Assessment of Students' Performance in Construction Management Program for Online Learning amid Covid-19

Ts. Dennis Chan Paul Leong (EdD)
Education and Social Sciences, Open University Malaysia, Kuching/Sarawak, Malaysia
Email - denniscpl@oum.edu.my

Abstract: *The Covid-19 pandemic has created a large disruption to higher education institutions across the globe. Owing to lockdown, movement restriction, as well as health and safety concerns of students and educators, all institutions of higher learning, were instructed to migrate their teaching and learning mode from offline to online during the pandemic period. This overnight shift of teaching and learning pedagogy has inevitably created various challenges for students. This research aims to study the impacts of the Covid-19 pandemic on the performance of construction management students. The study applied qualitative semi-structured interviews and involved 4 construction management students (research respondents) from a private college in Kuching Sarawak, Malaysia. The purposive sampling method was adopted for selecting targeted respondents who must have undergone both teaching and learning experience before and during the Covid-19 pandemic, as well as from different geographical divisions in Sarawak, Malaysia to study on the impacts of change. Findings from this study showed that the performance of construction management students in online learning during the Covid-19 pandemic was affected, particularly in the context of numeracy skills and entrepreneurship skills. In addition, the study found out that poor infrastructure facility is a potential threat to online learning satisfaction and the perceived students' performance.*

Key Words: *Covid-19 pandemic; online learning; construction management; students' performance.*

1. INTRODUCTION:

Owing to the outbreak of the Covid-19 cases across the nation, 18 March 2020 marked the most extraordinary moment for fellow Malaysians as lockdown and movement control order was unprecedentedly imposed. All government and private premises, including all the educational institutions, were instructed to close during this movement control period for curbing the infected cases. Both the public and private higher institutions in Malaysia were urged to shift all teaching activities to online mode overnight, following the immediate circulations released by the Malaysian Qualification Agency (MQA). Numerous advisory notes were also circulated by MQA to provide guidelines to the higher education providers for permitting the teaching and learning to go on without major disruptions.

Looking at the positive spectrum, the pandemic crisis has increased online teaching and learning activities exponentially. It has transformed the way of engaging in online learning in all institutions across the globe, which fills in the gap of realising the use of digital technology in Education 4.0. However, when all learning institutions have no other option but to switch to an online learning approach while embracing the pandemic, the readiness, and quality of online learning require almost everyone's attention. The online learning curriculum is not the replication of traditional face-to-face learning as engagement of students to participate in learning is crucial. The sudden change from traditional classrooms to online classrooms has impacted the learning experience of students. Owing to poor network or internet facilities, this pitfall has created negative impacts on the learning process and affected the academic performance of students (Thandevaraj, Gani & Nasir, 2021). Hence, this paper intends to discuss and explore the problems and challenges in online learning.

2. LITERATURE REVIEW:

In Malaysia, online education has been rooted in tertiary education for quite some time. Long before the pandemic, massive open online courses (MOOCs) were offered by universities as add-ons to face-to-face teaching and learning. With the release of Malaysian Education Blueprint 2015-2025 (Higher Education) by the Malaysian Ministry of Education, online learning will be the future trend of education as Blended Learning (BL) has been set as one of the shift total ten shifts for spurring excellence in the higher education system (Ganapathy, 2016). One of the public universities in Malaysia, namely Universiti Teknologi MARA (UiTM), had already introduced blended learning well before the implementation of fully online learning on 12 April 2020 (Chung, Subramaniam & Dass, 2020). Online learning involves the use of online pedagogy, e-learning, flexible learning, blended learning, and cloud learning (Patel, 2014). Online learning was defined by Dhawan (2020) as synchronous or asynchronous learning experiences by using different technological devices such as mobile phones, laptops, etc. that are connected to the internet. Synchronous

learning is a learning activity that enables learners and instructors to engage at the time via audio, instant messaging, Google Meet, Zoom and etc., whereas asynchronous learning does not happen in real-time mode, the interactions are carried through email or online discussion board (Lin & Gao, 2020).

The Malaysian Educational Technology Association chairman, Associate Professor Dr. Mahizer Hamzah, ever mentioned that the public acceptance of virtual learning in Malaysia was pessimistic before the outbreak of the Covid-19 pandemic (Bernama, 2020). With the issuance of the movement control order by the Prime Minister on 19 March 2020, online learning has fostered acceptance as virtual learning is the only panacea to ensure the learning process is not affected. Despite the fact that online learning is an effective solution for both learners and educators during the pandemic crisis, however, the quality of online learning shall not be compromised. The satisfaction and dissatisfaction aspects of both learners and instructors deserve a persistent study. In the Outcome-Based Education (OBE) context, learners are to take their own responsibility and ownership in the learning process, however, the connectedness or interaction aspect between learners and instructors is also equally important in the active learning process. Other important aspects such as emotional support, good digital facility, and teaching pedagogy must not be neglected to improve the satisfaction of students in the online learning environment (Mohamed, Noorashid & Razak, 2021).

It has been a major concern when there were numerous complaints about not having internet access, slow internet connectivity, technical issues with choppy audios and lagged videos when engaging in online learning during this pandemic (Hassan, 2021). Studies conducted by numerous scholars have shown that dissatisfaction in online learning has a significant effect on the achievement of learning outcomes and academic performance (Li & Tsai, 2020; Dhaqane & Afrah, 2016; Hashemi, 2021; El-Hilali, Al Jaber & Hussein, 2015). In an OBE setting, academic performance is the measurement of the outcome of education (Narad & Abdullah, 2016). An educational, performance, or competency outcome refers to observable behaviors and actions of participants to get the work done at the completion of an educational experience (McCoy & Anema, 2013). Hence, the satisfaction of students becomes a significant component or driving motivator to ensure the performance of students is not affected when there is a sudden shift from an offline mode of teaching and learning to an online mode.

A literature gap has been identified as there has yet to be a research study to explore how online learning affects the performance of students from the built environment program in Sarawak, Malaysia. Hence, this study enables a deeper understanding is gained to look into the impacts of online learning on construction management students of a private college in Kuching Sarawak, Malaysia during the Covid-19 pandemic. The reviews bring to the formulation of the following research question:

Research Question: Does online learning affect the academic performance of construction management students?

3. RESEARCH METHOD:

For answering the above research question, the study explored the online learning experience of construction management students during the Covid-19 pandemic and determined the potential impact of academic performance of students in online learning. The performance of construction management undergraduate students of a private college in Kuching Sarawak, Malaysia during the Covid-19 pandemic was explored and studied based on the students' perceived achievement of five clusters of learning domains specified in the Malaysian Qualifications Framework 2nd Edition. A qualitative research approach with the interview that encompassed open-ended and closed-ended questions was adopted to produce the narrative data and simple descriptive data. The selected built environment program in this study is offered by a private college in Kuching, with an approximate population of 50 construction management students from the different divisions in Sarawak, Malaysia. The duration of the construction management program is three years. The researcher applied the purposive judgment sampling method to select four construction management students that could best address the research objective and fulfill several desired criteria to his knowledge (Etikan & Bala, 2017). Firstly, the researcher ensured the research respondents have participated in traditional face-to-face classes before the Covid-19 pandemic and online classes during the Covid-19 pandemic so that the impact of online learning could be clearly compared. Secondly, the researcher ensured the four research respondents were performing online learning in different locations or divisions in Sarawak to better understand the impact of geographical location and challenges in online learning.

In the context of this study, the four research respondents were identified through non-probability sampling with the assistance of the program leader of the construction management program. The data was collected through semi-structured interviews to address the research question. The semi-structured interview can collect extra information when there is an interactive discussion in the structured conversation, which is designed with a set of standardised questions which were asked to multiple respondents, subsequently with a pertinent follow-up question to gain deeper knowledge on the topic (Ahlin, 2019). Prior to the interview session, the four research respondents were contacted and informed of the aim of the research with the assurance of confidentiality of the data, giving them an idea of what was expected from the interview. This is also to ensure the respondents feel at ease with the sharing of

sensitive information and personal views. Upon the voluntary acceptance of respondents to join the research study, the one-to-one interview was arranged and conducted via the Google Meet platform in the month of October 2021 as the research respondents were still performing online learning from their respective hometowns in the period of the research study. This platform was chosen because the research respondents have been very familiar with Google Meet in the synchronous learning sessions. Hence, this would help to create a comfortable and more relaxed environment for the research respondents in the interview session (Alsaawi, 2014).

On the day of the one-to-one interview session, each research respondent was once again informed of the purpose of the research and their voluntary role in providing the data. They were informed of their rights as the research participants and how their responses will be used. In this study, the confidentiality of the respondents is assured by not disclosing the name of the participants. Permission to record the interview session was requested before commencing the semi-structured interview so that the researcher could review the recorded data repeatedly and write out the recorded interview into textual documents for data analysis and discussions.

The interview generally adopted the five phases recommended by Robson (2011, as cited in Alsaawi, 2014):

Phase 1: Introduction: the researcher introduced himself and briefed the interviewee(s) with the aim of the interview, rights of the interviewee(s).

Phase 2: Warm-up: the researcher started with easy questions to ease the situation and make interviewee(s) feel comfortable.

Phase 3: Main body: the researcher focused on the main topic of the study.

Phase 4: Cool-off: the researcher asked simple questions to conclude the session.

Phase 5: Closure: the researcher thanked the interviewee(s) for valuable inputs.

In this study, the interview lasted for 20-30 minutes for each research respondent (interviewee). The language of communication used was the English Language.

4. Limitations of Study:

The findings from this study were discussed based on a qualitative approach that involved only four respondents with open-ended and closed-ended questions. In usual practice, the measurement of student's performance shall be based on quantitative data of academic grades (Narad & Abdullah, 2016). The performance of students to address the five clusters of learning domains is more accurate to be measured through the results of students in every course through Course Learning Outcomes (CLOs) and Program Learning Outcomes (PLOs) analysis and subsequently triangulated with a qualitative interview. Thus, a mixed method of quantitative and qualitative is recommended as it could better address the research question accurately via review and validation of the qualitative findings. However, mixed-method was not adopted in this study due to research time constraints. In addition, the time factor is another significant limitation to the accuracy of this study as the interview was conducted 1.5 years after the Covid-19 pandemic. Some respondents could have adapted to online learning, this scenario might result in justification bias and could have affected the accuracy of findings when they were asked about their perceptions towards online learning and performance.

5. FINDINGS & DISCUSSION:
5.1. Descriptions of Research Participants

In answering the research question, one-to-one semi-structured interviews were conducted with four construction management students (named as Respondents 1, 2, 3 & 4 in this study) in a private college who have fulfilled the two specified criteria determined by the researcher based on his best knowledge to answer the research question. Apart from having the experience of participating in online learning during the Covid-19 pandemic, the respondents must have undergone the traditional face-to-face learning before the outbreak of the Covid-19 pandemic in the year 2020. This is to ensure that the impacts of online learning on academic performance could be comparatively described. Since the program duration of the construction management program is only 3 years, the selected respondents in this study were all in their year 3 when the interview was conducted in the month of October of the year 2021. In addition to that, the participants were purposely selected from different divisions or locations in Sarawak, Malaysia to observe how different geographical locations and infrastructure facilities affected their online learning experience. In this study, the participated respondents were from four divisions in Sarawak, Malaysia namely Kuching, Sarikei, Serian, and Sibu. The profile of the participants is as illustrated in Table 2.1.

Table 2.1: Profile of Respondents

Respondent	Gender	Present Year/Semester of Study in Construction Management Program	Present Location in Sarawak, Malaysia
Respondent 1	Female	Year 3, Semester 1	Kuching Division

Respondent 2	Male	Year 3, Semester 1	Sarikei Division
Respondent 3	Male	Year 3, Semester 3	Serian Division
Respondent 4	Male	Year 3, Semester 1	Sibu Division

5.2. **Online Learning Experience:**

In the first part of the data collection, the respondents were asked about their online learning experience, the ICT devices, and network types used in participating in online learning during the Covid-19 pandemic. The researcher intended to gain an understanding of the learning experience from the respondents so that the impacts of online learning on the students' performance can be closely associated when addressing the research question. From the findings, all respondents replied that the teaching and learning approaches used in the construction program were mostly synchronous mode through the Google Meet platform. Two respondents described their interactions with lecturers were also made through WhatsApp. The video recordings provided by the lecturers were said to have enabled the asynchronous learning to be carried out after the online classes for enhancing their knowledge and understanding. Their responses quoted,

... I will learn from recordings...Sometimes when I am not sure about the part of the notes, I keep on repeating the recording until I understand...I will get confirmation from the lecturers in the next Google Meet class or after the class... (Respondent 1)

... Normally is live through Google Meet... I like recording because if you missed something...you can watch back ... (Respondent 2)

... Learning mostly through video calls...through WhatsApp to ask questions...will view recordings at the later stage... (Respondent 3)

... Interaction and learning through Google Meet...will use WhatsApp to interact with lecturers... I learn through recordings and slides mostly before the tests... (Respondent 4)

Furthermore, the findings also showed that the four construction management students owned and used at least three devices in performing their online learning. The stated devices include laptops, mobile phones, and iPad. They mentioned that iPad and a laptop were mostly used when they performed online learning at home through wifi broadband while using a mobile phone was preferred when they were away from home. They described,

... Devices used are iPad and laptop.... when I go outside, I will use my phone to attend classes.... with Unifi wifi broadband... (Respondent 1)

... I am using 3 devices, sometimes I switch just in case one the device is low batt... laptop, my handphone, and iPad ...just Streamyx, normal Streamyx, Unifi not in my area... (Respondent 2)

... I use a laptop and iPad...unless I am outside, I will use mobile phone....at home I use Unifi... (Respondent 3)

...laptop, handphone, and iPad at home.... use handphone when I am outside...use Unifi at home... (Respondent 4)

During the interview, the respondents were given a closed-ended question to rate their level of satisfaction with online learning. The researcher adopted the scale applied by Vagias (2006) in this study, namely from (1) very dissatisfied; (2) dissatisfied; (3) neutral; (4) satisfied to (5) very satisfied to measure the satisfaction level of respondents in online learning. The findings indicated that the satisfaction levels of the respondents were rated as neutral to satisfying levels, with overall results summarised in Table 2.2.

Table 2.2: Satisfaction Level of Respondents in Online Learning

Respondent	**Satisfaction Level**
Respondent 1	(4) Satisfied
Respondent 2	(3) Neutral
Respondent 3	(4) Satisfied

Respondent 4	(3) Neutral

Following the closed-ended question, probing questions about what they like and dislike in online learning were asked to find out the reasons for these responses. One of the identified causes that resulted in a reduction in satisfaction among the respondents in online learning was due to challenges in acquiring direct interaction in online learning, especially for those technical courses in the construction management program that require practical works. For instance, challenges in performing measurement of construction drawings to produce bills of quantities, operation of surveying instrument with complex mathematical solutions to determine the reduced level and areas of project site were mentioned by the respondents in the interview. The comments from the respondents were highlighted as follows,

… The course that requires drawings will be challenging…have to ask the lecturer about drawings, so sometimes will be difficult to ask it online… (Respondent 1)

… like if you attend calculation classes, better you get face to face la because of calculations ma…. if got calculation classes, I prefer going back face to face…measurement…surveying fieldwork…mathematics as well… (Respondent 2)

… difficult for discussion…less convenient although as it is discussion is indirect… difficult to interact among peers (Respondent 3)

… inconvenient to find lecturers…need to wait for their response…in a physical class, I could find them in the office directly… (Respondent 4)

Additionally, respondents also remarked on the poor internet connection issue during bad weather when performing their online learning. And for Respondent 2 who stayed in the rural area, network accessibility and video call quality were some of the key dissatisfactions. The feedback from Respondent 2 was proven to be accurate as the quality of the video call was observed to be rather poor and lagged during the interview session with this respondent. The respondents described,

… somehow, there are issues with the wifi problem, I could not catch up with the lesson…. I wonder sometimes is my side problem or lecturer side problem…if it is raining, the issue of the wifi will be more…have to worry about it when it is raining… (Respondent 1)

…the internet connection is not that strong because I am staying far from Sarikei town… …sometimes due to raining weather…so have to off the Streamyx, if not the lightning will strike, worrying the modem….so I cannot join the class la… if you want to have a good experience, you have a good internet connection…because sometimes line very lagging…sometimes lecturers want to deliver, you need to re-watch due to poor internet… (Respondent 2)

… normally with problems after heavy rain…because our Unifi cable is frequently struck by falling tree branches (few months one incident) …my house is just near to forest with lots of trees… (Respondent 4)

5.3. Impact of Online Learning on Students' Performance:

The reviews from the literature have shown that a shift to online learning will affect the academic performance of students. In the context of this study, the qualitative findings through interviews with open-ended and closed-ended questions were used to answer the formulated research question of whether online learning affects the academic performance of construction management students in a small private college in Kuching Sarawak, Malaysia. The researcher adopted the comparative scale used by Mahdy (2020) to check with the research respondents of those who have experienced both the traditional mode of learning and the online mode of learning due to the Covid-19 pandemic, followed by probing questions to study the reasons. During the interviews, the research respondents were given a 5-point comparative scale of (1) not affected; (2) slightly affected; (3) moderately affected; (4) considerably affected and (5) greatly affected, to determine and evaluate how online learning has affected their academic performance in the program of study. The findings showed that the impact of online learning varies among the research respondents who participated in this study. Two respondents commented that online learning has no impact on their performance, while the other two respondents responded with a moderate to a considerable impact on their performance. The overall feedbacks are shown in Table 2.3.

Table 2.3: Impact of Online Learning to Academic Performance

Respondent	Impact of Online Learning on Academic Performance
Respondent 1	(1) Not affected
Respondent 2	(4) Considerably affected
Respondent 3	(1) Not affected
Respondent 4	(3) Moderately affected

Probing questions were then asked to determine how online learning affects the academic performance of students. The research found out that the Respondent 1 and 3 who expressed a better satisfaction (as shown in Table 2.2) tended to give positive responses of not having issues with their academic performance when participating in online learning. In contrast, impacts on academic performance were observed from another two respondents, Respondents 2 and 4, who showed neutral satisfaction (in Table 2.2) towards online learning and with internet connection issues when performing the online lessons.

To compare for physical and online, I think I perform better during pandemic… (Respondent 1)

Not affected… time management is important in online learning (Respondent 3)

…it is better to get face-to-face because if you have any problem, you directly approach lecturers to solve the problem…I think face-to-face is still better because very direct…online cannot focus… (Respondent 2)

…honestly speaking…could not cope well and lack of focus in the study (Respondent 4)

Additionally, the research respondents were required to do self-evaluation of their performance in online learning during the Covid-19 pandemic if compared with the traditional learning approach through closed-ended questions. In this study, the five clusters of learning outcomes specified in the Malaysian Qualifications Framework, namely knowledge and understanding, cognitive skills, functional work skills, personal and entrepreneurial skills, and ethics and professionalism were used in the self-evaluation. Under the cluster of functional work skills, it contains six domains of practical skills, interpersonal skills, communication skills, digital skills, numeracy skills, and lastly the leadership, autonomy, and responsibility. Thus, the respondents were asked to make a simple evaluation through a 3-point scale to reduce the complexity of decision and interest to answer the items as the total number of domains to be evaluated by each respondent is about eleven (Jacoby & Matell, 1971). The 3-point scale used was (1) worst; (2) similar and (3) better, in which the research respondents were to evaluate whether online learning has helped them to achieve these five clusters if compared with the traditional learning mode. To identify the impact of domain achievement in online learning, the mode value of the responses received from the respondents was determined in the study. Through the findings, it showed that the domains of interpersonal skills and digital skills were perceived to achieve better in the online setting, whereas numeracy skills and entrepreneur skills deserved attention to be improved in the online learning environment. The overall responses received from the respondents are presented in Table 2.4.

Table 2.4: The Perceived Achievement of Domains by Respondents in Online Learning

Domains	Respondent (R) No				Mode
	R1	**R2**	**R3**	**R4**	
Knowledge & understanding	Similar	Similar	Similar	Worst	Similar
Ability to think & solve problem	Similar	Similar	Similar	Similar	Similar
Practical skills	Similar	Worst	Similar	Similar	Similar
Interpersonal skills	Better	Worst	Similar	Better	Better
Communication skills	Better	Similar	Similar	Similar	Similar
Digital skills	Better	Similar	Better	Better	Better
Numeracy skills	Better	Worst	Worst	Similar	Worst
Leadership skills	Similar	Similar	Worst	Similar	Similar
Personal skills	Similar	Worst	Similar	Similar	Similar

| Entrepreneur skills | Similar | Worst | Similar | Worst | Worst, Similar |
| Professional ethics | Better | Similar | Better | Similar | Similar, Better |

From all the above qualitative findings, it can be observed that online learning has created both positive and negative impacts on the students' performance in the construction management program of a private college in Kuching Sarawak, Malaysia. This finding was also supported by the majority of the reviews that have been conducted earlier in this research (Chung et al., 2020; Hashemi, 2021; Dhaqane & Afrah, 2016; Thandevaraj et al., 2021). Owing to the Covid-19 pandemic, the use of technological devices in online teaching and learning has been accelerated across the globe, including the students in this college. Online learning was perceived to be a "nice to have" option before the pandemic. The sudden outbreak of the pandemic crisis has forced all institutions are to convert teaching and learning materials to digital forms, to deliver the lessons online synchronously and asynchronously in ensuring the learning momentum of students is not affected. Indirectly, students have acquired extra benefits in this mode of learning as their digital skills are boosted and enhanced, which is strongly supported by the findings in this study. Students are more techno-savvy and competent to operate different kinds of digital devices, able to participate in online learning through different learning platforms and are more familiar with social and teleconferencing apps. One of the responses about how online learning has boosted digital skills was cited as follows,

…through this online learning, I was also able to learn other software like Google Docs, Google Slides, Google Classroom, and more. It is much better than the physical classroom… (*Respondent 1*)

Apart from that, online learning was found to have fostered interpersonal skills among the students in the construction management program. Interpersonal skills are the skills of engaging in effective communication, promoting interaction, and the ability to work in a group (Dhal, Dhal & Mohapatra, 2021). Because of lockdown and safety concerns, students were not able to meet with each other physically on campus. For courses that require group work in preparing for the assignments, students had no choice but to use social apps such as WhatsApp, WeChat, and even video calls to engage in assignment discussions and problem-solving among peers.

According to Respondent 4, "I need to collaborate more with peers to solve problems… in classes before the pandemic, sometimes I didn't get the chance to speak to them or meet with them in the physical class… Now, we use WeChat and WhatsApp to interact with peers directly…have discussions and delegate tasks in assignments..."

According to Respondent 2, "... through WhatsApp to discuss assignments… mostly through WhatsApp group la…"

Nonetheless, perfection in online learning simply does not exist. Challenges could be observed in the technical courses in the construction management program that requires technical fieldwork with equipment operation, massive numerical calculations, and quantities take-off from construction drawings. It is indeed challenging for students in the built environment programs to refer digital construction drawings for performing quantities take-off as compared to those printed drawings that are available in A3 size, in which the floor layout, structural components, material specifications could be easily marked and coloured during the taking-off process. With complex details in the construction drawings, students are also unable to seek assistance from lecturers conveniently online if compared to physical classes. Not only that, acquiring entrepreneurial competencies without many physical actions is found to be another obstacle in the online learning environment through this study. In a traditional learning setting, students are able to organise events, set up booths, perform physical sales and etc. to develop their entrepreneurial psychomotor skills. During the pandemic period, these kinds of activities were impossible to be carried out. With all these challenges, the performance of students in addressing the learning outcomes is affected, particularly the psychomotor skills of students in the online learning environment (Korkmaz, 2012).

According to Respondent 1, "…have to ask the lecturer about drawings, so sometimes will be difficult to ask it online…"

According to Respondent 2, "The hard skill like operating the tools in surveying fieldwork class…because in that semester I attended the online class…I could not get to experience the equipment…actually I don't know how to conduct the equipment…traditional method is good for some reasons anyway…"

6. CONCLUSION:

The results acquired from this study have shown that the performance of construction management students in online learning during the Covid-19 pandemic was affected in the courses or areas that require hands-on practices and numerical analysis, such as technical measurement of construction drawings, surveying fieldwork as well as the business entrepreneur activities. From the study, the researcher discovered that the responses of online learning satisfaction and feedbacks on how online learning has affected the performance of students are somehow associated. Online learning is not all gloom and doom, digital skills and interpersonal skills were perceived to have improved through qualitative responses in this study. Hence, validation of students' performance through detailed course learning outcomes and program learning outcome analysis is highly recommended in the next study. In addition, the researcher also found out that the issues of network infrastructure could be a hazard or threat to the online learning process, which were supported and highlighted in the reviews of the literature (Chung et al., 2020; Wulanjani & Indriani, 2021; Pandey & Solanki, 2021; Hassan, 2021; El-Hilali et al., 2015). The pandemic has given us a lesson with the cruel fact that the digital gap still presents in our country, Malaysia. This issue deserves our high attention and shall be addressed at the soonest possible time before it is widened. If online learning is claimed to be the future of education on par with the revolution of Education 4.0, a greater network coverage including the rural areas shall be established across the country, such as with Single Wholesale Networks (SWNs) or Wholesale Open Access Networks (WOAN). Internet penetration to all areas including remote areas and the internet with higher speed and affordability for all shall be the blueprint in the era of digital transformation. A virtuous quote from a respondent in this study, "*If you want to have a good experience, you must have a good internet connection.*"

7. ACKNOWLEDGEMENT:

REFERENCES:

1. Thandevaraj, E. J., Gani, N. A. N., & Nasir, M. K. M. (2021). A Review of Psychological Impact on Students Online Learning during Covid-19 in Malaysia. *Creative Education*, *12*(06), 1296–1306. https://doi.org/10.4236/ce.2021.126097
2. Ganapathy, M. (2016). Transformation of Malaysia's Higher Education System: Malaysia Education Blueprint (2015-2025). In *Bulletin of Higher Education Research* (pp. 10–11). National Higher Education Research Institute (IPPTN).
3. Chung, E., Subramaniam, G., & Dass, L. C. (2020). Online Learning Readiness among University Students in Malaysia amidst Covid-19. *Asian Journal of University Education*, *16*(2), 46–58.
4. Patel, F. (2014). *Online Learning: An Educational Development Perspective*. Nova Science Publishers, Inc.
5. Dhawan, S. (2020). Online Learning: A Panacea in the Time of Covid-19 Crisis. *Journal of Educational Technology Systems*, *49*(1), 5–22. https://doi.org/10.1177/0047239520934018
6. Lin, X., & Gao, L. (2020). Students' Sense of Community and Perspectives of Taking Synchronous and Asynchronous Online Courses. *Asian Journal of Distance Education*, *15*(1), 169–179.
7. Bernama. (2020, September 21). *Is Malaysia Ready for Full Implementation of Virtual Learning?* https://www.bernama.com/en/features/news.php?id=1881656
8. Mohamed, B., Noorashid, N., & Razak, F. (2021). The Determine Factors of Student Satisfaction with E-Learning in Malaysia Higher Education Institutions: A Scoping Review. *Journal of Physics: Conference Series*, *1874*, 1-10. https://doi.org/10.1088/1742-6596/1874/1/012051
9. Hassan, H. (2021, February 5). Malaysia's Digital Divide Makes Some Students Trek Up Hills and Sleep on Trees for Internet Access. *The Straits Times*. https://www.straitstimes.com/asia/se-asia/malaysias-digital-divide-makes-some-students-trek-up-hills-and-sleep-on-trees-for
10. Li, D.-C., & Tsai, C.-Y. (2020). An Empirical Study on the Learning Outcomes of E-Learning Measures in Taiwanese Small and Medium-Sized Enterprises (SMEs) Based on the Perspective of Goal Orientation Theory. *Sustainability*, *12*(12), 1-23. https://doi.org/10.3390/su12125054
11. Dhaqane, M. K., & Afrah, N. A. (2016). Satisfaction of Students and Academic Performance in Benadir University. *Journal of Education and Practice*, *7*(24), 59–63.
12. Hashemi, A. (2021). Effects Of Covid-19 on the Academic Performance of Afghan Students' and Their Level of Satisfaction with Online Teaching. *Cogent Arts & Humanities*, *8*(1), 1933684. https://doi.org/10.1080/23311983.2021.1933684

13. El-Hilali, N., Al-Jaber, S., & Hussein, L. (2015). Students' Satisfaction and Achievement and Absorption Capacity in Higher Education. *Procedia - Social and Behavioral Sciences*, *177*, 420–427. https://doi.org/10.1016/j.sbspro.2015.02.384

14. Narad, A., & Abdullah, B. (2016). Academic Performance of Senior Secondary School Students: Influence of Parental Encouragement and School Environment. *Rupkatha Journal on Interdisciplinary Studies in Humanities*, *8*, 12. https://doi.org/10.21659/rupkatha.v8n2.02

15. McCoy, J., & Anema, M. (2013). *Fast Facts for Curriculum Development in Nursing: How to Develop & Evaluate Educational Programs in a Nutshell*. Springer Publishing Company.

16. Etikan, I., & Bala, K. (2017). Sampling and sampling methods. *Biometrics & Biostatistics International Journal*, *5*(6). 215-217. https://doi.org/10.15406/bbij.2017.05.00149

17. Ahlin, E. M. (2019). Semi-Structured Interviews with Expert Practitioners: Their Validity and Significant Contribution to Translational Research. In *SAGE Research Methods Cases. 1-15.* https://www.doi.org/10.4135/9781526466037

18. Alsaawi, A. (2014). A Critical Review of Qualitative Interviews. *European Journal of Business and Social Sciences*, *3*, 149–156. https://doi.org/10.2139/ssrn.2819536

19. Mahdy, M. A. A. (2020). The Impact of COVID-19 Pandemic on the Academic Performance of Veterinary Medical Students. *Frontiers in Veterinary Science*, *7*, 732. https://doi.org/10.3389/fvets.2020.594261

20. Vagias, W.M. (2006). *Likert-Type Scale Response Anchors*. Clemson International Institute for Tourism & Research Development, Department of Parks, Recreation and Tourism Management. Clemson University, Clemson.

21. Jacoby, J., & Matell, M. S. (1971). Three-Point Likert Scales are Good Enough. *Journal of Marketing Research*, *8*(4), 495–500. https://doi.org/10.1177/002224377100800414

22. Dhal, S., Dhal, S., & Mohapatra, S. (2021). Teamwork Quality and Team Effectiveness of Nursing Professionals During Handling Covid-19 Outbreak Turkish - Google Search. *Turkish Journal of Physiotherapy and Rehabilitation*, *32*(3), 18053–18068.

23. Korkmaz, Ö. (2012). The Effects of Web-Based Learning on The Psychomotor Skills and Attitude Toward Course of Students. *Energy Education Science and Technology Part B: Social and Educational Studies*, *4*(3), 1279–1288.

24. Wulanjani, A. N., & Indriani, L. (2021). Revealing Higher Education Students' Readiness for Abrupt Online Learning in Indonesia amidst Covid-19. *Nobel: Journal of Literature and Language Teaching*, *12*(1), 43–59. https://doi.org/10.15642/NOBEL.2021.12.1.43-59

25. Pandey, Y. V., & Solanki, N. (2021). Student Satisfaction Towards the Virtual Learning in Higher Education Sector. *Ilkogretim Online*, *20*(6), 87–92. https://doi.org/10.17051/ilkonline.2021.06.011