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The online classroom, a place where no virus can enter: UiTM Sarawak undergraduates' engagement during the COVID-19 pandemic

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ABSTRACT

COVID-19 has undeniably shifted the educational landscape in Malaysia and the overnight decision to switch to online teaching and learning has presented challenges for students in Sarawak, which is the largest state in Malaysia. After the COVID-19 movement control order was lifted and many undergraduates returned to campuses, they expressed their relief at no longer having to contend with the detrimental effects of online learning, such as heightened stress and anxiety, which led to a range of psychosocial issues. Despite some students gaining valuable experiences from these new learning environments, a significant number have faced challenges in maintaining motivation for their courses. The objective of this study is to investigate and examine the reasons affecting the online learning challenges faced by university students in Sarawak. The challenges impacting students' engagement in online learning were examined through the investigation of five independent variables namely, personality, behavioural, technological savviness, availability of home Internet access, and the structure of the online courses. A set of questionnaires, along with data from focus group interviews, were used to collect information from a total of 102 participants. These participants were selected from two branch campuses of a local university situated in Samarahan, Sarawak. The implication of this study to update knowledge with a wide range of student satisfaction and motivation through online learning during the COVID-19 pandemic, especially to improve student satisfaction and motivation for a successful learning process suggests that it can be considered an effective learning method. This study is beneficial for education experts, lecturers, teachers, trainers, and technologists who are interested in assessment, learning, guidance, design, and online-based learning environments during a pandemic or after a pandemic to increase motivation and satisfaction in learning.

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1.0 INTRODUCTION

The COVID-19 pandemic is one of the biggest threats to the Malaysian education system. As this outbreak quickly swelled, social distancing and lockdowns were imposed. Educational institutions struggled to find alternatives to face-to-face education when dealing with this challenging situation (Rieley,2020). The pandemic has led to dilemmas and an increase of uncertainties about the conduct, rigour, and outcomes of teaching and learning. The UNESCO Report 2022 clearly stated that more than 1.5 billion students in 188 countries were out of school due to COVID-19 last year, representing over 91 percent of the world's student population.

The landscape of Malaysian education has undergone significant adaptations due to the disruptive impact of the COVID-19 pandemic. The enforced closure of campuses and the implementation of Movement Restriction Orders (MCO) have substantially disrupted conventional learning, leading to the adoption of online learning as the most viable alternative to sustain the educational process. Notably, the government has assumed a pivotal role in ameliorating the educational challenges by providing support, such as internet allowances, to both the poor (B40) families and students, affording them the means to access the online educational sphere (Mohd Yusoff, 2020). This stipend has been instrumental in granting students unfettered access to online learning resources. However, it is imperative to acknowledge that the transition to this novel mode of education has not been devoid of challenges. This predicament has resonated across diverse stakeholders, encompassing students, educators, parents or guardians, and administrative bodies.

The Sarawak Education Workshop, held by The Sarawak Initiatives, a non-governmental organization, on the 4th-5th of July 2023, revealed that there was a unanimous agreement regarding the urgency of evaluating and resolving the inadequacies and inequities prevalent in the education system of Sarawak. These issues encompassed challenges such as limited access to internet connectivity and computers, as well as the lack of supportive environments and infrastructure required to facilitate both physical and virtual learning. Additionally, there was recognition of the misalignment between school resources and the diverse needs of students. The COVID-19 pandemic significantly exacerbated these disparities, emphasizing the disparity in Sarawak's preparedness to ensure equitable access to remote learning for all students, regardless of whether they reside in urban or rural areas.

Universiti Teknologi MARA (UiTM) is the biggest public university in Malaysia with 22 branches in all 13 states in the country. There are three UiTM branches in Sarawak, namely UiTM Samarahan Campus 1, UiTM Samarahan Campus 2, and UiTM Campus Mukah. In total, 8256 full-time students are pursuing various courses at diploma, degree, and postgraduate levels in UiTM Sarawak campuses. In UiTM, system technology has always been powerful when combined with education on campuses, but the pandemic has exposed the limited access being unequal when students were at home during the lockdown. Blended learning has become more integrated into the university education system and students were encouraged to take charge of their learning to lead to improvements in their communication skills and academic abilities. However, the pandemic has exposed the vulnerabilities of an education system that was not fully equipped for remote learning. At one end of the spectrum, the UiTM system was used to deliver remote learning at scale in normal business circumstances. On the other end during the pandemic, there were remote areas where internet access was not available.

Administrators and educators found themselves facing an abrupt and substantial shift in their approach, having to swiftly adapt to connecting with previously inaccessible individuals, innovating new pedagogical methods, and ensuring the security of the newly established virtual classroom environment. Every conceivable effort was dedicated to enabling students to persist with their education through the utilization of collaborative distance learning tools and platforms such as Google Classroom, Zoom, and Webex. These

platforms emerged as indispensable resources, allowing students to sustain their learning endeavours amid periods of lockdown and stay-at-home directives. The resumption of in-person classes in March 2022 elicited palpable relief from both students and instructors. Consequently, it becomes pertinent to thoroughly examine alterations in student engagement within the online classroom setting, as well as the key determinants underlying these changes.

Thus, the aim of this study is formulated into the following research questions:

1. Is there any significant relationship among the personality dimensions (behavioural, emotional, and cognitive) that may have affected students' engagement in online learning?
2. How significant is the relationship between being technology savvy and students' engagement in online learning?
3. Is there any significant relationship between the online course structure and students' engagement in online learning?
4. How significant is the relationship between internet accessibility and students' engagement in online learning?
5. What are the prospects of online learning for UiTM Sarawak campuses?

The scope of the study includes a total of 102 undergraduates selected from two branch campuses of a local university situated in Samarahan, Sarawak. The implication of this study is to update knowledge with a wide range of student satisfaction and motivation through online learning during the COVID-19 pandemic, especially to improve student satisfaction and motivation for a successful learning process. It is recommended that online learning can be considered an effective learning method when students have technology savviness, positive cognitive and emotional personality towards learning, availability of home Internet access, and the availability of structure of the online courses. This study is beneficial for education experts, lecturers, teachers, trainers, and technologists who are interested in assessment, learning, guidance, design, and online-based learning environments during a pandemic or after a pandemic to increase motivation and satisfaction in learning.

2.0 LITERATURE REVIEW

The term "student engagement" refers to the time and effort that students actively invest in educational activities, according to Hew (2014). Coates (2008), cited in Sathe et al., (2022), defined student engagement as the extent to which students participate in instructional activities associated with excellent learning outcomes. As cited in Fredricks et al. (2004). Sathe et al., (2022) also described student engagement as a multidimensional construct with a large potential that consists of three components. In short, engagement can be defined as a meta-construct. Therefore, engagement should be maintained specifically for work where multiple components are present. The three components that comprise the multidimensional construct of student engagement are behavioural, cognitive, and emotional involvement as stated by Reeve, (2013) cited in Sathe et al., (2022).

Sathe et al. (2022) conducted an inquiry aimed at scrutinizing and dissecting the determinants of online learning that exerted an influence on the degree of engagement observed among Malaysian university students during the COVID-19 lockdown phases within Malaysia. The study investigated independent variables, namely User-friendliness, Course design, Availability of resources, and Digital literacy, to assess their statistical significance concerning student engagement. The research encompassed a total of 389 sets

of questionnaire forms, distributed across three public universities and three private institutions in Malaysia. The findings, as revealed by the Pearson correlation coefficient, demonstrated a positive correlation between all independent variables and the dependent variable, which is student engagement. Furthermore, the outcome of the multiple regression analysis established a distinct correlation between all independent variables, except user-friendliness, and the dependent variable.

The inception of online learning within Malaysian Higher Learning Institutions can be traced back to the late 1990s (Hussin et al., 2009). This mode of learning has witnessed a surge in demand attributed to its potential for reaching a global audience, distinct functional attributes, enhanced accessibility, and enduring flexibility (Azhari and Ming, 2015). Aligning with the trajectory of educational progress, the Malaysian Ministry of Education, under the purview of the Malaysian Education Blueprint 2015–2025 (Higher Education), has introduced strategic initiatives to integrate online learning as a fundamental constituent of higher education and lifelong learning (Ministry of Education Malaysia, 2015).

A study conducted by Lau & Shaikh (2012) in Malaysia delineated that students' computer and internet proficiency, coupled with personal attributes encompassing gender, ethnicity, course year level, and financial aid status, played a pivotal role in shaping students' readiness for online learning. This readiness was particularly influenced during lockdown periods, disproportionately affecting marginalized and rural school students.

The shutdown of campuses and enforcement of movement restrictions led to a disruption in formal education, resulting in the rise of online learning as the preferred alternative. In alignment with this, the Malaysian government mandated students to shift to online learning upon their return to their hometowns in April 2020. The government's initiative to provide internet allowances to the B40 family and students, highlighted by Mohd Yusoff (2020), played a pivotal role in ensuring unhindered access to online educational resources.

Another research endeavour by Selvanathan et al. (2023) focused on the learning experiences of students during the COVID-19-induced period of remote work within Malaysian Higher Learning Institutions. The study involved 328 participants drawn from 12 distinct public and private universities across Malaysia, comprising 155 (47.3%) males and 173 (52.7%) females. The findings underscored the need for enhancements in online learning and teaching, particularly in refining the quality of interaction and instruction throughout the course curriculum. Despite overall satisfaction with instructors, course management, and technological aspects, there existed room for improvements to elevate the efficacy of online teaching and learning in Malaysia. The research highlighted that while students managed their work-from-home obligations, certain elements elicited dissatisfaction.

In developed countries such as Australia and Korea, Misko et al. (2004) noted a prevalent inclination among students towards flexible learning schedules during the pandemic. This approach provided them with convenient access to educational materials, offering a level of adaptability that was well-suited to their needs. Furthermore, educational institutions reaped several benefits from the implementation of such flexible arrangements. This approach proved to be economically efficient, catering to a broader demographic, and eliminating the necessity for physical infrastructure.

The popularity of online resources and learning was not limited to the pandemic period and has been observed across numerous nations. An investigation conducted by Williams et al. (2020) surveyed 170 students at Chattanooga State Community College in the United States. The survey outcomes disclosed distinct preferences among students for learning materials. Specifically, students demonstrated a propensity for E-textbooks in humanities and social science courses (such as management, marketing, history, English literature, sociology, etc.), while they leaned towards printed materials in STEM-oriented disciplines

(including statistics, engineering, accounting, finance, etc.). Notably, 72.8% of participants indicated a preference for e-materials when the readings extended to seven pages or more in length.

In a cross-sectional survey of undergraduate library information science students across five universities in Nigeria, Adeyinka et al. (2018) also identified a preference for textbooks, with students perceiving E-textbooks to be easy to use and an enhancement to their learning. Another study of 880 undergraduates of Ajman University in the United Arab Emirates from a study conducted by Al-Qatawneh et al. (2019) showed a high degree of usage and preference for E-textbooks.

Nevertheless, a study by Clinton (2019) delved into the analysis of 33 randomized experimental design studies, revealing outcomes that indicated a detrimental impact on performance when individuals read expository texts on screens compared to the same texts presented on paper. In contrast, no discernible differences in performance were observed between screen and paper when it came to reading narrative texts, and similarly, no significant variations emerged in terms of reading time. Furthermore, readers exhibited superior metacognitive abilities, including calibration and performance awareness, when engaged in paper-based reading as opposed to reading from screens (Clinton, 2019).

3.0 METHODOLOGY

The selection of a non-experimental survey research design for this study stems from the utility of survey research methods in comprehending population characteristics based on data obtained from a sample (Johnson & Christensen, 2020). Employing surveys that incorporate quantitative elements such as Likert scales has been a prevalent approach in gauging student engagement. The questionnaire utilized in this study was adapted from Sathe et al. (2022), who, in turn, drew inspiration from various pertinent research sources. It is widely recognized that the level of validity exhibited by a measurement instrument directly impacts its capacity to accurately capture a conceptual construct (Ong & Ward, 2005). Quantitative research involves the accumulation of numerical data through the administration of questionnaires, subsequently presenting findings in formats characterized by quantitative representations like graphs or statistical analyses (Collis, 1998).

The participants of the current study were chosen through a random selection process from the pool of students enrolled in various diploma and degree programs across two campuses situated in Samarahan, Sarawak. All students under the instruction of the respective researchers were invited to participate in an online Google survey. The utilization of a questionnaire was deemed appropriate due to its capability to expedite the acquisition of a substantial volume of data. Justifying this choice, McLeod (2023) asserted that, when compared to alternative measurement instruments, a questionnaire stands as a cost-effective method that offers a swift, uncomplicated, and efficient means of amassing extensive data from a sizable respondent cohort (McLeod, 2023).

After the lapse of one week following distribution, a total of 105 participants responded to the Google survey form. The questionnaire was divided into five sections, namely Sections A, B, C, D, and E. Section A encompassed inquiries related to demographic characteristics, employing nominal and ordinal scales. On the other hand, Sections B, C, D, and E comprised queries constructed using the Likert scale. This scale prompts respondents to evaluate their level of agreement with an array of statements concerning a specific subject. By considering behavioural, cognitive, and emotional dimensions of attitudes, the Likert scale assesses personality traits. One of the key benefits of utilizing Likert scale questions is that they allow participants to convey varying degrees of opinion, including a neutral standpoint, in contrast to a binary yes-or-no response (McLeod, 2023).

To gauge participants' intentions, a 1 – 5 scale was employed, wherein 1 represented "strongly disagree," 2 denoted "disagree," 3 indicated "neutral," 4 signified "agree," and 5 corresponded to "strongly agree." To enhance the data's robustness, a triangulation approach was adopted, involving four focus group interview sessions encompassing a total of 20 participants.

4.0 FINDINGS

The first part of the analysis reveals the respondents' demographic data and looking at gender, out of 105 respondents, 45.7% were males and 54.3% were females. The female respondents outnumbered the male respondents by 8.6% in this investigation. As for the age groups, a percentage of 60.0% were between 18 years old and 20 years old, while another 40.0% of the respondents were from 21 to 24 years old respectively. The younger age group outnumbered the female respondents by 20%. The respondents were also asked about their levels of study and 46.7% of the respondents indicated that they were pursuing various diploma programs, while another 53.3% of the respondents were pursuing various degree programmes in UiTM Sarawak campuses. The degree respondents outnumbered the diploma respondents by 6.6%.

4.1 Student Engagement

The results from the surveys are shown below. The data were analysed using descriptive statistics by presenting the mean score (1-5) of each statement based on the Likert scale.

Pearson's Correlation Analysis was used to determine the strength and direction between the dependent and independent variables, as well as the orientation and extent to which the variable was related to others. In the study, Pearson's Correlation Analysis was also used to investigate four independent variables: Personality dimensions, technology savviness, online course structure, and internet accessibility.

Research Question 1: Is there any significant relationship among the personality dimensions (behavioural, emotional, and cognitive) that affected students' engagement in online learning?

Table 1: Personality Dimensions and Students' Engagement in Online Learning

No.	Item	Mean (1 - 5)
Behavioral Dimension		
1.	I take advantage of the key information given by my lecturers during online learning classes. (Ex: video suggestions to enhance understanding of content).	4.67
2.	I regularly participate in online learning class discussions in most of my classes.	4.72
3.	I ask my lecturer questions during my online learning class if I do not understand the content.	3.82
Emotional Dimension		
1.	I am excited to take part in the online learning activities conducted in the class.	4.12
2.	I feel inspired to improve my online learning skills.	3.88
3.	I feel comfortable taking part in online learning discussions.	4.42
Cognitive Dimension		
1.	I evaluate the opinions and ideas shared by my lecturer and my course mates during my online learning lessons.	3.67
2.	I tend to apply the knowledge I've learnt during my online learning lessons to real-world problems.	4.34
3.	I go through the learning materials (Ex: lecture slides) before I take part in online learning classes.	3.88

Table 1 clearly shows that the personality dimension has a great impact on students' engagement in online learning. Most of the students regularly participated in online learning discussions in their classes as indicated in the high mean of 4.72. Undeniably, most of the students were excited to participate in their online classes (4.12) and were comfortable with the online discussions (4.42). Generally, all the students scored a mean of above 3.5 for all other items in the behavioural, emotional and cognitive dimensions.

Research Question 2: How significant is the relationship between being technology savvy and students' engagement in online learning?

Table 2: Technology Savvy and Students' Engagement in Online Learning

No.	Item	Mean (1 - 5)
1.	I believe online learning platforms are user-friendly	3.87
2.	It only took me a short time to fully understand how to use the online learning platform.	4.12
3.	It is easy for me to find necessary information when using online learning platforms.	4.62
4.	I learned to use the online learning platform very quickly.	4.82
5.	I think that the learning methods used in online learning platforms are not difficult for me.	4.72
6.	The online learning system set up by my university is compatible with the way I learn.	3.74

Table 2 indicates succinctly that being technology savvy and having students' engagement were important for online learning. In fact, the mean score of 4.72 shows that the learning methods used in online learning platforms were not difficult for them. Nonetheless, the higher mean score of 4.82 indicates that the students learned to use the online platform very quickly. A mean score of 4.62 also indicates that it was easy for them to find necessary information when using online platforms, and a mean score of 4.12 shows that it had taken the students a short time to fully understand how to use online learning platforms. A high mean of 3.72 scores also shows that the online learning set up by the university was compatible with the way they learned.

Research Question 3: Is there any significant relationship between the online course structure and students' engagement in online learning?

Table 3: Online Course Structure and Students' Engagement in Online Learning

No.	Item	Mean (1 - 5)
1.	The learning materials (Ex: lecture slides, tutorial questions) provided for my course are aligned with the course objectives.	3.67
2.	The online coursework activities (assignment, presentation, debate, etc.) reflect the course objectives.	3.72
3.	The online course content and learning outcomes are clear and well-structured.	3.82
4.	The online coursework is designed well so I can interact and communicate with my course mates.	3.58
5.	I am satisfied with the way my lecturer/tutor delivers the course content (Ex: lecture slides, pre-recorded videos etc.).	3.72
6.	I am satisfied with the alternative assessment plans provided for my course (Ex: replacing the Final exam with an Open-book Final assessment).	3.88

Table 3 indicates clearly that the online course structure and students' engagement were important for online learning. In fact, the mean score of 3.88 shows that the students were satisfied with the alternative assessment plans provided for the course, such as replacing the Final exam with an Open-book Final assessment. Nonetheless, a high mean score of 3.82 indicates the online course content and learning

outcomes are clear and well-structured. This is followed by a mean score of 3.72 whereby the students were satisfied with the way their lecturer/tutor delivered the course content (lecture slides, pre-recorded videos etc.); and also, were satisfied that the online coursework activities (assignment, presentation, debate, etc.) which reflect the course objectives. A mean score of 3.67 showed that the learning materials (lecture slides and tutorial questions) provided for their course were aligned with the course objectives.

Research Question 4: How significant is the relationship between internet accessibility and students' engagement in online learning?

Table 4: Internet Accessibility and Students' Engagement in Online Learning

No.	Item	Mean (1 - 5)
1.	I have access to at least one basic learning device (laptop, smartphone, PC, etc.).	4.05
2.	I have access to the internet at my place of study (Mobile data, Wi-Fi etc.).	4.76
3.	Relevant learning resources (e-textbook, database, software) are accessible me.	4.88
4.	I am aware of the online learning resources provided by my university (Ex: laptop rental).	4.02
5.	My university provides subscriptions for online learning software accounts (Microsoft Teams, Zoom, etc.).	3.78
6.	I am satisfied with the level of resources that I currently have to conduct my online learning.	4.62

Table 4 shows concisely that internet accessibility and students' engagement in online learning were imperative for learning. A very high mean score of 4.88 showed that students' engagement could occur because the relevant learning resources (e-textbook, database, software) were accessible to them. This is followed by a mean score of 4.62 whereby the students were satisfied with the level of resources to conduct my online learning. A mean score of 4.76 showed that the students had access to the internet at my place of study (Mobile data, Wi-Fi). The mean scores of 4.05 and 4.02 respectively showed that the students had access to at least one basic learning device (laptop, smartphone, PC, etc.) and also were aware of the online learning resources provided by the university (Ex: laptop rental).

Research Question 5: What are the prospects of online learning for UiTM Sarawak campuses?

Table 5: Prospects of Online Learning for UiTM Sarawak Campuses

No	Item	Mean (1 - 5)
1	I feel comfortable using digital devices in my online learning.	3.99
2	I am willing to learn more about digital technology to help in my online learning.	4.08
3	I feel like I am at the same pace as my course mates in using digital technology.	3.89
4	I think my learning can be enhanced through digital tools and resources.	4.05
5	I need help while using online software (Microsoft Teams, Zoom, etc.).	3.16
6	Technical help from my university is available and helpful.	3.73

Table 5 clearly shows that there are good prospects for online learning for UiTM Sarawak campuses. The respondents indicated that they were willing to learn more about digital technology to help in their online learning with a high mean score of 4.08. A high mean score of 4.05 was obtained from the respondents who thought that their learning could be enhanced through digital tools and resources. Another high mean score of 3.99 was recorded from the respondents who stated that they felt comfortable using digital devices in their online learning; whereas there was a mean score of 3.89 from the respondents who felt they were at the same pace as their course mates in using digital technology. Besides that, a mean

score of 3.73 from the respondents stated that technical help from UiTM Sarawak was available and helpful.

In summary, the findings clearly show that all five independent variables, namely of five independent variables namely, personality, behavioural, technological savviness, availability of home Internet access, and the structure of the online courses have significant implications on students' engagement in online learning during the COVID-19 pandemic period. It can be concluded that technology savviness and behavioural such as cognitive and emotional aspects are significant predictors of students' engagement in online learning.

5.0 DISCUSSION

The advent of the COVID-19 pandemic has given rise to impracticability in facilitating traditional face-to-face learning, consequently impeding the scholastic endeavours of students. In response to these ensuing pedagogical challenges, with particular emphasis on the availability of internet connectivity, a salient and pressing concern has materialized. The data from the focus group interviews supported the data obtained from the questionnaire survey. According to the Coefficient Table above, internet accessibility is the most significant independent variable in this study. This is because internet accessibility has a R-value of 0.758. Furthermore, internet accessibility is the predictor variable that has helped determine student engagement when compared to other variables. Among the responses from the focus group interviews:

"I was able to attend all the online classes because there is internet accessibility in my housing. I heard some friends who are staying in remote areas have problems joining the online classes."

Another response:

"We can only do online classes when there is internet accessibility. However, the charges can be expensive and if do not have enough money or data, it is impossible to attend online classes."

Therefore, there is great importance in enhancing internet connectivity for e-learning, especially in rural areas. Most of the respondents in this study showed readiness for online learning when there is internet accessibility. Hence, the government or the university should provide internet facilities and an environment for students to attend online classes. The lack of internet access in facing the increasingly greater need for online learning gives institutions of higher education a powerful argument to advocate for state and federal broadband initiatives that would close the "homework gap" while also expanding the ability to serve students in rural areas (Rachfal, 2020). With these impediments resolved, students may be more accepting and likely to gravitate towards digital materials.

Data from the focus group interviews also showed that in terms of internet accessibility at home, at least 85% of the surveyed students have access to it. In terms of Wi-Fi access at home, more than half 65% of the students responded positively and the remaining, the opposite. For the students who have pocket Wi-Fi, the majority, or 75% of the students did not have any. In terms of mobile data availability, more than 80 percent of the students used mobile data for internet surfing. Some of the students owned a tablet (6%), laptop (70%), and personal computer (24%) to access the internet for online classes.

There is also a significant relationship among the personality dimensions (behavioural, emotional, and cognitive) that affected students' engagement in online learning. Data from the focus group interviews also revealed that positive personality dimensions are crucial to ensure success for students' engagement. Specifically, behavioural engagement has direct and positive effects on both emotional and cognitive engagement which can influence students' engagement in online classes. Responses from respondents

during the focus group interviews are as follows:

“Students’ lack of access to a personal computer or smartphone, as well as the internet, is the most significant factor affecting students’ engagement in online teaching and learning. Some of us have poor learning habits but I don’t think many, lack technology skills or are unfamiliar with such technology”. In fact, many students could develop positive attitudes during online classes as reported by a group of respondents: *“Majorities of students felt more comfortable asking and answering questions in online classes”*. This suggests that there might be features of learning online to which students are receptive, and which may also benefit in-person classes.

The findings derived from the survey conducted within this study distinctly indicate the presence of active student responses towards learning activities, as manifested through their engagement characterized by participation, persistence, and favourable demeanour in the context of online learning. Additionally, a favourable cognitive engagement is discernible, underscored by the students’ demonstration of mental exertion in their learning endeavours, as evidenced by their grasp of the subject matter. The respondents’ inclination to critically evaluate viewpoints and contributions put forth by their educators and peers during online learning sessions also exhibits a positive orientation. Furthermore, a significant proportion of students articulated their propensity to apply the knowledge acquired during online learning sessions to practical challenges encountered in the real world.

Moreover, the students exhibited an augmented sense of engagement by affirming their proactive perusal of learning materials, notably lecture slides, in preparation for their participation in online learning classes. Within the emotional domain of learning activities, a positive disposition is perceptible, elucidated through affirmative reactions including a sense of enthusiasm in participating in online learning activities, a motivation to enhance their prowess in online learning, and a feeling of ease when engaging in discussions within the online learning milieu.

There is a clear indication of a positive relationship between technology savvy and students’ engagement in online learning with a value of such relationship at 0.4737. Restrictions on physical gatherings due to COVID-19 have compelled higher education institutions to rapidly embrace digital technologies to support teaching and learning. Though the current generation of students entering university has a certain level of digital literacy, such literacy may be limited to engaging with entertainment technologies and games rather than using such skills to acquire vital knowledge and skills. Responses obtained from the focus group interviews found that students preferred digital materials, and they had to be technology savvy to gain access to those digital materials. Undoubtedly, familiarity with technology may impact student course material format preferences and their engagement in learning. This includes a willingness to try new technology as the frequency of technology use and training influence students’ acceptance of e-textbooks. A response from the focus group interviews is given below:

“Using digital technology to deliver content, connect learners, and enable anytime, anywhere learning is increasing, but keeping students engaged in technology-mediated learning is challenging. The lecturers must always know how to engage their students such as innovative instructional practices on online learning”.

Generally, the respondents believed that online learning platforms are user-friendly, and it only took them a short time to fully understand how to use the online learning system. The respondents also concurred on the ease with which they could access requisite information through these online platforms, highlighting their rapid adaptation to utilizing these digital resources. The number of students taking online, and blended courses continues to increase, thus, being technologically savvy is useful in helping students engage in learning.

There is also a positive relationship between the online course structure and students' engagement in online learning with a score of R 0.4221. The respondents stated that the learning materials provided for their courses were aligned with the course objectives. In addition, they also stated that the online coursework was designed well, so they could interact and communicate with their coursemates well, and the online assessments were also found very satisfactory. The course organization and structure have accounted for considerable variance in students' satisfaction and perceived learning in online learning environments.

6.0 CONCLUSION

The terrain of distance education is transforming, presenting encouraging opportunities. In the prospective expansion of online course offerings at UiTM Sarawak campuses, it becomes imperative for each faculty to meticulously deliberate on the evolving facets within online learning ecosystems. This encompasses the configuration of course frameworks, the dynamics of learner engagement, and the prominence of instructor involvement. This contemplation holds significance due to the inherent challenge of online learning, wherein students occasionally grapple with a sense of detachment from their peers and instructors. Hence, the incorporation of these considerations stands to augment not only students' acquisition of knowledge but also their adeptness in social interaction, ultimately fostering heightened engagement within the educational process.

Ćukušić et al. (2010) named a few recommendations for increasing online learning use such as reviewing current programs, setting clear goals, and expected outcomes of the program, setting learning methods and activities, defining the organization and presentation of activities, defining learning materials for every activity, select appropriate assessment models, identify skills and other requirements for access and set requirements related to resources and infrastructure.

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The authors agree that this research was conducted in the absence of any self-benefits, commercial or financial conflicts and declare the absence of conflicting interests with the funders.

10.0 CONTRIBUTION OF AUTHORS

All authors contributed equally to this article.

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