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The Challenges of Educational Environment on Virtual Learning among Undergraduate Students during the Covid-19 Pandemic

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Abstract

Purpose: This paper examined the challenges students faced with virtual learning during the coronavirus pandemic. Virtual learning is currently the alternative solution to slow down the spreading of COVID-19. However, it can be challenging for the disabled, underprivileged, and marginalized students with limited resources.

Design/methodology/approach: 165 university students from private universities took part in the study and Structural Equation Modeling was used to analyze the data in the study, which took a quantitative approach.

Findings: Results showed that self-efficacy, motivation, and technology literacy had a positive impact on virtual learning. The findings indicated that educational institutions must pay attention to the factors that keep students motivated and maintain their optimal performance, especially during the COVID-19 pandemic, through virtual learning.

Research limitations/implications: There are number of limitations in the current study that should be as caveats. Since the study is conducted with private university students in Klang Valley area only, the sample size is very small, and the duration is very short.

Practical implications: It is recommended that private university students to better equipped with the technology to enhance not only their interaction with instructors, but the skills they acquired that will be the advantage of their learning opportunities to advance their competencies.

Originality/value: During the COVID-19 pandemic lockdown, a student has become one of the utmost prominent primacies for nationwide education institutions. The sudden shift of a conventional learning environment, to a virtual learning mode, has caused numerous concerns among the education sector, fellow educators as well as parents.

Keywords: Education, Pandemic, Motivation, Virtual Learning, Self-Efficacy, Technology Literacy

Introduction

Governments all around the world are getting the lead out to adapt and enact policies that will result in a new normal in their nations as Covid-19 virus infections continue to arise, as a

result, the sector of Education has been deeply impacted by the pandemic. To circumvent this, the education system in Malaysia has decided to use technology and devices as a means of communication instead of in-person instruction. Online education is currently the most popular strategy for stopping the spread of Covid-19. However, it may be challenging for students who are disadvantaged, disabled, or otherwise excluded and lack access to online learning resources (Ngwacho, 2020). Their inability to access and take part in online learning is the root cause of their disparity and dropout rates. In addition, online education necessitates dedication and discipline, particularly for vulnerable students who need to engage to enhance their social skills (McKenney & Reeves, 2021).

Despite the advantages, to implement the online learning or e-learning system in higher education institutions and create a relevant and supportive learning environment, lecturers and students must possess specific skills, posessed positive attitude toward e-learning, and knowledge of ICT. This is paramount as according to Hussein (2018), most professors and students are not well-versed in the use of computers, and even those who are, the vast majority of the time, primarily use them for communication and entertainment. Additionally, Ali (2004) demonstrates that a significant population lacks computer literacy. This makes e-learning tough, which may cause some people to lose interest and decide not to use it at all. In some universities, e-learning also does not improve learning activities and has no effect on student academic performance (Oye et al., 2012).

To date, most Malaysians are technologically literate, which is defined as having a working knowledge of mechanical devices like desktop computers and laptops, among others (Ating, 2020). The overall level of technological literacy among Malaysians is 90.1 percent. Some of the factors contributing to an increase in technological literacy include the growth of e-commerce (Morgan, 2020), the availability of technology as a requirement for academic purposes (Emosda & Annisa, 2020), internet usage, and other issues associated with these topics. However, due to the lack of reliable Internet service in isolated areas like Pahang, Kelantan, Sabah, and Sarawak, not all states in Malaysia have equal access to the Internet. Among the many causes are a poor lifestyle, lack of technological literacy, and inconvenient location. However, even though some areas are difficult to access for internet service providers, a survey shows that technology literacy rates are 92.2 percent for urban areas and 81.5 percent for rural areas (Ating, 2020).

In addition, when university students were forced to switch from in-person instruction to e-learning because of the Covid-19 pandemic, maintaining motivation has become one of their challenges. Some students may lack motivation and are less interested in continuing with online classes due to a lack of self-discipline or face-to-face learning (Lim, 2020). Online education encompasses more than just self-study, students can skip class and attribute their absence to a poor internet connection. Although some students may struggle to use the internet, online instruction is not as effective as in-person instruction.

According to Kundu (2020), self-efficacy in online learning requires additional research. Hodges asserted, "Research on self-efficacy in online environments is in its infancy. "More research is required to fully comprehend the significance of self-efficacy in online learning settings. Self-efficacy was found to have a significant impact on students' levels of contentment with their online learning environments and their likelihood of enrolling in

additional online courses. There is a lack of research examining the connection between self-efficacy and online learning due to competing alternative assumptions. Hence, additional research is required to comprehend the nature of the link (Alqurashi, 2016).

The epidemic is anticipated to last for several years. Numerous opportunities exist to introduce a new standard for human existence because of this globally unparalleled phenomenon. This also applies to the education industry. Due to the lockdown that led to the closure of educational institutions, more technology is being used in daily life to meet the requirements of families as the globe accepts and progresses toward the Industrial Revolution 4.0 (IR4.0). This is the ideal time for the entire globe to transition to another stage of human civilization by applying technology in daily life, according to needs and desires for the following year.

In addition, poorer nations are increasingly adopting online education as a new teaching method (Iqbal and Ahmad, 2010). However, a lack of essentials for e-learning, such as highly effective equipment and Internet access, plagues many educational establishments. Lack of computer proficiency and enthusiasm hinder some students' access to online education (Zainol, 2021). Students' self-efficacy, digital literacy, and motivation are all important considerations when using online classes as learning tools. Due to these obstacles, online learning is more challenging for students.

This paper intends to investigate the connections between e-learning self-efficacy, motivation, and technology literacy in Malaysia during the Covid-19 lockdown and essential to understanding the difficulties faced by Malaysian university students during the epidemic. In addition, this study also offers advice to the Malaysian government on how to support online education at Malaysian universities.

Problem Statement

The COVID-19 pandemic changed the world's educational system and upended modern society. To teach in a virtual setting, educators must quickly and thoroughly transition from traditional classroom instruction. Different communication, teamwork, and "being" logics would be used in this unique educational setting (Lindroth et al., 2015). During this time, innovative approaches to teaching and learning became crucial for ensuring that education continued throughout the pandemic. Because the educational pedagogy used in online learning is different from that used in traditional classroom settings, educators need more time to develop the necessary skills Yusof et al (2022); Meyers (2009) Additionally, Malaysian education places less emphasis on the use of technology and internet resources because it emphasizes instruction in traditional classrooms.

According to Hamzah and Attan (2007), educators do not fully understand how to use computer-based information technology in education. In addition, Noh et al (2013) revealed that teaching activities rely very little on technology. Additionally, educators' likelihood of utilizing new technology is influenced by their perceived computer self-efficacy. However, even though there is still room for improvement, Mohiddin and Khalid (2014) asserted that instructors' awareness of how to use technology has improved.

In addition, internet coverage has emerged as the primary barrier to the deployment of online teaching and learning, despite students' motivation and willingness to commit to it (Zulkifli et

al., 2020). According to recent research carried out during the MCO phase by Gong (2020), most low-income parents have found it difficult to provide each of their children with digital devices, with the exception of the issue of Internet access for children living in remote areas. Due to this, it is currently challenging for students and educators alike to make use of online education.

On the other hand, every effort must be made in all learning contexts, especially in an e-learning environment, to ensure that educators and students achieve the learning objectives. Learning objectives can assist students in concentrating their efforts and maintaining motivation. Additionally, it aids educators in supporting the learning objectives in the planning and design of their lessons, activities, and assessments. Online learning platforms like e-learning offer their own set of challenges, such as a lack of interaction, lack of motivation, issues with technology, isolation, and limited resources, which is a crucial concern for both educators and students to the same extent (Abuhassna et al., 2022). Therefore, in order to guarantee the success of the teaching and learning method used in virtual learning, educators and students need to be skilled and trained.

The research questions and research objectives to be addressed in this study are

Research Questions

1. Does technology literacy have a significant relationship towards e-learning among undergraduate students during pandemic?
2. Does motivation have a significant relationship towards e-learning among undergraduate students during pandemic?
3. Does self-efficacy have a significant relationship towards e-learning among undergraduate students during pandemic?

Research Objectives

1. To examine the relationship between technology literacy and e-learning among undergraduate students during pandemic.
2. To examine the relationship between motivation and e-learning among undergraduate students during pandemic.
3. To examine the relationship between self-efficacy and e-learning among undergraduate students during pandemic.

Theory (Metacognitive model of strategic learning)

According to Weinstein (2018), strategic mastering is centered on college students as active, self-decided people who system statistics and assemble information. This version explores the want of online learners to revel in, and their issues which they will have in no way encountered earlier than in conventional mastering environments; for example, the way to cope with the emotions of isolation and the way to resolve online technological issues through themselves. The version has the learner at its center, and around this center are three interactive additives that specify a hit mastering: skill, will, and self-regulation. Recent studies explore online inquiry- primarily based on mastering- and declare that a better degree of cognitive techniques facilitates pupil information construction (Salovaara, 2005) and improvement of pupil metacognitive techniques (Abednego, 2022). The Strategic e-Learning version explains and evaluates pupil e-mastering from metacognitive perspectives. The version framework is built and illustrated through 4 dimensions of traits of e-mastering

environments and three center domains (perceived skill, affection, and self-regulation) of pupil e-mastering techniques. This tool provides a diagnostic tool for e-mastering researchers, machine designers, curriculum builders, and teachers to assess pupils' e-mastering techniques for their experiment, layout, and improvement.

Technology Literacy and E-Learning

Due to the rapid growth of the digital world, technology literacy is crucial for students to acquire. However, there are two conflicting schools of thought regarding the development of technology literacy. There are opportunities and challenges associated with the advancement of digital technology. According to the National Education Association (2010), the implementation of technological literacy programs that are expected to assist Industry 4.0 is critical thinking, communication, collaboration, and creation. Additionally, technology literacy has a substantial impact on students' fundamental skills as well as their ability to succeed in jobs that require knowledge and skills that are enhanced by digital technology in the future (Pirzada & Khan, 2013; Vrana, 2016).

In the age of the Fourth Industrial Revolution, learning can now be done virtually through a variety of internet-based platforms, in addition to in-person in a classroom. All nations are currently undergoing a major crisis, specifically COVID-19. The learning system changes as a result of the coronavirus's existence. The conversion of lecture activities into remote learning in higher education is impacted by the phenomena of restricting distances during the epidemic. There is no physical interaction between the educator and the student in a distance learning system because it does not take place in a single space. Instead, face-to-face communication is conducted online. Students that are enrolled in distant learning use software in the form of a learning management system. The learning management tools included using Webex, Google Meet, Zoom, Google Classroom, and WhatsApp Group. As a result, students must develop their technology literacy skills.

H1: There is a significant relationship between technology literacy and e-learning among undergraduate students.

Motivation and E-Learning

In asynchronous communication, motivation affects students' engagement and overall learning experience (Xie & Huang, 2014). Peers have a significant impact on a learner's motivation to learn, therefore their approval in an online discussion becomes a crucial aspect in terms of the learner's motivation to engage (Zakariah et al., 2016). It is strongly advised to support this attribute by providing a peer rating in an online conversation since students impact one another's motivation (Xie & Huang, 2014). As a result, consumers in this technological age are searching for new technological tools and techniques to improve communication. Universities must adopt the most recent technology and integrate it into online learning since mobile communication tools have been shown to increase online learners' motivation (Chaiprasurt & Esichaikul, 2013).

H2: There is a significant relationship between motivation and e-learning among undergraduate students.

Self-Efficacy and E-Learning

According to Bandura (2006), self-efficacy refers to an individual's belief in his or her capacity to carry out a particular behavior. In the context of online learning, self-efficacy is a person's assessment of their capacity to use online learning in everyday activities, such as using computers, the Internet, and web-based instructional and learning tools. e-Learning will be viewed favorably by those with high technology self-efficacy, and vice versa. One of the most crucial factors that affect students' levels of satisfaction is their computer anxiety. Their belief in technology as a medium will be directly impacted once they become dissatisfied (Sun et al., 2008). According to Al-Rahmi et al., self-efficacy is a significant factor in students' intentions to use e-Learning.2018).

H3: There is a significant relationship between self-efficacy and e-learning among undergraduate students.

Proposed Research Framework

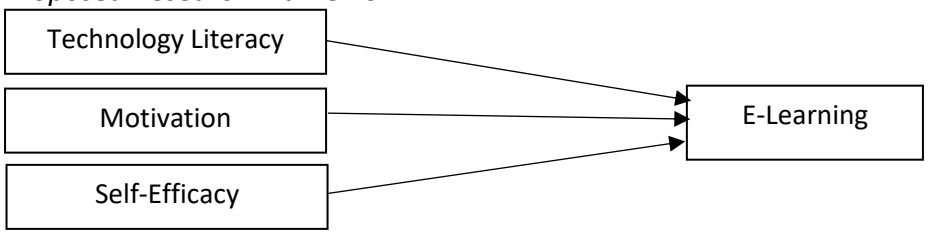

Fig. 1. Theoretical Framework

Figure 1 shows the proposed theoretical framework on the challenges of educational environment on virtual learning among undergraduate students during the covid-19 pandemic.

Research Methodology

Research Design and Sample

In this quantitative study, the respondents were gathered using a purposive sampling technique. The four domains that made up the components of online learning were technology literacy, motivation, self-efficacy, and e-learning. This survey research was applied to 165 undergraduate students in Klang Valley area. However, only 114 questionnaires were returned and made up of 69% of response rate.

Instruments

Data were collected using a questionnaire comprising 28 items that measured the four domains as follows: technology literacy (7-items), motivation (7-items), self-efficacy (7-items) and e-learning (7-items). Response was made on a five-point Likert Scale (1: Strongly Disagree, 2: Disagree, 3: Neutral, 4: Agree, 5: Strongly Agree). The questionnaires were developed by adopting from the previous researchers. The distribution of items according to dimensions is presented in Table 1 below.

Table 1
Measurement Items

Dimensions	Items	Total Items
Technology Literacy	I believe that I can do activities related to technology for my online learning during the pandemic.	7 items
	I often use the internet for my online learning during the pandemic.	
	I take advantage of technological developments to support my presentation for my online learning during the pandemic.	
	I use technology at each of my presentation of my online learning during the pandemic.	
	I use internet for the information that I did not know for my online learning during the pandemic.	
	I believe that technology is very beneficial for me for my online learning during the pandemic.	
	I believe learning style can be combined with technological development for my online learning during the pandemic.	
Self-Efficacy	Compared with other students in this class, I expect to do well for my online learning during the pandemic.	7 items
	I believe I can understand the ideas related to my online learning during the pandemic.	
	I believe I am a good student if compared with the other students for my online learning during the pandemic.	
	I am sure I can do an excellent job on the problems and tasks assigned for my online learning during pandemic.	
	I believe I will receive a good grade for my online learning during the pandemic.	
	My study skills are excellent compared to others for my online learning during the pandemic.	
	I know I will be able to learn the material for my online classes during the pandemic.	
Motivation	Studying online during pandemic is important because it is for my future career.	7 items
	Studying online during pandemic is important because it will make me knowledgeable and educated.	
	Studying online is important because I need it for technology uses and the Internet.	
	Studying online during pandemic is important because it will enable me to better understand and appreciate my learning.	
	Studying online during pandemic is important because I will be able to participate more freely in my learning.	
	Studying online during pandemic is important because it will help me make many friends from many parts of the world.	
	Studying online is important because it will allow me to learn about the other social life.	

E-Learning	My e-learning course materials are practical.	7 items
	My e-learning course materials challenge me to think.	
	My e-learning course exams are reasonable in length and difficulty.	
	My e-learning system quickly and efficiently respond to student needs.	
	My e-learning system provide an environment which encourages interactive participation.	
	My e-learning course materials are useful.	
	My e-learning course materials are up-to-date.	

Findings

Reliability Analysis

Reliability analysis was used in the present study to examine the internal consistency of the dimension items of self-efficacy, technology literacy, motivation, and online learning. It indicates that Cronbach's Alpha for all the dimensions is above 0.7. Hence, the measurement items are considered acceptable and have good internal consistency (Nunally, 1975).

	Cronbach's Alpha	rho_A	Composite Reliability	Average Variance Extracted (AVE)
Tech_Literacy	0.776	0.803	0.847	0.527
Self_Efficacy	0.852	0.898	0.892	0.623
Online_Learning	0.841	0.881	0.890	0.627
Motivation	0.911	0.923	0.930	0.656

Fig. 2 Reliability Analysis

Research Model

When a latent variable explains a significant part of the variance of its manifest variables, the convergent validity should be checked (Nacaskul, 2017). Convergent validity is examined through the variance extracted indicator (AVE), which is a measure of the variance that a latent variable capture from Sustainability 2017, 10, 8 10 of 16 its associated manifest variables relative to the total amount of variance, including the variance due to measurement error. At a level above 0.50, the latent variable explains more than half of its manifest variables' variance. At this level, it may be argued that the variation is not coincidental, i.e., error variance, and a" true" relation between the manifest variables and the latent variable may thus be argued to exist. According to Henseler & Chin (2010), it should be excluded from the model the variables that have path coefficients less than or equal to 0.5. Therefore, as shown in Figure 3 below, the following variables will be excluded: SBTech02, ELearning5, ELearning7.

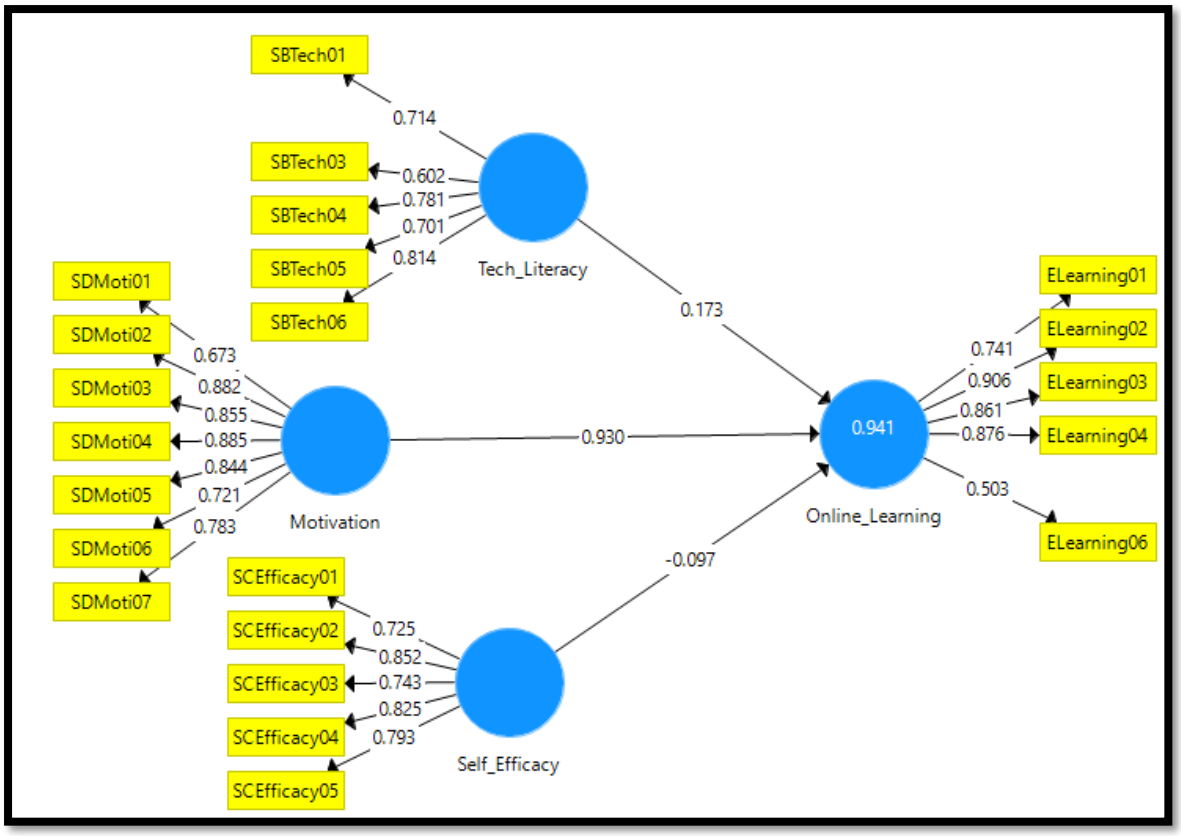

Fig. 3. Research Model

Correlation Analysis

Figure 4 below shows the result of the correlation analysis. Correlation analysis was used in this study to show the significant relationship between the dependent and independent variables. The variables are statistically significant when the Significant value (2-tailed) is 0.05 or below (Bland & Altman, 1995). Based on the above table, shows that there are significant relationships between technology literacy, self-efficacy, and motivation toward e-learning among students.

	Original Sample (O)	Sample Mean (M)	Standard Deviation (ST...	T Statistics (|O/STDEV|)	P Values
Motivation -> ...	0.930	0.929	0.027	34.617	0.000
Self_Efficacy ->...	-0.097	-0.096	0.028	3.470	0.000
Tech_Literacy -...	0.173	0.172	0.035	4.879	0.000

Fig. 4. Correlation Analysis

Discussion and Conclusion

Discussion on findings of the study

Based on the findings, all independent variables, technology literacy, motivation, and self-efficacy indicated a significant relationship towards e-learning. This is according to the p-value given by each of the factors. It is significant if the p-value is below 0.05 but insignificant when the p-value is greater than 0.05 as in Table 2.

Table 2
Summary of the result

Hypotheses	t-value	P-Value	Results
H_1: There is a significant relationship between technology literacy and online learning.	4.879	0.000	Accept H_1
H_2: There is a significant relationship between self-efficacy and online learning.	3.470	0.000	Accept H_2
H_3: There is a significant relationship between motivation and online learning.	4.617	0.000	Accept H_3

H_1: There is a significant relationship between technology literacy and online learning.

The significant value for technology literacy is 0.000, as shown in Table 1 above. It has a beneficial connection when Sig. value is less than or equal to 0.05. The study's findings offer educators in the education sector valuable insights. According to Hidayat et al., technology literacy has a significant impact on undergraduate students' engagement in learning 2022. A high level of technology literacy is necessary for online learning success. Students are better able to engage with course material and communicate with educators and peers if they are familiar with digital technologies and have the necessary skills and knowledge to use online learning platforms (Coman et al., 2020). However, students who struggle with technology may find it challenging to fully participate in e-learning, resulting in lower educational standards. Overall, technology literacy is important for making online learning effective and successful (Mainake & McCrocklin, 2021).

H_2: There is a significant relationship between self-efficacy and online learning

The significant value for self-efficacy is 0.000, as shown in Table 1 above. It has a beneficial connection when Sig. value is less than or equal to 0.05. The findings indicate that students' self-efficacy is crucial to the development of their e-learning skills. Arpaci (2017) says that factors like the level of interactivity and feedback, the ease of technology use, and the quality of instruction in online learning can affect an individual's self-efficacy. By giving students a sense of control over their learning environment, encouraging a growth mindset, and increasing engagement and motivation, well-designed online learning can have a positive effect on self-efficacy (Tseng et al., 2020). Online learning, on the other hand, can have a negative effect on self-efficacy by hindering learning and increasing anxiety and frustration (Deng et al., 2022). As individuals with higher levels of self-efficacy are more likely to participate in online learning and perform better in online courses, self-efficacy can play a significant role in the effectiveness of online learning.

H_3: There is a significant relationship between motivation and online learning

As shown in Table 1 above, the significant value for motivation is 0.000. It has a positive relationship when Sig. value falls on or less than 0.05. Motivation and online learning are closely related because motivation plays a critical role in a student's ability to succeed in an online learning environment (Esra & Sevilen, 2021). Without the structure and accountability

of traditional classroom settings, students in online learning must rely on their own motivation to stay on track and achieve their learning goals. Motivation can be influenced by various factors such as perceived relevance, interest, and the sense of autonomy or control over the learning process (Chiu, 2022). Therefore, educators need to design engaging and interactive online learning experiences that foster motivation, as it can significantly impact students' learning outcomes and retention (Ferrer et al., 2020).

Conclusion

To conclude, the majority of students who are motivated to study during difficult times tend to disregard their motivation level. Even though the learning environment is vastly different, the abrupt switch from in-person to online learning has resulted in positive outcomes. Most students face a number of challenges, some of which include a lack of access to fast internet and difficulties with online learning. During the COVID-19 problem, teachers need to know how to motivate students or reward them for staying engaged. Students can participate without difficulty because of the high levels of motivation. However, students who lack motivation will exhibit a problem like disengagement. Because the findings were based solely on the opinions of students, the study's primary flaw was its small sample size. However, to gain a better understanding of the issues with student participation during the COVID-19 crisis, future studies may benefit from the educator's perspectives. The perceptions of students attending higher education institutions in the Klang Valley area also play a significant role in the study's findings. As a result, examining perceptions of student participation in various states or locations may yield more sobering results.

Contribution of Study

This study’s contribution was to shed light on the importance of virtual learning among university’s students especially in the technology wise. This information could be a motivator for the students in order to make sure that they are competent in education. It could also have implications for the development of technology literacy among students for their learning abilities.

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