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The Experiences and Challenges of Online Learning Technology for Teaching during the COVID-19 Pandemic among University Undergraduate Students

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ABSTRACT

Online learning refers to teaching and learning process through asynchronous and real-time communication over the Internet and with multimedia. This study examines the perception and acceptance of online learning as an alternative way in teaching undergraduate courses at School of Technology Management and Logistics (STML) after COVID-19. It also aims at identifying factors that facilitate online learning and the challenges of online learning. To accomplish the aim, this study applied a quantitative approach, in which data were collected using an online survey involving 156 undergraduate students at STML. Results show a moderate high level of acceptance on online learning. In addition, it was found that among four main factors that facilitate online learning, Enthusiasm ranked the highest, followed by Satisfaction, Self-Efficacy, and Enhancement of Communication Skills. Besides, results also reveal that among the main challenges encountered by majority of the students, delivery speed of teaching and learning, students' attitude, struggles and stress of online learning mode were the most common issues. Results yielded in this study add to the existing literature on the possibility of online learning as an alternative pedagogy in post COVID-19.

1. Introduction

In 2020, the COVID-19 virus spread all over the country, which led to the implementation of the Movement Control Order (MCO). No one was allowed to cross district unless with written permission from local police department. According to Michael [1], the Covid-19 was first discovered in December 2019, in a seafood market in Wuhan. It was proven that the virus was spread through person-to-person transmission [2-4]. The Director General of WHO in March 2020 [5] declared Covid-19 as a pandemic after its rapid spread and severity of the deadly virus across the globe. It was

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followed with an announcement of social distancing as a means of curbing the spread of the pandemic. Because of this pandemic, businesses, sports, and schools all over the world had to close and moved to online platforms. One of the most popular online applications is online learning. Online learning platforms play an important role in modern education, and they should encourage all students to attend classes regularly. They should be well-designed (covering instructional delivery and management of program [6], catering the needs of teaching and learning activities from the beginning to the end of the course [7]. Hrastinski [8] distinguished online learning into two, namely asynchronous and synchronous.

The rapid changes and disruptions caused by the unprecedented spread of the COVID-19 pandemic continue to transform learning and teaching experiences and the broader higher education landscape [9]. According to Sim *et al.*, [10], online learning pedagogy employs technology as the mechanism for educators to provide quality learning experience for students to engage in student-centred learning [11]. The sudden COVID-19 pandemic situation experienced globally has caused schools and institutions of higher learning to go fully online, including in Malaysia. Speculation has also begun spreading, about what the lasting effects of this will be, and what education may look like in the post-COVID era. There were mixed feelings among educators, parents and students on online teaching and learning. Some students were less motivated and had less interest to follow through with lessons conducted online, due to a lack of self-discipline or because they preferred face-to-face learning. In contrast to face-to-face learning, online learning is more to self-learning, in which students can be absent from the online class and use the poor internet problem as an excuse.

As many teachers and students survived the situation, and until a way to stop the spread of this deadly coronavirus is found, many people were still wondering, will online learning be the future learning environment for college students after COVID-19. Hence, this study discusses post-Covid-19 alternative online learning for undergraduate students at STML, opportunities and challenges with respect to Covid-19, and also adds values to the existing body of literature on online learning by providing a comprehensive awareness of teaching methods. Delivery adopted by universities, faculty and students, challenges and opportunities as the world's struggle to eradicate the epidemic. Thus, this study aims to identify the level of acceptance on online learning among undergraduate students at STML who have experienced full online learning mode. It also intends to identify the factors that facilitated online learning and the challenges encountered by university students [12].

2. Literature Review

2.1 Online Learning

Most researchers describe online learning as Web-based learning that is delivered through the Internet or an intranet or extranet [13]. In higher education, online learning is defined as teaching and learning through asynchronous and real-time communication over the Internet and with multimedia. It can be used interactively, and students' higher-order thinking skills were said to have improved because of it [14]. Thornton and Chris [15] say that online learning is a tool that could help teachers and students learn and teach better, but its effectiveness depends on how the tool is used. In practice, there are still a lot of unsatisfactory use of online learning [16]. Based on earlier research, there are three main factors affecting how well online learning works: technology, qualities of the teachers, and qualities of the students [17,18].

2.2 Factors Facilitating Online Learning

Several studies in the past explored on how students felt about online learning. Through their analysis on 198 students of online nursing course in Hong Kong found that the students perceived it as convenient and that they were in charge of their own learning and could find their way around [20]. In other studies, some other benefits of online learning have been perceived, which include intrinsic motivation [21], ease of retrieving information and saving money [22], able to understand the taught content [20], and potential to perform better [12,21,23]. Other benefits found in other studies include it saves time [2], it is convenient to study [20], it provides chance to be creative by using computer technology [2], and it gives timely feedback from the instructor [24].

2.3 Challenges of Online Learning

Even though studies in the previous section have shown that online learning has positive impacts, a number of studies found differently. Among problems students faced when dealing with online learning include unable to control oneself, unable to use technology well, and unable to manage time well [3,4]. Not only that, some students do not have a computer at home [9]. Besides, many also agreed that online learning increases workload, reduces human contact and interaction, and makes them hard to focus and tend to fall asleep [3,4,22,23].

2.4 Other Factors Contributing to Online Learning

Studies have explored on how well students performed and how happy they were with online learning in terms of their self-efficacy. As an instance, pupils who had a high level of internet self-efficacy performed better in school and had a greater sense of self-esteem than those who had a low level of self-efficacy [3,4]. Although [24] revealed that students' satisfaction with their courses and their grades was negatively correlated, another study found that students' confidence in using online technologies and self-regulated learning practices was positively related. Also, time, study environment, and self-control played a big role.

2.5 Acceptance of Online Learning

In Information System (IS) acceptance domain, academic acceptance on online learning environments (which is also called virtual learning environment, eLearning technology, learning management system, or content management system [25] is a hot research topic [25,26]. It is a web-based multimedia system that teachers and students can access at anytime from anywhere [27]. With that, it helps teachers run their classes more efficiently and gives students a better learning experience [28]. As online learning keeps becoming more popular, there have been studies looking at its roles in higher education [29]. In particular, some studies tend to find out how well online learning technologies were accepted in colleges and universities. Other studies either explored on how eLearning is used for teaching and learning and how it affected teachers' and students' learning outcomes, as well as at what made teachers or students accept online learning technology in higher education [30].

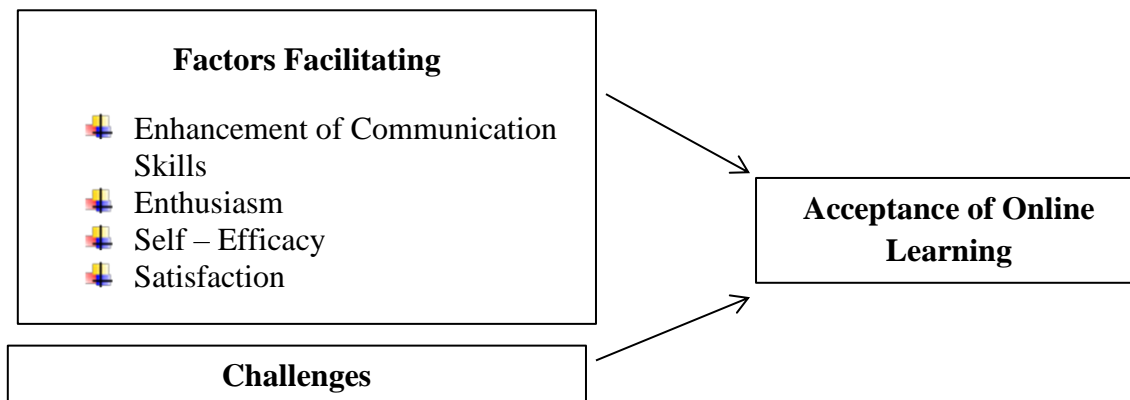


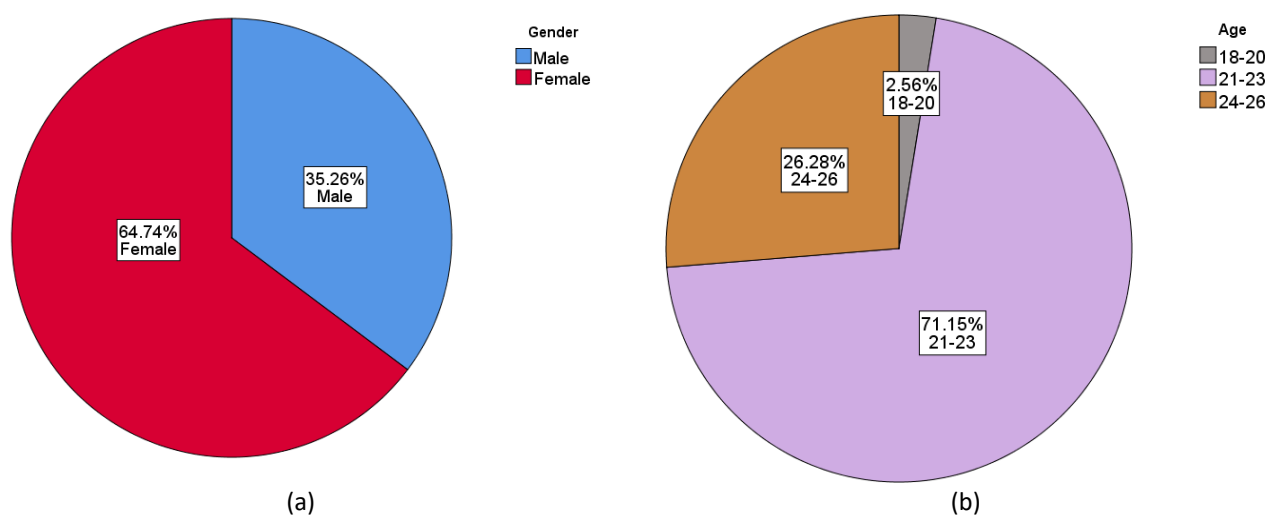
Fig. 1. Research framework on the acceptance of online learning

3. Methodology

This study applies quantitative approach in achieving the stated objectives. By determining the acceptance level of students, it can lead to a perspective on whether online learning could be an alternative way to teach after COVID-19. Participants in this study are undergraduate students at STML. Data were collected from them through an online survey, distributed through groups that house undergraduate students of STML. They were between 18 and 27 years old. Through this means, respondents felt more confident because their anonymity was ensured, compared to giving feedback face-to-face. It is also very convenient and saves time.

4. Results and Discussions

The purpose of this research is to explore student's views and perspectives on their experience dealing with online learning during Covid-19. To achieve this objective, survey has been used in collecting data. Summaries of demographic properties of respondents in this study are illustrated in Figure 2.



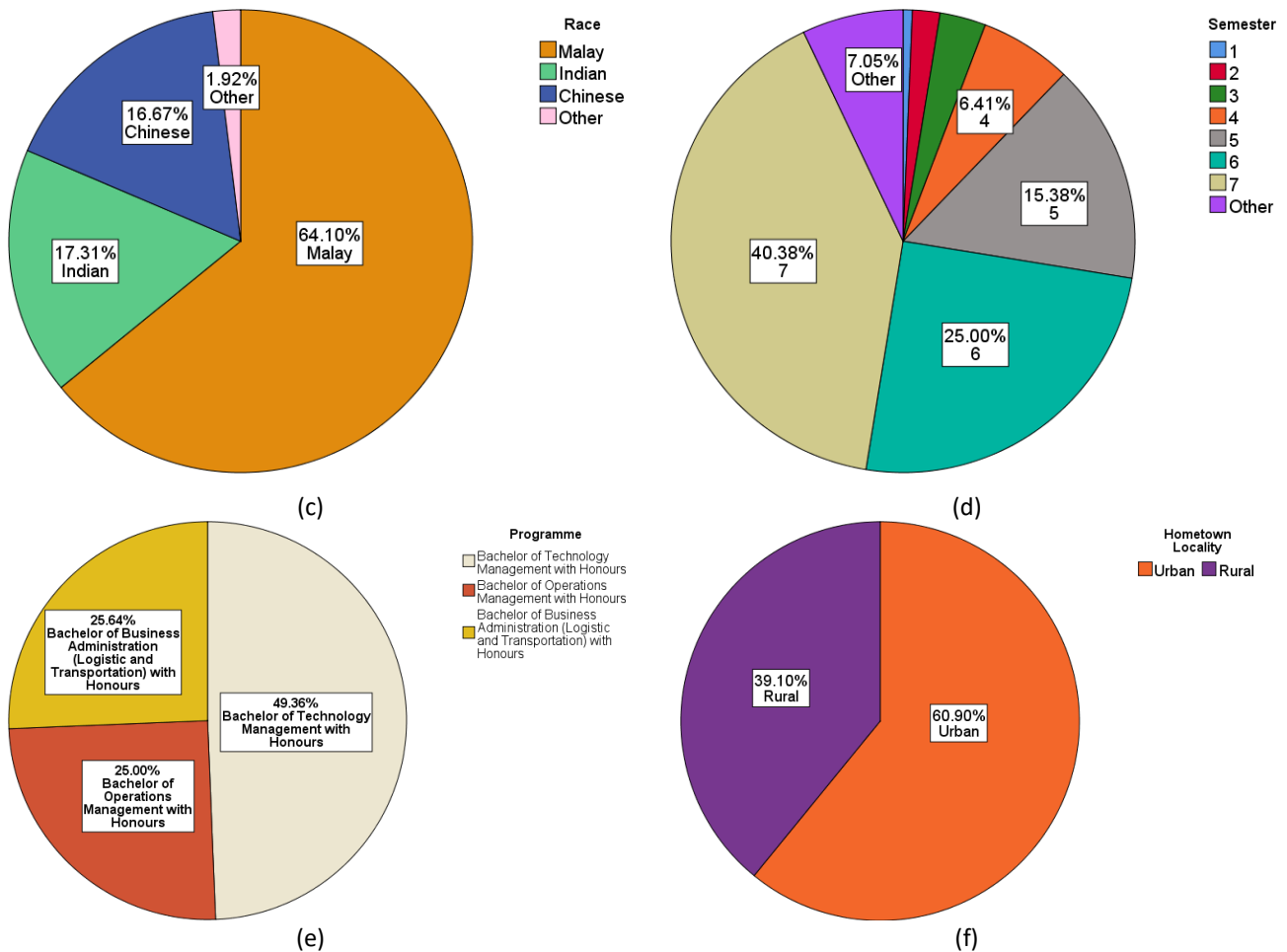


Fig. 2. (a)-(f) Profile of respondents

The questionnaire consists of two parts. Part A gathers information on the respondents' demographic profile. Meanwhile Part B comprises 36 items in 5 constructs namely Satisfaction, Self-efficacy, Enhancement of Communication Skills, Enthusiasm, and Challenges. The constructs apply five-point Likert Scale (1=Strongly Disagree, 2=Disagree, 3=Mildly Agree, 4=Agree, and 5=Strongly Agree).

A total of 156 undergraduate students at STML (Male = 56, Female = 100), aged between 18 to 26 years old were employed as respondents. Out of the 156, 105 lived in urban areas while 51 of them lived in rural areas.

The questionnaire was involved with the 156 participants. The reliability analysis was carried out to evaluate the appropriateness of the items in each category in the questionnaire. As shown in Table 1, the Cronbach's Alpha is 0.932, which indicates a high level of internal consistency for the scale. As it is greater than 0.70 (70%), it implies that all the items are reliable and acceptable for data collection.

Table 1
 Reliability test for all items on factors that facilitated and the challenges of online learning

Reliability statistics	
Cronbach's Alpha	N of Items
0.932	36

The data collected from the survey were analysed using descriptive statistics (means, frequency counts and percentages) in the SPSS version 26.0.

4.1 Acceptance of Online Learning among STML Undergraduate Students

Results in Table 2 show a moderate high level of acceptance on online learning among respondents. It is seen that Enthusiasm (mean = 4.24) ranks the highest among the factors that influence the acceptance of online learning among university students. It is followed with Satisfaction (mean = 4.171), Self-Efficacy (mean = 4.059) and Enhancement of Communication Skills (mean = 3.791).

Table 2
 Mean Scores of Main Factors Influencing the Acceptance of Online Learning

N =156	Mean	Std. Deviation
Enhancement of Communication Skills	3.791	1.055
Enthusiasm	4.242	0.672
Self-Efficacy	4.059	0.919
Satisfaction	4.171	0.745
Challenges	2.931	1.141

4.2 Factors that Facilitated Online Learning among STML Undergraduate Students: Enthusiasm

Further, each factor is zoomed into each item. Results for items in Enthusiasm factor are detailed in Table 3. Referring to the results, it is seen that the students moderately optimistic about online learning. This is indicated through the high mean for “I like online learning because it helps me keep up with new technology” ($\mu=4.384$, $\sigma=0.724$). They also are preparing themselves for the challenges of online learning in the future ($\mu=4.326$, $\sigma=0.719$) and also believe that the best way to learn is through online classes ($\mu=4.076$, $\sigma=0.974$). To further understand, the students were asked to rate on “I like learning online because it helps me be more creative”, in which the score is very high ($\mu=4.179$, $\sigma=0.905$). This reflects that students have a strong stand regarding their preferred online learning as the online-based platform.

Table 3
 Enthusiasm

N = 156	Mean	Std. Deviation
1) I like online learning because it helps me keep up with new technology	4.384	0.722
2) I am preparing for the challenges of online learning in the future	4.326	0.719
3) In the new normal, the best way to learn is through online classes	4.076	0.974
4) I like learning online because it helps me be more creative	4.179	0.905

4.3 Factors that Facilitated Online Learning among STML Undergraduate Students: Satisfaction

Results for each item in Satisfaction factor are detailed in Table 4. First, it is seen that students agree that learning online is fun through different apps (Webex (live) Google Meet, Whatsapp, Google Classroom, and Telegram) ($\mu=4.371$, $\sigma=0.755$). Also, they agree that online learning can make them focus better and be more attentive ($\mu=3.801$, $\sigma=1.171$), as well as convenient ($\mu=4.121$, $\sigma=0.959$). The students also agree that it can speed up the teaching and learning process ($\mu=4.04$, $\sigma=1.07$), it is a conducive environment ($\mu=4.179$, $\sigma=1.025$), and it is secure ($\mu=4.141$, $\sigma=0.999$). Besides, they can gain a lot of benefits ($\mu=4.211$, $\sigma=0.999$) as it is flexible ($\mu=4.30$, $\sigma=0.86$). Other than

that, they feel they can consult with their lecturers easily ($\mu=3.955$, $\sigma=1.137$). On top of that, agree that online learning can develop their interpersonal skills easily ($\mu=4.000$, $\sigma=1.053$). They have no problem to access the Internet from home ($\mu=4.192$, $\sigma=1.023$), because they have their own phone and laptops ($\mu=4.500$, $\sigma=0.686$), without having to pay for food and room rental ($\mu=4.525$, $\sigma=0.675$).

Table 4
 Satisfaction of Online Learning

N = 156	Mean	Std. Deviation
1) I like online learning because it is a fun way to learn through different apps (e.g., Webex, Google Meet, WhatsApp, Google Classroom, and Telegram)	4.371	0.755
2) I like online learning because I can focus better and pay more attention	3.801	1.171
3) I like online learning as it is a convenient way of learning	4.121	0.959
4) I like online learning as it speeds up the teaching and learning process	4.044	1.073
5) I have a conducive environment for online learning	4.179	1.025
6) I like online learning as it is a secure way of learning	4.141	0.999
7) I like online learning as I can gain a lot of benefits from it	4.211	0.990
8) I like online learning as I have more time flexibility in learning	4.301	0.868
9) I like online learning because I can easily consult with my lecturers to explain something I don't understand	3.955	1.137
10) I like online learning as I can develop my interpersonal skills by easily socialising and discussing certain issues with my friends	4.000	1.053
11) I can easily access Wi-Fi or mobile data for online learning from my home	4.192	1.023
12) I can understand content subjects via online learning	4.057	1.004
13) I have my own phones, computers, laptops, and tablets that I can use to learn online	4.500	0.686
14) I like online learning because I can stay at home and don't have to pay for rent or food	4.525	0.676

4.4 Factors that Facilitated Online Learning among STML Undergraduate's Students: Self-Efficacy

For Self-efficacy factor, details for each item are listed in Table 5. It is seen that students moderately agree that online learning makes them want to learn ($\mu=3.987$, $\sigma=1.077$) and that they tend to be more responsible ($\mu=3.788$, $\sigma=1.223$). They also agree that they can explore more information on their own on the Internet ($\mu=4.282$, $\sigma=0.900$), and it teaches them to be self-disciplined ($\mu=4.179$, $\sigma=1.044$).

Table 5
 Self-Efficacy

N = 156	Mean	Std. Deviation
1) I like online learning because it makes me want to learn	3.987	1.077
2) I like online learning as I tend to be more responsible for my own learning	3.788	1.223
3) I like online learning because I can explore more information on my own on the Internet	4.282	0.900
4) I like online learning because it teaches me to be self-disciplined	4.179	1.044

4.5 Factors that Facilitated Online Learning among STML Undergraduate's Students: Enhancement of Communication Skills

In terms of Enhancement of Communication Skills, results of each item are detailed in Table 6. The students moderately agree that online learning helps to improve non-verbal communication ($\mu=3.967$, $\sigma=1.055$). They also moderately agree that online learning helps to improve their communication skills ($\mu=3.756$, $\sigma=1.166$) and their friendliness ($\mu=3.750$, $\sigma=1.257$). Apart from that, online learning also helps to improve confidence to speak up ($\mu=3.692$, $\sigma=1.200$).

Table 6
 Enhancement of Communication Skills

N = 156	Mean	Std. Deviation
1) I feel online learning helps me to improve my communication skills	3.756	1.166
2) I feel online learning helps me to improve my confidence to speak up	3.692	1.200
3) I feel online learning helps me to improve my non-verbal communication	3.967	1.055
4) I feel online learning helps me to improve my friendliness	3.750	1.257

4.6 Challenges of Online Learning among STML Undergraduate Students

In spite of the moderate acceptance of online learning by the students, some challenges were identified. Results of each item on challenges are detailed in Table 7. It is seen that majority of the students have Internet connection problems that hinders them from accessing their online learning ($\mu=3.480$, $\sigma=1.365$) and they tend to be lazy when engaged in online learning ($\mu=3.314$, $\sigma=1.444$). They also agree that online learning slows down the learning process ($\mu=3.256$, $\sigma=1.395$) and that they feel lonely ($\mu=3.134$, $\sigma=1.455$). They feel stressful because they are not good at online learning applications ($\mu=2.99$, $\sigma=1.41$) and they have to struggle to change to from traditional classroom to virtual learning ($\mu=2.961$, $\sigma=1.404$). In fact, students also have financial constraints in purchasing mobile data for online learning ($\mu=2.859$, $\sigma=1.555$) and on top of that, they need to share mobile data with siblings and family members ($\mu=2.609$, $\sigma=1.515$), as well as the gadgets ($\mu=2.435$, $\sigma=1.464$). For many students, they even need to go outside their house (within 500 meters) to get good internet ($\mu=2.269$, $\sigma=1.378$).

Table 7
 Challenges of Online Learning

N = 156	Mean	Std. Deviation
1) I need to go outside my house (within 500 meters) to get good internet for online learning	2.269	1.378
2) I have to share my electronic gadgets with my siblings	2.435	1.464
3) I have to share my mobile data with my siblings and family members	2.609	1.555
4) I have a financial constraint in purchasing mobile data for online learning	2.859	1.513
5) I struggle to change from traditional classroom to virtual learning	2.961	1.404
6) I feel lonely to be engaged in online learning	3.134	1.455
7) I tend to be lazy when engaged in online learning	3.314	1.444
8) I feel online learning slows down the learning process because questions posed take a longer time to be answered due to long queues as compared to traditional classroom teaching	3.256	1.395
9) I feel stressful to be engaged in online learning as I am not efficient in operating online Apps	2.993	1.416
10) I feel left out when I am unable to get internet access for online learning	3.480	1.365

5. Discussion and Conclusions

Online learning is a new norm in the Covid-19 pandemic era, replacing traditional face-to-face learning to ensure continuous learning. This research was conducted to view the experience of online learning facilitating factors and challenges amongst undergraduate students at STML in Universiti Utara Malaysia, using the online approaches in the aspects of acceptance of online learning, zooming into factors that facilitate online learning and challenges. It was found that students are willing to participate and use multiple synchronous and asynchronous platforms to ensure a smooth online learning experience. Based on the obtained results, it could be deduced that online learning can be considered as the future of education as students show interest towards this technology-based

learning compared to traditional-based learning. Therefore, rigorous research on the online learning in terms of:

- i. enhancement of communication skills
- ii. enthusiasm
- iii. self-efficacy
- iv. satisfaction
- v. challenges, as well as the suitability of the technologies used to mediate learning should be further studied to understand this matter in more detail.

The results of this study add to what is already known about how online learning could be used as an alternative method of teaching after COVID-19. This new alternative way to teach and learn will help with the growing number of students, the lack of space in the classroom, and the lack of financial and people to teach. So, this will help the government reach its goals and make the changes outlined in the Education Blueprint, 2013-2025 [20] about the need to improve access to all levels of education to educate more people. Online learning can be a great way to teach and learn, as long as it is properly planned and there is constant support, enough equipment, and a good environment for learning.

The results of this study only applicable to the people who took part in it. They cannot be applied to all university students in this country as a whole. So, if this kind of research is done again in the future, more people from other universities can take part to confirm the results of this study. Also, since most of the people who took part in this study lived in cities, future studies can consider involving more people from rural areas to get more accurate results.

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