INTERNATIONAL JOURNAL OF ACADEMIC RESEARCH IN BUSINESS & SOCIAL SCIENCES
HRMARS MANAGEMENT ACADEMIC RESEARCH SOCIETY
EXPLORING INTELLECTUAL CAPITAL
www.hrmars.com
ISSN: 2222-6990

Students' Perception and Preference for Online Learning in Sabah During Covid-19 Pandemic

Nur Hazilah Omar, Bibianah Thomas, Mohamad Zulfadhli Jusoh, Saiful Zizi Jalil

To Link this Article: http://dx.doi.org/10.6007/IJARBSS/v11-i11/11262 DOI:10.6007/IJARBSS/v11-i11/11262

Received: *09* September *2021,* ***Revised:*** *01* October *2021,* ***Accepted:*** *24* October *2021*

Published Online: 07 November 2021

In-Text Citation: (Omar et al., 2021)

To Cite this Article: Omar, N. H., Thomas, B., Jusoh, M. Z., & Jalil, S. Z. (2021). Students' Perception and Preference for Online Learning in Sabah During Covid-19 Pandemic. *International Journal of Academic Research in Business and Social Sciences*, *11*(11), 270 – 292.

Copyright: © 2021 The Author(s)
Published by Human Resource Management Academic Research Society (www.hrmars.com)
This article is published under the Creative Commons Attribution (CC BY 4.0) license. Anyone may reproduce, distribute, translate and create derivative works of this article (for both commercial and non-commercial purposes), subject to full attribution to the original publication and authors. The full terms of this license may be seen at: http://creativecommons.org/licences/by/4.0/legalcode

Vol. 11, No. 11, 2021, Pg. 270 – 292

http://hrmars.com/index.php/pages/detail/IJARBSS | **JOURNAL HOMEPAGE**

Full Terms & Conditions of access and use can be found at
http://hrmars.com/index.php/pages/detail/publication-ethics

INTERNATIONAL JOURNAL OF ACADEMIC RESEARCH IN BUSINESS & SOCIAL SCIENCES
HRMARS MANAGEMENT ACADEMIC RESEARCH SOCIETY
EXPLORING INTELLECTUAL CAPITAL
www.hrmars.com
ISSN: 2222-6990

Students' Perception and Preference for Online Learning in Sabah During Covid-19 Pandemic

Nur Hazilah Omar[1], Bibianah Thomas[3], Mohamad Zulfadhli Jusoh[2], Saiful Zizi Jalil[3]

[1]Faculty of Business and Management, Universiti Teknologi MARA Sabah Branch, Kota Kinabalu Campus, MALAYSIA, [2]Faculty of Business and Management, Universiti Teknologi MARA Sabah Branch, Tawau Campus, MALAYSIA [3]Faculty of Administrative Science & Policy Studies, Universiti Teknologi MARA Sabah Branch, Kota Kinabalu Campus, MALAYSIA
Email: nurha234@uitm.edu.my

Abstract

The Covid-19 outbreak has significantly halted a variety of activities, including educational ones, across the world. This has resulted in a massive crisis reaction relocation of institutions with online learning acting as the educational platform. The introduction of online learning has resulted in certain drawbacks for educators and students. The quality of online learning is dependent on the amount of digital availability and efficacy. However, some students are still affected by inaccessibility and a lack of digital technology in their communities. In this study, we used an online survey of 270 students to explore students' perceptions and preferences for online learning in three public higher education institutions in Sabah. We also looked at the students' preferences for various components of online classrooms, which would be beneficial in developing an effective online learning environment. The results indicated that most of the respondents (77%) get their internet from mobile data packs. Additionally, the majority of the respondents preferred social media for class updates during online learning. We also found that the students preferred assessments such as assignments, quizzes, and tests at the end of every class which are necessary to achieve effective online learning. Therefore, the findings will assist academics in identifying strengths and places for development, as well as encouraging the faculty to think carefully about how to reorganise course learning objectives and teaching approaches to engage students and improve the learning process.

Keywords: Online learning, Perception, Preferences, Digital technology, Covid-19 Pandemic

Introduction

Since the Covid-19 was identified as a pandemic in March 2020, approximately all nations in the world got affected. The economy, society, environment, health, and education are among the most impacted areas by this epidemic. From a day to another, the virus has impacted the lives of millions of people around the world. The way people do their daily business and activities has drastically changed as this pandemic causes a lot of obstacles for them. A variety of methods and preventative measures are implemented to minimise and stop the virus's

spread in the population. For instance, most of the countries affected are slowing down the spreading of the virus by implementing measures such as restrictions of mass gathering, public events, cross borders restrictions for domestics and international transport, tests and contact tracking, also the closure of jobs as well as the education institutions (Aristovnik et al., 2020). In Malaysia, the government has implemented a Movement Control Order (MCO) on 18 March 2020 as a preventive measure to control the spread of the virus in the community. Educational institutions are among other sectors that need to close. Only a major economic sector can continue its operation with a strict standard operation procedure (SOP). In many sectors of national and global society, this epidemic has generated insecurity. There is no exemption to educational institutions. The shutdown time of educational institutions is unpredictable because there are no positive signals that the rate of viral infection is reducing.

Higher education sector has been affected by the reaction to the news of the national lockdown, where colleges and universities have to shut down. The educators and learners have to adopt a new normal in teaching and learning where both need to find the best method as an alternative to face-to-face lectures. Both universities and students have shifted to online learning and used information and communication technology (ICT) as an alternative. For example, the use of Microsoft teams, google meet, zoom and Webex meet have become popular platforms or tools. To remain relevant, higher education institutions require a creative platform to ensure that the teaching and learning processes are not interrupted. Innovations and the implementation of new educational and evaluation methodologies are urgently needed (Pokhrel & Chhetri, 2021).

The closing of universities has affected the performance of students in various educational levels. The fourth goal of sustainable development goals (SDG) is to ensure inclusive and equitable quality and promote lifelong learning opportunities for all. However, the implementation of online teaching has created certain disadvantages to the educators and students, it should be noted that the quality of learning depends on the extent of digital availability and effectiveness (Muthuprasad et al., 2021). Online learning elements are technology-driven and dependent on internet facilities. The students' progress and performance might be impaired without access to internet services and an appropriate gadget for online learning. Bali & Liu (2018) reported that face-to-face learning is more comfortable compared to online learning as regards social presence, social interaction and enjoyment. In addition, a study by Kulal & Nayak (2020) on the perception of teachers and students on online learning showed that the students thought that online lessons are not as effective as a classroom study and they also felt that understanding the online learning system is challenging for them. These facts show us that it is important to design the online class properly and make it effective as a traditional class to satisfy the students' needs and help them to improve their performance.

The universities in Sabah have likewise altered their teaching methods to online learning. Sabah's public universities, such as the Universiti Teknologi MARA (UiTM), Universiti Malaysia Sabah (UMS) and Kota Kinabalu Polytechnic, have employed their learning management systems such as UFUTURE for UiTM, smartUMS for UMS, and Kota Kinabalu Polytechnic's Centre for eLearning and Teaching (CeLT). The major concern of Sabah's public universities is the challenges of limited resources and accessibility to online learning. According to the Department of Statistics Malaysia (DOSM), Sabah ranked at the top six highest internet access in 2020 with 94.6 per cent. However, the percentage of households with access to ICT services and equipment, Sabah ranked among the lowest states in Malaysia with only 60.7 per cent. Other than that, the percentage of individuals using computers in Sabah is only 59.3 per cent

which is the lowest in Malaysia. Sabah also ranked at the bottom four for the percentage of individuals using the internet for learning activities like doing a formal online course (10.4 per cent), consulting websites for formal learning purposes (24.2 per cent) and doing an informal online course (12.5 per cent). This data revealed that there are some students still suffering from the inaccessibility and lack of digital technology in their areas. The perception and preferences of these students are vital as this can determine the level of their satisfaction with online learning.

The objective of this study was 1) to identify students' perception towards online learning during the Covid-19 pandemic; 2) to determine students' preference for online learning. The study's findings are critical for Sabah's public educational institutions for two main reasons. Firstly, the transition from a face-to-face class to an online mode has impacted students' achievement and performance. In this context, it is important to understand the experience of the students where it can be used to simplify, efficient and effective online learning. Second, the government is still working to avoid a dramatic peak of cases and disseminate the virus over a long time through the MCO and other restrictions. The lockdown to Covid-19 has stopped traditional schooling with national closures. During the lockdown and even after this pandemic ended, online learning will be the best alternative to the traditional face to face lectures and become a new normal in the education sector. So, all educational institutions need to prepare, design and alter the curriculum framework appropriately. Thus, the findings on the difference of students' perceptions towards online learning among gender and area of residence can be useful and critical contributions in choosing the ideal teaching and learning environment. In the next part, we provide a review of the literature, the research methodology and a discussion of the results followed by a conclusion of the study.

Literature Review

Learning is a process of acquiring knowledge or skills through experience, study, or being taught (Martin et al.,2018). In a traditional setting, the process of learning usually is conducted in a physical class, with academic achievement as the commonly studied dependent variable to measure learning (Martin et al.,2018). However, with the covid-19 disease spreading across the globe, a shift in education base from conventional to online learning was necessitated. Online learning or E-learning can be defined as "learning that takes place partially or entirely over the internet (Gilbert, 2015). Drawing from the data released by UNESCO (2020) reported that by the end of April 2020, 186 pandemic driven countries have implemented nationwide closure, affecting about 73.8% of the total enrolled learners. With schools and universities suspended classroom teaching for an indefinite period, online learning appears to have quickly become the acceptable alternative option to traditional learning. The alteration in the learning method is inevitable to ensure that students are not left unengaged and do not suffer academic loss (Bhaumik and Priyadarshini, 2020). As a matter of fact, the steep demand for an online course during the pandemic stems from the commitment to provide quality education to all students, regardless of the situation (Chaney, 2010). According to Schlenz et al (2020), it is accepted that students' assessments are the important factors of the benefits and values of online learning and the evaluation of their attitude are important factor in assessing success. Browsing through past literature, most scholars agreed that online learning approach is cost-effective, learner-centred and it provides flexible learning anytime and anywhere which fits the global audience (Alley, 2008; Salleh et al., 2020). Tareen and Hand (2020) pointed out that the pedagogical benefit of having a self-paced and regulated study of learners appeals to a diverse population of the

students with ranging academic needs that traditional education classes are incapable of meeting. Concurring with the statement is Sahin et. al (2015) in their research finding that shows students come to class better prepared, increased motivation, improve attendance, and decrease withdrawal when they registered for online courses. Online learning shifts passive learning to active learning (Akcayir and Akcayir, 2018). The flexible design of online learning means that the teaching material can be shared with students before class, enabling them to pause, rewind, and review lectures, while the time slot for the class can be dedicated to a more focused discussion with good quality questions coming from the students (Gomez-Gonzalez et al., 2016). Similarly, Tareen and Hand (2021) mentioned that the two constructs are thought to enhance learning outcomes are interaction and participation. Being in a virtual classroom eliminates the pressure of speaking in public, thus helps the student to have more courage to engage in-class discussion, subsequently leading to a more inclusive and productive discourse in class. Meanwhile, the design of online learning aid to cater further layer of instructor availability, resulting in better accessibility and more quality feedback in student-instructor interaction (Tareen and Hand, 2021; Baghdadi, 2011; Arbaugh, 2000). The incorporation of technology in learning resonates well with the social state of gadget addiction among the lower age group, as they are now able to see how they could use smart devices as learning tools, making learning an everyday habit (Alhudiry and Alahdal, 2021)

Despite online learning benefits, it also posed some weaknesses especially when the facilities and the infrastructures are not readily available to make sure the online learning can be facilitated smoothly. A study has been conducted to discover the perception of Ghanian international students in China on their perceptions towards online learning and some of the drawbacks mentioned by the students are apart from online learning is costly as they have to buy internet data access, they also faced difficulties in attending the online classes due to unstable internet connections (Demuyakor, 2020). Similar findings were found by (Agung & Surtikanti, 2020; Lischer et al., 2021) in which the main concerns of the students are the availability and sustainability of internet connection. Without good internet connection, the process of teaching and learning will be disrupted. Besides, recent studies also noted that fully conducting online learning is not suitable to be implemented for some courses such as medical that requires technical and clinical skills (Longhurst et al., 2020; Thomas et al., 2021) as it cannot provide the real medium for them to hone their clinical skills. This may influence their capabilities in delivering their services as they do not have sufficient exposure and experience in real situations. In addition, among the weaknesses of online learning that was frequently mentioned in prior studies are first, the lack of interaction between the lecturer and the students and second, among students themselves (Gherheș et al., 2021; Thomas et al., 2021). This situation is synonym with online learning as the lecturers and students are separated by space. Therefore, the contexts of online classes might not be the same as traditional classes whereby the interaction is more reciprocal. As a result, from lack of interaction, it may impede the process of knowledge delivering and sharing thus, giving impact on the motivation of learning among the students. Further, most of the students are staying at home with their families and have to juggle their responsibilities at home and as students. This will make it difficult for students to give their full commitment as students hence, rationalising the findings generated by Lischer et al (2021) in which it was found that one of the difficulties faced by students during online learning is students' difficulty to concentrate and maintain their motivation to study online. Consequently, this situation will give extra advantage to face-to-face classes where they can give their commitment as students without any interruptions.

With all the pros and cons of online learning, some studies have reported that the majority of the students prefer to go back to face to face classes (Lischer et al., 2021; Thomas et al., 2021). However, in some cases, this preference is higher among the students who were only experiencing e-learning but quite lower among the students that are experiencing both e-learning and face-to-face learning sessions (Gherheș et al., 2021). This is contributed by the factor of experiencing the advantages and disadvantages of both classes and thus, may influence their perceptions. In contrary to this perception, some studies have found that the majority of the students agreed that their preference depends on the needs of the course and situations. For example, face-to-face classes are perceived to be much better if the subjects require face-to-face learning experience, require more interaction as well as suitable for developing interpersonal relationship. However, they would prefer online learning if they can control their learning schedules and progress (Yau & Tang, 2020). This is also consistent with Jaggars (2014), as it was proven that the students preferred to choose face-to-face courses for difficult subjects that require rich and deep learning experience with tendencies to choose online learning for easy subjects. As both platforms have their own merits and demerits, Baczek et al (2021) and Paechter & Maier (2010) found that students prefer to have blended learning whereby the combination of both online and face to face classes is used according to the need of the course.

Although various studies on online learning have been conducted, however, studies conducted to discover students' perspective on online learning in the context of public universities in Sabah is still limited. As one of the states that facing a lot of issues in transforming to online mode, it is fruitful to conduct this study to draw insights from the perception and preferences of online learning among students in public universities in Sabah.

Methodology

Procedures

Data gathering procedure was conducted through Google forms, which were sent to students from Universiti Teknologi MARA (UiTM) Sabah Branch, Universiti Malaysia Sabah (UMS), and Kota Kinabalu Polytechnic through social media. It was appropriate and easily accessible to achieve a promising response rate from the targeted respondents. To provide the appropriateness, structure, and clarity of the questions, a pilot study was conducted with 30 respondents involved and their feedback was considered for designing the final questionnaire. Thus, to ensure the ethical conduct of the study, participants were informed that by completing the online survey, they were giving consent to voluntarily participate in the study. No identifying information was collected to protect the anonymity of participants.

Sampling

There were 270 undergraduate students that participated in this study from Universiti Teknologi MARA (UiTM) Sabah Branch, Kota Kinabalu Campus, Universiti Malaysia Sabah (UMS) and Kota Kinabalu Polytechnic. Among them were 88 male and 182 were female students. The sampling technique that was used in this research is convenience sampling. This study is a cross-sectional study with the selected university that was reported to be affected by the COVID-19 pandemic lockdown ordered by the government (Wong, 2020). Therefore, all students were advised to proceed with their learning process through an online platform. During data collection, some of the students had already gone back to their hometown and some of them were still in the university hostel or staying nearby.

The Instrument

This study was based on a quantitative method and used a structured and unstructured preliminary questionnaire as the main data collection method. The items in the questionnaire were adapted from (Muthuprasad et al., 2021) to identify students' perception and preferences for online learning during the covid-19 pandemic. The questionnaire consisted of 37 items and was separated into five main sections namely demographic details, students' preferences for online learning, students'perception towards online learning, benefits of online learning and bottlenecks for online learning. To identify students' perception towards online learning, and identify most benefits and bottlenecks of online learning Likert-type scale was used with a score range starts from "1" which is strongly agree to "5" which is strongly disagree

Data Analysis

Analysis packages IBM SPSS was used for statistical analysis of the collected data. A descriptive approach for data analysis was considered to identify respondents' perceptions and preferences for online learning. Frequency and percentage were calculated for most of the questions to summarise the data. Further, to investigate the differences between gender and area of residence students, an independent samples t-test were used.

Results

Demographic Details of Respondents

There were 270 respondents from undergraduate students that participated and shared their feedback on the students' perception and preference for online learning in Sabah during the covid-19 pandemic. Table 1 shows the demographic details of the 270 respondents which comprised of students from UiTM Sabah Branch 192 (71.10%), Universiti Malaysia Sabah 50 (18.50%) and Kota Kinabalu Polytechnic 28 (10.40%). There were more female respondents 182 (67.40%) than male respondents 88 (32.60%), with the age range between 18 to 30 years old, and the majority of the respondents are between 18 to 24 years old with 99.30%, while the lowest number of respondents are between 25-30 years old group with 0.70%. The majority of the respondents addressed to live in urban areas 185 (68.50%) and only 85 (31.50%) from the rural area. As for 111 (41.10%) have average internet connection quality, whereas 31 (11.50%) have a very good internet connection, 109 (40.40%) with good connection and only 19 (7%) have a poor internet connection. Majority of the respondents, 220 (81.50%) having prior experience of online learning and 50 (18.50%) did not attend any online learning before and most of the respondents 257 (95.20%) said that online learning has already started by the universities where they registered.

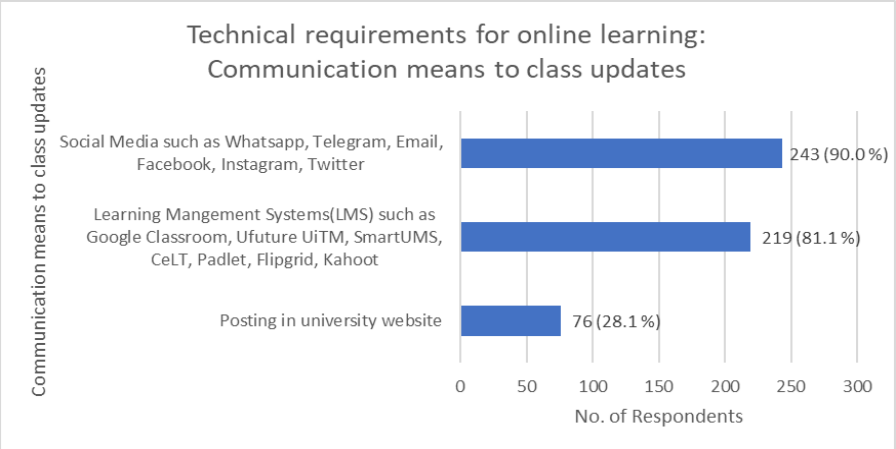
Table 1: Demographic Details of 270 Respondents

Characteristic	Category	N	Percentage
Gender	Male	88	32.60%
	Female	182	67.40%
Age	18-24 years	268	99.30%
	25-30 years	2	0.70%
Institution	Universiti Teknologi MARA (UiTM) Sabah Branch	192	71.10%
	Universiti Malaysia Sabah	50	18.50%
	Kota Kinabalu Polytechnic	28	10.40%
Program Level	Pre-Diploma / Certificate	4	1.50%
	Foundation / Matriculation	1	0.40%
	Diploma	210	77.80%
	Bachelor's Degree	55	20.40%
Current Area of Residence	Rural area (Countryside)	85	31.50%
	Urban area (Town / City)	185	68.50%
Internet Connection Quality	Very Good	31	11.50%
	Good	109	40.40%
	Average	111	41.10%
	Poor	19	7%
Attending any online learning prior to covid-19	Yes	220	81.50%
	No	50	18.50%
Institution Has Begun Online Learning	Yes	257	95.20%
	No	13	4.80%

Respondent's Preference for Online Learning During Covid-19

Technical Requirement for Online Learning

Majority of the 243 (90.0 %) respondents preferred social media such as WhatsApp, Telegram, Email, Facebook, Instagram, and Twitter for class updates during online learning as illustrated in Figure 1. More than 219 (81.1%) of the respondents preferring LMS such as Google Classroom, Ufuture UiTM, SmartUMS, CeLT, Padlet, Flipgrid and Kahoot whereas 76 (28.1%) respondents preferred only posting on university websites.



There were various devices preferred by the respondents during online learning were laptops (95.6%), smartphones (78.9%), Tablet (27.8%) and only (23.3%) using Desktop computers as shown in Figure 2. As shown in Figure 3, it was not a surprise that respondents stated to use mobile data pack 208(77.0%) for their source of internet. It is because mobile data pack was the best value option for students as well as cheaper compared with using other sources of internet. This finding was consistent with a previous study (Muthuprasad et al., 2021) in which 85.67% of students stated to use mobile data packs as their source of internet. About 184 (68.1%) of the respondents using Wi-Fi and only 4 (1.5%) using Lan as their source of internet.

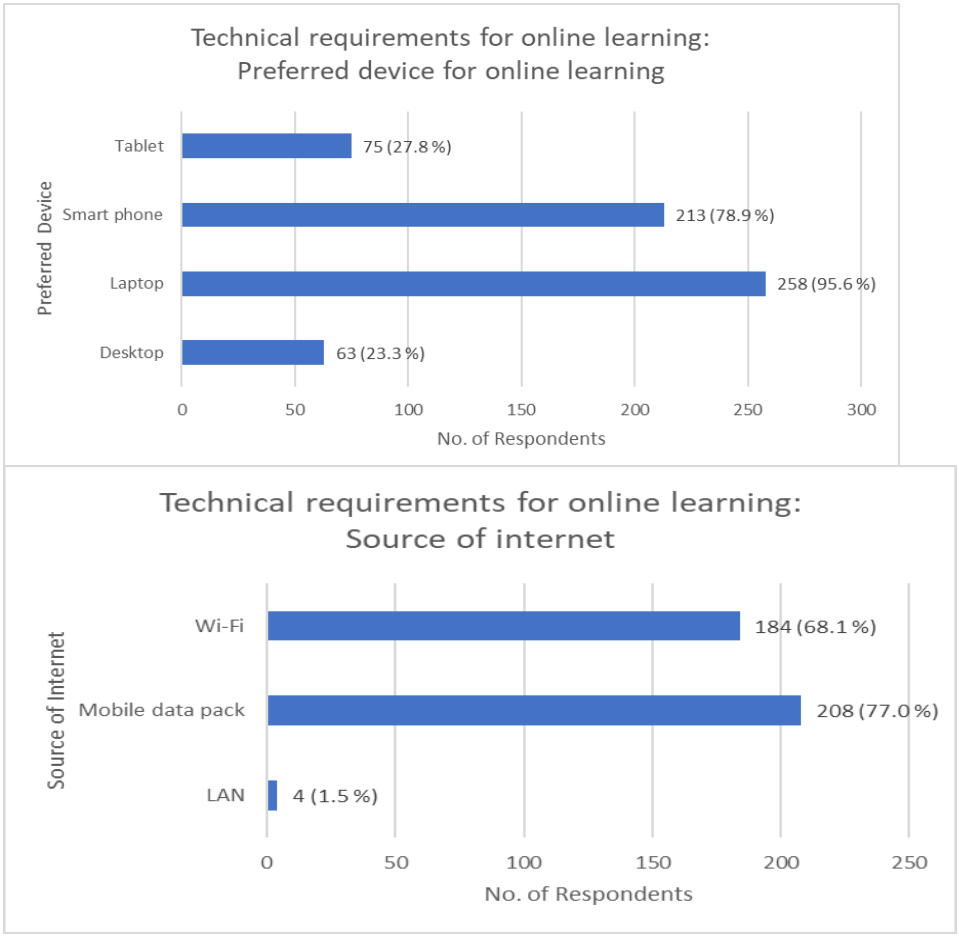


Figure 3: Source of Internet

Structure of Online Learning

As shown in Table 2, live online learning that can be recorded was the most preferred (89.6%) online learning format whereas (73.0%) of the respondents preferred live sessions, (68.5%) respondents chose sending reading material and (63.7%) preferred only pre-recorded video uploaded at university website, YouTube or other application. The majority of the respondents choose video content supplemented with reading material with (77.0%) (208 out of 270 participants). This outcome was consistent with the discoveries in a prior study in which 84.0% 0f 307 students wanted their reading material to be supplemented with video content (Muthuprasad et al., 2021). In terms of the video content, most of the respondents preferred course instructors should teach using both PowerPoint and whiteboard or online whiteboard with 111 out of the 270, (41.1%) respondents preferring this method in other to enhance students' understanding of the subject.

Table 2: Structure of Online Learning

Attributes	Item	No. of Response	Percentage (%)
Online learning format	Live online learning	197	73.0
	Live online learning that can be recorded	242	89.6
	Pre-recorded video that uploaded at university website/YouTube/and other application	172	63.7
	Sending reading material	185	68.5
Nature of course material	Reading material is sufficient	29	10.7
	Video content is sufficient	33	12.2
	Video Content supplemented with reading material	208	77.0
Nature of video content	As per the convenience and requirement of the course instructor	73	27.0
	Course instructor should teach using whiteboard/ online whiteboard	13	4.8
	Course instructor should use PowerPoint	73	27.0
	Course instructor should teach using both PowerPoint and Whiteboard/online whiteboard	111	41.1

Frequency and Duration of Online Learning

The majority of the respondents (77.0%) preferred online learning should be conducted as per the schedule to complete the syllabus, (8.5%) respondents' hose online learning should be conducted weekly once, whereas (5.9%) respondents chose weekly twice. Around 161 (59.6%) respondents preferring 1-hour duration of each class and most of the 219 (81.1%) respondents desired to spend 6 to 8 hours a day for online learning as showed in Table 3.

Table 3: Frequency and duration of online learning

Attributes	Item	No. of Response	Percentage (%)
How often do you expect the course instructor to conduct the online learning?	Alternate days	7	2.6
	As per the schedule to complete the syllabus	208	77.0
	Daily	15	5.6
	Fortnight	1	0.4
	Weekly once	23	8.5
	Weekly twice	16	5.9
Suitable duration for online learning (per class)	45 min	46	17.0
	1 hour	161	59.6
	≥ 1 hour	63	23.3
How much time would you like to spend a day on online learning	Less than 2 h	51	18.9
	6–8 h	219	81.1

Plan and Criteria for Evaluation

As revealed in Table 4, the majority of the respondents 227 (84.1%) felt the assessment such as assignments, quiz and tests at the end of every class are necessary to achieve effective online learning although 213 (78.9 %) of the respondents addressed to like to attend online examinations. A survey in a prior study also received a similar result which revealed that the respondents liked attending online examinations (Husna & Roslina, 2021; Muthuprasad et al., 2021). In contrast, in a study from medical and nursing students, tests and examinations were the least preferred activities (Olum et al., 2020). Further, 165 (61.1%) of the respondents preferred online exam being replaced with assessment, both objectives and subjective format of online examinations with 73 (27.0%), 31 (11.5%) of the respondents chosen objectives and only 1 (0.4%) respondent taking the subjective format of online exam.

Table 4: Plan and Criteria for evaluation

Attributes	Item	No. of Response	Percentage (%)
Do you feel assignments/ quiz/ test at the end of every class is necessary to achieve effective learning?	Yes	227	84.1
	No	43	15.9
Do you like to attend online exams	Yes	213	78.9
	No	57	21.1
Nature/ Format of online exam.	Objective	31	11.5
	Subjective	1	0.4
	Both (Objective and Subjective)	73	27.0
	The online exam is being replaced with an assessment	165	61.1

Respondents' Perception towards Online Learning During Covid-19

Table 5 indicates seven Likert scale questions, which revealed not many differences in the perception of respondents towards online learning. The total percentage of respondents who agreed or strongly agreed (75.2%) that online learning has increased technical skills such as email and internet application since attending online learning. There is (37.4%) disagreement of respondents with the statement i.e., the online environment makes it easier for respondents to communicate with their instructor rather than the physical classroom environment. Although (57.0%) respondents of the present study agreed that spend more time on their homework in comparison with regular classroom learning. Another study revealed that (36.3%) respondents disagreed that online learning helps them to understand more the course materials compared to face-to-face learning. Apart from that, more than (57.0%) respondents agreed that asking questions by using social media such as email, WhatsApp and Telegram rather than orally.

Table 5: Respondents' perception towards online learning

Item	SD (%)	D (%)	N (%)	A (%)	SA (%)	*Mean*
I prefer my online learning as they are very structured and similar to face-to-face learning	7.4	15.9	40.0	25.2	11.5	3.17
Online learning helps me understand more the course materials compared to face-to-face learning	10.7	25.6	41.5	16.3	5.9	2.81
The online environment makes it easier for me to communicate with my instructor rather than the physical classroom environment	17.0	20.4	32.2	18.9	11.5	2.87
I am more comfortable asking questions by using social media such as email/WhatsApp/Telegram rather than orally.	6.3	12.2	28.5	32.6	20.4	3.49
My technical skills (email/internet apps) have increased since attending online learning	0.4	3.0	21.5	43.0	32.2	4.04
I spend more time on my homework in comparison with regular classroom learning	3.0	6.7	33.3	34.8	22.2	3.67
The instructor understands the online environment and makes it easy to learn	5.2	10.0	37.8	28.5	18.5	3.45

SD: strongly disagree, D: disagree, N: not sure, A: agree, SA: strongly agree

Benefits of Online Learning

Given the sudden change from face-to-face learning to online learning, which may have caused distress among students, the respondents were asked to rate the perceived usefulness of online learning through five questions as showcased in Table 6. Based on the mean score, average feedback from respondents ranged from 3.06 to 3.71. The result revealed that (59.6%) respondents improve their technical skills during online learning. This is consistent with the past findings in past research on the perception and preference of online learning (Husna & Ibrahim, 2021; Muthuprasad et al., 2021). Further, online learning offers the students the opportunity to study at their own pace and time with their flexible schedule and convenience with a mean score of 3.41. Apart from that, more respondents agreed that online learning is more comfortable with a mean score of 3.18 and can increase their self-discipline and responsibility with a means score of 3.34. However, (25.5%) respondents disagreed that online learning can enhance their interaction and concentrate with a mean score of 3.06. These findings are in line with the multiple studies that highlighted social interaction as one

of the barriers to online learning. (Arifiati et al., 2020; Ilias et al., 2020; Kamal et al., 2020; Husna & Ibrahim, 2021).

Table 6: Benefits of online learning

Item	SD (%)	D (%)	N (%)	A (%)	SA (%)	Mean
Online learning very flexible schedule and convenience	6.3	9.6	37.4	29.6	17.0	3.41
Online learning is more comfortable	10.7	14.4	34.4	27.0	13.3	3.18
Online learning can improve my technical skills	3.7	4.4	32.2	36.3	23.3	3.71
Online learning can enhance my interaction and greater ability to concentrate	9.6	15.9	40.7	26.3	7.4	3.06
Online learning can increase my self-discipline and responsibility	8.5	11.9	33.0	30.4	16.3	3.34

SD: strongly disagree, D: disagree, N: not sure, A: agree, SA: strongly agree

Bottlenecks for Online Learning

Table 7 summarises the respondents' bottlenecks they experienced when online learning during the Covid-19 pandemic; this section is comprised of five questions. The most prominent obstacles faced by respondents were 71.8 % of respondents agreed that online learning brings a lack of face-to-face communication with a mean score of 4.04. Hence, 61.5 % of respondents had difficulty with the internet connection with a mean score of 3.80. A slightly higher percentage of respondent's lack self-discipline with a mean score of 3.69 and online learning can bring a poor learning environment with a mean score of 3.62. Therefore, instructors can try to conduct more engaging activities to enhance student's engagement during online learning.

On the other hand, 49.3% respondents lack devices such as mobile phones, laptops, iPad and desktops which affect their online learning.

Table 7: Bottlenecks for online learning

Item	SD (%)	D (%)	N (%)	A (%)	SA (%)	Mean
Online learning can bring lack of connectivity	1.5	7.0	30.0	32.6	28.9	3.80
Online learning lack face to face communication	1.9	5.6	20.7	30.7	41.1	4.04
Online learning is limited to certain self-discipline	1.1	6.3	40.0	28.1	24.4	3.69
Online learning can bring poor learning environment	3.3	10.4	34.1	25.6	26.7	3.62
Lack of device	7.4	12.2	31.1	25.2	24.1	3.46

SD: strongly disagree, D: disagree, N: not sure, A: agree, SA: strongly agree

Differences in students' perception towards online learning based on gender

In this study, there were 88 (32.60%) males and 182 (67.40%) females participated in online learning. To investigate the differences between male and female students towards the perception of online learning, an independent samples t-test was used. The results are summarized in Table 8. It was revealed that the mean scores for females (M=3.37) were generally higher than males (M=3.35) towards students' perception of online learning. However, the differences (p-value range from 0.837 to 0.864, >0.05) between the two tested groups were not significant.

Table 8: Significant Differences in students' perception based on gender

Group Statistics

Gender		N	Mean	Std. Deviation	Std. Error Mean
Perception	Male	88	3.3701	0.79661	0.08492
	Female	182	3.3509	0.68282	0.05061

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
Perception	Equal variances assumed	2.054	0.153	0.206	268	0.837	0.01927	0.09371	-0.16523	0.20377
	Equal variances not assumed			0.195	150.654	0.846	0.01927	0.09886	-0.17606	0.21460

Differences in students' perception towards online learning based on Area of Residence

In this study, there were 85 (31.50%) respondents from the rural area and 185(68.50%) from the urban area participated in online learning. To identify differences in students' perception towards online learning based on an area of residence students, independent samples t-test were used as shown in Table 9.0. The results have reveals that the mean scores for the rural area (M=3.27) were generally higher than urban area (M=3.39). The differences (p-value range from 0.181 to 0.199, >0.05), there was not much difference in the overall satisfaction between rural area and those from urban area. This gave the impression that the area of residence factor did not play a critical role in online learning.

Table 9: Significant Differences in students' perception based on the area of residence

Group Statistics

Area of residence		N	Mean	Std. Deviation	Std. Error Mean
Perception	Rural area (Countryside)	85	3.2739	0.66504	0.07213
	Urban area (Town/City)	185	3.3954	0.74313	0.05464

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
Perception	Equal variances assumed	1.866	0.173	-1.288	268	0.199	-0.12142	0.09429	-0.30706	0.06422
	Equal variances not assumed			-1.342	180.853	0.181	-0.12142	0.09049	-0.29997	0.05713

Discussion

The main objective of this study was to identify students' preferences and perceptions of online learning during the Covid-19 pandemic. Furthermore, the findings on the differences in students' perception among gender and area of residence can be useful for institutions when planning online teaching and learning activities.

The first research question aimed at finding out students' preferences of online learning during Covid-19 pandemic. The finding revealed that most of the respondents preferred online learning using social media such as WhatsApp, Telegram, Email, Facebook, Instagram, and Twitter for class updates with 90.0%. These findings in line with previous research indicates that WhatsApp was the most effective way to communicate class updates. This is due to the fact that social media such as WhatsApp allows students and educators to check in and ask or respond to questions more directly and fluidly. Laptop devices are preferred by the respondents for use in online learning with 95.6% who believe laptops are popular because of the technological tools they provide, as well as their portability. Students who use laptops will experience increased efficiency and accuracy in assignment completion, as well as more convenient group work and online learning. The findings also revealed respondents preferred live online learning that can be recorded since it gives them flexibility in learning. It was supported by (Muthuprasad et al., 2021; Razami & Ibrahim, 2021) that both methods live

online and recorded have their advantages and limitations, for instance, during a live session allows students to real-time interaction but uses more internet data compared to other learning activities. However, pre-recorded video provides with benefit for the learner to receive and digest content in small chunks as well as give more flexibility to the students. It was also reinforced by (Peng et al., 2006; Tsai & Lin, 2004); The advantages of online learning have been recognised as flexibility and convenience. Poole (2000) discovered that students frequently used their home computers to access course information since this was the most accessible place for them. As a result, lecturers may arrange online learning based on learner preferences, and it would be great if recorded videos were made available on the university site or other platform so that students could watch them whenever they wanted. Taking this feedback from students into consideration, lecturers can record the live learning session as well as give reading material, allowing students to view the video at their convenience. It was discovered that to complete the syllabus, learning should be conducted according to a schedule, and participants preferred a one-hour duration for each online learning session. This outcome is supported by the findings of (Allen, 2011; Reiser & Dempsey, 2001; Song et al., 2004); Long-length lessons should be avoided to increase student productivity, and a suitable break should be provided between two consecutive classes. It not only reduces cognitive stress but also reduces physical strain induced by the extended usage of technological devices. It was supported by (Thompson, 2014) method of working for 52 minutes and taking a 17-minute break. The findings of this study also revealed the majority of students had a positive attitude regarding online learning. To enhance the learning experience, students preferred interactive online learning with quizzes, tests, and assignments. In terms of the format of online exams, respondents preferred online exams being replaced with assessment. This finding is consistent with (Olum et al., 2020) which found that tests and exams were the least preferred activities for students, while lectures and discussion were more appropriate. The main concern at the institution was online examinations, where students felt to be inappropriate and unfair (Jhon et al., 2020).

Furthermore, this research also identified the respondents' perceptions towards online learning during the Covid-19 pandemic. The result indicates that students' perceptions towards online learning are relatively positives, with a majority of the students has increased their technical skills, such as email and internet application. From this result, it can be interpreted that students in this study are relatively confident in their skills in using computer & internet in order to learn online. According to Jones (2012) university students these days are generally proficient in using technology due to their exposure to technology-rich environments. This is due to the fact that students felt online learning to be beneficial because it was flexible, did not require them to travel for attending lectures, and they were able to enhance their independence and technical abilities. Another study revealed that online learning enables them to spend more time on their homework and assignments than traditional classroom learning. Hence, students are more comfortable asking questions by using social media such as email, WhatsApp, Telegram rather than orally. Students can ask questions and effectively communicate by using asynchronous technologies such as threaded discussions and email, as well as synchronous tools such as live chat, instant messaging, and Skype (Hung et al., 2010). It is important for students to be able to interact freely and confidently with classmates and instructors via computer-mediated email (Salaberry, 2000). However, the opposite result was obtained where respondents considered online learning to be more difficult to comprehend the course material than classroom learning. Therefore, it is

suggested instructor can include both synchronous and asynchronous activities such as the combination of live video conferencing and pre-recorded video.

Apart from the obvious benefits, online learning has significant drawbacks. The most prominent constraint faced by respondents is that online learning brings a lack of face-to-face communication. This finding is consistent with multiple studies that have identified social interaction as one of the barriers of online learning; Thus, this element must be considered when designing online learning in order to improve students' perceptions and enhance their learning experience (Arifiati et al., 2020; Ilias et al., 2020; Kamal et al., 2020). The study conducted by (Amir et al., 2020) showed more students felt lower learning satisfaction and more difficult communication either with instructors or with peer students during online learning. The results of this study also discovered respondents had difficulty with internet connectivity. Previous researchers received similar results; Poor internet connection is the major setback that plagued many students during this unprecedented COVID-19 pandemic (Chung, Noor, et al., 2020; Chung & Mathew, 2020; Mathew & Chung, 2020). Various reports (The Rakyat Post, 2020; The Sunday Daily, 2020) have drawn attention to a serious delay or speed problem that impacts internet users. This issue has become even more serious in Sabah, where all teaching and learning has been shifted online beginning April 2020. University students in rural Sabah will continue to face similar difficulties until more stable internet infrastructure is accessible. Therefore, the government must consider long-term infrastructure investment in order to improve internet connectivity (Chung, et al., 2020). Students complaining about unstable internet connections and additional cost burdens for internet quotas clearly met technical limitations (Amir et al., 2020). The problem of disconnection and slow internet speed caused students' frustration and anxiety (Faize & Nawaz, 2020). It is recommended that universities must be provided with robust resources and more technology infrastructure to support online learning. Educators, on the other hand, may choose which internet platforms are appropriate for their students. It is preferable for educators to use online platforms that require low internet memory or internet connection. Educators should make online learning accessible and comfortable for students so that all students have the opportunity to participate in online learning (Jhon et al., 2020). Although the institution has enabled students who have internet access in rural areas to return to the university in order to obtain better internet access for more effective learning, internet connection within the campuses is in severe need of upgrading. Because this new norm is going to remain for the foreseeable future, universities should prioritize boosting internet connectivity.

This research also reveals that respondents' gender and area of residence did not influence their perception of online learning. These results are in line with previous studies by (Chung, et al., 2020; Subramaniam, et al., 2020; Razami & Ibrahim, 2021) found that genders and students from rural areas and those from the urban area did not play a critical role in satisfying online learners. Therefore, the finding of this research suggests online learning should be properly managed and regulated. The undesirable preconceived conceptions about online learning that institutions often hold must be adjusted or rectified in order to enhance perceptions of online learning and perhaps reduce opposition to the adoption of online learning (Felege & Olson, 2015).

Conclusion

In conclusion, online learning became the primary means of instruction when most universities were forced to close their operation due to covid-19. The shift in platform raises

the question of how it influenced the students as the client, perceived the changes in quality of education offered, after almost two years of implementation. This study investigated students' perception and preference for online learning in Sabah during the COVID-19 pandemic. The result indicates that students' perceptions towards online learning are relatively positives, with a majority of the students favour online learning over traditional face-to-face learning. There were also no significant differences in perceptions found between genders nor area of residence. In terms of preferences, flexibility and convenience factor were significant with students were found to prefer a combination of synchronous and asynchronous learning that enables students to participate in class discussion in real-time and access, re-watch, skip and revise the topic of their selection at their convenience. This is consistent with the finding that shows students are more inclined to use social media and mobile data packs as both items offer mobility and enable students to get timely information. This study provides useful insight to the relevant stakeholders especially the higher education institution to be aware of the perception and situation of the students in using online learning as a new norm during the pandemic. Therefore, the implementation of online learning can be executed successfully and thus may reduce the tendency of e-learning fatigue among the students.

However, even though this study provides some insight into the perception of the students on the implementation of online learning, this study also posed some limitations. This study is a cross-sectional study and thus provides a one-off overview of their perception towards using online learning. Therefore, a longitudinal study may be conducted in the future to study the changes in their perception over time. Next, this study is only a descriptive study in nature and thus does not provide in-depth information on the reason that influences their perception. Hence, future studies may conduct a qualitative study to get in-depth information and thus may provide an integrative overview of their perception. Furthermore, this study also focuses on the perception of the students while in reality, the course instructors are also among those who are being affected by the implementation of online learning. Therefore, future studies may conduct a study to investigate the course instructor perception on the transition towards online learning and thus may compare the result from both perspectives.

References

Agung, A. S. N., & Surtikanti, M. W. (2020). Students' Perception of Online Learning during COVID-19 Pandemic: A Case Study on the English Students of STKIP Pamane Talino. *SOSHUM: Jurnal Sosial Dan Humaniora*, *10*(2), 225–235. https://doi.org/10.31940/soshum.v10i2.1316

Akcayir, G., & Akcayir, M. (2018). The Flipped Classroom: A Review of Its Advantage and Challenges. *Computer and Education*, 126, 224-245.

Alkhudiry, R., & Alahdal, A. (2021). The Role of Online Learning During and Post COVID- 19: A Case of Psycho- Social Study, *TESOL International Journal*. Vol 16(1), 119-135.

Allen, M., & Book, U. (2011). Successful e-Learning Interface Making Learning Technology Polite, Eective and Fun "Introducing the CEO of LID" FREE CHAPTER VOLUME III of e-LEARNING LIBRARY SERIES. http://www.wiley.com/go/permissions.

Ally, M. (2008). Foundations of Educational Theory for Online Learning. In T. Anderson (Ed). *The Theory and Practices of Online Learning*. Athabasa: Athabasca University Press

Amir, L. R., Tanti, I., Maharani, D. A., Wimardhani, Y. S., Julia, V., Sulijaya, B., & Puspitawati, R. (2020). Student perspective of classroom and distance learning during COVID-19 pandemic in the undergraduate dental study program Universitas Indonesia. *BMC*

Medical Education, *20*(1), 1–8. https://doi.org/10.1186/s12909-020-02312-0

Arbaugh, J. B. (2000). How Classroom Environment and Student Engagement Affect Learning in Internet-based MBA Courses. *Business Communication Quarterly*, 63(4), 9–26.

Arifiati, N., Nurkhayati, E., Nurdiawati, E., Pamungkas, G., Adha, S., Purwanto, A., Julyanto, O., & Azizi, E. (2020). University Students Online Learning System During Covid-19 Pandemic: Advantages, Constraints and Solutions. *Systematic Reviews in Pharmacy*, *11*(7), 570–576.

Aristovnik, A., Keržič, D., Ravšelj, D., Tomaževič, N., & Umek, L. (2020). Impacts of the COVID-19 pandemic on life of higher education students: A global perspective. *Sustainability (Switzerland)*, *12*(20), 1–34. https://doi.org/10.3390/su12208438

Baczek, M., Baczek, M. Z., & Szpringer, M. (2021). Student's Perception of Online Learning during COVID Pandemic. *Medicine*, *100*(7), 1–6. https://doi.org/10.1007/s12098-020-03327-7

Baghdadi, Z. D. (2011). Best Practices in Online Education: Online Instructors, Courses, and Administrators. *Turkish Online Journal of Distance Education*, 12(3), 109-117.

Bali, S., & Liu, M. C. (2018). Students' perceptions toward online learning and face-to-face learning courses. *Journal of Physics: Conference Series*, *1108*(1). https://doi.org/10.1088/1742-6596/1108/1/012094

Bhaumik, R., & Priyadarshini, A. (2020). E-Readiness of Senior Secondary School Learners to Online Transition amid COVID-19 Lockdown. *Asian Journal of Distance Education*, 15(1), 244-256.

Chaney E. G. (2001). Web-Based Instruction in a Rural High School: A Collaborative Inquiry into its Effectiveness and Desirability. *NASSP Bulletin*, 85(628), 20-35.

Chung, E., & Mathew, V. N. (2020). Satisfied with Online Learning Amidst COVID-19, but do you Intend to Continue Using it? International Journal of Academic Research in Progressive Education and Development, 9(4). https://doi.org/10.6007/IJARPED/v9-i4/8177

Chung, E., Noor, M., & Mathew, V. N. (2020). Are You Ready? An Assessment of Online Learning Readiness among University Students. *International Journal of Academic Research in Progressive Education and Development*, 9(1), 301–317. https://doi.org/10.6007/IJARPED/v9-i1/7128

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), 1–9. https://doi.org/10.29333/ojcmt/8286

Department of Statistics Malaysia. (2021, February). POKET STATS NEGERI SABAH ST4 2020.

Faize, F. A., & Nawaz, M. (2020). Evaluation and Improvement of students' satisfaction in Online learning during COVID-19. *Open Praxis*, *12*(4), 495. https://doi.org/10.5944/openpraxis.12.4.1153

Farah Idayu Mohd Salleh, Jamilahtun Md Ghazali, Wan Nor Hana Wan Ismail, Maizura Alias, & Nur Syafiqah A Rahim. (2020). The Impacts of Covid-19 Through Online Learning Usage for Tertiary Education in Malaysia. *Journal f Critical Review*. Vol 7(8), 147-149

Felege, C., & Olson, M. (2015). Online Education: Faculty Perceptions and Recommendations. 9.

Gherheș, V., Stoian, C. E., Fărcașiu, M. A., & Stanici, M. (2021). E-learning vs. Face-to-face learning: Analyzing students' preferences and behaviors. *Sustainability (Switzerland)*,

13(8), 1–15. https://doi.org/10.3390/su13084381

Gilbert, B. (2015). Online Learning Revealing the Benefits and Challenges. *Education Masters*, Paper 3, St. John Fisher College.

Gonzalez-Gomez, D., Jeong, J. S., Airado Rodriguez, D., & Canada-Canada, F. (2016). Performance and Perception in The Flipped Learning Model: An Initial Approach to Evaluate the Effectiveness of a New Teaching Methodology in A General Science Classroom. *Journal of Social Education and Technology*, 25(3), 450-459.

Hung, M. L., Chou, C., Chen, C. H., & Own, Z. Y. (2010). Learner readiness for online learning: Scale development and student perceptions. Computers and Education, 55(3), 1080–1090. https://doi.org/10.1016/j.compedu.2010.05.004

Ilias, A., Baidi, N., Ghani, E. K., & Razali, F. M. (2020). Issues on the Use of Online Learning: An Exploratory Study Among University Students During the COVID-19 Pandemic. Universal Journal of Educational Research, 8(11), 5092–5105. https://doi.org/10.13189/UJER.2020.081109

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

Jhon, W., Mustadi, A., & Zubaidah, E. (2020). Online Learning during Covid-19 Pandemic in Developing Countries: Does it run well? *Jurnal Pendidikan Progresif*, *10*(3), 440–454. https://doi.org/10.23960/jpp.v10.i3.202006

Jones, C. (2012). Netweroked learning, stepping beyond the Net Generation and digital natives. In L. Dirckinck-Holmfeld, V. Hodgson, & D. McConnel (Ed), Exploring the theory, pedagogy and practice of networked learning (pp 27-41). New York, NY: Springer.

Kamal, A. A., Shaipullah, N. M., Truna, L., Sabri, M., & Junaini, S. N. (2020). Transitioning to Online Learning during COVID-19 Pandemic: Case Study of a Pre-University Centre in Malaysia. International Journal of Advanced Computer Science and Applications, 11(6), 217–223. https://doi.org/10.14569/IJACSA.2020.0110628

Lischer, S., Safi, N., & Dickson, C. (2021). Remote learning and students' mental health during the Covid-19 pandemic: A mixed-method enquiry. Prospects. https://doi.org/10.1007/S11125-020-09530-W

Longhurst, G. J., Stone, D. M., Dulohery, K., Scully, D., Campbell, T., & Smith, C. F. (2020). Strength, Weakness, Opportunity, Threat (SWOT) Analysis of the Adaptations to Anatomical Education in the United Kingdom and Republic of Ireland in Response to the Covid-19 Pandemic. *Anatomical Sciences Education*, *13*(3), 301–311. https://doi.org/10.1002/ase.1967

Martin. F., Wang, C., & Sadaf, A. (2018). Student Perception of Helpfulness of Facilitation Strategies that Enhance Instructor Presence, Connectedness, Engagement and Learning in Online Courses. *The Internet and Higher Education.* 37, 52–65.

Mathew, V. N., & Chung, E. (2020). University Students' Perspectives on Open and Distance Learning (ODL) Implementation Amidst COVID-19. *Asian Journal of University Education*, *16*(4), 152–160. https://doi.org/10.24191/ajue.v16i4.11964

Muthuprasad, T., Aiswarya, S., Aditya, K. S., & Jha, G. K. (2021). Students' perception and preference for online education in India during COVID -19 pandemic. Social Sciences & Humanities Open, 3(1), 100101. https://doi.org/10.1016/j.ssaho.2020.100101

Nayak, A. (2020). A study on perception of teachers and students toward online classes in Dakshina Kannada and Udupi District. Asian Association of Open Universities Journal, 15(3), 285–296. https://doi.org/10.1108/aaouj-07-2020-0047

Olum, R., Atulinda, L., Kigozi, E., Nassozi, D. R., Mulekwa, A., Bongomin, F., & Kiguli, S. (2020). Medical Education and E-Learning During COVID-19 Pandemic: Awareness, Attitudes, Preferences, and Barriers Among Undergraduate Medicine and Nursing Students at Makerere University, Uganda. Journal of Medical Education and Curricular Development, 7, 2382120520973212–2382120520973212. https://doi.org/10.1177/2382120520973212

Paechter, M., & Maier, B. (2010). Online or face-to-face? Students' experiences and preferences in e-learning. *Internet and Higher Education*, *13*(4), 292–297. https://doi.org/10.1016/j.iheduc.2010.09.004

Peng, H., Tsai, C. C., & Wu, Y. T. (2006). University students' self-efficacy and their attitudes toward the Internet: The role of students' perceptions of the Internet. *Educational Studies*, *32*(1), 73–86. https://doi.org/10.1080/03055690500416025

Pokhrel, S., & Chhetri, R. (2021). A Literature Review on Impact of COVID-19 Pandemic on Teaching and Learning. *Higher Education for the Future*, *8*(1), 133–141. https://doi.org/10.1177/2347631120983481

Poole, D. M. (2000). Student Participation in a Discussion-Oriented Online Course. *Journal of Research on Computing in Education*, *33*(2), 162–177. https://doi.org/10.1080/08886504.2000.10782307

Razami, H. H., & Ibrahim, R. (2021). Distance Education during COVID-19 Pandemic: The Perceptions and Preference of University Students in Malaysia Towards Online Learning. *International Journal of Advanced Computer Science and Applications*, 12(4), 118–126. https://doi.org/10.14569/IJACSA.2021.0120416

Reiser, R. A., & Dempsey, J. (2001). Trends and Issues in Instructional Design and Technology.

Sahin, A., Cavlazoglu, B., & Zeytuncu, Y. E. (2015). Flipping A College Calculus Course: A Case Study. *Journal of Educational Technology & Society*, 18(3), 142–152.

Saidi, R. M., Sharip, A. A., Abd Rahim, N. Z., Zulkifli, Z. A., & Md Zain, S. M. (2021). Evaluating Students' Preferences of Open and Distance Learning (ODL) Tools. *Procedia Computer Science*, 179(2019), 955–961. https://doi.org/10.1016/j.procs.2021.01.085

Salaberry, M. R. (2000). Pedagogical design of computer mediated communication tasks: learning objectives and technological capabilities. *Modern Language Journal*, 84(1), 28–37

Schlenz, M. A., Schmidt, A., Wostmann, B., Kramer, N., & Schulz-Weidner, N. (2020). Student and Lecturer Perspective on The Implementation of Online Learning in Dental Education Due to Sars-Cov-2 (Covid-19): A Cross Sectional Study. *BMC Medical Education* 20:354

Schrum, K., & Sleeter, N. (2013). Teaching History Online: Challenges and Opportunities. *OAH Magazine of History*, 27(3), 35-38.

Song, L., Singleton, E. S., Hill, J. R., & Koh, M. H. (2004). Improving online learning: Student perceptions of useful and challenging characteristics. *The Internet and Higher Education*, 7(1), 59–70. https://doi.org/10.1016/J.IHEDUC.2003.11.003

Tareen, H., & Hand, M. T. (2020). A Case Study of UiTM Post-Graduate Students Perception on Online Learning: Benefits & Challenges, *International Journal of Advanced Research and Publications*, Vol 4(6), 86-94.

The Rakyat Post. (2020). Malaysia experiencing major internet pressure, says Economist. Retrieved on 17 April from https://www.therakyatpost.com/2020/03/31/malaysia-experiencing-major-internet-pressure-says-economists/.

The Sunday Daily. (2020). Users in many areas face connectivity issue while Malaysia moves into 5G era. Retrieved from https://www.thesundaily.my/local/users-in-many-areas-

face-connectivity-issue-while-malaysia-moves-into-5g-era-HJ1856458

Thomas, N. S., Thakkar, M., & Ghanekar, J. (2021). Student's perception on online teaching, learning and evaluation during the covid-19 pandemic: a survey. *International Journal of Health and Clinical Research*, *4*(1), 61–67.

Thompson, D. (2014). A Formula for Perfect Productivity: Work for 52 Minutes, Break for 17. 1–5. https://www.mendeley.com/catalogue/b8e22ad6-d51a-322b-84f2-277a71167cc4/?utm_source=desktop&utm_medium=1.19.8&utm_campaign=open_catalog&userDocumentId=%7B2eca019d-e1fc-3da3-8ce3-84db3d332782%7D

Tsai, C.-C., & Lin, C.-C. (2004). Taiwanese adolescents' perceptions and attitudes regarding the internet: Exploring gender differences. Adolescence, 39(156), 725–734.

UNESCO. (2020). COVID-19 Educational disruption and response. https://en.unesco.org/themes/educationemergencies/coronavirus-school-closures.

Wong, C. H. (2020). Malaysia: coronavirus, political coup and lockdown. *The Round Table,* 1-2.

Yau, H. K., & Tang, S. T. (2020). Investigation of The Difference Between Online Learning and Face-To-Face Learning on The Aspects of Students' Satisfaction and Preferences: A Study on Hong Kong Higher Education. *The Turkish Online Journal of Educational Technology*, *Special Is*, 176–188.