

## **Education Transformation in the Covid-19 Era: Challenges for Malaysia University Students in Different Area**

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### **Abstract**

The transition from traditional Teaching and Learning (T&L) methods (face-to-face) to Home-Based Learning (HBL) during the Covid-19 era is inevitable. Unfortunately, this transition not only creates positive effects but also has its own negative impact, especially for higher education students. Following on from that, this study was conducted to identify the challenges experienced by higher education students in Malaysia when following the HBL programme. In addition, this study also aims to determine the group of vulnerable students based on the location and type of residence. To achieve this goal, a survey was conducted on 2394 higher education students living throughout Malaysia. Inferential statistical analysis techniques (Principal Component Analysis & Kruskal Wallis) and descriptive (percentage & frequency) were used in this study to extract the raw data obtained. The results of the study show that higher education students in Malaysia usually face six main challenges when implementing HBL, namely decreased focus on learning ( $\text{var}(X)=20.26\%$ ), physical health problems ( $\text{var}(X)=12.12\%$ ), mental health problems ( $\text{var}(X)=10.06\%$ ), technical & connectivity problems ( $\text{var}(X)=10.82\%$ ), social isolation ( $\text{var}(X)=7.41\%$ ) and low digital literacy ( $\text{var}(X)=7.83\%$ ). The results of this study also found that students who live in rural and slum areas are the most vulnerable to the implementation of HBL. The findings of this study are very useful as supporting information for the authorities (stakeholders) to further strengthen the implementation of HBL in Malaysia.

**Keywords:** Higher education, online learning, e-learning, virtual learning, teaching and learning, rural area

## Introduction

Education plays a very pivotal role in an effort to develop the civilization of a society (Ismail, & Yusuf, 2012). This is in line with the Sustainable Development Goal 4 (SDG4) that quality education is very important as a foundation for social, economic and cultural development (Do et al., 2020). Therefore, the ruling class (stakeholders) in every country must ensure that every citizen has good accessibility to education services. It includes higher education, vocational school, secondary school, primary school and even pre-school (Shava et al., 2021).

As known by the public, in December 2019, there was an outbreak of coronavirus disease 2019 (COVID-19) in Wuhan, Hubei, China (Jafar et al., 2021a; Jafar et al., 2021b; Dollah et al., 2022) which continued to spread around the world (Lone & Ahmad, 2020; Hasbullah & Rahman, 2020; Chen, 2021) including Malaysia (Jafar et al., 2022a; Jafar et al., 2022b). In Malaysia alone, the spread of COVID-19 not only affected the business, agriculture (Hasbullah & Rahman, 2020), tourism, services, housing and manufacturing (Sani, 2021) sectors, but has also changed the education landscape of the country where there has been a massive transformation from the aspect of teaching and learning (T&L) method. To prevent the spread of COVID-19 (Ating, 2020; Yeo et al., 2021), online teaching and learning (T&L) or Home-Based Learning (HBL) method has been implemented throughout the country to replace face-to-face teaching method (Azizan & Nasri, 2020; Hairia'an & Dzainudin, 2020), including at the higher education level (Mokhtar & Lakman, 2021).

Despite this, the shift from face-to-face T&L system to HBL T&L which happened very drastically across the nation creates its own challenges. It includes low internet access in some areas, lack of electronic device among students (Mesman & Majid, 2021), lack of availability and skills of teachers in implementing e-learning (Yahaya et al., 2020), low digital literacy among students (Mesman & Majid, 2021) and so on. Furthermore, not all students have the same level of ability to participate in the HBL T&L activities. In China, for example, almost half of the students who reside in rural areas are found to be unable to undergo T&L through HBL due to limited ownership of electronic devices (Zhu et al., 2020). Hence, it is not surprising if it is difficult to remove the stigma that the quality level of learning is lower compared to face-to-face learning (Hodges et al., 2020).

Such matters should not be taken lightly as it can affect the acceptance and willingness of students to undergo online learning (Hung et al., 2010). Therefore, empowerment measures to increase students' capability in implementing HBL should be done immediately, especially for students who are very vulnerable to this problem. Unfortunately, there has not been a comprehensive study in Malaysia to identify this group of vulnerable students. Whereas such studies are crucial to facilitate the empowerment of vulnerable students that is to be done more systematically, effectively and efficiently. Therefore, this study aims to explore the challenges faced by higher education students in Malaysia when implementing HBL as well as identify the vulnerable group based on factors such as location of type of residence.

## Research Methods

### *Study Design and Recruitment Procedure*

The primary data of this study was obtained using a cross sectional survey approach. This approach helps facilitate the assessment process over large population sizes (Jones et al.,

2013). The data collection process was carried out online using the KoBoToolbox (e-questionnaire). This is to avoid the risk of COVID-19 spread. The online questionnaire was publicized through WhatsApp and Facebook as both of the communication platforms have the highest level of popularity in Malaysia. A total of 2394 public (18 universities) and private (9 universities) higher education students residing in Malaysia (2 federal territories & 13 states) have answered the e-questionnaire. According to Adam (2020), the minimum number of samples needed to represent a population exceeding 1,000,000 people (infinity) with 99% confidence level is 463 people. Based on that, the sample size in this study (2394 people) is sufficient considering that it has already exceeded the minimum sample size required. Respondents in this study were selected using purposive sampling technique where only higher education students with active status and living in Malaysia are eligible to be used as a study sample. The collection process of the e-questionnaire data took approximately one and a half month starting on 21 October 2021 until 06 December 2021.

### ***Study Instrument***

The instrument (e-questionnaire) of this study is divided into two main parts namely Part A (respondents' demographic information) and Part B (challenges of e-learning). All the questions in Part B (35 variables) are in the form of a Likert scale where each has five answer choices starting from '1 (=strongly disagree) to '5 (=strongly agree). The questions in this part are also in negative forms. In other words, the higher the score, the higher the level of challenges faced by the students and vice versa. To ensure that the reliability and validity of the instrument is in a satisfactory condition, a pilot study was first conducted on 50 respondents (Johanson & Brooks, 2010; Bujang et al., 2018). The validity test found that each variable (35 variables) is valid to be used since the value of its correlation coefficient ( $r_{xy}$ ) is greater than the critical value for the Pearson's Correlation coefficient  $r$  (Fanani & Djati, 2016). The Pearson's correlation coefficient  $r$  for this study's minimum value is 0.299, which is higher than the critical value for that coefficient at a level of significance of 0.5%, which is 0.273 (Niño - Zarazúa, 2012). The results of the reliability test show an alpha value of 0.935 (excellent) and at the same show that the e-questionnaire of this study is worthy of use (Taber, 2018). Most of the e-questionnaire questions in this study were adapted from studies by Kim et al., (2005), Zembylas et al., (2008) and Adnan & Anwar (2020).

### ***Statistical Analysis***

The raw data analysis process is done with the help of IBM SPSS software version 26. There are several statistical analysis techniques used in this study, including descriptive (frequency and percentage) and inference (Principal Component Analysis & Kruskal-Wallis) statistics. Descriptive statistics were used to explain the background of the respondents. PCA, on the other hand, was used to summarise Construct B data from 34 variables into 6 components in accordance with the analysis function, which is to identify and extract the important information from the statistical data to represent is as a set of new orthogonal variables called principal components (Mishra et al., 2017). This analysis was performed twice, but Variables B1 and B19 had to be removed first before doing the PCA analysis for the second time due to a loading factor (commonality) value of less than 0.5 (Kirch et al., 2017; Simanjuntak, 2018). The result of Barlett's test was found to be significant ( $X^2=54959.59$ ,  $df=528$ ,  $p<0.05$ ) which shows that the sample is eligible to be factored. There are 6 components formed with an eigenvalue exceeding 1 (De Barros et al., 2020) (refer to Table 1). The six components have a cumulative variance value of 67.78 per cent. In other words, a total of 67.78% of virtual learning challenges in Malaysia are represented by the 6 components (Nasution, 2019). In the context of humanities studies, a variance of 50% and above is acceptable.

**Table 1: Cumulative value of variance**

Component	Initial Eigenvalues		
	Total	% Variance	Cumulative %
1	14.24	43.159	43.16
2	2.44	7.397	50.56
3	2.03	6.159	56.72
4	1.34	4.063	60.78
5	1.23	3.733	64.51
6	1.08	3.269	67.78
7-33	0.90-0.23	2.71-0.70	70.49-100

Kruskal Wallis analysis (non-parametric) was used to identify whether there is a significant difference or otherwise between the components formed with two variables, namely the location of residence and the type of settlement area. The use of non-parametric analysis in the study is on the grounds that the study data is not normally distributed as shown in Table 2.

**Table 2: Tests of Normality**

	Kolmogorov-Smirnov <sup>a</sup>			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Decreased Focus on Learning	0.061	2394	0.000	0.966	2394	0.000
Physical Health Problems	0.085	2394	0.000	0.956	2394	0.000
Mental Health Problems	0.074	2394	0.000	0.979	2394	0.000
Technical & connectivity problems	0.076	2394	0.000	0.984	2394	0.000
Social isolation	0.123	2394	0.000	0.946	2394	0.000
low digital literacy	0.140	2394	.000	.963	2394	0.000

a. Lilliefors Significance Correction

## Results

### Demographic Characteristics

From the total sample of this study (2394 students), most of them are male (72%) and unmarried (97.7%). Most of the respondents in this study are Muslim (71.2%). Only a small part are Christians (20.8%), Buddhists (4.8%) and Hindus (1.7%). The number of respondents studying at public higher education institutions (95.4%) is also far more than those studying at private higher education centers (4.6%). In addition, the respondents in this study predominantly resided in urban areas (41.3%) and rural areas (41.6%). Only a few live in the suburbs (17.2%). The results of the analysis also found that most respondents live in villages (49.5%) and residential area (45.4%). The rest live in slum areas (4.1%) and shophouses (3.1%).

**Table 2: Demographic characteristics of respondents (n = 2394)**

Characteristics	Category	Frequency	Percent (%)
<b>Gender</b>	Male	671	28
	Female	1723	72
<b>Marital Status</b>	Single	2339	97.7
	Married	55	2.3
<b>Religion</b>	Muslim	1722	71.9
	Cristian	499	20.8
	Buddhist	116	4.8
	Hindus	41	1.7
	Others	16	0.7
<b>Institutional Status</b>	Public university	2283	95.4
	Private university	111	4.6
<b>Residential Location</b>	Urban	988	41.3
	Suburban	411	17.2
	Rural	995	41.6
<b>Type of Residence</b>	Residential area	1088	45.4
	Village	1178	49.5
	Slum area	99	4.1
	Shophouse	31	3.1

### ***Challenges of T&L Through Home Based Learning (HBL) During the COVID-19 Pandemic in Malaysia***

The results of the PCA analysis found that there are 6 main challenges faced by higher education students in Malaysia when undergoing T&L through HBL (Table 3). Most students assumed that T&L through HBL causes (Co1) decreased focus on learning ( $\text{var}(X)=20.26\%$ ). The same situation is also experienced by students in Jordan (Maqableh & Alia, 2021). For them, the learning workload when HBL is implemented is greater than the face-to-face T&L method. Apart from the, T&L through HBL also, if done routinely over a long period of time, could cause (Co2) physical health problems ( $\text{var}(X)=12.12\%$ ). In Malaysia itself, some student face difficulties in implementing HBL due to experiencing (Co3) technical and connectivity problems ( $\text{var}(X)=10.82\%$ ). There are no less for students who are faced with (Co4) mental health problems ( $\text{var}(X)=10.06\%$ ) as is also the case in Jordan (Maqableh & Alia, 2021). The results of the study also found that some students, when implementing HBL, had to face (Co5) low digital literacy problem ( $\text{var}(X)=7.83\%$ ) and (Co6) social isolation ( $\text{var}(X)=7.41\%$ ). According to Bokayev et al., (2021), the phenomenon of social isolation often occurs when HBL as happened in Kazakhstan.

### ***Determination of Vulnerable Students Based on Location and Type of Residence***

The results of the Kruskal Wallis analysis in Table 4 found that there is no significant difference ( $P>0.05$ ) between the student's residential location and challenges from the aspect of Co4) mental health problem. This means that the level of student vulnerability from that aspect is at the same level for all three residential locations. In other words, the location factor does not affect the level of vulnerability of students based on that aspect. The situation is different with university students in Bangladesh where students from urban areas are found to be more likely to feel anxious than rural and suburban areas (Hoque et al., 2021).

**Table 3: The challenges of T&L through HBL in Malaysia during the Covid-19 era**

<b>Component (Domain) /Item</b>	<b>Loading factor</b>	<b>Variance (%)</b>
<b>Component 1 (Co1) Decreased Focus on Learning</b>		
B16) Lack of motivation as the learning environment at home is not similar to being at university	0.746	
B22) Easily bored due to very limited e-learning learning techniques	0.735	
B21) Difficulty focusing due to boring e-learning learning methods	0.734	
B8) Lack of motivation due to not being able to meet friends and lecturers face to face	0.721	
B18) Declining learning productivity	0.709	
B17) Difficulty in understanding the content of the subject taught	0.656	
B23) Difficulty focusing due to the unconducive house condition	0.646	
B20) Difficulty in completing group assignments digitally	0.613	20.26
B9) Feeling lonely	0.609	
B15) Easily drowsy during classes	0.570	
B24) Difficulty focusing due to disruption of other work at home	0.562	
<b>Component 2 (Co2) Physical Health Problems</b>		
B3) Pain in the neck	0.778	
B6) Eye fatigue	0.770	
B4) Pain in the back	0.766	
B2) Headaches	0.662	
B5) Blurred vision	0.661	12.12
B7) Fatigue	0.578	
<b>Component 3 (Co3) Technical and connectivity problems</b>		
B29) My internet access is limited due to the low internet network in my home area	0.812	
B28) My internet access is limited due to the very expensive internet cost	0.806	
B30) Power outages often occur in my house	0.738	10.82
B31) My laptop is slow	0.650	
B32) I had to share a laptop with siblings	0.615	
<b>Component 4 (Co4) Mental Health Problems</b>		
B12) Easy to feel depressed (depression)	0.783	
B13) Easy to experience stress	0.772	
B14) Easy to experience anxiety/restlessness (anxiety)	0.740	
B10) Feeling isolated	0.547	10.06
B11) Lack of personal/physical attention	0.533	
<b>Component 5 (Co5) low digital literacy</b>		
B35) Not easy to use e-learning as using other systems	0.805	
B34) Not easy to become proficient in e-learning	0.777	
B33) I found that e-learning is difficult to use	0.697	7.83
<b>Component 6 (Co6) Social isolation</b>		
B25) Not close with peers	0.791	
B27) Unable to recognise many peers at university	0.754	
B26) Difficulty communicating with peers online	0.737	7.41

Apart from that, this study also found that there is a significant difference ( $P < 0.05$ ) between the student's residential location and Co1) decreased focus on learning, co2) physical

health problems, co3) technical and connectivity problems, co5) low digital literacy and co6) social isolation. Students who live in rural areas are found not only to have the highest level of vulnerability (MR=1403.25) compared to students in the suburbs (MR=1257.48) and urban (MR=965.34) in relation to technical and connectivity problems but also have the lowest level of digital literacy compared to two other locations (urban and suburban). The results of this study are in line with the findings of Zhu et al., (2020) that rural students in China find it difficult to follow the HBL programme due to limited ownership of electronic devices. Not only that, rural students were also found to have a higher level of vulnerability (MR=1252.47) compared urban (MR=1127.33) and suburban (MR=1233.09) students related to the issue of decreased focus on learning.

Rural students experience difficulties undergoing T&L through HBL due to having to deal with technical and internet access problems as also expressed Yakin et al., (2021). This is not surprising given that the internet distribution gap between urban and rural areas in Malaysia is generally very large with a ratio 70% : 30% (Bing & Jamaludin, 2021). Sabah and Perlis are among the states that often face this problem (Mohamad, 2021).

From the aspect of physical health problems, on the other hand, suburban students (MR=1240.05) are found to be more vulnerable compared to rural (MR=1234.30) and urban (MR=1142.74). The same also happened for social isolation problem when suburban students (MR=1240.05) are found to be more vulnerable compared to rural (MR=1232.77) and urban (MR=1145.46).

**Table 4:** *The relationship between HBL Challenges and Students' Residential Locations*

Challenges	Residential location	Mean Rank (MR)	P-value
Co1) Decreased Focus on Learning	Urban	1127.33	<.001
	Suburban	1233.09	
	Rural	1252.47	
Co2) Physical Health Problems	Urban	1142.74	0.005
	Suburban	1240.05	
	Rural	1234.30	
Co3) Technical and connectivity problems	Urban	965.34	<.001
	Suburban	1257.48	
	Rural	1403.25	
Co4) Mental Health Problems	Urban	1129.54	0.580
	Suburban	1190.84	
	Rural	1267.73	
Co5) low digital literacy	Urban	1145.46	<.001
	Suburban	1237.21	
	Rural	1232.77	
Co6) Social isolation	Urban	1145.46	.008
	Suburban	1237.21	
	Rural	1232.77	

Kruskal-Wallis (p-value) at the level of significance ( $\alpha=0.05$ )

The results of the Kruskal Wallis analysis in Table 5 show that there is no significant difference ( $P>0.05$ ) between the type of students' residence and the challenge of Co6) social isolation. Despite this, it was found that there was a significant difference ( $p<0.05$ ) between the type of residence and five other challenges (Co1, Co2, Co3, Co4 & Co5). Students who live in slum areas are the most vulnerable group to the five challenges. Limited ownership of electronic gadgets and internet accessibility among the students in slum areas is caused by the financial inability to own electronic gadget and subscribe to the internet. This is because the

majority of students living in slum areas in Malaysia belong to low-income families (Radhi Muslim, 2021).

The group of students with the second highest level of vulnerability are those who live in the village except mental health problems. The results of this study are in line with the findings of Rahiem (2020) that students who live in villages often experience poor internet accessibility problems to the point that they have to leave their homes to get a better internet network elsewhere. The results of this study also found that the group of students who live in residential area has the lowest level of vulnerability in dealing with various challenges (Co1, Co2, C03 & C04) except for the low digital literacy problem.

**Table 5:** *Relationship between Challenges of HBL and Students' Type of Residence*

Challenges	Type of Residence	Mean Rank (MR)	P-value
Co1) Decreased Focus on Learning	Residential area	1138.37	0.001
	Village	1238.56	
	Slum area	1351.70	
	Shophouse	1216.15	
Co2) Physical Health Problems	Residential area	1149.90	0.019
	Village	1234.37	
	Slum area	1280.58	
	Shophouse	1198.82	
Co3) Technical and connectivity problems	Residential area	985.37	<.001
	Village	1369.77	
	Slum area	1460.93	
	Shophouse	1241.29	
Co4) Mental Health Problems	Residential area	1185.31	0.025
	Village	1188.91	
	Slum area	1381.96	
	Shophouse	1361.95	
Co5) low digital literacy	Residential area	1135.93	<.001
	Village	1245.03	
	Slum area	1327.05	
Co6) Social isolation	Shophouse	1134.45	0.502

Kruskal-Wallis (p-value) at the level of significance ( $\alpha=0.05$ )

## Conclusion

It can be concluded that the geographical position or residential location of students plays a very important role in influencing their ability to undergo T&L through HBL. Students who live rural and slum areas are found to be more likely to face various challenges when HBL is implemented. This indirectly shows that students who live in rural and slum areas in Malaysia have a highers level of vulnerability to the implementation of T&L through HBL than in other locations (urban, suburban, residential area and shophouses). Hence, the emphasis on the empowerment process of T&L through HBL should focus on the target group, which is the vulnerable student group who are generally in rural and slum areas.

The results of this study are very important to be used as supporting data for the authorities (policy makers/stakeholders) in further strengthening the implementation of T&L



through HBL in Malaysia. This is because by understanding the location of the target group (vulnerable student group) in detail, it will facilitate the process of empowerment and T&L planning in HBL to be done more efficiently and systematically.

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