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UNDERGRADUATES' READINESS AND SELF-EFFICACY FOR ONLINE LEARNING

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ABSTRACT

Today, the teaching-learning process has shifted from the traditional physical classroom to the new norm of virtual learning. Nevertheless, students' low level of readiness and self-efficacy for online learning may jeopardize any effort to optimize online learning. This study aims to examine the undergraduates' readiness and determine their self-efficacy for online learning. An online questionnaire is used as the research instrument, consisting of items adopted from Vicki Williams' Online Readiness Assessment, and the Online Learning Self-Efficacy Scale (OLSES) developed by Zimmerman and Kulikowich. The quantitative method is employed and responses from 150 undergraduate students from the University of Technology Sarawak (UTS), Malaysia have been obtained through random sampling. The data collected is analyzed using Statistical Package Social Science (SPSS 25) software. This study reveals that (1) the undergraduates are ready for online learning in terms of goal setting, computer literacy, learning styles, preferences and requirements; and (2) students indicate moderate to high self-efficacy for learning in the online environment, technology use and time management. These findings have valuable implications on e-learning as the students' preferred mode of learning. Further studies can be done to identify the relationship between students' readiness and self-efficacy with academic performance to evaluate the effectiveness of online learning.

Keywords: Undergraduates, Readiness, Self-Efficacy, Online learning.

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1. INTRODUCTION

Education is no longer an option but a necessity for a better life in this evolving world in which technology is one of its prerequisites. The education system has moved beyond chalk and talk whereby the teaching and learning process is enhanced through the use of technology, more so when the recent COVID-19 pandemic has exacerbated the need for virtual learning since schools all around the globe were forced by the governments to close down at its worst. Furthermore, educating generations Z and alpha (born 1997 – present) who were born in the age of technology is challenging if technology is not integrated into the process. Luthra & Mackenzie (2020) asserted that the pandemic has changed the way of educating future generations and redefined the role of educators. It has changed the education system related to curriculum, educator functions, student positions and assessments (Daniel, 2020).

Online learning is an indispensable mode of learning for future education or Education 4.0 to produce highly creative graduates (Haseeb, 2018). Prior research has found that younger students with technology skills tended to accept and adopt online learning more easily (Teo et al., 2011). They also need basic computer skills to use modern ICT and computers. In line with the emerging use of online learning, it is pivotal to determine whether the students are ready and have adequate self-efficacy for online learning. Therefore, this study attempted to answer two research questions:

i) What is the level of students' readiness for online learning in terms of goal setting, learning styles, learning preferences, computer literacy and learning requirements?

ii) What is the level of students' self-efficacy for learning in the online environment, technology use and time management?

2. REVIEW OF LITERATURE

2.1 Online Learning

The term online learning has been used interchangeably to refer to e-learning, virtual learning, or web-based learning in contrast to a physical classroom, traditional setting, or face-to-face learning. Some may even confuse it with hybrid or blended learning. Kharve and Gogia (2016) defined online learning as a process of learning by electronic means which involves the use of computer, mobile phone or other electronic devices and accessing the internet. E-learning is described as supported and made possible by the use of modern ICT and computers (Hoppe & Breitner, 2003) to deliver learning and training programs (Newman, 2008).

2.2 Readiness for Online Learning

Readiness is defined by Smart & Cappel (2006) as the preparedness of students to respond to changes and adapt to online learning as a new way of delivering lectures or classes. A study by Adams, Sumintono, Mohamed and Noor (2018) reported a satisfactory level of readiness for online learning in higher education institutes. A majority of the students claimed to have a high level of readiness, ICT skills and competencies needed for online learning. (Olayemi, Adamu & Olayemi, 2021). However, online learning readiness varies from one learning institution to the other, and not all the students and lecturers have been trained for online learning and most students do not have any device or allocation to buy internet bundles (Nganga, Waruru & Nakweya, 2020).

2.3 Self-Efficacy

The concept of self-efficacy was originally proposed by Albert Bandura in his social cognitive theory. It was first introduced as the belief in one's capabilities to organize and execute the courses of action required to produce given attainments (Bandura, 1977). It was later defined as an individual's

belief in his or her ability to accomplish or succeed in a specific task, activity, challenge, or situation (Bandura, 1997, 2012). It is how individuals feel, think and perceive motivation, thereby determining their actions and behaviors. It is important to note that it is not synonymous with self-esteem which involves an individual's emotional evaluation of their own value. On the contrary, self-efficacy is one's evaluation of one's own ability to achieve a goal or belief to do so. It is often associated with confidence, motivation, resilience, and persistence. Due to the Covid-19 outbreak, the unprecedented shift to online learning and the integration of educational technology may have affected students' self-efficacy and the effects may differ among individuals. It is integral to academic learning and performance (Hodges, 2008).

2.4 Challenges to Effective Online Learning

There are numerous challenges in promoting online education in developing countries. A survey in three Nigerian universities revealed that the low acceptance of e-learning was due to the low awareness and computer literacy level, unreliable platform and Internet services, and the high cost of implementation (Folorunso, Ogunseye & Sharma, 2006). Similar obstacles faced included infrastructure, limited access to computers and untrained instructors. Kamaruzaman, Sulaiman and Shaid (2021) listed the high cost of data, poor internet services, erratic power supply, inaccessibility to online library resources and limited access to computers as the challenges to effective learning. According to some researchers, online learners' readiness and self-efficacy might be influenced by technophobia or anxiety (Bates & Khasawneh, 2007). Students' ability to succeed with online learning, handle technology and apply time management skills may influence their self-efficacy. Rosenberg (2009) listed ten strategies for a successful e-learning experience, among which are proper time management, web experience, appropriate technology requirements, and an effective learning environment. Students need to arrange a time within their schedules dedicated to online

learning. Teachers' support and motivation might reshape and sculpt their learning self-efficacy (Mitchell & DellaMattera, 2010; Kim et al., 2018).

3. RESEARCH METHODOLOGY

3.1 Participants

This study employed a quantitative method using a descriptive survey research design. The sample of this study encompasses undergraduate students from the University of Technology Sarawak (UTS), Malaysia. 150 students participated in this study by filling out the given online questionnaire adapted from Online Readiness Assessment by Vicki Williams from the Pennsylvania State University, and the Online Learning Self-Efficacy Scale (OLSES) developed and validated by Zimmerman and Kulikowich (2016).

3.2 Instrument

The questionnaire consists of three parts (Part A, Part B and Part C). Part A comprises background information of participants: In the first part of the survey, demographic information of the respondents was obtained. Their age, gender, race, internet accessibility, technology devices owned, and preferred mode of learning were asked. As for the second part of the survey (Part B), the five domains adapted from the Online Readiness Assessment consisting of 30 items are as follows:

i. Goal setting (five items)

ii. Learning styles (seven items)

iii. Learning preferences (seven items)

iv. Computer literacy (five items)

v. Learning requirements (six items)

For the third part of the survey (Part C), the study adopted the Online Learning Self-Efficacy Scale (OLSES). The OLSES has 22 items on the three dimensions of self-efficacy as stated below:

i. Learning in the online environment (10 items)

ii. Technology use (seven items)

iii. Time management (five items)

The questionnaire was administered to the respondents online via Google form. The link was shared with the undergraduate students. Data were collected from March to May 2022. The data obtained were analyzed using Statistical Package for Social Sciences (SPSS) version 25. For Parts B and C, the respondents answered a set of questionnaires based on a five-point Likert-type scale (5 = Strongly Agree; 4 = Agree; 3 = Neutral; 2 = Disagree; 1 = Strongly Disagree). The findings were presented in the form of percentages, means and standard deviation in figures and tables. In the analysis of students' readiness and self-efficacy for online learning, the interpretation by Aydin and Tasci (2005) was referred to. As a five-point Likert-type scale was utilized, it is suggested that the mean score of 3.40 be identified as the expected level of readiness for online learning. Since a five-point scale contains four intervals and five points with the ratio of 4 over 5 being 0.8, the mean scores will be interpreted as suggested by Pallant (2010), as illustrated in Figure 1.

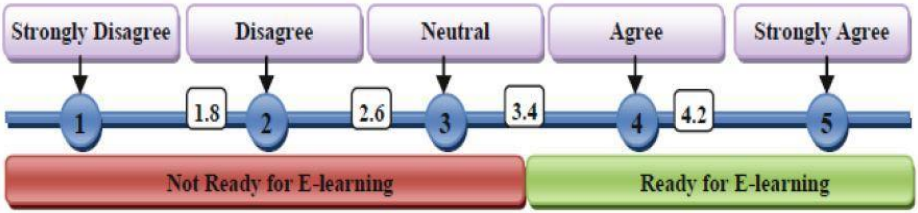

Figure 1. Mean Scores Based on Five-Point Likert Scale

The interpretation for each mean score range in accordance with students' readiness for online learning is presented in Table 1. Meanwhile, the mean score interpretation of their online learning self-efficacy is reflected in Table 2.

Table 1. Mean Score Interpretation of Students' Readiness for Online Learning

Mean Score Range	Interpretation of Readiness
1.00 – 1.79	Strongly not ready
1.80 – 2.59	Not ready
2.60 – 3.39	Moderate
3.40 – 4.19	Ready
4.20 – 5.00	Strongly ready

Table 2. Mean Score Interpretation of Students' Self-Efficacy for Online Learning

Mean Score Range	Interpretation
1.00 – 2.33	Low
2.34 – 3.67	Moderate
3.68 – 5.00	High

4. ANALYSIS

4.1 Demography

A total of 150 respondents participated in this study. Among the participants, 75 (50%) are males and the remaining 75 (50%) are females, aged from 17 to 21 with the majority aged 18. Equivalent numbers of both male and female students should be encouraged since both genders might respond to the questionnaire differently (Bidjerano, 2005). Most of the respondents are

Chinese students (84.7%), followed by Malay (10.7%) and other races (4.7%). A majority of them are studying at the foundation level (96.7%) while 3.3 per cent are from different degree programs, as illustrated in Table 3.

Table 3. Demography Analysis of Participants

Characteristics	Categories	Frequency	Percentage (%)
Gender	Male	75	50.0
	Female	75	50.0
Race	Malay	16	10.7
	Chinese	127	84.7
	Others	7	4.7
Programs	Foundation in Arts	145	96.7
	Others	5	3.3

Out of 150 participants, a total of 95.3 per cent of the participants responded to having good to average Internet accessibility, with 46 per cent of the participants responded that their Internet accessibility was good, with 49.3 per cent average. Only 7 participants had poor Internet connection (4.7%) and none with no Internet access. Among the technology devices owned by the participants are laptop (90.7%), smart phone (76%), printer (35.3%), tablet or pad (17.3%), desktop (15.3%) and others (3.3%).

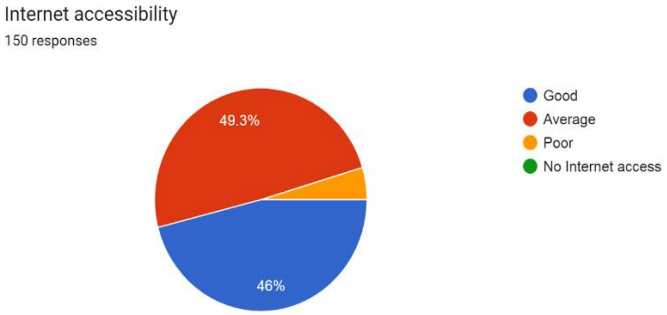

Figure 2. Internet Accessibility

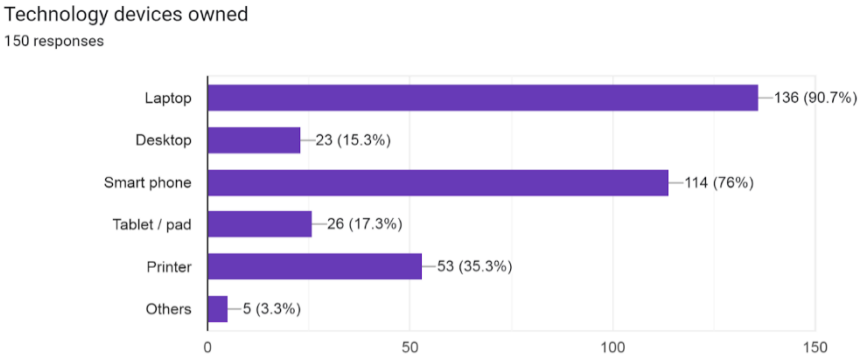

Figure 3. Technology Devices Owned

When the participants were asked about the mode of learning, 38.7 per cent responded that they preferred hybrid or blended learning whereby online learning is integrated with the traditional mode. Coming close is online

learning, also used interchangeably with distance or e-learning, which is at 34.7 per cent. Only about a quarter of the participants (26.7%) indicated their preference for the traditional mode which includes physical classroom and face-to-face teaching and learning.

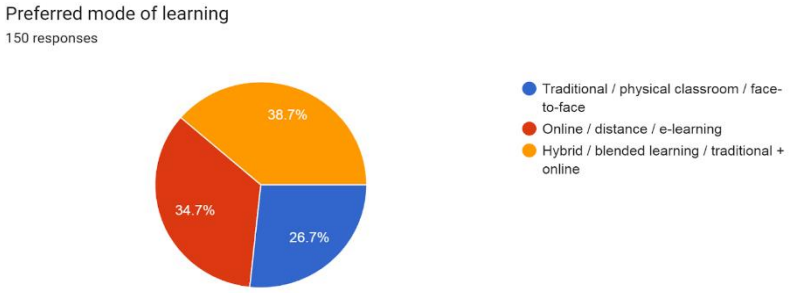

Figure 4. Preferred Mode of Learning

4.2 Reliability

In terms of the reliability of the instrument, Cronbach's alpha coefficient was determined to verify the reliability of the instrument. Based on the study conducted on 150 undergraduate students, the value of Cronbach Alpha obtained for the domains are as follows: goal (G) 0.776, learning style (S) 0.767, learning preference (P) 0.784, computer literacy (C) 0.808, learning requirement (R) 0.799, learning environment (E) 0.880, technology use (T) 0.893 and time management (M) 0.857. The overall Cronbach Alpha coefficient for all the eight domains is 0.821, which is considered a strong reliability level. This means that the instrument is reliable. Table 4 shows the Cronbach Alpha values of each domain, the number of items and the overall coefficient value of the instrument.

Table 4. Cronbach Alpha Coefficient

Domains	Number of Items	Cronbach Alpha
Goal Setting (G)	5	0.776
Learning Style (S)	7	0.767
Learning Preference (P)	7	0.784
Computer Literacy (C)	5	0.808
Learning Requirement (R)	6	0.799
Learning Environment (E)	10	0.880
Technology Use (T)	7	0.893
Time Management (M)	5	0.857
Overall	52	0.821

5. RESULTS AND DISCUSSION

5.1 Students' Readiness for Online Learning

Referring to Table 5, all the five domains of students' readiness for online learning show a mean of above 3.50 which indicated that the students were ready for online learning. The highest mean score was computer literacy (mean = 3.66, SD = 0.652) which revealed that the students were able to do searches, set bookmarks, download files, install software, change configuration settings and can turn to someone for help if there is any problem. Learning requirement domain ranked second (mean = 3.64, SD = 0.688) where the students' computers run reliably on Windows or Mac OS installed with virus protection and connected to fairly fast and yet reliable Internet as well as a stable web browser, with accessibility to a printer, headphones or speakers for online classes. Overall, the participants are ready for online learning in goal setting, learning style and preference too with an average mean of 3.58 for their overall readiness for online learning.

Table 5. Mean and Standard Deviation of Students' Readiness for Online Learning (n = 150)

Domains	Mean	Interpretation	SD
Goal setting	3.57	Ready	.578
Learning Style	3.52	Ready	.538
Learning Preference	3.50	Ready	.587
Computer Literacy	3.66	Ready	.652
Learning Requirement	3.64	Ready	.688
Overall	3.58	Ready	.609

In terms of goal setting, one item shows a high mean score. The participants claimed that they finish the projects that they start (m = 3.78). Meanwhile, four items show moderate mean scores. The participants responded that they are good at setting goals and deadlines for themselves (m = 3.43), have a good reason for taking an online course (m = 3.39), do not quit just because things get difficult (m = 3.65) and can keep themselves on track and on time (m = 3.61). Students with high self-efficacy set challenging goals for themselves and are committed to achieving their desired outcomes successfully. They do not avoid difficult tasks or see them as obstacles or threats but take them as a challenge to develop their skills. If they fail in a task, they do not dwell on their personal deficiencies and quickly recover their sense of efficacy. Overall, the mean score obtained is 3.57 which indicated a moderate level of readiness.

Table 6. Goal setting

Items	Mean	Interpretation	SD
I am good at setting goals and deadlines for myself.	3.43	Moderate	.578
I have a really good reason for taking an online course.	3.39	Moderate	.538
I finish the projects I start.	3.78	High	.587
I do not quit just because things get difficult.	3.65	Moderate	.652
I can keep myself on track and on time.	3.61	Moderate	.688
Overall	3.57	Ready	.578

Out of seven items on learning styles, the participants revealed a moderate level of mean scores. They can learn easily (m = 3.18) from things they hear such as lectures, audio recordings and podcasts (m = 3.65), have to read something to learn it best (m = 3.61), have developed a good way to solve problems they encounter (m = 3.43), learn best by figuring things out for themselves (m = 3.60), and are willing to e-mail or have discussions with strangers (m = 3.34). The mean score for one particular item is high, which reveals that the participants like to learn in a group as well as on their own. Adams et al. (2018) proposed that online learning curricula include group work in order to be more effective. The overall mean score of 3.52 indicates a moderate level of readiness whereby they are ready for online learning.

Table 7. Learning styles

Items	Mean	Interpretation	SD
I learn pretty easily.	3.18	Moderate	.786
I can learn from things I hear, like lectures, audio recordings and podcasts.	3.65	Moderate	.752
I have to read something to learn it best.	3.61	Moderate	.834
I have developed a good way to solve problems I run into.	3.43	Moderate	.798
I learn best by figuring things out for myself.	3.60	Moderate	.786
I like to learn in a group, but I can learn on my own, too.	3.85	High	.880
I am willing to e-mail or have discussions with people I might never see.	3.34	Moderate	.975
Overall	3.52	Ready	.538

For the third domain which is learning preferences, the participants indicated a moderate level of readiness in the following aspects. They usually work, read and work on assignments in a place without distractions (m = 3.53), can ignore distractions around them when they study (m = 2.78), are willing to spend 10 to 20 hours each week on an online course (m = 3.34), and will get help from the people around them and not be distracted by them (m = 3.45). Three other items indicated a high level of readiness as in they keep a record of what their assignments are and when they are due (m = 3.81), plan their work in advance so that they can submit them on time (m = 3.84) and are willing to use e-mail and other online tools to ask their classmates and instructors questions (m = 3.77). The overall mean score is 3.50 which implies that the participants are ready for online learning.

Table 8. Learning Preferences

Items	Mean	Interpretation	SD
I usually work in a place where I can read and work on assignments without distractions.	3.53	Moderate	1.02
I can ignore distractions around me when I study.	2.78	Moderate	.881
I am willing to spend 10-20 hours each week on this online course.	3.34	Moderate	.842
I keep a record of what my assignments are and when they are due.	3.81	High	.903
I plan my work in advance so that I can turn in my assignments on time.	3.84	High	.852
People around me will help me study and not try to distract me.	3.45	Moderate	.856
I am willing to use e-mail and other online tools to ask my classmates and instructors questions.	3.77	High	.860
Overall	3.50	Ready	.587

With regard to computer literacy, the participants claimed to have a moderate level of readiness. They are good at using the computer (m = 3.43), comfortable with things like installing software and changing configuration settings on their computers (m = 3.57) and know someone who can help them if they have any problems (m = 3.59). A high level of readiness is observed as the participants are comfortable surfing the Internet (m = 3.88) and with things like doing searches, setting bookmarks, and downloading files (m = 3.82). E-learning is expected to improve students' computer literacy, the skill needed in the current workforce (Addah, 2012). They have to be comfortable with various internet tasks which include navigating the web, emailing, downloading and uploading files, and posting messages to discussion boards.

Overall, the mean score for computer literacy is 3.66 which implies that the participants are ready.

Table 9. Computer literacy

Items	Mean	Interpretation	SD
I am pretty good at using the computer.	3.43	Moderate	.806
I am comfortable surfing the Internet.	3.88	High	.802
I am comfortable with things like doing searches, setting bookmarks, and downloading files.	3.82	High	.860
I am comfortable with things like installing software and changing configuration settings on my computer.	3.57	Moderate	.877
I know someone who can help me if I have computer problems.	3.59	Moderate	.978
Overall	3.66	Ready	.652

When asked about the requirements for online learning, the participants indicated a high level of readiness in having their computers run reliably on Windows or on Mac operating system (m = 3.92). They also have headphones or speakers and a microphone to use if a class has a videoconference (m = 3.77) and their browser can play several common multimedia formats like video and audio (m = 3.74). A moderate level of readiness is shown in their responses to having access to a printer (m = 3.63), a fairly fast, reliable internet connection such as DSL or cable modem (m = 3.51) and access to a computer with virus protection software on it (m = 3.77). Newman (2008) emphasized the importance of technology whereby students must have a computer with internet access and other adherent equipment such as printer and speakers. They also need to have the appropriate technology by installing software, internet browser, and multimedia plug-ins. Overall, a moderate

level of online learning requirements is achieved (m = 3.64) and the participants are ready for it.

Table 10. Learning requirements

Items	Mean	Interpretation	SD
My computer runs reliably on Windows or on Mac OS.	3.92	High	.879
I have access to a printer.	3.63	Moderate	1.179
I am connected to the Internet with a fairly fast, reliable connection such as DSL or cable modem.	3.26	Moderate	.972
I have access to a computer with virus protection software on it.	3.51	Moderate	.925
I have headphones or speakers and a microphone to use if a class has a videoconference.	3.77	High	1.019
My browser will play several common multimedia (video and audio) formats.	3.74	High	.831
Overall	3.64	Ready	.688

5.2 Students' self-efficacy for online learning

Referring to Table 11, all the three domains of students' self-efficacy for online learning show an average mean of above 3.69 which indicated the students have moderate to high self-efficacy for online learning. The highest mean score was from the domain of time management (mean = 3.78, SD = 0.685) which revealed that the students were able to manage their time effectively, complete all their assignments on time, meet deadlines with very few reminders, focus on schoolwork when faced with distractions as well as develop and follow a plan for completing all required works on time. The second highest mean score was from the domain of technology use (mean =

3.70, SD = 0.645) where the students were able to navigate the online course materials efficiently, find the course syllabus online, communicate effectively with the lecturers via e-mails, and submit the assignments online. The mean score for students' self-efficacy for learning in the online environment is 3.58, a moderate level of self-efficacy.

Table 11. Mean and Standard Deviation of Students' Self-efficacy (n = 150)

Domains	Mean	Interpretation	SD
Learning Environment	3.58	Moderate	.586
Technology Use	3.70	High	.645
Time Management	3.78	High	.685
Overall	3.69	High	.639

There are ten items under the domain of learning in the online environment. The learning environment has to be conducive to maximise learning. Four of them indicated a high level of self-efficacy. The participants responded that they are able to communicate effectively with technical support via e-mail, telephone, or live online chat (m = 3.69), learn to use a new type of technology efficiently (m = 3.71), complete a group project entirely online (m = 3.71), and use synchronous technology such as Zoom, Google Meet, Microsoft Team, Skype and such to communicate with others (m = 3.89). Their responses were recorded to be moderate in overcoming technical difficulties on their own (m = 3.46), learning without being in the same room as the instructor (m = 3.49) or as other students (m = 3.42), communicating using asynchronous technologies such as discussion boards, forum, e-mail and so forth (m = 3.53), using the library's online resources (e-library) efficiently (m = 3.27) and asking questions promptly in the appropriate forum when a problem arises (m = 3.57). Overall, it was recorded that the participants showed a moderate level of self-efficacy with an average mean score of 3.58.

Table 12. Learning in the Online Environment

Items	Mean	Interpretation	SD
Communicate effectively with technical support via e-mail, telephone, or live online chat.	3.69	High	.876
Overcome technical difficulties on my own.	3.46	Moderate	.880
Learn to use a new type of technology efficiently.	3.71	High	.832
Learn without being in the same room as the instructor.	3.49	Moderate	.775
Learn without being in the same room as other students.	3.42	Moderate	.846
Communicate using asynchronous technologies (discussion boards, forum, e-mail, etc.)	3.53	Moderate	.808
Complete a group project entirely online.	3.71	High	.885
Use synchronous technology to communicate with others (such as Zoom, Google Meet, Microsoft Team, Skype).	3.89	High	.804
Use the library's online resources (e-library) efficiently.	3.27	Moderate	.962
When a problem arises, promptly ask questions in the appropriate forum (e-mail, discussion board, etc.)	3.57	Moderate	.772
Overall	3.58	Moderate	.586

In technology use, the participants indicated a moderate level of self-efficacy in navigating online course materials efficiently (m = 3.62), finding the course syllabus online (m = 3.67), communicating effectively with their instructors via e-mail (m = 3.59), and navigating the online grade book (m = 3.53). A high

level of self-efficacy is observed in submitting assignments to an online dropbox (m = 3.73) searching the internet to find the answer to a course-related question (m = 3.82) and searching the online course materials (m = 3.91). Most common technologies utilized for online learning include word processing, spreadsheet, e-mail, search engines, Google drive, discussion forum, text, voice or video chat, websites, blogs or vlogs, games and social media. An average mean score of 3.70 is achieved, which indicates a high level of self-efficacy in technology use. Wang et al. (2013) reported no difference in technology self-efficacy between males and females. Some reported that students who had higher technology self-efficacy were more satisfied with the online learning experience (Lim, 2001; Artino, 2008). Self-efficacy for the use of technology influenced students' adoption of technology (Chen et al., 2013; Coskun & Mardikyan, 2016; Bakhsh et al., 2017).

Table 13. Technology Use

Items	Mean	Interpretation	SD
Navigate online course materials efficiently.	3.62	Moderate	.849
Find the course syllabus online.	3.67	Moderate	.839
Communicate effectively with my instructor via e-mail.	3.59	Moderate	.779
Submit assignments to an online dropbox.	3.73	High	.833
Navigate the online grade book.	3.53	Moderate	.800
Search the internet to find the answer to a course-related question.	3.82	High	.828
Search the online course materials.	3.91	High	.859
Overall	3.70	High	.645

The results obtained from the items in the domain of time management indicated a moderate level of self-efficacy in managing time effectively (m = 3.62) and focusing on schoolwork when faced with distractions (m = 3.50). A

high level of self-efficacy is recorded in completing all assignments on time (m = 4.15), meeting deadlines with very few reminders (m = 3.77) as well as developing and following a plan for completing all required work on time (m = 3.84). Bidjerano (2005) reported that undergraduate female students had better time management skills than their male classmates which could be attributed to gender differences in terms of behaviors and the use of learning strategies. Previous research suggests that learners must be able to motivate themselves, manage their time wisely, and take responsibility for their own learning (Collett, 2000; Rovai, 2003; Smith, Murphy & Mahoney, 2003). Overall, the average mean score is 3.78 which implies a high level of self-efficacy in time management.

Table 14. Time Management

Items	Mean	Interpretation	SD
Manage time effectively.	3.62	Moderate	.849
Complete all assignments on time.	4.15	High	.885
Meet deadlines with very few reminders.	3.77	High	.868
Focus on schoolwork when faced with distractions.	3.50	Moderate	.857
Develop and follow a plan for completing all required work on time.	3.84	High	.836
Overall	3.78	High	.685

6. CONCLUSION

This study revealed that the undergraduate students were ready for online learning in terms of goal setting, learning styles, learning preferences, computer literacy and learning requirements. The students also have moderate to high self-efficacy for online learning. The study's findings outline the salience of students' readiness and self-efficacy, emphasizing its importance in the online learning environment, student satisfaction and

intention to partake online learning. Students' readiness and self-efficacy levels will affect their choice of behavior, degree of initiative, emotional response and enthusiasm. A high level of readiness and self-efficacy will produce autonomous and independent learners who take ownership of learning.

Online learning solves the problems of large classrooms, increasing enrolment, and limited staff (Ikpe, 2011). Bhuasiri et al. (2012) claimed that the critical success factors of online learning were computer training, perceived usefulness, attitude toward online learning, computer self-efficacy, program flexibility and clear direction. The learning institute should provide technical support to troubleshoot technical problems encountered in online learning through help lines or other means. Time management workshops can be organized to enhance their experience of online learning platforms. The government has supported the use of digital technologies and provided funding for infrastructure projects. The schools or learning institutions need to invest in proper technological training and support, especially for online collaborative tools unfamiliar to students, equip the computer labs with sufficient technological devices and reliable internet access. Professional development for instructors to effectively use online learning tools should be provided. Instructors should be able to adapt their teaching methods or strategies to take full advantage of the technology. The current education system should flexibly respond and continually address the needs and opportunities associated with online learning. Since most students own mobile devices, it is suggested that e-learning platforms used should be mobile-friendly.

Nonetheless, there are several limitations to this study. First, the research design was cross-sectional which limits its ability to show the relationships between the variables. Second, the participants were predominantly Chinese from the foundation level, thus the findings cannot represent or be generalized to other samples with varying demographic backgrounds. Third,

the facilities and infrastructures of learning institutions might differ, which might create unequal online learning environments for students. Future studies can be directed to the relationship between students' readiness and self-efficacy with academic performance as well as the roles of existing and emerging educational technologies as well as efficient support strategies in learning institutions so that the best practices can be shared.

REFERENCES

Adams, D., Sumintono, B., Mohamed, A., & Noor, N. S. M. (2018). E-learning readiness among students of diverse backgrounds in a leading Malaysian higher education institution. *Malaysian Journal of Learning and Instruction*, *15*(2), 227-256.

Addah, J. (2012). Computer literacy and e-learning: Attitudes among first year students in a Ghanaian medical school. *International Journal of Computer Applications*, *51*, 22.

Artino, A. R. (2008). Motivational beliefs and perceptions of instructional quality: Predicting satisfaction with online training. J. Compute. Assist. Learn. 24 (3), 260–270. doi:10.1111/j.1365-2729.2007.00258.x

Aydin, C. H., & Tasci, D. (2005). Measuring readiness for e-learning. *Educational Technology and Society*, 244–257.

Bandura, A. (1977). Self-efficacy: toward a unifying theory of behavioral change. Psychol. Rev. 84, 191–215. doi: 10.1037/0033-295X.84.2.191

Bandura, A. (1997). Self-Efficacy: The Exercise of Control. New York, NY: W. H. Freeman and Company.

Bandura, A. (2012). "Social cognitive theory," in Handbook of Theories of Social Psychology, Vol. 1, eds P. M. Van Lange, A. W. Kruglanski, and E. Higgins (Thousand Oaks, CA: Sage Publications Ltd), 349–373.

Bakhsh, M., Mahmood, A., and Sangi, N. A. (2017). Examination of factors influencing students and faculty behavior towards m-learning acceptance. Int. J. Inf. Learn. Technol. 34, 166–188. doi:10.1108/IJILT-08-2016-0028

Bates, R., and Khasawneh, S. (2007). Self-efficacy and college students' perceptions and use of online learning systems. Computer. Human. Behavior. 23 (1), 175–191. doi:10.1016/j.chb.2004.04.004

Bhuasiri, W., Xaymoungkhoun, O., Zo, H., Rho, J. J., & Ciganek, A. P. (2012). Critical success factors for e-learning in developing countries: A comparative analysis between ICT experts and faculty. *Computers & Education*, *58*, 843-855.

Bidjerano, T. (2005). Gender differences in self-regulated learning. Educ. Technol. Soc. 12 (3), 12–22

Chen, Y. C., Lin, Y. C., Yeh, R. C., and Lou, S. (2013). Examining factors affecting college students' intention to use web-based instruction systems: towards an integrated model. Turk. Online J. Educ. Technol. 12 (2), 111–121

Collett, D. (2000). *Learning technologies in distance education*. Alberta, Canada: University of Alberta, Office of Learning Technologies.

Coskun, M., and Mardikyan, S. (2016). Predictor factors for actual usage of online evaluation and assessment systems: a structural equation model (SEM) study. Egitim Bilim 41 (188), 131–152. doi:10.15390/EB.2016.6579

Daniel, S. J. (2020). Education and the COVID 19 Pandemic. *Prospects*, *49*, 91-96. https://doi.org/10.1007/s11125- 020-09464-3

Folorunso, Olusegun & Ogunseye, Shawn & Sharma, Sushil. (2006). An exploratory study of the critical factors affecting the acceptability of e-learning in Nigerian universities. Information Management &amp Computer Security. 14. 496-505. 10.1108/09685220610717781.

Haseeb, A. (2018). Higher Education in the Era of IR 4.0. New Straits Times. https://www.nst.com.my/education/2018/01/323591/higher-education-era-ir-40.

Hodges, C. B. (2008). Self-efficacy in the context of online learning environments: a review of the literature and directions for research. Perf. Improv. Q. 20, 7–25. doi:10.1002/piq.20001

Hoppe, G., & Breitner, M. (2004). Business models for e-learning. *Conference proceedings of the e-learning: Models, Instruments and experiences of Multikonferenz Wirtschafstinformatik*, 3-18.

Ikpe, I. B. (2011). E-learning platforms and humanities education: An African case study. *International Journal of Humanities and Arts Computing*, *5*(1), 83-101.

Kamaruzaman, F. M., Sulaiman, N. A., & Shaid, N. A. N. (2021). A study on perception of students' readiness towards online learning during covid-19 pandemic. *International Journal of Academic Research in Business and Social Sciences*, *11*(7), 1536-1548.

Kharve, D., & Gogia, A. (2016). E-learning: Student's perception in developing countries like India. *Advances in Computer Science and Information Technology*, *3*(5), 389-395.

Kim, L. E., Dar-Nimrod, I., and MacCann, C. (2018). Teacher personality and teacher effectiveness in secondary school: personality predicts teacher support and student self-efficacy but not academic achievement. J. Educ. Psychol. 110(3), 309–323. doi:10.1037/edu0000217

Lim, C. K. (2001). Computer self-efficacy, academic self-concept, and other predictors of satisfaction and future participation of adult distance

learners. Am. J. Dist. Educ. 15 (2), 41–51. doi:10.1080/08923640109527083

Luthra, P., & Mackenzie, S. (2020). 4 ways covid-19 could change how we educate future generations. https://www.weforum.org/agenda/2020/03/4-ways-covid-19-education-future-generations/

Mitchell, S., and DellaMattera, J. (2010). Teacher support and student's self-efficacy beliefs. J. Contemp. Issues Educ. 5 (2), 24–35. doi:10.20355/C5X30Q

Newman, M. (2008). *Advantages and disadvantages of e-learning*. http://www.newman.ac.uk/Students_Websites/~m.m.friel/.

Nganga, G., Waruru, M., & Nakweya, G. (2020). Universities face multiple challenges in wake of COVID-19 closures. *University world news*. https://www.universityworldnews.com/post.php?story=20200407162549396

Olayemi, M. S., Adamu, H., & Olayemi, K. J. (2021). perception and readiness of students towards online learning in Nigeria during Covid-19 pandemic. *Library Philosophy and Practice*, 5051. https://digitalcommons.unl.edu/libphilprac/5051

Pallant, J. (2010). *SPSS survival manual - a step by step guide to data analysis using SPSS for windows (version 10)*. Buckingham Open University Press.

Rosenberg, J. (2009). *Ten strategies for a successful e-learning experience*. http://www.online-degree-search.net/strategies.html.

Rovai, A. P. (2003). In search of higher persistence rates in distance education online programs. *Internet and Higher Education*, *6*, 1-16.

Smart, K. L., & Cappel, J. J. (2006). Students' perceptions of online learning: A comparative study. *Journal of Information Technology Education*, *5*, 201-219.

Smith, P. J., Murphy, K., & Mahoney, S. E. (2003). Towards identifying factors underlying readiness for online learning: An exploratory study. *Distance Education*, *24*(1), 57-67.

Teo, T., Luan, W. S., Thammetar, T., & Chattiwat, W. (2011). Assessing e-learning acceptance by university students in Thailand. *Australian Journal of Educational Technology*, *27*(Special issue, 8), 1356-1368.

Wang, C.-H., Shannon, D. M., and Ross, M. E. (2013). Students' characteristics, self-regulated learning, technology self-efficacy, and course outcomes in online learning. Dist. Educ. 34 (3), 302–323. doi:10.1080/01587919.2013.835779

Zimmerman, W. A., & Kulikowich, J. M. (2016). Online Learning Self-Efficacy in Students With and Without Online Learning Experience, American Journal of Distance Education, 30:3, 180-191, doi: 10.1080/08923647.2016.1193801.