A. C. & Faul, A. C. (2007). Reduction of face-to-face contact hours in foundation research courses: Impact on student knowledge gained and course satisfaction. *Social Work Education*, 26(8), 780-793. <https://doi.org/10.1080/02615470601140500>
- Beckers, J. J., & Schmidt, H. G. (2001). The structure of computer anxiety: A six factor model. *Computers in Human Behavior*, 17, 35-49. doi: 10.1016/S0747-5632(00)00036-4
- Belanger, F., & Jordan, D. H. (2000). *Evaluation and implementation of distance learning: Technologies, tools and techniques*. Idea Publishing Group.
- Biner, P. M., Dean, R. S., & Mellinger, A. E. (1994). Factors underlying distance learner satisfaction with televised college-level courses. *The American Journal of Distance Education*, 8(1), 60-71. <https://doi.org/10.1080/08923649409526845>
- Bolliger, D. U., & Halupa, C. (2012). Student perceptions of satisfaction and anxiety in an online doctoral program. *Distance Education*, 33(1), 81-98. DOI: 10.1080/01587919.2012.667961
- Bolliger, D. U., & Martindale, T. (2004). Key factors for determining student satisfaction in online courses. *International Journal on E-Learning*, 3, 61-67.
- Bonk, C. J., & Cunningham, D. J. (1998). Searching for learner-centered, constructivist, and sociocultural components of collaborative educational learning tools. In C. J. Bonk & K.S. King (Eds.), *Electronic collaborators: Learner-centered technologies for literacy, apprenticeship, and discourse* (pp. 25-50). Lawrence Erlbaum.
- Booker, Q. E., & Rebman, C. E. (2005). E-student retention: Factors affecting customer loyalty for online program success. *Issues in Information Systems*, 6(1), 183-189. https://doi.org/10.48009/1_iis_2005_183-189
- Bower, B. L., & Kamata, A. (2000). Factors influencing student satisfaction with online courses. *Academic Exchange Quarterly*, 4(3), 52-56.
- Braun V., & Clarke V. (2006). Using thematic analysis in psychology. *Qualitative Research Psychology*, 3, 77-101. doi/pdf/10.1191/1478088706qp063oa?needAccess=true
- Bray, E., Aoki, K., & Dlugosh, L. (2008). Predictors of learning satisfaction in Japanese online distance learners. *The International Review of Research in Open and Distributed Learning*, 9(3), 1-24. <https://doi.org/10.19173/irrodl.v9i3.525>
- Brosnan, M., Joiner, R., Gavin, J., Crook, C., Maras, P., Guiller, J., & Scott, A. J. (2012). The impact of pathological levels of internet-related anxiety on internet usage. *Journal of Educational Computing Research*, 46(4), 341-356. <https://doi.org/10.2190/EC.46.4.b>

- Cheng, M., Taylor, J., Williams, J., & Tong, K. (2016). Student satisfaction and perceptions of quality: Testing the linkages for PhD students. *Higher Education Research & Development, 35*(6), 1153-1166. <https://doi.org/10.1080/07294360.2016.1160873>
- Cheung, W., & Huang, W. (2005). Proposing a framework to assess internet usage in university education: An empirical investigation from a student's perspective. *British Journal of Educational Technology, 36*(2), 237-253. <https://doi.org/10.1111/j.1467-8535.2005.00455.x>
- Davis, T. G. & Quick, D. (2001). Reducing distance through distance learning: The community college leadership doctoral program at Colorado State University. *Journal of Research and Practice, 25*(8), 607-620.
- Debourgh, G. A. (1999). Technology is the tool, teaching is the task: Student satisfaction in distance learning. In *Society for Information Technology & Teacher Education International Conference* (pp. 131-137). Association for the Advancement of Computing in Education (AACE).
- Derakshan, N., & Eysenck, M. W. (2009). Anxiety, processing efficiency, and cognitive performance: New developments from attentional control theory. *European Psychologist, 14*(2), 168-176. <https://doi.org/10.1027/1016-9040.14.2.168>
- DeVaney, T. A. (2010). Anxiety and attitude of graduate students in on-campus vs. online statistics courses. *Journal of Statistics Education, 18*(1), 1-15. <https://doi.org/10.1080/10691898.2010.11889472>
- Evans, T. N. (2009). *An investigative study of factors that influence the retention rates in online programs at selected state, state-affiliated, and private universities*. (An unpublished doctoral dissertation). Robert Morris University.
- Hara, N., & Kling, R. (2001). Student distress in Web-based distance education. *Educause Quarterly, 24*(3), 68-69.
- Heinssen, R. K., Glass, C. R., & Knight, L. A. (1987). Assessing computer anxiety: Development and validation of the computer anxiety rating scale. *Computers in Human Behavior, 3*, 49-59. doi: 10.1016/0747-5632(87)90010-0
- Herbert, M. (2006). Staying the course: A study in online student satisfaction and retention. *Online Journal of Distance Learning Administration, 9*(4). <http://www.westga.edu/~distance/ojdla/>
- Igbaria, M., & Parasuraman, S. (1989). A path analytic study of individual characteristics, computer anxiety and attitudes toward microcomputers. *Journal of Management, 15*, 373-388. <https://doi.org/10.1177/014920638901500302>
- Joiner, R., Gavin, J., Duffield, J., Brosnan, M., Crook, C., Durndell, A., ... Lovatt, P. (2005). Gender, internet identification, and internet anxiety: Correlates of internet use. *CyberPsychology & Behavior, 8*(4), 371-378. <https://doi.org/10.1089/cpb.2005.8.371>
- Jurkowitsch, S., Vignali, C. & Kaufmann, H. R. (2006). A Student Satisfaction Model for Austrian Higher Education Providers Considering Aspects of Marketing Communications. *Innovative Marketing, 2*(3), 9-23.
- Kay, R. H. (2008). Exploring the relationship between emotions and the acquisition of knowledge. *Computers & Education, 50*, 1269-1283. doi: 10.1016/j.compedu. 2006.12.002
- Keller, J. (1983). Motivational design of instruction. In C. Reigeluth (Ed.), *Instructional design theories and models: An overview of their current status* (pp. 386-434). Erlbaum.
- Knox, W. E., Lindsay, P., & Kolb, M. N. (1993). *Does college make a difference? Long-term changes in activities and attitudes*. Greenwood Press.
- Kuo, Y. C., Walker, A. E., Belland, B. R., & Schroder, K. E. E. (2013). A predictive study of student satisfaction in online education programs. *The International Review of Research in Open and Distributed Learning, 14*(1), 16-39. <https://doi.org/10.19173/irrodl.v14i1.1338>
- Levy, Y. (2007). Comparing dropouts and persistence in e-learning courses. *Computers & Education, 48*(2), 185-204. <https://doi.org/10.1016/j.compedu.2004.12.004>

- Liang, J. C., & Tsai, C. C. (2008). Internet self-efficacy and preferences toward constructivist internet-based learning environments: A study of pre-school teachers in Taiwan. *Educational Technology & Society*, 11(1), 226-237. <https://www.jstor.org/stable/jeductechsoci.11.1.226>
- Mackey, A. & Gass, S. (2005). *Second language research: Methodology and design*. Rutledge.
- Moore, M. G. (1989). Editorial: Three types of interaction. *American Journal of Distance Education*, 3(2), 1-7. <https://doi.org/10.1080/08923648909526659>
- Moore, M. G., & Kearsley, G. (1996). *Distance education: A systems view*. Wadsworth Publishing.
- Moy, P., Manosevitch, E., Stamm, K., & Dunsmore, K. (2005). Linking dimensions of internet use and civic engagement. *Journalism & Mass Communication Quarterly*, 82(3), 571-586. <https://doi.org/10.1177/107769900508200306>
- Muller, T. (2008). Persistence of women in online degree-completion programs. *The International Review of Research in Open and Distributed Learning*, 9(2), 1-18. <https://doi.org/10.19173/irrodl.v9i2.455>
- Noel-Levitz, Inc. (2011). *2011 cost of recruiting an undergraduate student benchmarks for four-year and two-year institutions*. https://www.noellevitz.com/documents/shared/Papers_and_Research/2011/2011%20Cost%20of%20Recruiting%20Undergraduate%20Students.pdf
- Ortiz-Rodriguez, M., Teig, R., Irani, T., Roberts, T. G., & Rhoades, E. (2005). College students' perceptions of quality in distance learning. *Quarterly Review of Distance Education*, 6(2), 97-105.
- Park, J. H., & Choi, H. J. (2009). Factors influencing adult learners' decision to drop out or persist in online learning. *Educational Technology & Society*, 12(4), 207-217. <https://www.jstor.org/stable/jeductechsoci.12.4.207>
- Paul, N., & Glassman, M. (2017). Relationship between internet self-efficacy and internet anxiety: A nuanced approach to understanding the connection. *Australasian Journal of Educational Technology*, 33(4), 147-165. <https://doi.org/10.14742/ajet.2791>
- Presno, C. (1998). Taking the byte out of internet anxiety: Instructional techniques that reduce computer/internet anxiety in the classroom. *Journal of Educational Computing Research*, 18(2), 147-161. <https://doi.org/10.2190/UY72-5TG8-0LT5-AU4L>
- Rezai, M., & Shams, A. (2014). Correlates of internet anxiety among agricultural students in Zanjan University of Iran. *Journal of Educational and Instructional Studies in the World*, 4(1), 63-70. <http://wjeis.org/FileUpload/ds217232/File/08a.rezaei.pdf>
- Saade, R. G., & Kira, D. (2007). Mediating the impact of technology usage on perceived ease of use by anxiety. *Computers & Education*, 49, 1189-1204. doi: 10.1016/j.compedu.2006.01.009
- Sahin, I. (2007). Predicting student satisfaction in distance education and learning environments. *Turkish Online Journal of Distance Education*, 8(2), 113-119.
- Sahin, I., & Shelley, M. (2008). Considering students' perceptions: The distance education student satisfaction model. *Educational Technology and Society*, 11(3), 216-223. <https://www.jstor.org/stable/jeductechsoci.11.3.216>
- Sampson, P. M., Leonard, J., Ballenger, J. W., & Coleman, J. C. (2010). Student satisfaction of online courses for educational leadership. *Online Journal of Distance Learning Administration*, 7(3), 1-12.
- Sinclair, J. K. (2011). Student satisfaction with online learning: Lessons from organizational behavior. *Research in Higher Education Journal*, 11, 1-18.
- Sun, J. C. Y., & Rueda, R. (2012). Situational interest, computer self-efficacy and self-regulation: Their impact on student engagement in distance education. *British Journal of Educational Technology*, 43(2), 191-204. <https://doi.org/10.1111/j.1467-8535.2010.01157.x>
- Sun, P. C., Tsai, R. J., Finger, G., Chen, Y. Y., & Yeh, D. (2008). What drives a successful e-Learning? An empirical investigation of the critical factors influencing learner satisfaction. *Computers & Education*, 50(4), 1183-1202. <https://doi.org/10.1016/j.compedu.2006.11.007>

- Susskind, A. M. (2004). Electronic commerce and the World Wide Web apprehensiveness: An examination of consumers' perceptions of the world wide web. *Journal of Computer-Mediated Communication*, 9(3), 1-25. <https://doi.org/10.1111/j.1083-6101.2004.tb00287.x>
- Suwantarathip, O. (2019). Predictors of students' satisfaction with a hybrid English course. *Turkish Online Journal of Distance Education*, 20(1), 115-130. <https://doi.org/10.17718/tojde.522427>
- Tsai, C. C., Chuang, S. C., Liang, J. C., & Tsai, M. J. (2011). Self-efficacy in internet-based learning environments: A literature review. *Educational Technology & Society*, 14(4), 222-240. <https://www.jstor.org/stable/jeductechsoci.14.4.222>
- Walker, C. E., & Kelly, E. (2007). Online instruction: Student satisfaction, kudos, and pet peeves. *Quarterly Review of Distance Education*, 8(4), 309-319.
- Wickersham, L. E., & McGee, P. (2008). Perceptions of satisfaction and deeper learning in an online course. *Quarterly Review of Distance Education*, 9(1), 73-83.
- Zembylas, M. (2008). Adult learners' emotions in online learning. *Distance Education*, 29(1), 71-87. <https://doi.org/10.1080/01587910802004852>
- Zhu, Y. Q., Chen, L. Y., Chen, H. G., & Chern, C. C. (2011). How does internet information seeking help academic performance? The moderating and mediating roles of academic self-efficacy. *Computers & Education*, 57(4), 2476-2484. <https://doi.org/10.1016/j.compedu.2011.07.006>

THE IMPACT OF ONLINE TEACHING ON STUDENTS' ENGAGEMENT IN WRITING DURING THE PANDEMIC OF COVID-19

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ABSTRACT

COVID-19 has dramatically changed the process of teaching, as educational institutions replaced in-person teaching with online teaching to ensure educational continuity while managing the spread of the contagious disease. Drawing on the multifaceted concept of engagement, engagement is addressed as a sole construct. The present study adapted Student Course Engagement Questionnaire (SCEQ) to explore the impact of online teaching through Blackboard on English as foreign language (EFL) college students' engagement in writing. The study sample included 148 students. The results of the present non-experimental study generally indicated that online learning through Blackboard positively influenced the engagement of Saudi EFL learners. However, it is essential to note that the students showed a high level of engagement in terms of skills engagement. In contrast, the levels of engagement were moderate for the other three elements of engagement: Emotional, participation/interaction, and performance. The findings also demonstrated that the students perceived the learning experience positively. The participants valued the various virtues offered by online learning platforms, specifically Blackboard. Consequently, it is recommended that using Blackboard features such as blogs, breakout groups, and videoconferencing will help foster educational practices locally and internationally.

Keywords: COVID-19, EFL Learners, Course Engagement, Online Learning, Student Course Engagement Questionnaire, EFL Writing.

INTRODUCTION

The whole world has witnessed an unexpected, mandated shift to online schooling, almost overnight, in the past year, due to the most challenging situation that accompanied the COVID-19 pandemic (Daniel, 2020). According to United Nations (2021), educational institutions in 191 countries were forced to cease face-to-face interaction and rapidly implement almost complete-remote learning. Saudi Arabia was no exception; in-person teaching and learning were suspended in all schools and universities and replaced by online learning. The new official way of online learning was decided based on the recommendations of the Ministry of Health. Remote learning was proven to be capable of overcoming educational challenges introduced by disasters and natural crises. Four years earlier, the government had gone through a similar experience of having to cease face-to-face instruction and move toward remote learning for the sake of people's safety in the Saudi Southern war zone (Rajab, 2018). Furthermore, universities were not totally novice to the idea of online learning. Universities like Imam Mohammad Ibn Saud Islamic University (IMSIU) has implemented online learning (Electronic Learning and Distance Teaching) since 2014. Since its establishment, the Deanship of Electronic

Learning and Distance Teaching at IMSIU has provided programs for bachelor's degrees in Islamic Studies, Arabic Language, and Economics and Administrative Sciences, using the platform of Blackboard. Since the beginning of the crisis, the deanship has paid outstanding efforts to educate instructors and students about Blackboard and promote e-learning. Such efforts were very helpful for the university, making it worthy of winning the institutional accreditation for the quality of teaching granted by the National Commission for Academic Accreditation and Assessment (NCAAA) (IMAMU, 2021).

Since the sudden and rapid transition, university instructors spared no effort to continue delivering their courses using the available tools, applications, and Learning Management Systems (LMSs), such as Zoom, Webex, Edmodo, WhatsApp, Telegram, and Blackboard respectively. Blackboard was the only official LMS used in universities prior to and during the pandemic (Alsuhaibani, 2021). The platform of Blackboard is described as modern, user-friendly LMS. It provides synchronous and asynchronous forms of communication, such as virtual classrooms, emails and blogs. It creates a learning environment that helps both instructors and learners to attend virtual classes, participate in online discussions, upload their assignments, get feedback, and take their exams (Khafaga, 2021). According to Whitmer et al. (2016), the virtues of availability, in-time feedback, skill-building tracking, and improved communication distinguish Blackboard and help overcome the problems other platforms encounter. As a result of these virtues, learning via Blackboard largely assimilated a face-to-face environment (Almekhlafy, 2020).

Playing a central role in the learning process and affecting linguistic gains and retention, students' engagement has been the concern of educators and researchers (Bryson & Hand, 2007). With the necessary transition to online learning, students' engagement can constitute a concern to language instructors. The term engagement has been addressed in various ways. Lately, student engagement has been conceptualized as a multidimensional phenomenon comprising three dimensions, i.e. namely behavioral, cognitive, and emotional (Lei et al., 2018). These dimensions refer respectively to the student's level of participation, use of self-regulated strategies, and emotional reactions. Engagement in learning can be realized as "the active participation in the learning process, and contributes to deeper and meaningful learning" (Huang et al., 2017, p. 96). According to Mackenzie (2015), the desired learning outcomes can be best achieved through a learning process in which students are actively engaged. When learners are more engaged in the learning process, they are more likely to maintain the knowledge longer and transfer it to further contexts. Engaging the students actively in the learning process remains the biggest challenge for teachers. Therefore, teachers need to modify their teaching procedures as well as classroom activities to engage students and, consequently, reach the desired learning outcomes (Rahayu, 2018).

Although online teaching has been the focus of EFL research lately, few studies have focused on students' engagement in online classes. Serag's (2013) study partially investigated the effect of online learning on students' engagement, reporting a positive impact of online learning on the level of engagement and performance. Likewise, Suharti, Suherdi, and Setyarini (2020) explored students' engagement in online EFL classrooms in a vocational school in Indonesia. The findings revealed that using online platforms for language learning leads to significant learning engagement. Sustani's (2020) study supports these findings to a certain extent. According to the results, EFL college students showed relatively high behavioral engagement, while cognitive and emotional engagements were not highly positive.

On the other hand, most papers have discussed students' engagement as a secondary matter (Banditvilai, 2016; Alzamil, 2021). Alzamil (2021) investigated students' views towards online learning compared to their face-to-face learning of the speaking skill. According to him, the participants "appreciated the benefits that online learning offer, but felt it could not replace face-to-face learning" (p.19). Such an attitude could be partially traced back to the direct and clear comparison drawn between face-to-face and online learning. Moreover, during the first few weeks after the suspension when the study was applied, instructors were having difficulties accommodating to the change, resulting in poor outcomes as related to online learning. Sahin-Kizil (2014) reported students' positive attitude towards online learning within blended learning. According to her, it "creates efficient learning environment" (p. 1). Likewise, Girik Allo (2020) has reported that learners perceived online learning as good and helpful in the middle of the COVID-19 pandemic.

Little attention has been paid to student engagement with online learning of writing. The few studies on engagement in L2 writing classes mainly highlight engagement with feedback, whether through online (Lili & Yu, 2020) or face-to-face teaching (Han & Hyland, 2015). Furthermore, the study of students'

engagement in online classrooms remains scarce in the context of Saudi Arabia. Oraif and Elyas (2020) explored the engagement of EFL students in secondary schools in online learning using a designated school platform. Using the Student Course Engagement Questionnaire (SCEQ), the results clearly showed a high level of student engagement. To the best of the researchers' knowledge, the present study is the first study to examine students' engagement in the writing course in e-learning using Blackboard.

With the previous background considered, the present study attempts to contribute to the field by shedding light on EFL college students' engagement in online learning through Blackboard, specifically in teaching writing. Therefore, it attempts to answer the following questions:

1. To what extent do EFL university learners engage in an online writing course during the COVID-19 pandemic?
2. How do EFL university learners perceive online instruction in the writing course?

METHOD

A mixed-method approach was adopted for the current research. Questionnaires were consequently used as the data collection tool, and these were in English. Questionnaires were used to measure the level of engagement among most of the students from the original population. The questionnaires were distributed by the course tutor during classroom time, in the final class at the end of the second term, in May 2021. The duration of the term was 12 weeks, excluding the testing weeks. In the selected writing course, the process approach was adopted, with the learners having to write multiple drafts and the teacher providing them with feedback. The writing class was taught online, once weekly via Blackboard.

The questionnaire was adopted from Oraif and Elyas (2021), who originally adapted it from Handelsman, Briggs, Sullivan, and Towler (2005) SCEQ format. The scale measures four essential items related to engagement in classroom learning. However, the questionnaire is used at the university level in the current study. The Cronbach's alpha was found to be 0.913 in Oraif and Elyas's (2021) description of the scale. In their 23-item measure, Handelsman et al. (2005) divided engagement into four factors, demonstrating high internal consistency in their study, with a coefficient alpha of between .76 and .82. The authors labeled the first factor, 'skills engagement' since it reflected student engagement through skills practice. Meanwhile, the second factor was labeled 'emotional engagement', relating student engagement to emotional involvement with the class material. The third construct, 'participation/interaction engagement', identified learner engagement through classroom participation and interactions with instructors and peers. Finally, the fourth factor, related student engagement to performance in class, is referred to as 'performance engagement'. However, the open-ended questions in Part 1 of the original questionnaire were changed in the current study to fit the research purpose and gain a deeper understanding of the existing situation on the writing course at IMSIU. Therefore, the following question being added: "Does your teacher allow collaborative work during the online writing class?" (see Appendix B). An expert in Applied Linguistics checked the suitability of the questions in terms of content, and they were found to be suitable.

Participants

Regarding the sampling procedure, a convenient sample was recruited, with three teachers agreeing to collect data from their classes. Seven out of 14 sections of the writing course were involved. A total of 148 students agreed to participate, representing 48% of the whole population, which consisted of 379 university students, enrolled in the final level of a writing course in the Department of English Language and Translation at the College of Languages and Translation, IMSIU, Riyadh, Kingdom of Saudi Arabia (KSA). The participants were all female students, as the education system in Saudi Arabia requires gender separation in governmental educational institutions. The students were between 20 and 23 years old (see Table 1).

Table 1. Participants' Characteristics (n=148)

	Categories	No	%
Age	20-21	56	34%
	22-23	92	56%

Data Collection and Analysis

Due to COVID-19 pandemic restrictions, the survey was created electronically using Google Forms, and the link was given to the teachers prior to class time. The teachers then provided the learners with the corresponding link. The questionnaire took around 10 minutes to complete and send. After distributing the form, one of the researchers joined the session to introduce the purpose of the questionnaire. She remained until the participants finished to ensure that the items were clear and easy to grasp and to answer the students' inquiries. After ensuring that all the participants had successfully submitted their responses, the researcher left the session. The data were kept confidential and anonymous, as the participants did not include their names. They also signed a consent form, which assured them that none of the research data collected and included would affect their grades for the course.

The Statistical Package for Social Sciences (SPSS) software version 26 was used to analyze the data after it had been coded. On the other hand, the qualitative data were analyzed through Microsoft Excel using percentages and frequency. Quantitative normally distributed variables were presented as means and standard deviation (SD). Qualitative variables were expressed in terms of frequency and percentages. The Wilcoxon and Kruskal-Wallis tests were also conducted to explore the statistical significance of differences in the level of engagement between two or more than two groups, respectively. In addition, Pearson's correlation was calculated to identify the significance in the association between quantitative variables -a p-value<0.05 was considered as an indication of statistical significance. As for open-ended questions, content analysis was used for conducting the analysis. Codes were checked by another expert in the field and changes were made based on his recommendation.

Consequently, this study investigated a single existing case among female university students from the Department of English Language and Translation at the College of Languages and Translation at IMSIU. The questionnaires were mainly used to help investigate the phenomenon in depth (Thomas, 2017). Based on the results drawn from the data, recommendations were subsequently made to improve current university teaching practice in KSA, specifically in English writing classes. The process approach was followed in delivering the course. During the course, learners were writing multiple drafts. The instructor gave feedback for each draft. While several types of essays were taught in the course, students were meeting their teacher once weekly through an online environment using Blackboard. Blackboard was used to deliver lectures, discuss ideas through discussion boards, submit assignments, implement in-class activities, and conduct tests.

RESULTS

To answer the first question: 'What is the level of students' engagement in online English writing classes?', descriptive data were calculated for each factor. Skills engagement was found to be a characteristic of the EFL learners in the online writing classes. In contrast, emotional engagement was moderately characteristic of this sample, as were participation/interaction engagement and performance engagement (see Tables 2-5).

Table 2. Descriptive data for the students' skills engagement

No	Items	Mean	SD	Per.	Level of Engagement
9	Coming to class every day	3.65	1.607	73%	Characteristic of me
8	Listening carefully in class	3.55	1.536	71%	Characteristic of me
3	Doing all the homework problems	3.52	1.459	70%	Characteristic of me
5	Looking over class notes between classes to make sure I understand the material	3.46	1.552	69%	Characteristic of me
6	Being organized	3.46	1.548	69%	Characteristic of me
2	Putting in effort	3.40	1.510	68%	Characteristic of me
4	Staying up to date with the readings	3.38	1.380	68%	Moderately characteristic of me
7	Taking good notes in class	3.34	1.504	67%	Moderately characteristic of me
1	Making sure to study on a regular basis	3.25	1.504	65%	Moderately characteristic of me
	Skills engagement	3.45	1.278	69%	Characteristic of me

Table 2 illustrates the students' level of skills engagement in their online English writing classes. In general, skills engagement was found to be characteristic of these learners (mean=3.45, SD=1.27). The item 'Coming to class every day' ranked first (mean=3.65, SD = 1.607), followed by 'Listening carefully in class' (mean=3.55, SD=1.536), which was also characteristic of the learners. The level of engagement was moderately characteristic in the final measure 'Making sure to study on a regular basis' (mean=3.25, SD=1.504).

Emotional Engagement

Table 3. Descriptive data for the students' emotional engagement

No	Items	Mean	SD	%	Level of Engagement
5	Really desiring to learn the material	3.24	1.470	65%	Moderately characteristic of me
3	Finding ways to make the course interesting to me	3.15	1.475	63%	Moderately characteristic of me
2	Applying course material to my life	3.05	1.385	61%	Moderately characteristic of me
4	Thinking about the course between class meetings	3.04	1.363	61%	Moderately characteristic of me
1	Finding ways to make the course material relevant to my life	2.96	1.365	59%	Moderately characteristic of me
	Emotional engagement	3.09	1.219	62%	Moderately characteristic of me

Table 3 demonstrates the students' level of emotional engagement in their English writing classes. It reveals that, in general, the participants' emotional engagement in their online English writing classes was moderately characteristic (mean=3.09, SD=1.219). The item 'Really desiring to learn the material' ranked first (mean=3.24, SD=1.470), followed by 'Finding ways to make the course interesting to me' (mean=3.15, SD=1.475). Finally, the item 'Finding ways to make the course material relevant to my life' (mean=2.96, SD=1.365) came last. All these descriptive statements are indicated as being moderately characteristic of the learners.

Participation/Interaction Engagement

Table 4. Descriptive data for the students' participation/interaction engagement

No	Items	Mean	SD	%	Level of Engagement
4	Participating actively in small-group discussions	3.55	1.614	71%	Characteristic of me
1	Raising my hand in class	3.52	1.603	70%	Characteristic of me
6	Helping fellow students	3.49	1.496	70%	Characteristic of me
2	Asking questions when I don't understand the instructor	3.26	1.570	65%	Moderately characteristic of me
5	Going to the instructor to review assignments or tests or to ask questions	3.20	1.548	64%	Moderately characteristic of me
3	Having fun in class	3.03	1.467	61%	Moderately characteristic of me
	Participation/interaction engagement	3.34	1.312	67%	Moderately characteristic of me

Table 4 shows the students' level of participation/interaction engagement in online English writing classes, which was generally found to be moderately characteristic of the learners (mean=3.34, SD=1.312). The item 'Participating actively in small-group discussions' came first (mean=3.55, SD=1.614). It was followed by 'Raising my hand in class' (mean=3.52, SD=1.603), where participant engagement was also found to be characteristic. Finally, the item 'Having fun in class' (mean=3.03, SD=1.467) came last, where the level of participation engagement was found to be moderately characteristic of the learners.

Performance Engagement

Table 5. Descriptive data for the students' performance engagement

No	Items	Mean	SD	%	Level of Engagement
3	Being confident that I can learn and do well in the class	3.38	1.544	68%	Moderately characteristic of me
2	Doing well in the tests	3.25	1.322	65%	Moderately characteristic of me
1	Getting a good grade	3.24	1.325	65%	Moderately characteristic of me
	Performance engagement	3.29	1.272	66%	Moderately characteristic of me

Table 5 illustrates that, in general, the students' level of performance engagement in their online English writing classes was moderately characteristic (mean=3.29, SD=1.272), with 'Being confident that I can learn and do well in the class' ranking first (mean=3.38, SD=1.544). It was followed by 'Doing well in the tests' ranking second (mean=3.25, SD=1.322), where performance engagement was also indicated as moderately characteristic, and 'Getting a good grade' ranked lowest (mean=3.24, SD=1.325). The level of engagement was, likewise, moderately characteristic of the participants.

Further, an analysis of the correlations illustrated in Table 6 demonstrated a relationship between all the factors of student engagement. It was found that, in general, the students' level of engagement in online English writing classes was moderately characteristic (mean=3.29, SD=1.160), with skills engagement ranking first (mean=3.45, SD= 1.278). While participation/interaction engagement ranked second (mean=3.34, SD=1.312), performance engagement ranked third (mean=3.29, SD=1.272), and finally, emotional engagement ranked the lowest (mean=3.09, SD= 1.219). All these types of engagement were indicated as moderately characteristic of the learners; however, the learners were positive about their experience.

Table 6. Correlations and descriptive data on the students' engagement factors

Factors	Mean	SD	%	Skills Engagement	Emotional Engagement	Participation/ Interaction Engagement	Performance Engagement
Skills engagement	3.45	1.278	69%	-	.788**	.901**	.759**
Emotional engagement	3.09	1.219	62%	.788**	-	.799**	.638**
Participation/ interaction engagement	3.34	1.312	67%	.901**	.799**	-	.774**
Performance engagement	3.29	1.272	66%	.759**	.638**	.774**	-
Overall engagement	3.29	1.160	66%	.946**	.881**	.953**	.870**

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

To answer the second research question, 'How do EFL university learners perceive online instruction of the Writing Course?', the descriptive data was analyzed in terms of frequency and percentages of participant responses.

Table 7. Descriptive data on the students' performance engagement

Variables	Variables	No	%
Does your teacher allow collaborative work in the online writing class?	Yes	147	90%
	No	17	10%
Does your writing teacher provide you with any additional study material (e.g., links, videos, etc.?) via the online environment?	Yes	116	71%
	No	48	29%
How do you feel about attending online writing classes?	Pleased	115	70%
	Displeased	49	30%

As Table 7 shows, the majority of the participants (90%) agreed that the teachers allowed collaborative work. Moreover, most of the participants (71%) agreed that the teachers provided learners with additional material. Furthermore, a majority of the participants (70%) were pleased about attending online classes. To obtain a clearer understanding of the participants' general views of the online learning experience, the frequency and percentages of the participants' reasons for being pleased or displeased were calculated and are listed in Table 8.

Table 8. Reasons for being pleased/displeased about attending online writing classes

Reasons for being displeased	Examples	No.	Per.
No real-life contact	...because in the real class it is better to have contact with the teacher, correct my essay, and learn from my mistakes	11	7.4%
	Because there is no face-to-face interaction, this makes it difficult for the teacher to know whether the students have understood or not		
Difficulties to learn	I don't feel like I am learning well, especially in spelling	4	2.8%
	It's not clear for me and sometimes I find it difficult to understand		
Difficulties in understanding	It is hard for me to understand all the subjects	4	2.7%
Boring	It's boring, and we can't communicate well	4	2.7%
Technical Problems	Poor connection can cause problems, such as missing exams	3	2.1%
	The Blackboard corrections and plagiarism checker were unfair. Also, Internet problems and timing were challenging		

Distraction	I can't focus with the teacher, hence, there are many distractions like WhatsApp. Moreover, I don't feel enthusiastic, since most of the girls don't participate and I can't see any faces. Therefore, I usually don't listen to the teacher if I know I've got a participation mark	2	1.4%
Group work	There is never enough time for group work; I prefer to work alone	2	1.4%
Not active	It is not active	2	1.4%
	The traditional environment makes me more active		
Anxiety	Because we do not have enough time to write our homework and tests, so the writing course sometimes causes anxiety	2	1.4%
No trust from the teachers' side	Because they always think the articles are taken from somewhere else, even if I am working on them	1	0.7%
Workload	Because they pressure us with a lot of assignments	1	0.7%
Difficulties in participation	It can be quite difficult to participate and engage during the class, which could affect the student's marks	1	0.7%
Hard to pay attention	It's hard to be attentive to the teacher all the time	1	0.7%
	It limits my focus in all subjects		
Reasons for being Pleased	Examples	No.	Per.
Usability	Easy and time saving	28	18.9%
	Saves the trouble of going to the university and it's easier than going to the university		
Comfortable Environment	I feel it makes us more comfortable.	19	12.9%
	Because I'm a shy person, so I feel more comfortable sharing my thoughts and ideas during online classes		
Helps in Writing	...because it develops my writing skills in many ways	13	8.8%
	I love writing classes because they help me to improve my writing		
Interesting	Interesting class	8	5.4%
distraction free	I can have my own time to write what I need without any noise	5	3.4%
	Online lessons make me focus more on the sound without distractions and help me be diligent		
Health safety	A safe life from the danger of the Coronavirus, saving time and effort, saving money in terms of transportation and more	4	2.7%
Clarity	Clarity	4	2.8%
	It's clear and Dr. [Teacher A] can deliver the information very clearly		
	Because it is clear, and I understand all the lessons		
Convenience	It's sufficient for me	4	%
	It is more convenient		
	It's convenient, I don't miss anything.		
Perfect	It's perfect	4	2.8%
	It's not bad		
Useful and easy to practice	It is useful	3	2.1%
	The one class makes us practice more and write more. Also, we do a lot of activities with the students		
Enjoyable	It is enjoyable	2	1.4%
	I love learning; that's why I enjoy the classes		
Flexibility	More flexibility - I can practice writing through my device	2	1.4%
	It's flexible		
Cooperative teacher	Because she [the teacher] is very cooperative with her students and explains her lesson with all sincerity	2	1.4%
Suitability to different learning styles	In the writing class, I don't feel that I need to study it in the traditional way	2	1.4%
	Online classes fit my lifestyle because I'm not a traditional student. If I had the choice, I would take all of my classes through the Internet		
Teacher's feedback	The teacher is obliged to look at our writing	1	0.7%

Table 8 displays the participants' positive and negative views of the online class. Most of the negative views were related to a lack of immediate contact with the teacher. On the other hand, most of the positive views were due to the learners finding the online environment easy and time-efficient to use.

To further understand the impact of collaboration in online classes, the effect of additional materials being provided via the online environment, as well as the participants' feelings about attending online writing classes, specifically in terms of different types of engagement, a correlation test was conducted (see Tables 9-11).

Table 9. Relationship between engagement and instruction in online English classes and collaborative work

	Does Your Teacher Allow Collaborative Work in the Online Writing Class?	N	Mean Rank	P-value
Skills engagement	No	17	83.7	0.910
	Yes	147	82.4	
Emotional engagement	No	17	84.1	0.880
	Yes	147	82.3	
Participation/interaction engagement	No	17	77.3	0.634
	Yes	147	83.1	
Performance engagement	No	17	84.4	0.858
	Yes	147	82.3	

**Wilcoxon test*

Table 9 illustrates that even though the learners indicated that their teacher allowed them to work collaboratively, no significant relationship was found between the collaborative work and any factors of engagement ($p < 0.05$), meaning that collaboration may not have impacted on engagement.

Table 10. Relationship between engagement and instruction in online English classes where the teacher provides additional materials for study

	Does Your Writing Teacher Provide You with any Additional Study Materials (e.g., Links, Videos, etc.) via the Online Environment?	N	Mean Rank	P-value
Skills engagement	No	48	71.0	0.046
	Yes	116	87.3	
Emotional engagement	No	48	75.0	0.190
	Yes	116	85.6	
Participation/interaction engagement	No	48	70.9	0.044
	Yes	116	87.3	
Performance engagement	No	48	74.0	0.137
	Yes	116	86.0	

**Wilcoxon test*

Table 10 illustrates that there is a significant relationship between the teacher providing students with additional study materials, through the online environment, and skills and participation/interaction engagement ($p < 0.05$). In other words, it relates to the positive impact of using multiple resources on developing skills and participation.

Table 11. Relationship between engagement and instruction in online English classes and students' feelings about attending online writing classes

	How Do You Feel About Attending Online Writing Classes?	N	Mean Rank	P-value
Skills engagement	Displeased	49	64.5	0.001
	Pleased	115	90.2	
Emotional engagement	Displeased	49	68.2	0.012
	Pleased	115	88.6	
Participation/interaction engagement	Displeased	49	66.0	0.004
	Pleased	115	89.6	
Performance engagement	Displeased	49	73.3	0.102
	Pleased	115	86.4	

Table 11 illustrates that there is a significant relationship between students' feelings about attending online writing classes, and skills engagement, emotional engagement, and participation/interaction engagement ($p < 0.05$). It can be interpreted as the learners mainly being pleased about attending their English writing classes online, because they are emotionally engaged, willing to improve through skills engagement, and experience participation/interaction engagement.

The different ways in which the teacher allowed the learners to work collaboratively in the online writing class deserves to be noted, based on the participants' responses (as in Table 12).

Table 12. Collaborative work in the online writing class

Variables	No	%
Group work and Breakout rooms	92	64.7%
Peer editing	38	26.7%
Class activities and discussion.	12	8.4%

Table 12 illustrates that the learners mainly performed tasks through group work (64.7%) and peer editing (26.7%), along with class activities and discussions (8.4%). However, these various types of collaborative work did not appear to have any impact on the students' engagement.

Regarding the types of additional material provided by the teacher, the learners' responses varied. The responses are classified and listed in Table 13.

Table 13. Additional materials provided by the teacher to the students

Variables	No	%
PowerPoint	44	39.6%
Videos	36	31.3%
Links	10	9.0%
Articles	13	7.2%
Additional information by the teacher	7	6.3%
Through text messages.	3	2.7%
Teacher's own references	1	0.9%
Feedback on errors that occur while writing articles	1	0.9%

Table 13 illustrates several types of additional material, which were introduced by the teacher on Blackboard. The PowerPoint presentation came at the top of the list (39.6%). It was followed by videos (31.3%), documents (9%) and links (9%). Such additional materials helped to raise the students' engagement, specifically skills engagement as well as participation/interaction engagement.

DISCUSSION AND CONCLUSION

In light of the results aforementioned, the participants showed different levels of engagement in relation to the different constructs of learners' engagement in their online writing course. In particular, the learners showed significant engagement in skills practice. On the other hand, their responses showed a moderate level of engagement in terms of emotional involvement with class material, classroom participation and interaction with the teacher and peers in class activities, as well as performance in class. Such findings align with Sustani's (2020) findings, which showed highly positive engagement among students in one aspect, while the other aspects were not quite significant.

It is undeniable that most participants generally reflected on the online learning experience as being 'pleased'. Some participants highlighted that online learning and face-to-face learning are quite similar, and the information is delivered clearly through both modes. Such findings reconcile with Almekhlafy's (2020) results that learning through Blackboard highly resembles face-to-face learning. However, it contradicts Al-Nofaie's (2020) conclusion that online learning cannot fully replace face-to-face learning. Moreover, some of the participants reported that Blackboard constitutes an environment that is free from distractions. Such finding also contradicts Al-Nofaie's (2020) findings that learning at home is very distracting, to the extent that motivated students become anxious about achieving learning outcomes when learning at home. Such contradiction could be resolved by considering the timing of both studies. AlNofaie's (2020) study was held at the beginning of the lockdown, and the students as well as their families were novices to such experiences of complete online learning. Now, the students and their families have become more experienced and understood their profound and fundamental role in the process and act accordingly.

Moreover, the students valued the virtues of online learning such as flexibility, affordability, convenience, suitability for shy students, usefulness, and in-time feedback. Such findings chain with many studies (Khafaga, 2021; Whitmer et.al., 2016; Banditvilai, 2016; Bin Dahmash, 2020), which have stressed that e-learning suits students' different learning styles and offers a flexible environment for independent learning. However, very few students reported some technical problems making them worry about exams and marks. This finding can be justified by Alsuhaibani's (2021) study, which found that the university has updated and improved Blackboard and incorporated several features since the beginning of the crisis. Besides, the university has offered many workshops to both instructors and students and legislated many policies regarding e-learning. Therefore, technical troubles no longer constitute an issue to many students.

The results further demonstrate that online learning through Blackboard has two significant features that helped raise the students' engagement: attending online and additional material. In fact, one of the reasons that made the participants pleased with the platform was the ability to attend virtual classes. It dramatically increased students' engagement as they found it a way to stay safe from COVID-19 during the pandemic. As the results of the present study indicate, many students stressed that e-learning saves time, effort, and money because it saves them the trouble of going to university to attend classes. With the use of synchronous and asynchronous tools, they were able to follow up with their instructors anytime and anywhere. The students were provided with a variety of additional material, including PowerPoint presentations, videos, documents, and links, helping them understand the information and pay attention to frequent errors in writing.

On the other hand, although the teachers implemented many collaborative activities, the results show that they do not have a significant statistical effect in improving the students' engagement. Thus, it is recommended that the teachers develop a more collaborative environment, for example, by using breakout groups on Blackboard. As Rahayu (2018) stressed, the teachers' styles mainly play a central role in engaging the students in activities, as they shape the learning process. According to him, the students heavily rely on their teachers to guide them in learning activities, affecting their involvement in the learning process and, consequently, their attainment.

Considering the results and discussion, it can be concluded that skills engagement is highly positive, while emotional, participation/interaction, and performance engagement are moderately positive. The participants of the study appreciated the virtues of Blackboard, primarily flexibility, affordability, convenience, and usefulness to different learning styles. They further indicated that e-learning through Blackboard constitutes an environment that is comfortable, rich with activities, and free from distractions. The fact that lessons are delivered online, along with various course materials provided to the students, noticeably influenced the students' engagement. However, the type of collaborative activities implemented do not play their central role in engaging the students. Therefore, it is recommended that the teachers work more on deciding and choosing more collaborative when the process approach is followed while implementing a writing course entirely online. To ensure that the students are actively involved in the learning process, the teachers' role in the learning process should be more engaging for the students; they should be guiding them throughout the activities to establish new, appealing, and helpful learning strategies. Using the features of Blackboard, videoconferencing may provide the students with more room to discuss and negotiate the meaning they are trying to deliver. Moreover, using breakout groups to implement peer-review may be another strategy to establish and maintain student online interaction and increase the students' engagement in writing courses especially when following the process approach.

Suggestions for Further Studies

Based on the present study limitations, it is recommended that more research should be conducted on investigating the following: 1- Male students and comparing the results with the female students' results presented in the study, as this constitutes a limitation in this study; 2- Other newly officiated platforms, and comparing their features and challenges in order to obtain a comprehensive conceptualization of the central role platforms have in affecting the students' level of engagement; thus, attainment; 3- The students' perspectives need to be examined thoroughly using semi-structured interviews, a limitation in the current study because of the short time limitation the researchers had for data collection; 4- other skills like reading, speaking, and listening to find out the effect of teaching through Blackboard on students' level of engagement in such courses.

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REFERENCES

- Almekhlafy, S. S. (2020). Online learning of English language courses via blackboard at Saudi universities in the era of COVID-19: perception and use. *Emerald Insight*, 5(1).
- Alsuhailani, Z. (2021). Saudi EFL students' use and perceptions of Blackboard before and during online learning amid COVID-19. *Arab World English Journal*. Special Issue on CALL. 22-37.
- Alzamil, A. (2021). Teaching English speaking online versus face-to-face: Saudi students' experience during the COVID-19 pandemic. *Arab World English Journal*, 12(1), 19-27.
- Banditvilai, Choosri. (2016). Enhancing students' language skills through blended learning. *The Electronic Journal of E-Learning*, 14(3), 220-229.
- Bin Dahmash, N. (2020). 'I Couldn't Join the Session': Benefits and challenges of blended learning amid COVID-19 from EFL students. *International Journal of English Linguistics*, 10(5).
- Bryson, C., & Hand, L. (2007). The role of engagement in inspiring teaching and learning. *Innovations in Education and Teaching International*, 44(4), 349-362.
- Daniel, S. J. (2020). Education and the COVID-19 pandemic. *Prospects*, 49, 91-96.
- Girik Allo, M. D. (2020). Is the online learning good in the midst of Covid-19 pandemic? The case of EFL learners. *Journal Sinesthesia*, 10(1), 1-10.
- Han, Y. & Hyland, F. (2015). Exploring learner engagement with written corrective feedback in a Chinese tertiary EFL classroom. *Journal of Second Language Writing*. 30, 31-44.
- Handelsman, M. M., Briggs, W. L., Sullivan, N., & Towler, A. (2005). A Measure of college student course engagement. *The Journal of Educational Research*, 98(3), 184-192.
- Huang, Y.-Y., Liu, C.-C., Wang, Y., Tsai, C.-C., & Lin, H.-M. (2017). Student engagement in long-term collaborative EFL storytelling activities: an analysis of learners with English proficiency differences. *Educational Technology & Society*, 20(3), 95-109.
- IMAMU, (2021), Retrieved on 10/9/2021: <https://imamu.edu.sa/news/Pages/news-20-10-1442-01.aspx>
- Khafaga, A. F. (2021) The perception of Blackboard Collaborate-based instruction by EFL majors/teachers amid COVID-19: A case study of Saudi Universities. *Journal of Language and Linguistics Studies*, 17(Special Issue 2), 1160-1173.
- Lei, H., Cui, Y., & Zhou, W. (2018). Relationships between student engagement and academic achievement: A meta-analysis. *Social Behaviour and Personality*, 46(3), 517-528.
- Lili, T. & Yu, Z. (2020). Learner engagement with automated feedback, peer feedback and teacher feedback in an online EFL writing context. *Elsevier Ltd*.
- Mackenzie, Allyson. (2015). Promoting student engagement in the English as a foreign language classroom in a Japanese university. *Journal of Business Administration*, 86, 129-143.

- Oraif, I. & Elyas, T. (2021). The impact of COVID-19 on learning: Investigating EFL learners' engagement in online courses in Saudi Arabia. *Education Sciences*, 11(3), 99.
- Rahayu, A. S. (2018). Engaging the students with styles in EFL perspective. *CELTIC: A Journal of Culture, English Language Teaching, Literature & Linguistics*, 3(1), 15–29.
- Rajab, K. D. (2018). The Effectiveness and potential of e-learning in war zones: an empirical comparison of face-to-face and online education in Saudi Arabia. *IEEE Access*, 6. Available at: <https://doi.org/10.1109/ACCESS.2018.2800164>
- Sahin-Kizil, A. (2014). Blended instruction for EFL learners: Engagement, learning and course satisfaction. *The JALT CALL Journal*, 10(3), 175–188.
- Serag, H. (2013). Exploring the effect of online classes on student engagement among EFL college students. *Dar Al mandumah*, 43(2).
- Suharti, D. S., Suherdi, D., & Setyarini, S. (2021). Exploring students' learning engagement in EFL online classroom. *Proceedings of the Thirteenth Conference on Applied Linguistics (CONAPLIN 2020)*. <https://doi.org/10.2991/assehr.k.210427.022>
- Sustani, Y. (2020). Student engagement in EFL on-line class. *Lingual*, 10 (2).
- Thomas, G. (2017). *How to do your research project: A guide for students*. Sage: Thousand Oaks. CA. USA.
- Whitmer, J., Nunez, N. and Forteza, D. (2016). How successful students use LMS tools – confirming our hunches –blackboard blog. Blackboard Blog, pp. 4-7, available at: <http://blog.blackboard.com/how-successful-students-use-lms-tools/>

TEACHERS' NARRATIVES FROM INITIAL VIRTUAL CLASSROOMS AND PROFESSIONAL DEVELOPMENT DURING THE COVID-19 PANDEMIC IN DEVELOPING BANGLADESH

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ABSTRACT

In the face of sudden migration to online teaching due to Covid-19 pandemic, education is going under trying times globally, especially in the low resource contexts of the Global South. Little is, however, known about how this forced migration to and coping with emergency remote teaching (ERT) are happening in the low resource context of developing Bangladesh, particularly in the Higher Education (HE). This paper, therefore, aims to understand how virtual classrooms look like in the Higher Education context in Bangladesh through TESOL teachers' narratives from initial virtual classrooms imparting ERT. Employing narrative inquiry, four teachers from four different public and private universities in Bangladesh share their experiences of doing, undergoing and reflecting as they try to adopt, adapt and strive in imparting ERT and carrying out education in HE. Insights from these initial teacher narratives may inform higher education pedagogies, teacher development in distance education environments in Bangladesh and similar contexts in the Global South. As the paper addresses HE teachers' initial orientation to ERT without exclusively dealing with TESOL education, it has multidisciplinary approach to migration to and coping with ERT in HE in general.

Keywords: Emergency remote teaching, distance education, virtual classroom, developing country context, TESOL teacher narratives, teacher development.

INTRODUCTION

A paradigm shift has occurred in education due to the Covid-19 pandemic causing much anxiety around how to improve teachers' performance (Ravitch, 2013) while ensuring education remotely as it is still unknown how language teachers recoup the inevitable threat by Emergency Remote Teaching (ERT) (Hodges et al., 2020). This discourse is dominated by an emphasis on learning, adopting and adapting to new educational technology, uninterrupted access to the Internet, engaging students remotely, examining and assessing students' performance and so on. Teacher narratives from virtual classrooms can support emergency remote pedagogy by not only addressing the issues but also coming up with some immediate indications to solutions and posing further questions to reflect on, and helping teacher development in the 'new normal'.

While ERT and online teaching differs tremendously from traditional teaching in a physical classroom, ERT is again different from planned online teaching. Online teaching is pre-planned and organised and systematically designed over a period of time to cater for certain services that offline or face-to-face teaching does not offer. ERT, however, reflects "a sudden and unplanned shifting of classroom-based courses to a distance education model" (Hodges et al., 2020) with no training and preparation and with insufficient bandwidth (Li & Lalani, 2020). The students and teachers have different expectations for online coursework than they have for ERT (Aguliera & Nightingale-Lee, 2020). Although E-learning was considered less prestigious, acceptable and popular than face-to-face education (Arias et al., 2018, p. 4), the scenario has forcedly been reversed by the COVID-19 pandemic. As a paradigm shift in pedagogy, ERT takes place and urges a "temporary shift of instructional delivery to an alternate delivery format due to crisis circumstances" (Hodges et al., 2020).

Following the global scenario, the educational institutions in Bangladesh have been closed since March 17, 2020, after its first three cases of COVID-19 diagnosed on March 8, 2020 (IEDCR, 2020). Confined to national lockdown, we all started passing a trying time hampering, reducing and even blocking our face-to-face interaction, generating a stifling condition, and making us dependent on online media, especially for education. The pandemic has resulted in closures of the traditional way of education globally, which eventually impacted around 91% of student population in the world (UNESCO, 2020). In this emergency, "education has changed dramatically, with the distinctive rise of e-learning, whereby teaching is undertaken remotely and on digital platforms (Li & Lalani, 2020).

Responses to ERT, however, differ context-wise. Bangladesh, a developing country, has a poor infrastructure for online education: inadequate resources, low connectivity and little prior experience (Khan et al., 2020). The overall status of ICT of the country is reflected in Bangladesh being ranked 147 out of 176 on the International Telecommunication Unit's ICT Development Index in 2017 (International Trade Administration, 2021) and below 13 percent of the population having access to the internet, as of 2019 (Statista Research Department, 2021). Initially there are huge debates- to teach or not to teach online, let alone how to teach online, as also reflected in dubious directives from the University Grants Commissions (UGC) of Bangladesh for online education. Although the private universities were given permission for ERT almost instantly, the public universities could not formally start online teaching until July 2020, due to several reasons.

In such a difficult context, research could expose the challenges and opportunities of ERT in Bangladesh (Dutta & Smita, 2020). With a view to obtaining a global view of ERT, Bozkurt et. al. (2020) collected data from different contexts of 31 countries including neighbouring India (India with a greater internet penetration rate- around 50%) and touched on myriad aspects of the impact of Covid-19 on K12 and Higher Education. Dutta & Smita (2020) exposed some key issues like disruptions in learning, shifting to online education along with other issues of health and finance from tertiary level students. Till date, we are not aware of any research studying teachers' perception of and adaptation to ERT in the Higher Education (HE) context in Bangladesh. The current study is a novel attempt to reveal teachers' perspectives on the impact of COVID-19 on tertiary education in Bangladesh: how the teachers, particularly TESOL teachers, initiated ERT and tried to survive and thrive, as is exposed in their narrations of and reflections on their lived experiences of imparting higher education in Bangladesh. These teacher narratives exposing their initial online teaching experiences largely irrespective of their subject expertise can reflect migration and adaptation to online teaching in any similar HE context.

THE CURRENT STUDY

This paper is an early qualitative exploration of how the Covid-19 pandemic has affected higher education in the context of developing Bangladesh. Within the global crisis, this is a super-crisis context, due to its low-resource including almost no virtual infrastructure, low-connectivity, and almost no prior experience. We four teachers from four universities tried to narrate our live experiences of ERT and reflect on our continuous adaptation while initiating teaching remotely overnight. The paper takes the approach of teacher narrative as a research tool, where we are at the same time teachers-researchers-participants. Existing teacher narratives are mostly narrated by teachers but a few are co-authored by a teacher and researcher (Furman, 2014; Kozol, 2007; Carini et al, 2009). Ours is the teacher in dialogue with the researcher- classroom teachers who are also academic researchers (Kinloch, 2012). Here, the dichotomy between the practitioner and the researcher (Schon, 1983) is broken down. (see section Teacher Narrative as Methodology for details). Thus, the paper takes a collaborative narrative perspective.

We tried to express our experiences in the forms of doing, undergoing and reflecting; keeping in mind how we started teaching and why, what went wrong or right and what could be done differently in future given the nature of the ERT in this context. We hope our narratives will highlight our local perspectives while also indicating global scenarios in similar contexts of low resources, low connectivity, and less preparedness, as we reflect on the challenges and possibilities of ERT while 1. preparing ourselves for teaching, 2. carrying out teaching, 3. engaging students, 4. assessing them, 5. evaluating our teaching, 6. support we received, among others.

The teaching context is higher education including both public and private university domains to gain an understanding of HE offered by the universities in Bangladesh in general. While the first two teacher narratives (TN 1 & 2) try to depict the scenarios of the virtual classroom in public university contexts, the latter two (TN 3 & 4) portray pictures from private university contexts. The four teachers who offer their narratives have five to twenty-seven years 'of teaching and research experience with quite different demography (see table 1 below) and are currently working in the Departments of English at two public and two private universities in Bangladesh.

Table 1. Teachers' demography and their online teaching

Teacher- researcher	TN1	TN2	TN3	TN4
Age	37	53	58	31
Teaching experience	11	27	30	4
University	Public	Public	Private	Private
Designation	Associate Professor	Professor	Associate Professor	Assistant Professor
Module taught	Research Methods, TESOL Methods	Applied Linguistics and ELT, English Phonetics & Phonology, Research Methods, Technology in ESL/EFL Teaching	Research Methods for ELT, Teaching Practicum	Phonetics and Phonology, Intermediate English Skills
Level of students	BA(Hon's), MA	BA(Hon's), MA	MA	BA(Hon's), MA
Total online teaching and assessment hours	42	96	56	124

TEACHER NARRATIVE AS METHODOLOGY

Narrative research enables researchers to look at more closely to the nuances and complexities of a person and setting (Griffiths & Macleod, 2008) and teacher narratives draw attention to the teachers' individuality as primary source of data (Gordon et al., 2007; Rosiek & Atkinson, 2005; Smith, 2007). In our narratives, we take storytelling as the mode of analysis focusing more on the thinking process of the writer and less on arguing for or even articulating a clear conclusion (Polkinghorne, 1995). Narratives unfold our identities and bring us together during difficult times (McCammon & Smigiel, 2004). During the emerging trouble of Covid 19, we teachers globally find ourselves under the same umbrella of coping with crisis to carry on education and to thrive further. These emergent narratives are personal experiences which do not necessarily represent a closed story and can be very context specific (Razfar, 2012, p.65). Our emergent narratives tried to tell the stories from the virtual classrooms grounded in practice. They follow a plot of development and highlight our strengths and areas of difficulty by narrating both practices and thinking closely (Richardson, 2000). In this plot, the teacher is the protagonist and first-person narrator.

Narrative also allows the reader to engage in practical wisdom, as Nussbaum (1990) argues, while the character reasons through a moral dilemma in a classroom, and involves the reader in a similar task; the reader has the opportunity to face a challenge, consider the particulars, apply a frame, and imagine the outcome. Teachers' stories- experiences and reflections lead to professional development and personal insight (Jalongo, Isenberg, & Gerbracht, 1995). This creates a way of reciprocal nature of teaching and learning and narratives work as a problem-solving tool through an educational dialogue. In this paper, the teachers are in-service teachers with teaching experience of 5 to 25 years but are novices in teaching in virtual platforms. Hence, we tried to see our narratives as a means of development, while also keeping in mind that narratives reach readers differently.

Narrative research offers to represent those who cannot be represented clearly in generalised data (Griffiths & Macleod, 2008) where any individual is complex and an educational system that discounts the human in her complexity is failing to educate (Furman, 2014). In a narrative, however, events can happen out of sequence through flashbacks as well as foreshadow (Hankins, 2003) and narratives offer a means to reflect on one's reflection-in-action (Schon, 1983) by helping the individual develop a keener sense of his/her own beliefs and the actions sought to accompany them (Hankins, 2003). Kolb (1984) also offers experiential learning in a four-cycle framework for teachers' reflections: concrete experience (actual experience); reflective observation (reviewing the experience); abstract conceptualisation (learning from the experience); and active implementation (putting the learning into practice) (also see Aktar & Oxley, 2019). This cyclic reflection could be instrumental for continued professional development (Aktar & Oxley, 2019) for online teaching in Higher Education. Therefore, every story counts.

A Vygotskian perspective of teacher development advocates a combination of the "teacher as a researcher" (Stenhouse, 1975) and the "reflective practitioner" (Schon, 1983) as core qualities of the professional teacher. As novice online teachers by expressing our doubts and challenges, our narratives are thus collaborative teacher narratives. These multiple case studies can create opportunities for dialogue among us who are willing to solve problems at hand and support teacher development. Therefore, this offers a co-creation of knowledge and proximal development (Vygotsky, 1978). Finally, our narratives attempt to address our problem-solving attitude (Schon, 1987) with their nuances and our practical wisdom, individually or collectively, from virtual classrooms may inform teacher development and teacher education in higher education (Schon, 1983).

Teacher Narrative 1

Starting teaching online during Covid-19 crisis was not easy for me. It was exciting but way intimidating. I took this as a challenge, a learning point; learning as a process of trial and error (Schon, 1983; Diamond, 2008). Being self-motivated I initiated ERT personally while the public universities were waiting for University Grants Commission's directives; motivation being experiencing online teaching as part of continued professional development and keeping my students little engaged during this bleak time. However, I started half-heartedly for two main reasons: no prior experience of online lesson delivery, and students' less affordance and low motivation (Aktar, 2020).

Getting the students on board of online platforms was a real hurdle for me. I tried quite different platforms and tools for two of my existing batches of students-regular BA (Hon's) final year students and evening, part-time MA students, for the Research Methods and TESOL Methods modules respectively. Starting with BA (Hon's) students, it was a mammoth task to motivate them to get their own email ids for creating group email and get zoom installed. However, I tried to do it differently with the MA students: I created Facebook Group and group messenger for them.

With the regular batch, I shared the PPT slides and associated materials e.g., articles beforehand via the group email (of 40 students) and students' messenger group (of all 54 students) via the class representative, so students could find the synchronous zoom lesson- lecture, and question-answers and discussion. Halfway through, I created google classroom and deposited all my materials-PPT slides, articles, my own works, and a few books for access anytime. Thus, I was able to reach almost all students on any of the platforms; although not in equal terms. Given little access and low connectivity, I decided to be flexible and consider students' any form of engagement including email correspondence as an attendance. Later I realised, I could have recorded the zoom lectures to be shared in the google classroom. With Evening MA (EMA) students (12 students), however, I found live lectures on Facebook Group and immediate video conferencing via messenger for follow-up question-answer session and discussion very interactive. The low-speed internet served comparatively better on Facebook (a popular platform among Bangladesh students). The attendance rate was very high; moreover, the live lectures are always there.

Regarding student engagement and formative assessment, I tried several strategies. As fostering student engagement is important classroom dynamics in facilitating successful learning (Trowler, 2010), I tried to engage them by continuous interrogations involving critical thinking, facilitating peer discussion, formative feedback, and quizzes and activities as formative assessment online via e.g., Kahoot and student-paced Nearpod which many of the students found interesting as an alternative assessment. The MA students also found three-minute video presentations and uploading them in the Facebook group very exciting and rewarding: being self- videoed; watching their own performances; receiving feedback from both peers and the teacher. Thus, the students feel somewhat equipped to the new normal. An emergency situation requires an emergency solution regarding curriculum as well, so I focused on only key topics left. It took me more than two months to complete the remaining lessons and some formative assessments, leaving some midterms and summative examinations to be decided on by the public university ordinances later.

Student feedback is an opportunity for teacher development and also a search for credibility when doubts are there (Boyd & Harris, 2010). Besides students' immediate oral and email feedback, feedback was also sought anonymously via Padlet. Students' comments show both concerns regarding access to the internet and low speed, economic and mental plight, and positivity like seeing friends during lockdown and opportunity to minimise the session jam (traffic) at public universities. Some excerpts:

"The mobile internet was too bad. Otherwise, the online class experience was excellent."

"...no pocket money to buy mobile data."

"After every class, assigning homework and little quizzes might work better".

"...a new experience, great to see everyone".

"...the PPT slides and other documents were really helpful"

"...good and praiseworthy initiative. Online classes and in-course (exams) will help reduce session jam."

On reflection, despite some odds, I found my orientation to online teaching rewarding and this narrative itself- thinking, writing and reflecting, a learning experience (Norris, McCammon, & Miller, 2000). As a reflective teacher who consistently couples actions and reflections (Dewey, 1944), I am gradually finding my feet in this new normal and hope to do better in next semester by e.g., using fewer effective platforms/ tools; a careful selection of content and tasks-in such a crisis less is more; frequent formative assessment; creating more opportunities for peer collaboration and discussions. However, although ERT turned out not as difficult as initially conceived, it could have been more manageable, convenient and of positive experience if supported by some concrete directives and guidelines and training at departmental and institutional levels.

Teacher Narrative 2

Since prolonged closure of our university and home confinement might negatively affect my students' health (Brazendale et al., 2017), and the "psychological impact of quarantine is wide-ranging, substantial and can be long-lasting" (Brooks et al., 2020), I started thinking of and planning to give online classes to them. The information, knowledge and expertise I gained from the online courses with the University of Maryland BC, University of Oregon, Iowa State University, and Commonwealth of Learning, and the onsite PDW-2013 at the University of Oregon encouraged me to contact my students in the Department of English, Jahangirnagar University, over the phone to attend the online classes. Despite several limitations, almost all my students consented to attend the online classes.

On April 12, 2020, I personally started conducting online classes with the undergraduate and postgraduate students, whereas online classes at my university officially commenced on July 12, 2020. The program was of 12 weeks, 96 contact hours, till July 10, and I gave two online classes a week, each of one hour, for each of the four courses.

To conduct the online classes, I used Google Classroom and Zoom side by side. Google Classroom helped me perform eight activities related to teaching, learning and assessment: creating the topics, giving instructions, uploading relevant materials, posting topic-related questions, facilitating interaction between the students as well as between me and the students, allowing the students to answer the questions and pass comments on each other's answers, checking and grading the answers with my written feedback, and scheduling all the assignments. To supplement, I exploited Zoom which helped me carry out six major tasks concerned with teaching, learning and assessment: meeting my students online, discussing and reviewing the topics already posted on Google Classroom and studied by the students, facilitating the discussion through PPT slides, YouTube videos and Open Education Resources, taking the students' queries and responding to them, administering formative assessment such as polling, quizzing, mini presentation, group and peer discussion, and follow-ups.

Initially, the online teaching system was not working well due to four major challenges. Firstly, despite experience of using educational technology, I did not feel so much comfortable in practice since it was my first time to teach online without the infrastructural support of my university as well as with many students feeling demotivated and finding online classes demotivating. Secondly, I had to struggle to get them acquainted with the functions of Google Classroom and Zoom and customize the lesson and assessment activities to cater for them. Thirdly, around 50% students were not actively participating in the Google Classroom and Zoom activities. Fourthly, I sometimes got into difficulties due to unstable Internet connection and some students' little Internet access or financial ability to purchase Internet data. Nonetheless, to motivate them to join and attend my classes, I had to contact the absentees over the phone. Hence, the first phase consisting of the first four weeks can be marked as a period of struggles, transition, transformation and adaptation for me.

In the second phase, next four weeks, I felt more comfortable and confident as I became more accustomed to operating Google Classroom and Zoom, conducting the classes in a more engaging, interactive and rewarding manner, and more than 65% students were proactively participating in the classes. Notwithstanding, I faced problems in administering quizzes, mini presentations, polling, MCQs, and short questions. I noticed many students were not taking the tests regularly because of lack of motivation, technical constraints, and technological limitations. I telephoned the students individually to encourage attending and thought of integrating assessment with class activities such as group and pair work, peer and self-assessment, information gap activities. Therefore, this phase can be characterized as a period of my mixed experiences.

The final phase, last four weeks, discovered me as a better equipped and more confident teacher than I was in the previous phases since I got acclimatized to the unusual mode of teaching and became capable of involving almost 75% plus students in the Google Classroom and Zoom activities basically allowing them to go through self-study materials, attend and perform class tasks, take tests, and act on my feedback on their performance. That is, in the final phase, three-fourths of my students found a virtual world incorporating what they dreamt up – interaction, simulation, cooperation and collaboration enabling their learning in an interactive environment (Mnyanyi et al., 2009; Thamarana, 2016). However, still approximately 25% students were not attending my online classes due to diverse constraints and inconveniences mentioned above.

Thus, the whole online program I conducted can be deemed as one of my professional developmental stages (Schwarz, 2001) impacted by my reflections on the three phases that continually kept me informed of my limitations, and created scope for follow-up actions to further my experience, expertise and performance.

Teacher Narrative 3

By my reckoning, the following anecdotes may sound my naivety of dealing with online classes during this COVID-19 pandemic. It was just halfway through of the Spring 2020 semester in the mid-March, there was an official request from my university to go for online classes immediately to conduct the remaining classes as the Corona outbreak all around seemed gradually more vulnerable. With inadequate training support, I made my debut teaching online through the gracious help of Facebook Live with a great deal of inhibition as if I was a novice teacher faltering frequently about how and what I should talk to my students who were keenly looking forward to this class. It was a core course titled 'Research Methods in ELL and Teaching' for students doing their MA in English. As I could somehow embark on the very first virtual class seeing all my students, gradually felt better though very often I needed to ask for help or suggestions, either from my teenage daughter or my finger counting the number of students (n=13). To my pleasant surprise, I discovered almost everybody of them was so super positive, which gave me a feeling that I had better continue what I basically planned to talk about. It went fairly well but after some time I realized my sheer stupidity as I totally forgot to record the lesson that was obviously essential for three absentees to watch it later. With the help of one of my netizen students, I could manage to record the remaining part of the class that was at least a face gaining situation for me. I was glad that all my students could appear calm, cool and collected on the screen enabling me to gradually feel confident and articulate in what I wanted to discuss with them as content of the class. In the meantime, a small number of PowerPoint slides and a reading article were properly shared. Before I wrapped up my debut session with my students, I wanted them to summarize what we discussed today; many of them wrote sentences in the chat box adding a few points from mine. The only disadvantage was that I could not see my students because it was online and less interactive. Students did send questions at various stages of the session that I responded to or requested other students to contribute.

The next few classes of the same course took place through Zoom streaming. I found it a little better as there were a few extra features such as, seeing each other while speaking which gave me a better interaction vibe for the ongoing discussion. However, Zoom timing was confined to a 40 minutes slot, giving options for renewal which was both advantage and disadvantage, I think. I conducted all the remaining classes on the Zoom stream that gave me a new experience to adapt to. Students, I believe, gradually adjusted well especially with submitting assignments that alternatively replaced traditional sit-in-examinations. Preparing answers for these types of questions that were presumably different, engaging students to use their critical thinking and problem-solving potentials. Questions were sent a couple of days earlier so that they could consult with authentic sources as well as they could think adequately before they wrote answers and submitted it. As there was no scope to find out the exact answers for the questions, the students tried their best to read relevant matters and they all wrote answers depending on their own understanding and views. However, for quizzes, students were given limited time to respond to and to submit. It is important to note that questions in the MCQ format were distributed after a good reshuffling so that they could not take advantage of the situation wasting their time. Relevant instructions were given on the top of the quiz page that every student had to read carefully before they attempted to answer. Students had their self-assessment marks as well as their attendance and contribution to the classroom discussion were given credits.

Reflecting on the abruptly conducted a few online classes, I would say, though it was unlike my regular teaching, these technology-aided classes gave me a 'new normal' opportunity to adapt to various tools and platforms that required me to maximize my technical skills. As time goes by, I expect to be more accustomed to this online system, however, I do miss the ambience of face to face vibrant connectivity of my regular teaching where facilitation of ingenious discourse, debate, group and pair work, various vibrant tasks and activities etc. were the main strengths of effective teaching. During this Corona pandemic, as every sphere of life and living came to a halt locally and globally, education too, has been under uncertainty but it also inevitably emphasizes innovation on teaching-learning materials, methodology and assessment that will hopefully effectively build our capacities the 'new normal' and post 'new normal' period.

Teacher Narrative 4

It was mid of March when I had to change my previous teaching plan and move into online teaching at a private university in Dhaka, Bangladesh, due to the outbreak of Covid19. Teaching language courses to the first semester students from undergrad and English Phonetics and Phonology to the Master's students taught me a lot to transform myself as a teacher ready to teach online. The total number of students was 97 in four separate sections. My teaching setting consists of a room, a laptop, a Wi-Fi connection, and a headphone. The sitting room is located in my house, where there is no usual sound pollution. I have changed my teaching techniques so that the students remain more engaged online during the class. I inspire them to interact when needed and ask me questions if any teaching material seems confusing to them. Overall, I have completed teaching a four-months semester with colossal enthusiasm and interaction with the students.

It needs to be stated that the online teaching-learning environment was full of challenges which include limited digital resources to the students, lack of money to buy internet data packages and interruption during class due to the poor internet connection. In the first semester of online teaching, it happened many days that I could not complete the class hour due to disconnection in the Wi-Fi or a few of my students could not continue the class fully due to lack of internet data and gadgets. Besides, as a teacher, I felt that my job is routine less and my students can call me or text me any time of the day. This had an impact on my sleeping hour, and consequently, I had to set a routine when the students can text or call me. I believe that if I stay sound physically, then I can provide quality education. Another major challenge was regarding assessment. Earlier, we used to assess students' scripts with pen and paper. On the contrary, currently, the assessment is also done online which is not that much comfortable. Moreover, previously the curricula were set for face to face class and feedback. The assessment system has changed without bringing any change in the curricula, although we need revised curricula and assessment criteria (Kalloo, Mitchell, & Kamalodeen, 2020) in this emergency. For instance, I had to set new assessment criteria for presentations as the students were not willing to do presentations online which is entirely different from the way they used to do before. Importantly, due to the online submission of the assignment, students were found to copy and paste from internet sources without paying any attention to the originality of the source. Due to their copy and paste habit regarding assignment submission, the quality of education is more or less hampered. Furthermore, online classes hardly allow me to evaluate my language students based on all skills. Even if I set listening tests online, they find it challenging to download the file and practice due to poor internet connection. It is bitter but true that the online teaching-learning approach failed to establish democracy in the teaching process since some of my students are living in weak internet areas or fail to buy necessary gadgets due to lack of money. Orr, Weller, and Farrow (2019) found that digitalization has made learning flexible and accessible to all regardless of minor challenges.

After all, I had to adjust to the new teaching system by learning to use google classroom, hangout meet, and inspire the students by saying that education is the greatest equalizer even in the pandemic. Now, in the second semester of online teaching, my students can learn better online. They become motivated when they get immediate feedback on their assignments or class tests online. As a teacher, as Schon (1983) said, I am working as a reflective practitioner and applying what goes effectively with the students.

I think we teachers are to learn to use any suitable medium for teaching online and set appropriate assessment criteria for each course they teach. Moreover, the syllabus and curricula also need to be revised for coping with the online assessment criteria; otherwise, the actual purpose of teaching a course might go in vain. As teachers or institutions, we need to rethink whether we can achieve the previously set Program Learning Objectives (PLOs) and Course Learning Objectives (CLOs) or bring changes to cope with the online teaching-learning environment. An ICT based education policy might also help achieve PLOs and CLOs accurately. Finally, before we let the students graduate, teachers and educational institutions need to involve the relevant industry experts while reforming the curricula, syllabus, PLOs and CLOs for imparting quality education.

DISCUSSIONS

Based on our narratives and reflection, we have identified several issues and areas related to virtual education in a low-resource context like Bangladesh.

Limitations and Challenges

As revealed in the narratives, ERT in a low-resource context of a developing country is challenged by multifarious issues. Most of the universities have no virtual learning environment (VLE) e.g., Moodle, Blackboard, Canvas to store and deposit any materials including PPT slides, lecture capture to which students can have easy access and can participate in forum discussions, also supported by Aktar (2020) and Kaisar & Chowdhury (2020). Therefore, it takes tolls on teachers to create and maintain a personal virtual platform with the students. We started learning and using Google Classroom, Basic Zoom (later on Government subsidised), and sometimes Google Meets as they are free, user-friendly for teachers, so popular among our teachers; others like Moodle and Microsoft Teams seem to require comparatively more professional knowledge and maintenance. Internet access is a crucial issue. Many of the students particularly from public universities do not afford to buy internet regularly to carry on online learning. Even if the teachers and some students afford buying internet megabytes or Wi-Fi, the speed does not suffice for e.g., zoom lessons. Many students are still not equipped with online communication skills via e.g., email. Therefore, teachers struggle to get the students on board. Finally, motivation among both students and teachers plays an important role. One of the myriad reasons is technophobia (Aktar, 2020; Islam et al., 2020). The students seem to be intimidated to communicate via emails, create an account in e.g., zoom, google classroom. We teachers are also not well equipped with online teaching tools and concerns are also privacy and ethical issues of sharing the recorded lessons or materials (Bozkurt et. al., 2020; Kaisar & Chowdhury, 2020). Furthermore, many students do not have the necessary devices to attend online classes, let alone working on lesson materials properly (also see Dutta & Smita, 2020). Moreover, a congenial atmosphere and space at home are not much advantageous. For we teachers, boundaries between work and life are often blurred and it becomes overwhelming and exhausting affecting teachers' mental and physical health. Institutional support including training was lacking, particularly for public university teachers.

Variability is seen in public and private contexts. For the public universities, there were no concrete directives in carrying out ERT; mostly no teaching took place for the initial four months unless a few enthusiastic teachers tried being self-motivated. Although the private universities were given some due attention (as they are run by students' fees) from the UGC with some directives and guidelines on online teaching, and many teachers received some forms of training and virtual infrastructure to carry out ERT, they are struggling to impart quality education. By the time this paper is written, University Grant Commissions finally allows the private universities to conduct some form of assessment after their initial rejection; however, public university ordinance cannot be changed overnight. Public universities could only undertake some kinds of formative assessment. Private university teachers found it problematic to conduct assessment as it requires revised curricula as well (Kalloo, Mitchell, & Kamalodeen, 2020). Furthermore, issues of convenience alongside validity and reliability of the tests are of concern. We also struggle with how the assessment of different language skills can be; if listening tests are set online, students find it difficult to access and carry out due to poor internet connection and appropriate devices. Therefore, challenges in assessment seem to be paramount.

Opportunities and Interventions

The present study shows some opportunities for interventions specifically related to certain issues and factors such as teacher and student preparation, attitude and motivation, institutional infrastructures and support, blended education and the flipped classroom, and alternative and online assessment.

Both teachers and students need to have knowledge of technology including basic computer literacy. In addition to the subject knowledge and pedagogical knowledge, teachers have to have technological knowledge encompassing capability of operating different gadgets, using necessary software and apps, finding appropriate materials offered by Open Education Resources, selecting, adapting and adopting online materials, using and managing online platforms for learning management system and delivery such as Zoom, Google Meet, Microsoft Teams, Moodle, Canvas, Google Classroom and so forth. Students are also required to have fundamental digital literacy of operating and using them as applied and suggested by teachers. Jones (2002) aptly holds "today, such skills are normally a prerequisite for success in higher education. Even for accessing resources on the internet and publishing" (p.10). Therefore, pedagogic and technological training in online

teaching and learning should be arranged and offered on a regular basis so that teachers and students can comfortably and effectively work online and achieve the intended goals and objectives. As teacher and student attitude and motivation play an important role in this regard, program designers and trainers should pay special attention to these factors.

The universities should develop their infrastructures to ensure Virtual Learning Environment and ensure support required for virtual English education and the availability of online resources needed for exposing students to adequate authentic and comprehensible input (Krashen, 1998). That is, the institutions should provide the teachers and the learners with necessary gadgets including computers or laptops, smartphones, stable Internet connection, adequate Internet data and so forth. Alongside, both, particularly the teachers should receive regular training on how to use different platforms and apps for engaging, inclusive and effective teaching and learning to take place. Besides instruction, we need a revised curricula and assessment criteria for emergency situation (Kalloo, Mitchell, & Kamalodeen (2020). The instructional strategies, curriculum, materials and assessment system should be in consonance with online education and based on the needs and interests of the stakeholders, especially the students. Teacher training is required to ensure their digital literacy and application of digital assessments (Knight & Drysdale, 2020). Reflecting on the challenges of the traditional assessment system, it is time to rethink and propose alternative assessment such as online and frequent formative assessment including online quizzes, activity sheets, writing summaries and reflections, developing a project, making videos, and creating e-portfolio and so forth while ensuring valid, safe and student friendly assessment

This pandemic creates opportunities for more flexible and sustainable future-ready higher education. There is something to stay even in post pandemic world - the online component of some aspects of the education can continue. The recovery endeavours from the pandemic offers plenty in innovations and the emerging technologies including AI in the Fourth Industrial Revolution can play an important role in shaping future education too (World Economic Forum, 2021). Therefore, blended education with its partial online infrastructure may emerge as a sustainable solution given any future pandemics and crises in developing country contexts (Bordoloi, Das & Das, 2021). Following them, in providing planned pedagogy, ensuring successful delivery of contents, and engaging and equipping students with 21st century skills, blended learning may work as a catalyst for change towards a democratic and sustainable education. The post-pandemic university can think of flipping classrooms such as depositing reading and research materials, even videoed lecturers and some quizzes and formative assessment online and meeting students in physical classrooms for more interactive and engaging discussions and real-life, hands-on practices. While some universities are already thinking of blended mode of teaching and learning in post-pandemic education, we, as individual teachers, are now determined to blend our teaching, even on personal level if needed, by keeping some elements online including using an LMS for the courses we teach with a view to better teaching and learning experience. Blended education seems to be more flexible and inclusive for different learner types provided affordable technologies are adopted. However, for sustainable higher education in the low-resource context of Bangladesh, all concerned parties need to come forward to work cooperatively and collaboratively.

Teacher Identity and Development

The starting was an emotional rollercoaster for us. From start to the end, it offers both excitement and overwhelm, frustration and confidence, and stress and reward- all at the same time. As noted by Higgins (2011), frustration is necessary for growth and reading someone else's narrative, which allows the teacher to think through someone else's frustration without having to engage in the experience and knowing that others get equally frustrated, may help the teacher feel less defensive about her own limitations (Furman, 2014). Thus, the whole online programme can be deemed as professional developmental stages (Schwarz, 2001) where the transformation of the teacher self is impacted by reflections.

As exposed, we all have gone through a good deal of emotional variations while conducting online teaching in the pandemic situation. With almost no prior experience, we seemingly have many kinds of uncertainty such as, proper use of tools and share of materials, engaging and assessing students, tension over quality of teaching, sufficient wifi and appropriate devices and space. This causes various psychological concerns like tension, fear, stress, frustration, inhibition, worry, luddite, lack of confidence. With time, we gradually

gained a reasonable level of confidence and spontaneity in our articulation, even sometimes by tech-savvy students' emergence as saviours in any technical glitches. This is how teachers got accustomed to the new normal remote teaching. Despite all these negative concerns, it eventually became a rewarding experience that surely contributed to the management of teacher emotions, professional capacity building and construction of teacher identity. As experiential learning promotes identity construction (Kolb & Kolb, 2017), narrative knowledging becomes a means of construction, making sense of human stories, and cognitive performance (Barkhuizen, 2011). Our worries and tension related to students' difficulties due to power disruptions, poor internet connectivity and even family members being covid patients transform our understanding into empathetic responses which eventually helped enrich our personal development and professional identity. Emotion regulates teachers' identity (Zembylas, 2003).

We also hereby acknowledge the benefits of writing narratives; we found developing our narratives as a strategy of developing and expressing our teacher voice (Richert, 1992) and the process of writing and thus discussing the narrative enables us to reflect on our lives in classrooms (Schon, 1983). Sharing our narratives here unfolds our "inherent connectedness with others" (Atkinson, 1995, p. 4) with an expectation of employing this as an effective means of creating a community of practice based on partnership. Feeling a sense of community and thus reducing teacher isolation is also beneficial for us as we participate in developing and sharing our narratives. It has pedagogical impact: in writing about the self, one shares oneself with others so that one creates and enters into the community across space and time (Richardson, 2001) and thus connects oneself and the world (Hankins, 2003).

CONCLUSION

The study focused on the issue of what it means to become an online teacher in a super-difficult context of low-resource, low-connectivity and no prior online infrastructure in a developing Asian country. With the hope that our experiences may serve as different samples of teaching online and reading these will help other novice teachers decide on their own. We all reflected on the coping strategies in our development through continuous improvisation. While our four narratives show lots of similar experiences, there are some distinct issues as well. Pictures from two kinds of universities with different kinds of support systems also highlight some cross-institutional differences of the access and use of online tools. Our study revealed that first-time online teachers' narratives provide an insight into what being a novice online teacher in an emergency situation looks like. These narratives suggested that being an online academic is influenced by, alongside technological knowledge and digital literacy, an individual (motivation and) agency, self-confidence, coping strategies, being resilient and thriving, and developing continually. Role of different parties in online teacher development is assumed: teacher's self-tension between selves - past and present (being a good teacher might not ensure a good online teacher because of technological knowledge and institutional support; if mismatch, tension arises), stake-holders' interventions (university, UGC, Ministry of Education), teaching context and infrastructure (including economy). With all these variables interacting, teachers' identities are also ever-changing. In such situation, teachers need what Lin, Schwartz & Hatano (2018) call "adaptive metacognition", which requires "change to oneself and one's environment, in response to a wide range of ... social and instructional variability" (p245).

We, however, do not claim our narratives as representatives for the generalisations of the whole scenario of ERT in HE but they do reflect on specific cases with some perspectives. Our personal, subjective construct might influence and at times limit our thinking (Miller, 1995). Notwithstanding, sharing our personal narratives can bring people into a community of thoughts, problems and challenges, and the ways out (Hankins, 2003; Hansen, 2011) and thus our teacher narratives can serve as a virtual friendship and offer collegiality (Isenberg, 1994).

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REFERENCES

- Aguliera, E., & Nightengale-Lee, B. (2020). Emergency remote teaching across urban and rural contexts: perspectives on educational equity. *Information and Learning Sciences*, 121(5). <https://doi.org/10.1108/ILS-04-2020-0100>
- Ahmed, M. (2000). Tertiary education during Covid-19 and Beyond. <https://www.thedailystar.net/opinion/news/tertiary-education-during-covid-19-and-beyond-1897321>
- Aktar, T. (2020). Virtual classrooms in low-resource context. *New Age*. Retrieved on June 30. <https://www.newagebd.net/article/106873/virtual-classrooms-in-low-resource-context>
- Aktar, T., & Oxley, L. (2019). Promoting student engagement by strengthening the link between research and teaching in Higher Education: An early career researcher perspective. *Higher Education Pedagogies*: UK. <https://www.tandfonline.com/doi/full/10.1080/23752696.2019.1669205>
- Arias, J. J., Swinton, J., & Anderson, K. (2018). Online Vs. Face-to-Face: A Comparison of Student Outcomes with Random Assignment. *e-Journal of Business Education & Scholarship of Teaching*, 12(2), pp. 1-23.
- Atkinson, R. (1995). *The gift of narratives: Practical and spiritual applications of autobiography, life narratives, and personal mythmaking*. Westport, CT: Bergin & Garvey.
- Bao, W. (2020). COVID-19 and online teaching in higher education: A case study of Peking University. *Human Behavior and Emerging Technologies*, 2(2), 113-115.
- Barkhuizen, G. (2011). Narrative knowledging in TESOL. *TESOL quarterly*, 45(3), 391-414.
- Bordoloi, R., Das, P., & Das, K. (2021). Perception towards online/blended learning at the time of Covid-19 pandemic: an academic analytics in the Indian context. *Asian Association of Open Universities Journal*.
- Boyd, P., & Harris, K. (2010). Becoming a university lecturer in teacher education: Expert school teachers reconstructing their pedagogy and identity. *Professional development in education*, 36(1-2), 9-24.
- Bozkurt, A., Jung, I., Xiao, J., Vladimirschi, V., Schuwer, R., Egorov, G., Lambert, S., Al-Freih, M., Pete, J., Olcott, Jr., D., Rodes, V., Aranciaga, I., Bali, M., Alvarez, A. J., Roberts, J., Pazurek, A., Raffaghelli, J. E., Panagiotou, N., de Coëtlogon, P., Shahadu, S., Brown, M., Asino, T. I., Tumwesige, J., Ramirez Reyes, T., Barrios Ipenza, E., Ossiannilsson, E., Bond, M., Belhamel, K., Irvine, V., Sharma, R. C., Adam, T., Janssen, B., Sklyarova, T., Olcott, N., Ambrosino, A., Lazou, C., Mocquet, B., Mano, M., & Paskevicius, M. (2020). A global outlook to the interruption of education due to COVID-19 pandemic: Navigating in a time of uncertainty and crisis. *Asian Journal of Distance Education*, 15(1), 1-126.
- Brazendale, K., Beets, M. W., & Weaver, R. G. (2017). Understanding differences between summer vs. school obesogenic behaviors of children: The structured days hypothesis. *International Journal of Behavioral Nutrition and Physical Activity*, 14. <https://doi.org/10.1186/s12966-017-0555-2>
- Brooks, S. K., Webster, R. K., Smith, L. E., Woodland, L., Wessely, S., Greenberg, N., & Rubin, G. J. (2020). The psychological impact of quarantine and how to reduce it: rapid review of the evidence. *The lancet*, 395(10227), 912-920.
- Carini, P. F., Himley, M., Christine, C., Espinosa, C., Fournier, J. (2009). *Jenny's story*. New York: Teachers College Press.
- Dewey, J. (1916/1944). *Democracy and education*. New York: The Free Press.

- Diamond, J. (2008). *Welcome to the aquarium: a year in the lives of children*. New York: The New Press.
- Dutta, S., & Smita, M. K. (2020). The Impact of COVID-19 Pandemic on Tertiary Education in Bangladesh: Students' Perspectives. *Open Journal of Social Sciences*, 8(09), 53.
- Dutta, S., & Smita, M. K. (2020). The Impact of COVID-19 Pandemic on Tertiary Education in Bangladesh: Students' Perspectives. *Open Journal of Social Sciences*, 8, 53-68. <https://doi.org/10.4236/jss.2020.89004>
- Furman, C. (2014). *Reflective teacher narratives: The merging of practical wisdom, narrative, and teaching* (Doctoral dissertation, Columbia University).
- Gordon, E., McKibbin, K., Vasudevan, L., and Vinz, R. (2007). Writing out of the unexpected: Narrative inquiry and the weight of small moments. *English Education*, 39(4), 326-351.
- Griffiths, M. and Macleod, G. (2008). Personal narratives and policy: Never the twain? *Journal of Philosophy and Education*, 42(S1), 121-143.
- Hankins, K. H. (2003). *Teaching through the storm: A journal of hope*. New York: Teachers College Press.
- Hansen, D. T. (2011). Introduction: Rethinking globalization, education, and citizenship. *Teachers College Record*, 113(6), 1135-1153.
- Higgins, C. (2011). *The good life of teaching: An ethic of professional practice*. Oxford: Wiley- Blackwell.
- Hodges, C., Moore, S., Lockee, B., Trust, T., & Bond, A. (2020). The difference between emergency remote teaching and online learning. *Educause Review*, 27.
- Institute of Epidemiology, Disease Control and Research (IEDCR). (2020). Covid-19 Vital Statistics. IEDCR. <https://iedcr.gov.bd>
- International Trade Administration (2021). *Country Commercial Guides*. <https://www.trade.gov/country-commercial-guides/bangladesh-information-and-communication-technology-ict>
- Isenberg, J. (1994). *Going by the book: The role of popular classroom chronicles in the professional development of teachers*. Westport, Connecticut: Bergin & Garvey
- Islam, M. A., Barna, S. D., Raihan, H., Khan, M. N. A., & Hossain, M. T. (2020). Depression and anxiety among university students during the COVID-19 pandemic in Bangladesh: A web-based cross-sectional survey. *PloS one*, 15(8), e0238162.
- Jalongo, M. R., Isenberg, J. P. & Gerbracht, G. (1995). *Teachers' stories: From personal narrative to professional insight*. San Francisco, CA: Jossey-Bass Publishers.
- Jandric, P., Knox, J., Besley, T., Ryberg, T., Suoranta, J., & Hayes, S. (2018). Postdigital science and education. *Educational Philosophy and Theory*, 50(10), 893–899. <https://doi.org/10.1080/00131857.2018.1454000>.
- Jones. B. G. (2002). Technology for prospective language Teachers. *Language learning and Technology*, 6, 10-14.
- Kaisar, M. T., & Chowdhury, S. Y. (2020). Foreign Language Virtual Class Room: Anxiety Creator or Healer?. *English Language Teaching*, 13(11).
- Kaloo, R. C., Mitchell, B., & Kamalodeen, V. J. (2020). Responding to the COVID-19 pandemic in Trinidad and Tobago: challenges and opportunities for teacher education. *Journal of Education for Teaching*, 1-11.
- Khan, R., Bashir, A., Basu, B. L., & Uddin, M. E. (2020). Emergency online instruction at higher education in Bangladesh during COVID-19: Challenges and suggestions. *The Journal of Asia TEFL*, 17(4), pp. 1497-1506
- Kinloch, V. (2012). *Teaching and Learning with Urban Youth*. New York: Teachers College Press.
- Knight, G. L., & T. D. Drysdale (2020). The future of higher education (HE) hangs on innovating our assessment – but are we ready, willing, and able? *Higher Education Pedagogies*. 5(1), <https://doi.org/10.1080/23752696.2020.1771610>

- Kolb, D. A. (1984). *Experiential learning: Experience as the source of learning and development* (Vol. 1). Englewood Cliffs, NJ: Prentice-Hall.
- Kolb, A. Y., & Kolb, D. A. (2017). Experiential learning theory as a guide for experiential educators in higher education. *Experiential Learning & Teaching in Higher Education*, 1(1), 7-44.
- Kozol, J. (2007). *Letters to a Young Teacher*. New York: Crown Publishing.
- Krashen, S. (1998). Comprehensible output? *System*, 26(2), 175-182.
- Langford, M., & Damsa, C. (2020). Online Teaching in the Time of COVID-19.
- Li, C., & Lalani, F (2020). The COVID-19 pandemic has changed education forever. This is how. World Economic Forum. 29 April Issue. <https://www.weforum.org/agenda/2020/04/coronavirus-education-global-covid19-online-digital-learning/>
- Lin, X., Schwartz, D. L., & Hatano, G. (2018). Toward teachers' adaptive metacognition. In *Educational Psychologist* (pp. 245-255). Routledge.
- Means, B., Toyama, Y., Murphy, R., & Baki, M. (2013). The effectiveness of online and blended learning: A meta-analysis of the empirical literature. *Teachers College Record*, 115(3), 1-47.
- McCammon, L., & Smigiel, H. (2004). Whose narrative is it? Ethical issues when using drama with teacher narratives. *International Journal of Education and the Arts*, 5(1), 1-11.
- Mcknight, K, O'Malley, K, Ruzic, R, Horsley, M., Franey, J. J., Bassett, K. (2016). Teaching in a Digital Age: How Educators Use Technology to Improve Student Learning. *Journal of Research on Technology in Education*. 48(3). <https://doi.org/10.1080/15391523.2016.1175856>
- Miller, J. H. (1995). Narrative. In *Critical terms for literacy study*, eds. Lentricchia, F. and McLaughlin, T. Chicago: University of Chicago Press, 66-79.
- Mnyanyi, C. B., & Mbwette, T. S. (2009). Open and Distance Learning in Developing Countries: The Past, the Present, and the Future. *Dares Salaam: Open University of Tanzania*.
- Mondol, M. S., & Mohiuddin, M. G. (2020). Confronting Covid-19 with a Paradigm Shift in Teaching and Learning: A Study on Online Classes. *International Journal of Social, Political and Economic Research*, 7(2), 231-247.
- Norris, J., McCammon, L., & Miller, C. S. (Eds.). (2000). *Learning to teach drama: A case narrative approach*. Heinemann.
- Nussbaum, M. C. (1990). *Love's knowledge: Essays on philosophy and literature*. New York: Oxford University Press.
- Orr, D., Weller, M., & Farrow, R. (2019). How is digitalisation affecting the flexibility and openness of higher education provision? Results of a global survey using a new conceptual model. *Journal of Interactive Media in Education*, 2019(1). Available from <http://oro.open.ac.uk/66299/1/66299.pdf>
- Polkinghorne, D. E. (1995). Narrative configuration in qualitative analysis. *International Journal of Qualitative Studies in Education*, 8(1), 5-23.
- Ramij, M. G., and Sultana, A., (2020). Preparedness of Online Classes in Developing Countries amid COVID-19 Outbreak: A Perspective from Bangladesh (Preprint). Available at SSRN: <https://ssrn.com/abstract=3638718> or <http://dx.doi.org/10.2139/ssrn.3638718>
- Ravitch, D. (2013, June 03). What is edTPA and why do critics dislike it? Retrieved from <http://dianeravitch.net/2013/06/03/what-is-edtpa-and-why-do-critics-dislike-it/>.
- Razfar, A. (2012). Narrating beliefs: a language ideologies approach to teacher beliefs. *Anthropology and Education Quarterly*, 43(1), 61-81.
- Richardson, L. (2000). Writing: A method of inquiry. In N.K. Denzin & Y.S. Lincoln (Eds.), *Handbook of qualitative research* (2nd ed., pp. 923-948). Thousand Oaks, CA: Sage.

- Richardson, L. (2001). Getting personal: Writing-stories. *International Journal of Qualitative Studies in Education*, 14(1), 33-38.
- Richert, A. (1992). Voice and power in teaching and learning to teach. *Reflective teacher education: Cases and critiques*, 187-197.
- Rosiek, J. and Atkinson, B. (2005). Bridging the divides: The need for a pragmatic semiotics of teacher knowledge research. *Educational Theory*, 55(4), 421-442.
- Rubin, G. J. (2020). The psychological impact of quarantine and how to reduce it: rapid review of the evidence. *The Lancet*. [https://doi.org/10.1016/S0140-6736\(20\)30460-8](https://doi.org/10.1016/S0140-6736(20)30460-8)
- Schwarz, G. (2001). Using teacher narrative research in teacher development. *The Teacher Educator* 37(1), pp. 37-48, DOI: 10.1080/08878730109555279
- Schon, D. A. (1987). *Educating the reflective practitioner: Toward a new design for teaching and learning in the professions*. San Francisco: Jossey-Bass Publishers.
- Schon, D. A. (1983). *The Reflective Practitioner: How Professionals Think in Action*. New York: Basic Books.
- Singh, V., & Thurman, A. (2019). How many ways can we define online learning? A systematic literature review of definitions of online learning (1988-2018). *American Journal of Distance Education*, 33(4), 289–306. <https://doi.org/10.1080/08923647.2019.1663082>.
- Siu, O. L., Cooper, C. L., & Phillips, D. R. (2014). Intervention studies on enhancing work well-being, reducing burnout, and improving recovery experiences among Hong Kong health care workers and teachers. *International Journal of Stress Management*, 21, 69–84. doi: 10.1037/a0033291
- Smith, T. J. (2007). *Teaching the children we fear: Lessons from the front*. Cresskill, NJ: Hampton Press, Inc.
- Statistica Research Department (2021). Internet penetration rate Bangladesh from 2010 to 2019. <https://www.statista.com/statistics/764102/internet-penetration-rate-bangladesh/>
- Stenhouse, L. (1975). The teacher as researcher. In *In Qf Brints Reuder, E835, Open*.
- Thamarana, S. (2016). Role of e-learning and virtual learning environment in English language learning. *Research Scholar*, 1(August), 1-8. <https://doi.org/10.13140/RG.2.1.4665.1122>
- Trowler, V. (2010). *Student engagement literature review*. Lancaster University: The Higher Education Academy: Lancaster.
- UNESCO. (2020). COVID-19 Educational Disruption and Response. <https://en.unesco.org/covid19/educationresponse>. Accessed 15 April 2020.
- Vygotsky, L. S. (1978). Socio-cultural theory. *Mind in society*, 6, 52-58.
- World Economic Forum. (2021). Global Technology Governance Report 2021. <https://www.weforum.org/reports/global-technology-governance-report-2021>
- Zembylas, M. (2003). Interrogating “Teacher Identity”: Emotion, resistance, and self-formation. *Educational Theory*, 53, 107-127. doi:10.1111/j.1741-5446.2003.00107.x
- Zhu, X. (2020). Building up National Online Teacher Education System. *Research in Education Development*, 40(2), 3. <https://doi.org/10.14121/j.cnki.1008-3855.2020.02.002>.

STUDENTS' SATISFACTION WITH THE PRACTICES AND IMPLEMENTATION OF NON-REGULAR EDUCATION PROGRAMS: THE CASE OF HARAMAYA UNIVERSITY, ETHIOPIA

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ABSTRACT

The purpose of this study was to assess students' satisfaction with the practices and implementation of non-regular education programs (NREPs) with particular regard to Haramaya University (HU), Ethiopia. To achieve the aim of the study, an explanatory sequential mixed methods research design, which initially allows collecting quantitative data and then qualitative data for elaboration on the quantitative data, was used. The study used a 5-point Likert scale questionnaire for quantitative inquiries from 741-students belonging to different centres, and follow-up with 20 interview participants purposefully selected to elaborate those results in more detail. In the quantitative phase, four features were considered as predictors of students' satisfaction with service quality: (a) academic issues, (b) administrative issues, (c) resources/facilities, and (d) assessment and feedback issues. In the qualitative follow-up, the semi-structured interviews outlined three major themes: (a) overall teaching-learning, (b) administrative and management issues, and (c) learning support facilities. The paper used descriptive statistics to interpret the quantitative data and thematic content analysis to interpret the qualitative data. The findings are presented sequentially following the order of the analysis of quantitative and qualitative data presented in the paper. The conclusions and relevant recommendations are also stated at the end of the paper.

Keywords: Haramaya University, higher education, non-regular education programs, service quality, student satisfaction.

INTRODUCTION

Universities are important contributors to state and national economies in terms of not only providing skilled human resources for various industries but also in terms of job creation, investment attraction, and revenue generation (Nisar, 2015). To achieve national development, the experiences of university students in their classroom and their satisfaction with the university services are essential (Ambachew and Mekonnen, 2014; Malik, Danish, and Usman, 2010).

As the existing regular higher education programs elsewhere and those in Ethiopia, in particular, have not been able to satisfy the divergent educational needs of all segments of society, NREPs are not optional. Regular education programs (REPs) could not serve the interests of those who could not attend their education for various reasons such as distance, family matters, employment conditions, and personal problems (UNESCO, 2005). For instance, a father who is a breadwinner for his family cannot attend a regular education program since he has to work to earn income for himself and his family. This necessitates the education system with

a different modality, i.e. educational activities arranged outside the established regular system (Baguma and Aheisibwe, 2011). This type of education gives learners a chance to attend education without jeopardizing their means of livelihood.

Depending on their employment conditions, therefore, people may plan to work during the daytime and attend their education in the evening or work during weekdays and attend their education on weekends. Others can opt for attending their education during summer while working for the rest of the months of the year. Still, others can plan to attend their education in distance mode, which has little face-to-face contact hours with tutors at intervals and has no impact on their working time (Tekeste, 1996). For these and other reasons, NREPs are the necessary ways to address the educational needs of a considerable number of citizens. According to Fitzpatrick (2001), the importance of different modalities of education programs is not questionable as they help students save money, time, and energy in addressing their needs. The NREPs modalities are also “considered as an alternative means of providing educational opportunities for those that have been previously disadvantaged” (Birhanu, 2014, p.314). NREPs are thus flexible learning approaches that can depend on the learners’ characteristics and can best meet their needs (Hodges, Moore, Locke, Trust & Bond, 2020).

Mishira (2002), on the other hand, indicates that NREP is of great advantage to employed workers who wish to enhance their educational or professional equipment, but who are not in a position to attend school on a full-time basis within the given rigid regular framework. Such workers can enrol part-time and complete the requirements in a more flexible situation. They can also work on part of a given program on a course-to-course basis for which they may not attend classes and invest their remaining time on the NREPs based on their preferences. According to Lasonen, Kempainen, and Raheem (2005), NREP is a concept that provides an alternative chance for citizens through its various modalities. Non-regular students can save costs because they neither travel to campus to attend classes on a regularly scheduled basis nor live on campus and leave their current professional commitments “although they will have to pay for tuition fees and expenses for the purchase of learning materials” (Tripathi, 2014, p. 674).

NREPs have become much more common since very recently in both private and public higher institutions (HEIs) in Ethiopia (Alemayehu and Solomon, 2017), via continuing education programs have had a longer history than the rest, as it was started almost three decades ago in a few universities in the country (MoE, 2002). Ethiopian public and private HEIs offer NREPs as a strategy of expanding higher education to produce educated human power in different modalities (Alemayehu and Solomon, 2017). HEIs that achieve student satisfaction engage in positive word-of-mouth and collaborate with the institution after they graduate (Alves and Raposo, 2009). HU, is thus, among one of the pioneers in establishing NREPs that have come to cover education and training initiatives which include Continuing Education Program (CEP), Summer Education Program (SEP), and Distance Education Program (DEP). These educational modalities were adopted in both public and private universities to enlarge the intake capacities of HEIs (MoE, 2002). Based on this direction, HU established its NREPs to reach out to citizens who have been deprived of the opportunity to attend REPs. The university thus is expected to assure service quality not only for its REPs but also for its NREPs. Achieving students’ satisfaction is a valuable institutional competitive advantage (Wilkins and Balakrishnan, 2013). To make the institution progressive and effective in the knowledge of expectation students, the higher authorities of the institute (Palacio, Meneses, and Perez, 2002) should keep academic preferences and quality perception about the educational environment.

NREPs in Ethiopia are highly increasing in terms of modalities, coverage, and the number of students. One of the main factors behind the growth of NREPs is its provision without geographical and time constraints for those who are on other businesses (Mulatu, 2014; Birhanu, 2014). However, there seems to be a general feeling in the public that the quality of services in the NREPs is not satisfactory. Sheferaw (2007) argues that such perceptions towards non-regular education can limit the full participation of students in the programs and can affect their education endeavours to meet their objectives.

The purpose of this study was, therefore to assess the students’ overall satisfaction with the practices and implementations of HU’s NREPs within the context of the foregoing arguments to locate the strengths and weaknesses of the programs through both quantitative and qualitative explanatory sequential mixed

methods. Hence, the research questions of this study were: (1) To what extent HU students under NREPs were satisfied with the overall practices and implementations of NREPs? (2) What were the qualities of the most common services of HU's NREPs students expected to be satisfied with?

LITERATURE REVIEW

Students satisfaction can be defined as the desired outcome of tasks or jobs that please and satisfy students' self-esteem in HEIs (Kotler and Clarke, 1986). HEIs assess students' satisfaction with their service quality to determine the originalities and accuracies of their educational system at the level of students' grooming their skill development, course knowledge, and mentality (Malik et al., 2010). Huang (2010) identified five determinant classifications of students' quality satisfaction at HEIs: academics, non-academics, reputation access, and program issue (p.38). According to Zeithaml (1988), satisfaction is the product of a well-functioning administrative and educational structure of an institution that testifies the provision of a conducive learning atmosphere to students to drive them to successful completion of their studies. Providing students with essential educational facilities with effective teaching and training are some of the motivating factors considered as best performers in the views of students (Rodie and Kleine, 2000). Student satisfaction is also the key determinant of student loyalty (Webb and Jagun, 1997), and it is student loyalty that encourages positive word-of-mouth and student involvement and cooperation with their institution both during and after their studies. As a result, HEIs often integrate students' satisfaction with assessing the link between teaching quality/learning outcomes and student satisfaction (Wilkins and Balakrishnan, 2013). According to Elliot and Healy (2001), student satisfaction is a short-term attitude based on an assessment of the education services provided. However, according to the argument of Wilkins and Balakrishnan (2013), student satisfaction is not only maintained by the experiences of the effective teaching-learning process the HEIs achieve "but also by their overall experiences as a customer of a particular institution" (p. 145).

According to Douglas et al., (2006), HEIs must control every aspect of students' engagement with all of their service offerings, especially those involving their people to provide high-quality services to students. The students' satisfaction is paramount and matters more than ever in an increasingly competitive and commercial higher education sector (O'Donovan1 2017). In the contemporary competitive commercial situation of global-wide education services, HEIs are obliged to provide market-driven educations that emphasize satisfying students' expectations (Arambewela and Hall, 2013). HEIs which run NREPs, that may engage in profit-making or commercial education must maintain students' satisfaction that plays a significant role for universities to be accepted at the international higher education level (O'Donovan1, 2017).

The issue of students' satisfaction with service quality is highly debatable and demands serious scrutiny. For example, Alemayehu and Solomon (2017) argue that "against all its criticism distance education, its contribution both to provide access to the needy and the encouragement it received from the side of the public institutions are immense" (p.38). However, according to Tucker (2001), in developed countries, DEP, which is one of the NREPs and by far different from others in the mode of delivery, is equally important as a regular program in producing competent human resources. Therefore, what matters most is not the type of education modality but the way it is organized and the effort made to achieve students' satisfaction in service delivery.

Several scholars have pointed out the importance of assessing service quality provisions of HEIs and their influence on students' satisfaction. Some of them have seen in terms of both academic and administrative support wings (e.g. Ambachew and Mekonne, 2014; Dawit, Getachew, and Ashenafi, 2017) whereas, some others have reported their findings in terms students' satisfaction based on feedback and assessment (e.g. Wilkins and Balakrishnan, 2013). Still, some others have sought students' satisfaction in terms of facilities/ resources (libraries, laboratories, and other materials) (e.g. Idiegbeyan-Ose and Esse, 2013; Larson and Owusu-Acheaw, 2012), while others have reported their study results as cumulative service quality provision of higher institutions (e.g. Dawit, Getachew, and Ashenafi, 2017; Kristensen, Martensen, Gronholdt, and Elkildsen, 2000).

However, this study was concerned with the investigation of students' satisfaction with the service quality of HU's NREPs. HU was chosen because it was one of the pioneers in establishing NREPs in Ethiopia and has been challenged in the delivery of services that satisfy its students. This study was made to locate where the problem lies and what needs to be done by the university to improve its service delivery and satisfy its students' satisfaction since students' satisfaction matters most in the delivery of quality education. As Webb and Jagun (1997) state, students' satisfaction is the key determinant of students' loyalty. Wilkins and Balakrishnan (2013) also argue that achieving students' loyalty is essential to receive positive word-of-mouth and their "cooperation with their institution both during and after their studies" (p. 146).

It has also been reported that the image of universities (Palacio et al 2002), the qualities of teachers' education, and teaching materials (Aldemir and Gulcan, 2004), influence the students' satisfaction with HEIs. Also, a study conducted in a Spanish university to assess students' satisfaction with educational delivery indicates that students' satisfaction is determined by teachers, teaching methods, and course administration (Navarro, Iglesias and Torres 2005). According to this result, universities can maintain students' satisfaction and their loyalty through careful management of staff teaching, teaching methodology, and implementation of appropriate course administration. Mai (2005) on the other hand, found out that students' satisfaction is affected by the overall impression of the school, the quality of the education, teachers' expertise and their interest in their subject, the quality, and accessibility of resources/facilities, and the appropriateness of the programs taught.

Theoretical Intervention

The theoretical framework underpinning this study was the self-directed learning theory. This theory is applicable in that it helps to examine the students' satisfaction with practices and implementation of NREPs. According to this theory "... individuals take on the responsibility for their learning process by diagnosing their personal learning needs, setting goals, identifying resources, implementing strategies and evaluating the outcomes" (Olaniyi, 2015, p. 264). This theory "entails individuals to take initiatives and responsibilities for their learning" (Loeng, 2020, p.2). The theory points that adult learners are goal-oriented to be self-determined in the learning process with effective practices and implementation of institutional facilitation of the learning process (Manning, 2007; Olaniyi, 2015). Effective facilitation teaching-learning environment (academics), overall management of the programs (administrations), providing resources, and assessment and feedback techniques are the important feature to measure students' overall satisfaction with education programs. The main idea of the self-directed learning theory according to (Boyer, Edmondson, Artis & Fleming, 2014; Olaniyi, 2015) is that students enhance their mental development and attitudinal changes through their self-administrated learning process.

RESEARCH METHODS

Study Design

The study adopted an explanatory sequential mixed methods design to assess students' satisfaction with the practices and implementation of HU's NREPs. An explanatory sequential mixed method research design is a two-phases model in which, first, collecting quantitative data and then collecting qualitative data that assist to elaborate on the quantitative findings was implemented (see figure 1). Hence, quantitative survey data were collected through a 5-point Likert Scale in the first phase, and then qualitative data were collected using semi-structured interviews in the second phase. According to Creswell (2012), the approach of using explanatory sequential mixed method research design is that the "quantitative data and results provide a general picture of the research problem; more analysis, specifically through qualitative data collection, is needed to refine, extend, or explain the general picture" (p. 542).

Hence, in this study, the quantitative data were used to arrive at pertinent findings that are relevant to the target population and the qualitative data were used for cross-checking with the quantitative data. The initial phase of data collection (the quantitative phase) was arranged to draw conclusions from the study population through descriptive statistics while the second phase of data collection (the qualitative phase) was made to collect pertinent qualitative data to cross-check them with each other and with the quantitative

data to draw empirical conclusions and policy implications. The target population comprises all non-regular education students of HU in the year when the study was conducted.

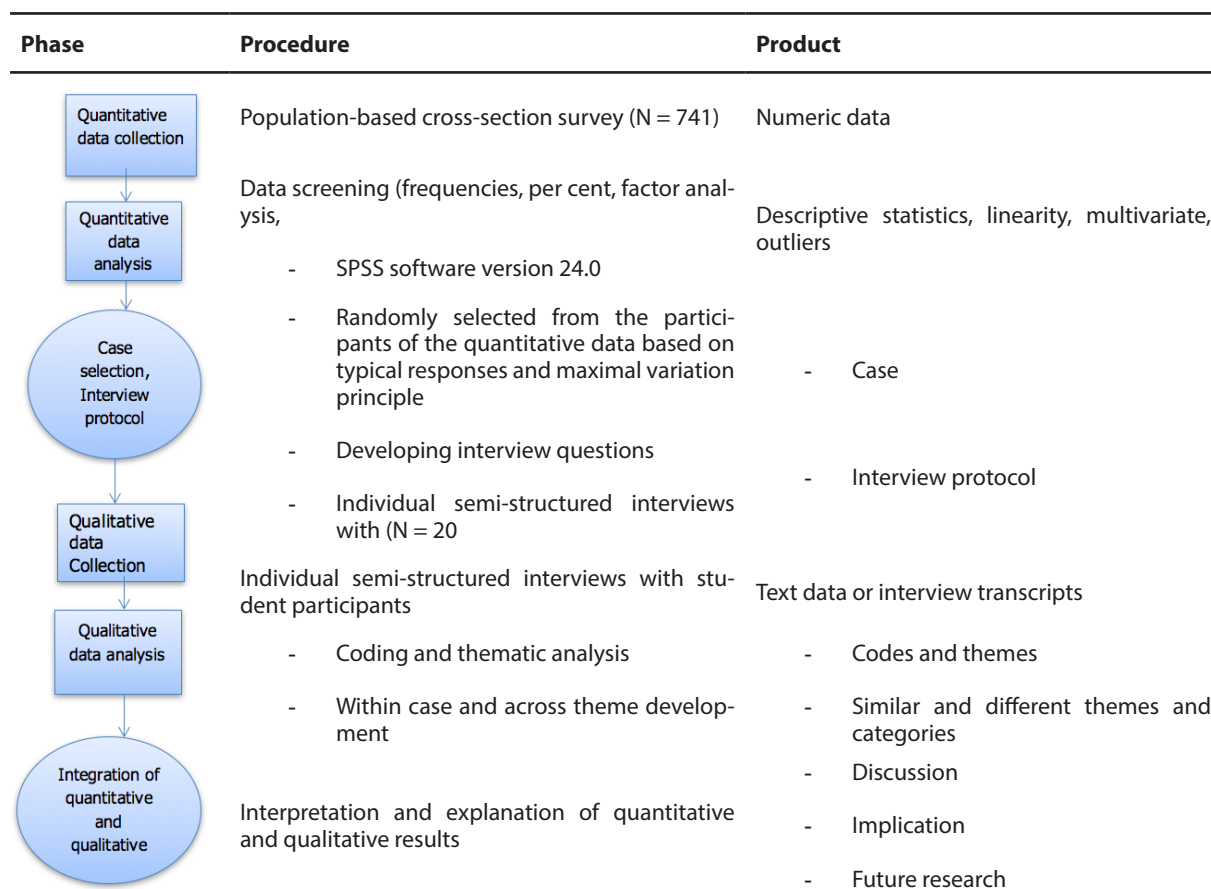


Figure 1. An Explanatory Sequential Mixed Method Research Design
(Adopted from Creswell, 2012)

Data Sources and Participants

Data were collected from primary sources around the issue at hand. Fieldwork was undertaken to collect the primary data through questionnaires and semi-structured interviews (SSIs) from sampled student populations in two phases. We first collected the quantitative data using the Likert-scale questionnaire and then qualitative data using SSIs.

Quantitative Phase

In the first phase of data collection, the Likert-Scale questionnaire was used to obtain data from significant numbers of respondents (741) drawn from the three modalities of HU's NREPs. The respondents of this study were sampled from 14, 578 non-regular students enrolled in the 2014/15 academic year at Haramaya University (HU, 2014).

The sampled students' populations were proportionally selected as a representative sample first by the programs they enrolled in and then by their respective departments. Accordingly, 5% (n = 750) of the student population was considered for the study using a stratified random sampling technique. After consents were made with both students and middle-level management, a questionnaire was distributed to 750 sampled participants.

Of these 750 sampled participants, 741 filled and returned the questionnaire, while the remaining nine (9) participants did not return the questionnaire. The participants were randomly selected so that they could represent the students of the different programs under the NREPs. Accordingly, nearly 47% (n = 346) of the participants were from Summer Education Programs Undergraduate (SEP UG) students, 24.9% (n = 177) were from DEP, 17.1% (n = 127) of the participants were from Continuing Education Program Undergraduate (CEP UG) students, 8.6% (n = 64) were from Summer Education Program Postgraduate (SEP PG) students, and 3.6% (n = 27) were selected from CEP PG (see Table 1).

The questionnaire consisted of 22 Likert Scale items intended to measure students' satisfaction with service quality and practices of the NREPs of HU. The questionnaire comprised two main sections: (1) the demographic characteristics such as age, gender, educational qualifications, study disciplines, and marital status; (2) questions intended to measure students' satisfaction and perceptions about services being provided towards their academic success based on a 5-point Likert scale used for data collection with "1" being "strongly disagree" and "5" being "strongly agree".

Table 1. Total number of Enrolled Students in 2014/15 and Samples drawn from the population

Programs	The total population in 2014/15			Samples				
	Male	Female	Total	Male	Female	Missing	Total	%
CEP, UG	1780	676	2456	93	29	5	127	17.1
CEP, PG	489	19	508	25	1	1	27	3.6
DEP	1929	2022	3951	99	69	9	177	24.9
SEP, UG	5068	1372	6440	267	60	19	346	47
SEP, PG	1163	60	1223	59	3	2	64	8.6
Total	10429	4149	14578	543	162	36	741	100

This descriptive analysis shows the demographic characteristics of respondents chosen from the HU NREPs. The output of the SPSS version 24.0 shows that there were about 5% missing values in response in terms of gender. There was an overall fair distribution between males and females with about 73% and 22% respectively. The expectation was that more males than females would form part of this study based on the socio-economic and cultural realities in Ethiopia that females get fewer opportunities in education than males. In terms of age, about 66% are 26-40 years old, about 29% of students are between 18-25 years old, and about 5% are more than 40 years old. Regarding their qualification, there were about 10% missing values, about 78% are in the bachelor degree, and about 12% are in the masters' degree. Concerning the respondents' years of services after the last qualification, 40.5% are between 0-5 years services, about 18% are in the range of 6-10 years of service, about 10% are between 11-15 years of service, 9.7% of the respondents have more than 15 years of service, and the missing value in this regard was about 22%. Concerning marital status, about 71% are married, about 25% are unmarried, 0.8% are widowed /widowers, and the missing value was about 3% (See Table 2).

Table 2. Demographic Characteristics of Student Respondents (n= 741)

Demographic Characteristics	Description	Frequency (n)	Per cent (%)
Sex	Male	543	73.3
	Female	162	21.9
	Total	705	95.1
	Missing System	36	4.9
	Total	741	100
Age	18-25	210	28.3
	26-30	342	46.2
	31-40	135	18.2
	above 40	33	4.5
	Total	720	97.2
	Missing System	21	2.8
	Total	741	100
Educational Background	Degree	581	78.4
	Masters	91	12.3
	Total	672	90.7
	Missing System	69	9.3
	Total	741	100
Service year	0-5	300	40.5
	6-10	132	17.8
	11-15	75	10.1
	Above 15	72	9.7
	Total	579	78.1
	Missing	162	21.9
Total	741	100	
Marital status	Married	525	70.9
	Unmarried	186	25.1
	Widowed	6	0.8
	Total	717	96.8
	Missing system	24	3.2
	Total	741	100

Variables Measured

Likert-Scale was used to measure the entire variables used in the quantitative phase of this study. The overall satisfaction level of respondents was considered in relation to academics, resources, administration, and assessment and feedback-related services of HU's NREPS. The variables are categorized into ordinal and dichotomous. The ordinal classification ranges from 1-5 (1 = strongly disagree; 2 = disagree; 3 = neutral; 4 = agree and 5 = strongly agree). However, the dichotomous classification is nominal and the binary classification is derived from the ordered categories and coded as 1 if the respondent is satisfied and with measurement variables and 0 if the respondent is not satisfied with services at HU's NREPs.

Demographic variables (such as age, gender, and educational background of the respondents), and the four constructed variables (academic activities, resource availabilities, administration services, and assessment and feedback techniques) were the assumed independent variables for this study. All course delivery modalities, learning-teaching process, courses materials, instructors teaching skills, course delivery methods and techniques, and classroom management have been assessed in the academic category of the variable. Various scholars indicate that these measurement items are very important in the academic world of higher institutions (Skordoulis, Chalikias, and Koniordos, 2014). Availability of resources has been examined using

specific inquiries that include laboratories, libraries, appropriateness of classrooms, and electric power supplies. Administrative services, on the other hand, were evaluated about the registration process and tuition fee collection, provision of market-oriented programs, supervision of courses content, breadth, overall evaluation of the programs by top, middle and low-level managements, complaints, and grievance handling of management bodies regarding courses delivery assessment and grading systems, admission, and graduation practices. These variables were considered because they are among the determinant factors that influence students' satisfaction in higher education institutions (Ambachew and Mekonnen, 2014). Assessment and feedback techniques which comprise the implementation of continuous assessment, transparency in examination and assignment correction, and overall feedback techniques in course handling were also variables considered in this study. These variables were assessed because they are very important in boosting students' satisfaction with the learning-teaching environment. As Maggs (2014) argues, feedback on students' assessments helps them both to modify their behaviours and improve their subsequent performances.

Quantitative Data Analysis

The quantitative data of this study were analyzed using SPSS version 24.0 to obtain the required results for the Likert Scale measurement. Descriptive statistics, frequencies, means, standard deviation, and standard errors were used in interpreting and presenting the data. The factor analysis model was used to detect the main concepts and ordinal logistic regression of the ordinal responses of the variables to be measured. The study consists of four independent variables (one demographic variable and three scale items variables). The dependent variable for this study is the overall satisfaction, which comprises four items scale (see Table 4). The four features that were identified as predictors of factors influencing students' satisfaction with the practices and implementation of HU's NREPs at the quantitative phase of the study were: (1) academic (teaching, tutoring, and learning factors), (2) administrative role-related factors, (3) resource/facilities (library, study materials, laboratories), and (4) assessment and feedback factors.

Qualitative Phase

The chief intent of these mixed-methods sequential explanatory studies was to identify the factors that influence students' satisfaction with HU's NREPs. Four features have been identified as predictors of factors influencing students' satisfaction with the practices and implementation of HU's NREPs at the quantitative phase of the study: (1) academic (teaching, tutoring, and learning factors), (2) administrative role-related factors, (3) resource facilities (library, study materials, laboratories), and (4) assessment and feedback related factors.

In the qualitative follow-up phase of data collection for this study, SSIs were used. As Longhurst (2003) states, "[a] semi-structured interview is a verbal interchange where one person, the interviewer, attempts to elicit information from another person by asking questions" (p. 103). In a similar vein, McIntosh and Morse (2015) state that "[t]he SSI is designed to ascertain subjective responses from persons regarding a particular situation or phenomenon they have experienced" (p. 1). Accordingly, 20 students were selected randomly and proportionally from each NREP of the university for SSI. The interviews were conducted at the different centres of HU NREPs (main campus (HU), Addis Ababa, Dire Dawa, and Harar. to elicit pertinent information. Before the interviews were conducted, the interviewees were informed that their names and the information they provide would be kept confidential.

The qualitative data collected during the second phase of the study was particularly used to check the soundness of the data collected through the quantitative method during the first phase of the data collection phase and augment them in the effort to explain deeply the topic under the study. According to Creswell (2012), in the qualitative phase of data collection and analysis in a sequential explanatory mixed-method research, investigators can use qualitative follow-up procedures to elicit more understanding of the research questions that are fully or partly unanswered.

The following interview guide questions were developed to get the responses of the interview participants regarding their satisfaction with the NREPs: (1) How is your satisfaction with the service delivery of HU's NREPs? and (2) What factors are responsible for influencing (either positively or negatively) your satisfaction with the service delivery of HU's NREP you are attending?

The SSI was conducted fifteen days after the statistical analysis was completed. Interviews were conducted with the 20 randomly selected participants from each program after calculating the number of participants to be included. Accordingly, from SEP UG (n = 9), from DEP (n = 5), from CEP UG (n = 3), from SEP PG (n = 2), and from CEP PG (n = 1) were randomly selected from the student population who completed the quantitative questionnaire. Though the proportions of the departments they were attending were not considered during the selection of the 20 participants, the maximal variation strategy that Creswell (2012) recommends was assumed. As a result, compositions of gender, age, geography, and respective fields of study in the NREPs were carefully considered.

Qualitative Data Analysis

All interviews were audiotaped and transcribed verbatim to facilitate subsequent data analysis. The analysis was performed using the following seven steps of qualitative analysis recommended by Ivankova and Stick (2007). These are (1) exploring data; (2) coding the data; (3) verifying the codes; (4) developing themes by using codes; (5) connecting and interrelating themes; (6) constructing narratives composed of descriptions and themes; and (7) cross-case thematic analysis (Ivankova and Stick, 2007, p. 103).

In this study, first, the audiotaped interviews were transcribed and translated into English and the textual data were thematized for analysis. The textual data were then coded and categorized based on the emerging themes pertinent to the objectives of the study. The main themes and subthemes were extracted by going through the textual data of the interviews several times for conformability, dependability, and transferability of the data. Hence, the trustworthiness of the qualitative data was checked and rechecked for the accuracy of the results emanating from them vis-a-vis the data collected through the quantitative method and review of related literature.

RESULTS AND DISCUSSIONS

Quantitative Data Results and Discussions

The quantitative phase of this study was intended to identify the levels of students' satisfaction with the overall practices and implementations of HU's NREPs. Hence, the dependent variable is 'students' satisfaction' that was measured by using 22 Likert question items. To compute the overall students' satisfaction with the practices and implementations of HU's NREPs all of the independent variables were coded as 0 = not satisfied and 1 = satisfied. All 0-3 responses were coded as not satisfied, though the response level of 3 indicates neutral, which does not always necessarily indicate disagreement or dissatisfaction with the variable. All 4-5 responses were coded as satisfied with HU's NREPs.

The sampled respondents were asked to indicate their level of overall satisfaction with the academic performances (teaching-learning process), resources/facilities availability, administrative services, and assessment and feedback) of the HU's NREPs. Based on the responses, the level of students' satisfaction is presented in Table 3. There was a relatively high percentage (65.78%) of the students' satisfaction with assessment and feedback techniques. Table 3 shows that the satisfaction of respondents with academic practices and administrative activities were significant percentages of 64.8% and 61.65% respectively. However, relatively low percentages (53.7%) of the respondents were satisfied with resources/facilities availability. It is not difficult to decipher from these figures the fact that nearly half (46.3%) of the respondents did not appreciate the level of satisfaction with the availabilities of resources/facilities (such as laboratories, libraries, and other resources) of the NREPs of the university. Regarding the dissatisfaction level with academic activities, administrative services, and assessment and feedback techniques, 35.2%, 38.35%, and 34.2% of respondents were not satisfied respectively.

Table 3. Descriptive statistics for students' overall satisfaction with HU's NREPs using construct variables

Variables	Not Satisfied	Satisfied	Total
Academics	35.2%	64.8%	100%
Resources	46.3%	53.71%	100%
Administrative	38.35%	61.65%	100%
Assessment	34.2%	65.8%	100%

Table 4. Distribution of Scale Items of Mean, Standard Deviation, and Standard Error values

Construct variables	Items	Mean	SD	Cronbach's alpha
Academic	I am satisfied with the courses delivery modalities of the NREPs of HU	3.96	1.093	0.872
	I am satisfied with the learning/teaching materials of HU's NREPs	3.81	1.171	
	I am satisfied in instructors' courses offering methods and techniques in the non-regular programs	3.67	1.166	
	Most teachers in HU NREPs teach with their full potential.	3.66	1.042	
	Best instructors are often involved in HU's NREPs	3.66	1.111	
	The instructor's use of time in the learning-teaching process of the HU NREPs is effective.	3.64	1.113	
Resources	HU non-regular programs have well-established libraries and other facilities for its students	3.44	1.170	0.73
	Electric power supplies and lighting at HU's non-regular programs classes and centres are satisfactory.	3.42	1.205	
	HU NREPs' laboratories are sufficient concerning the number of students	3.60	1.266	
	HU's NREPs learning classes at centres are effective and up to standard	3.50	1.167	
	HU's NREPs have many contributions to the human resource development of the country	3.42	1.205	

	The registration process and fee collection in the NREPs are effective.	2.69	1.334	
	The NREPs of HU are relevant to the interests, needs, and goals of students	3.36	1.141	
Administrative	Non-regular education courses are of sufficient content, breadth, and length to permit the students to learn and attain the required knowledge, skill, and abilities	3.17	1.068	0.449
	HU develops, implements, and evaluates the effectiveness of its NREPs	3.01	1.126	
	In the NREPs of HU, students' complaints or grievances regarding courses and grades are carefully investigated and feedback are given in time	2.83	1.281	
	The admission practices and placements of NREPs are effective and carefully made	3.03	1.276	
	There is a sufficient provision of continuous assessments by instructors who offer courses in the NREPs of HU	3.28	1.156	
	There is transparency in assignment and exam correction and feedback in time in the NREPs of HU	3.59	1.124	
Assessment	Exam distribution and administrations are effective and carefully made.	3.79	1.072	0.808
	Students are well informed of their roles as students before dealing with each course	3.78	1.114	
	Irregularities in course handling and grading students in the non-regular educations in HU are not the main problems	3.91	1.133	

Qualitative Data Results and Discussion

The qualitative analysis of the 20 participant interviews generated essential data associated with the quality of service of HU's NREPs. Accordingly, the SSI interviews revealed that three major issues influence students' satisfaction with the service delivery of NREPs. These are (1) Academics pertinent services affecting student satisfaction, (2) general administrative and management issues, and (3) learning resources/facilities as indicated in Table 5 below.

In the qualitative phase of this study, academic-related issues such as instructors' course handling, instructors' transparency in assessment and feedback, instructors' time management, and appropriately and accurately advising on senior essays and MA/MSc theses of students were identified. Administrative and management-related factors like admission procedures, registration process, exam administration, and efficient orientation and communication on university rules and regulations were also identified. Furthermore, in relation to the availability of resources/facilities, the availability of libraries, laboratories, the internet, and other teaching materials were issues identified by the interviewees.

Table 5. Themes, Sub-Themes, and Exemplary Translated Interview Statements

Main Themes	Sub-themes	Exemplary translated interview statements
Academics		<i>"I am very satisfied with the relevance of the program I am attending. All my colleagues and I do not have problems because we were already admitted to the programs of our choices and market demands"</i> (38 years, DEP, 35 years, SEP UG).
	• Programs relevance	<i>"In terms of quality, however, one can question a lot about the curricula of the programs, module design, and management, course/module handling, professional ethics of instructors, pedagogical skills, and knowledge of instructors"</i> (28 years, CEP PG).
	• Course Delivery	<i>"I like much of our instructors' course delivery techniques. However, there were few instructors whom I felt were pedagogically and professionally incapable of handling the courses"</i> (30 years, SEP UG).
	- Teaching/ Tutoring	<i>"I have never seen my exam and assignment results since my enrolment in this program"</i> (31 years, SEP, UG).
	• Assessment and Feedback	<i>"I am now a graduating class. I used to see only my courses letter grades posted on the notice board of the university. I am not sure whether those grades are mine or not since I did not know my exam and assignment results"</i> (40 years, SEP UG).
	- Transparency in exam correction	<i>"I need to know how I am coping with coursework through tests and assignments. But I did not get the chance from my instructors yet"</i> (36 years, SEP UG).
	- Transparency in assignment correction	<i>"I wish I would have known my errors in assignments and exams. Unfortunately, I have not seen all courses' exams and assessment results except their grades posted"</i> (31 years, CEP UG).
	- Transparency in course grading	<i>"I do not want to discuss my thesis openly with my advisor as he is not willing to closely discuss it with me. However, I am always eager to work with him on my thesis in a friendly manner"</i> (33 years, CEP PG).
	• Commitment	<i>"I have not been adequately and accurately advised. Both major and co-advisors seem very reluctant to advise me to the level required"</i> (29 years, SEP PG)
	- MA/MSc thesis advising and supervisions	<i>"Advisors often promise to help to the maximum possible but most of the time they are not available in their office as per their consultation hours"</i> (33 years, CEP PG).
Administrative and Management	• Time management	<i>"I like the time management of many of our instructors. They come to class and leave class on time. However, some instructors come to class very lately and leave very early. I feel that such instructors do not care about time management"</i> (34 years, DEP).
	• Admission procedures	<i>"I feel that the admission procedures of the NREPs are good and as per the rules and regulations but the problem is that sometimes classes do not begin right after admission and enrolment"</i> (26 years, CEP UG).
		<i>"I hate my summer classes. A very large number of students are being enrolled and I feel that our teachers do not have time for such large classes to check the progress of each student"</i> (27 years, SEP UG).
	• Registration and Tuition Fee collection Processes and procedures	<i>"The fee collection process of the SEP is not conducive. It is boring to wait in a queue for a long time during registration to pay tuition or registration fee and get registered. The registration process is time-wasting and completely traditional"</i> (35 years, SEP UG).
		<i>"As far as I know, most students were not discouraged by the tuition fees. It is affordable. However, some students were asked much amount of money when they repeat courses for various reasons and this is very much discouraging"</i> (33 years, DEP).
	• Effective Orientation and Communication	<i>"There is no effective communication and orientation on how the learning and teaching process is accomplished in HU right from the beginning of our admission. We need to know the rules and regulations of the university in general and the SEP in particular"</i> (29 years, SEP UG).
	- University's rules and regulations	<i>"I feel there is a poor record handling in the CEP. Many of our students are told that they did not take some courses later after years even though they claim that they took them already"</i> (28 years, CEP UG, and 41 years, DEP).
	• Setting schedules	<i>"I sometimes observe overlap of class and exam schedules for students who add courses and take them with some other class students (not their batches). Failures to consider such circumstances were some of the sources of complaints I often hear from students. Generally, there were timetabling problems (makeup and tutorial exams, courses, classes, etc.)"</i> (32 years, DEP).

Resource Availability	<ul style="list-style-type: none"> • Availability of learning-teaching resources/facilities - Availability of libraries, ICT, quality modules/books 	<p><i>"I am not satisfied with HU's CEP learning resources/facilities. For example, there is no well-established library in our centre, and the computer laboratory is not sufficient as many students want to use them" (28 years, CEP UG).</i></p> <p><i>"When I have free time, I want to go to the library. However, I could not access reference materials from my centre, and I am obliged only to depend on the courses modules" (33 years, DEP).</i></p> <p><i>"I had never enjoyed HU's library as much as I can for the last three summers except when individuals or group assignments were given. I always feel a shortage of time to study in libraries due to the tight schedule of the summer program" (27 years, SEP).</i></p> <p><i>"Some of the modules I am offered seem very poor in quality and difficult for independent learning and the instructors often fail to complete them within the reserved time for tutorial classes as they are very bulky" (38 years DEP).</i></p> <p><i>"Some of our programs need well-established laboratories. However, we do not have labs for our engineering courses at our centres" (31 years CEP, UG).</i></p>
	<ul style="list-style-type: none"> • Availability of Laboratories 	<p><i>"Few computers are available in the computer lab. Even the available ones are not good for practical support. They are very old and you should wait several minutes to start them up (26 years, CEP UG).</i></p> <p><i>"We need internet connectivity at our campus either wired or wireless. But no such service at all" (36 years, SEP PG).</i></p>

Theme 1: Academics Pertinent Services Affecting Student Satisfaction of HU's NREP

Programs Relevance: The relevance and usefulness of programs offered under the NREPs of HU were not questionable as they were launched based on students' and stakeholders' demands. As a result, students did not have any problem as far as the relevance and usefulness of the programs were concerned.

Courses Delivery: The qualitative data obtained from the SSI interviews revealed that NREPs students' satisfaction with course delivery was determined by the instructors' subject matter knowledge and pedagogical skills.

Assessment, Feedback, and Academic Advising: Participants of the interviews generally believed that transparency in assessment and feedback is essential in determining students' academic progress but instructors of the NREPs of HU were rarely transparent in this regard. Hence, the practices and implementation of instructors' transparency in assignment and exam corrections and course grading were found to be less satisfactory in the NREPs of HU. Though Students were eager to get feedback on their works and progress in discussion with their instructors, in the context of many of the HU's NREPs this was lacking. Lack of transparency in assessment also created not only an atmosphere of mistrust between students and instructors but also students' lack of trust in the final grades they were given in each course. For example, 25 years old female student of CEP UG, reflected on the assessment and feedback techniques of her courses instructors as follows: "I have never seen my exam and assignment results since my enrolment in this program."

It is needless to mention that this phenomenon was jeopardizing students' satisfaction. This finding goes with the work of other scholars in the field. For example, according to Browne, Kaldenberg, Browne, and Brown (1998), students' satisfaction is driven by their assessments of course quality and other curriculum-related factors. In a similar vein, Ramsden (1992) and Rust et al. (2003), argue that efficient and effective assessment and corrective feedback are pivotal for driving students learning behaviour. Students often harness good marks in course assessment with good teaching and tutoring (Ivankova and Stick 2007).

Students' satisfaction regarding instructors' advising and supervision was another sub-theme that emerged from the interviews. Many of the quotations from interviews indicate that students of the NREPs of HU were less satisfied with the advisory or supervisory services they were provided with. This again indicates that there is a significant gap in terms of service delivery as exemplified by instructors' disposition towards their advisees.

Classroom and Time Management: Interview participants also addressed that teachers frequently miss classes or tutorial sessions without substantial reasons. On the other hand, interview respondents from the graduates of the NREPs of HU unanimously argued that the majority of the teachers were not serious when they taught courses or handled tutorial classes. As they indicated, many teachers do not start tutorial classes

or teaching courses of a semester on time but they finish classes before using all the hours assigned for each course. As they further stated, a considerable number of teachers come late to class every time and leave class early (see Table 5).

Theme 2: Administrative and Management-Related Factors Affecting Students' Satisfaction

From participant interviews, it is possible to realize that students' satisfaction with service delivery in the area of administration and management was significantly affected by the following factors.

Lack of Proper Communication and Orientation: participants in the interview believed that lack of proper communication and orientation about the university's rules and regulations in general and the practices of NREPs, in particular, exposed them to several messes and irregularities. They strongly stated that they were exposed to wastage of their money, time, and energy due to a lack of sufficient information about the actual procedures and processes of NREPs. Late registration with a penalty, inactively attending courses and achieving poor results in course works and repeating courses with additional tuition fees, missing exams, etc are partly the consequences of lack of information about the actual requirements of NREPs. Most students did have little or no knowledge at all about the pedagogy of NREPs even after joining one of the programs. Furthermore, most of the students, if not all, did not do the assignments given to them by their instructors/tutors on their own but they were always supported by others around them either freely or by paying them at the expense of educational quality as they wrongly thought that their mission to be in one of the programs was not as such to acquire knowledge but to obtain a degree at whatever cost in the desire to get a job promotion.

Admission: Interview participants did not have serious concerns in the admission procedures of the NREPs except the absence of clear orientation and communication timely. They indicated that they were less challenged by the admission process of the NREPs of HU. However, the SEP respondents did express their frustration due to the highly increasing number of students admitted and enrolled in some of the SEP departments that, according to them, was affecting the quality of the learning-teaching process and becoming a challenge for the administration. Instructors were thus facing the serious challenge of assessing students' learning progress. Apart from these issues, the university is said to have been successfully and effectively admitting its NREPs students in the fields of their choice. Hence, it seems that the admission procedure of HU's NREPs did not significantly affect students' satisfaction though the responses from informants from the different programs seem to be inconsistent (See quotes from Table 5).

The Registration Process, Tuition Fee Collection, Communication, and Orientation: According to the interview results of this study, the registration process of HU's NREPs is time-wasting and completely traditional. The lack of a faster and efficient process of registration made the students feel bored and unsatisfied.

The interview participants indicated that the tuition fees paid for the different NREPs of HU were affordable but the absence of proper orientation and effective communication on the rules and regulations of the university were exposing many students to unnecessary monetary punishments. Students obtained Incomplete (I), No Grade (NG), and F grades sometimes because they were not well informed about the procedures, rules, and regulations to be followed to successfully deal with courses of the different programs. Scoring these grades would cost students to repeat these courses paying higher fees than the fees for the normal course registrations. In addition, late registration with a penalty which was also partly one result of lack of adequate orientation would bring additional cost on students. As most of the students of NREPs were self-sponsored, these additional costs would affect students' satisfaction with the service delivery of the NREPs of the university. These and other additional costs contributed to students' dissatisfaction with the service delivery which the administrative management did not consider at all.

Setting Timetables: As mentioned elsewhere in this paper, NREPs, as their names imply, are education arrangements that do not follow the format of the REPs and hence need careful considerations of timetabling and scheduling. Participants of the interviews pinpointed that due attention needs to be given to exam schedule preparations of NREPs as students who added courses faced overlap of course and exam schedules which forced them to miss one of the courses or exams. This also contributed to some extent to students' dissatisfaction with service delivery though the problem did not affect the majority of the student population

Theme 3: Availability of Learning-Teaching Resources/Facilities

The availability of educational resources/facilities such as libraries, laboratories, ICT, and others is very significant in bringing about students' satisfaction with service delivery. The finding of this study revealed that the lion's share of students' dissatisfaction with the service delivery of HU's NREPs goes to the unavailability and inefficiency of educational resources/facilities.

Availability of Libraries, ICTs, and Laboratories: These are the main resources/facilities that support effectively the learning-teaching process in any educational institution. Regarding the NREPs of HU, almost all SSI participants indicated that they were not satisfied with the availability of libraries, ICTs, and laboratories (See Table 5). According to informants, NREPs are not effectively supported by the necessary services such as libraries, ICTs, and laboratories. The absence of these supporting services were other crucial factors that negatively affected students' satisfaction with the NREPs of HU. The availability of resources/facilities is mandatory in providing quality education and in satisfying students' educational needs. As Idiegbeyan-Ose & Esse (2013) state, “[l]ibraries are service-oriented organizations established for the provision of relevant information resources and quality services to meet their users' information needs” (p. 66). In the same token, laboratories are very important in assisting learners for scientific discovery and inquiry-based learning. ICTs are also the most relevant resources in supporting libraries and laboratories for effective functioning.

Text Books, Reference Books, Modules, and Related Resources: The availability of up-to-date textbooks, reference books, quality modules, and related resources is another crucial factor that affect students' satisfaction with NREPs of HU. Interview respondents indicated that the teaching modules and other materials they were being offered were poor in quality as many of them were haphazardly prepared and their contents were copy-pasted from internet sources without due regard to pedagogical and professional concerns. Interviewees also indicated that most of these modules were bulky both in content and in the number of pages they contained and hence could not be covered by tutors within the specified time allotted to the theme. This forced students to be left to themselves to cover all the chapters left uncovered by the tutors of the modules. Furthermore, informants also indicated that many of the modules and teaching materials were outdated once as they were not revised for a long period. It is, therefore, needless to mention that all these service delivery defects would negatively affect students' satisfaction with the NREPs of HU and hence demand serious attention from the university to be addressed.

CONCLUSION AND RECOMMENDATIONS

It is needless to say that enhancing students' satisfaction with educational service delivery is very essential in producing a well-educated workforce for national development. Students' satisfaction needs to be seen not as an optional aspect but as one of the core components of the education process.

Concerning the level of students' satisfaction with HU's NREPs, the findings of the study revealed the fact that a lot remains to be done to bring HU's NREPs to the required standard. Therefore, assessing student satisfaction with the NREPs is necessary from the viewpoint of identifying the internal features affecting students' satisfaction. Since NREPs aim at the maximum involvement of people belonging to different cross-sections of society, it is natural for diverse groups to raise questions and seek answers on the efficiency and effectiveness of these programs from one angle or the other (Tefera, 2010).

NREPs can gain students' satisfaction via the delivery of up to standard services, and this is an integral part of securing a sustainable competitive advantage in today's educational market (Huang, Binney, and Hede, 2012).

The findings derived from both the quantitative and qualitative data indicate that the issue of quality service of the NREPs of HU deserves critical attention and serious intervention for improvement. The issues of academics, administration and management, and resources/facilities are very important in students' satisfaction with NREPs which the university should closely consider in its practical roles to improve the quality of its NREPs. Both phases of the study consistently revealed that these factors need serious scrutiny to sustainably and progressively improve the practices and implementation of NREPs at HU.

The internal problems identified through the study were lack of experts who have the know-how about non-regular education, lack of proper attention from the university in strengthening the administrative capacity

of the programs and in providing the necessary resources for these programs, and the teaching staffs' wrong perceptions about the programs and poor knowledge and skills about NREPs' teaching modalities.

The findings of the study are more or less in line with the findings of previous scholars in the field of education. For instance, Ramsden (1991) states three important factors that affect the quality of NREPs. These include the quality of student learning, their satisfaction with their courses, and their lecturers' descriptions of their attitudes to teaching and students.

All the above conclusions call for all stakeholders to work hard separately, collaboratively, and jointly to address the gaps and challenges of providing quality education in the non-regular modalities to achieve students' satisfaction by fulfilling educational support resources and technologies. HU should work hard for the betterment of its NREPs by providing appropriate academic, administrative, and logistic services. Both academic and administrative staff involved in the programs should exert more effort and commitment to improving the teaching-learning process and services that support the learners including library services, module preparation and distributions, and other facilities to achieve students' satisfaction. Students' satisfaction is an increasingly important indicator of the quality of teaching performance and can be considered as a measure of the outcome of the education process itself (Ramsden, 1991). As a result, the HU's NREPs should practice achieving the students' satisfaction in all its dimensions. As Munteanu, Ceobanu, Bobâlcă, and Anton (2010) rightly argue, being driven to engage in a commercial rivalry, higher education institutions have to be cautious not only about the quality of education they provide but also about students' feelings regarding their learning experiences.

Future Research

This research is limited to students' service quality satisfaction with HU's NREPs. Future studies in this area should examine students' satisfaction with NREPs across HEIs of the country. Future research in this particular area should also cover more diversified participant groups from the different universities of the country as this research only focused on the case of HU. Future research can additionally investigate the roles of teachers on student satisfaction in the NREPs. This research only sought internal factors on students' satisfaction with NREPs. Future research should also look at external factors such as socioeconomic and sociocultural factors, and individual motivations that were left unaddressed in this particular research.

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REFERENCES

- Aldemir, C., & Gulcan, Y. (2004). Student satisfaction in higher education: A Turkish case. *Higher education management and policy*, 16(2), 109-122.
- Alemayehu, B. and Solomon M. S., (2017). Historical analysis of the challenges and opportunities of higher education in Ethiopia. *Higher Education for the Future*, 4(1), 31-43.
- Alves, H., & Raposo, M. (2009). The measurement of the construct satisfaction in higher education. *The service industries journal*, 29(2), 203-218.
- Ambachew, M. and Mekonnen, T. (2014). Determinants of student and staff satisfaction with services at Dilla University, Ethiopia: Application of single and multilevel logistic regression analyses. *Social indicators research*, 119(3), 1571-1587.
- Arambewela, R., & Hall, J. (2013). The interactional effects of the internal and external university environment, and the influence of personal values, on satisfaction among international postgraduate students. *Studies in higher education*, 38(7), 972-988.
- Baguma, P. and Aheisibwe, I. (2011). Issues in African Education. In A. B. Nsamenang and Therese M.S. Tchombe, (eds), *Handbook of African Educational Theories and Practices: A Generative Teacher Education Curriculum*, PP.21-34. Human Development Resource Centre (HDRC), Cameroon.
- Birhanu, N. W. (2014). The Quality of Evening Education Program at Jimma Teachers' Training College (JTTC), In Oromia, Ethiopia. *European Scientific Journal*, 10(28), 312-326.
- Boyer, S. L., Edmondson, D. R., Artis, A. B., & Fleming, D. (2014). Self-directed learning: A tool for lifelong learning. *Journal of Marketing Education*, 36(1), 20-32.
- Browne, B.A., Kaldenberg, D.O., Browne, W.B., and Brown, D., (1998). Students as customers: Factors Affecting Satisfaction and Assessments of Institutional Quality, *Journal of Marketing for Higher Education*, 8 (3): 1-14.

- Creswell, J.W. (2012). *Educational Research: Planning, conducting, and evaluating quantitative and qualitative research (4th ed.)* Pearson Education Inc. USA, Library of Congress.
- Dawit, D., Getachew L. and Ashenafi, A. (2017). Assessment of Students' Satisfaction: A Case Study of Dire Dawa University, Ethiopia. *Journal of Education and Practice*, 8(4), 111-120.
- Fitzpatrick, R. (2001). Is Distance Education better than the Traditional Classroom? (<http://www.clearpnt.com/accelepoint/articles/>) Retrieved on 31 July 2018.
- Haramaya University. (2014). *Haramaya University Facts and Figures, 2005/06. Planning and Programming Office, Haramaya University.*
- Hodges, C. B., Moore, S., Lockee, B. B., Trust, T., & Bond, M. A. (2020). The difference between emergency remote teaching and online learning.
- Huang, Q. (2010). The relationship between service quality and student satisfaction in higher education sector. *AU Journal of Management*, 8(1), 38-44.
- Huang, H. T., Binney, W., and Hede, A. M. (2010). Strategic marketing of educational institutions. In *ANZMAC 2010: Doing More with Less: Proceedings of the 2010 Australian and New Zealand Marketing Academy Conference* (pp. 1-9). ANZMAC.
- Idiegbeyan-Ose, J. and Esse, U.C. (2013). Students satisfaction with academic library resources and services: the covenant university library experience. *Information Impact: Journal of Information and Knowledge Management*, 4(1), 64-75.
- Ivankova, N. V., and Stick, S. L. (2007). Students' persistence in a Distributed Doctoral Program in Educational Leadership in Higher Education: A mixed-methods study. *Research in Higher Education*, 48(1), 93-135.
- Kotler, P., & Clarke, R. N. (1986). *Marketing for health care organizations*. Prentice-Hall.
- Larson, G.A., and Owusu-Acheaw, M. (2012). Undergraduate Students Satisfaction with Library Services in A Faculty Library in University of Education, Winneba. Ghana. *Library Philosophy and Practice (e-journal)*, 1027, 1-26.
- Lasonen, J., Kempainen, R. and Raheem, K. (2005). *Education and training in Ethiopia: An evaluation of approaching EFA goals* (No. 23). Institute for Educational Research.
- Loeng, S. (2020). Self-directed learning: A core concept in adult education. *Education Research International*, 2020.
- Longhurst, R. (2003). Semi-structured interviews and focus groups. *Key methods in geography*, 3(2), 143-156.
- Maggs, L. A. (2014). A case study of staff and student satisfaction with assessment feedback at a small specialised higher education institution. *Journal of further and higher education*, 38(1), 1-18.
- Mai, L. W. (2005). A comparative study between UK and US: The student satisfaction in higher education and its influential factors. *Journal of marketing management*, 21(7-8), 859-878.
- Malik, M. E., Danish, R. Q., and Usman, A. (2010). The impact of service quality on students' satisfaction in higher education institutes of Punjab. *Journal of Management Research*, 2(2), 1-11.
- Manning, G. (2007). Self-directed learning: A key component of adult learning theory. *Business and Public Administration Studies*, 2(2), 104-104.
- Martensen, A., Gronholdt, L., Eskildsen, J. K., and Kristensen, K. (2000). Measuring student-oriented quality in higher education: Application of the ECSI methodology. *Sinergie rapporti di ricerca*, 9(18), 371-383.
- McIntosh, M.J. and Morse, J.M. (2015). Situating and constructing diversity in semi-structured interviews. *Global qualitative nursing research*, 2, p.2333393615597674.

- Mishira, A. K. (2002). Economic Development and Skills Development. In Arun K. Mishira and John Bartram, (eds). *Perspectives on Distance Education: Skills Development through Distance Education*, PP. 1-8. Vancouver: The Commonwealth of Learning.
- MoE (2002). Five-Year Education Sector Development Program (ESDP II) (2002/03-2004/05). Addis Ababa: Ministry of Education.
- Mulatu, D. L. (2015). The Dynamics and Challenges of Distance Education at Private Higher Institutions in South Ethiopia. *Asian Journal of Humanity, Art and Literature*, 2(1), 9-22.
- Munteanu, C., Ceobanu, C., Bobâlcă, C., and Anton, O. (2010). An Analysis of Customer Satisfaction in a Higher Education Context, *International Journal of Public Sector Management*, 23(2): 124-140.
- Navarro, M. M., Iglesias, M. P., & Torres, P. R. (2005). A new management element for universities: satisfaction with the offered courses. *International Journal of educational management*, 19(6),505-526.
- Nisar, M. A. (2015). Higher Education Governance and Performance-based Funding as an Ecology of Games, *Higher Education*, 69(2): 289-302.
- O'Donovan, B. (2017). How student beliefs about knowledge and knowing influence their satisfaction with assessment and feedback. *Higher Education*, 74(4), 617-633.
- Olaniyi, F.O. (2015). The relevance of learning theories in adult and non-formal education. *Journal of Educational and Social Research*, 5(1), 261-261.
- Palacio, A. B., Meneses, G. D. and Perez, P. (2002). Configuration of the university image and its relationship with the satisfaction of students. *Journal of Educational Administration*, 40(5), 486.
- Ramsden, P. (1991). A Performance Indicator of Teaching Quality in Higher Education: The Course Experience Questionnaire. *Studies in Higher Education*, 16(2). 129-150.
- Ramsden, P. (1992). *Learning to teach in higher education*. London: Routledge.
- Rodie, A. R., & Kleine, S. S. (2000). Customer participation in services production and delivery. *Handbook of services marketing and management*, 33(1), 111-126.
- Skordoulis, M., Chalikias, M., & Koniordos, M. (2014, September). Students' satisfaction from their educational context through DREEM and LOT-R. In *Joint Conference on Knowledge-Based Software Engineering* (pp. 113-122). Springer, Cham.
- Tefera, D. (2010). The Effectiveness of Tutorial Program in Distance Education at the Tertiary Level: The Case of Alpha and Admas University Colleges. Unpublished MA. Theses, Addis Ababa University.
- Tekeste, N. (1996). *Rethinking Ethiopian Education*. Uppsala: Nordiska Afrikainstitutet.
- Tripathi, J.G. (2014). Distance Learning Courses become more popular in rural areas than urban areas? *International Journal of scientific research and management*, 2(3), 674-678.
- Tucker, S. (2001). Distance Education: Better, Worse, Or as Good as Traditional Education? *Online Journal of Distance Learning Administration*, 4(4).
- UNESCO. (2005). *Perspectives on Distance Education: Lifelong Learning & Distance Higher Education*. Commonwealth of Learning / UNESCO Publishing.
- Webb, D. and Jagun, A. (1997). Customer care, customer satisfaction, value, loyalty and complaining behavior: validation in a UK university setting. *Journal of Consumer Satisfaction, Dissatisfaction and Complaining Behavior*, 10, 139-151.
- Wilkins, S., and Balakrishnan, M. S. (2013). Assessing student satisfaction in transnational higher education. *International Journal of Educational Management*, 27(2) 143-156.
- Zeithaml, V. A. (1988). Consumer perceptions of price, quality, and value: a means-end model and synthesis of evidence. *Journal of marketing*, 52(3), 2-22.