Digital Educational Divide among Low Socioeconomy Income Group: A Conceptual Model

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Abstract

With the ever-increasing growth of technology, the transition from a physical class to going online is unavoidable. Many lessons are now being conducted online due to students' enjoyment and preference for it. It also leads to independent learning, where learners are encouraged to control their education and discover which method is most suitable for their benefit. However, even with the plethora of available interactive tools to be used online, unfortunate groups are still left out of this luxury. This study investigated learners' readiness from low socioeconomy income group (B40) and their challenges in using digital educational tools while learning online. This is regarding the B40 learners who face challenges while trying to learn using interactive tools. After analyzing several theories, this study proposes a conceptual model to help understand and create better teaching strategies.

Keywords: interactive learning, independent learning, challenges, B40 learners

1. Introduction

Technology is widely being incorporated into education to boost learners' interest and engagement with educational experiences (Licorish et al., 2018; Wang & Lieberoth, 2016; Zarzycka-Piskorz, 2016). According to Medina and Hurtado (2017), there has been an increase in interest in the appropriate incorporation of technology into the language classroom, so it is also essential to use technology correctly in the classroom, especially in interactive learning. It has been proven that learners enjoy the online interactive classroom (Goyal & Tambe, 2015) since it effectively enhances their understanding of the lesson (Ahmad & Al-khanjari, 2011) and saves time (Cakrawati, 2017).

Unfortunately, there are still learners who do not have the financial means to enjoy this pleasure of interactive learning. This is in reference to the B40 family who lives in urban areas. Besides economic factors, e-learning has several drawbacks, which include lack of focus (Roy, 2021), digital competence (Adedoyin & Soykan, 2020), access (Ahmed et al., 2018), as well as the transition from face-to-face to online (Islam et al., 2015). Based on the report entitled Income Classification by Household released by the Department of Statistics of Malaysia for 2019 has categorized Malaysians into three different income groups, namely (i) Top 20% (T20), (ii) Middle 40% (M40), and (iii) Bottom 40% (B40). The income level is one of the indicators of Malaysia's economic growth. As seen in Table 1, Median Income and Income Range are presented in Malaysia Ringgit (RM) on the 2019 monthly household earning for T20, M40, and B40.

Table 1: Income Classification by Household in Malaysia

Income Classification by Household			
Household Group		Median Income (RM)	Income Range (RM)
B40	B1	1,929	Less than 2,500
	B2	2,786	2,500 - 3,169
	B3	3,556	3,170 - 3,969
	B4	4,387	3,970 - 4,849
M40	M1	5,336	4,850 - 5,879
	M2	6,471	5,880 - 7,099
	M3	7,828	7,110 - 8,699
	M4	9,695	8,700 - 10,959
T20	T1	12,586	10,960 - 15,039
	T2	19,781	15,040 or more

Info Source: Department of Statistics, Malaysia.

Hence, this study looked into the readiness of learners in the B40 group in using technology and their perceptions of using technology for online education. Simultaneously, study the challenges faced by the B40 learners in using digital educational tools while learning online.

2. Literature Review

2.1 Learning online

Electronic learning (E-learning) has become an increasingly effective method extensively used and implemented by educational institutions (Kumar & Owston 2016; Yeh & Chu, 2018). E-learning provides better educational opportunities by supplying a link between teachers and learners as well as giving fairness to all learners to have access to education (Arkorful & Abaidoo, 2015). With the advancement of technology, teachers have the technical competency to carry out lessons online, which aligns with their acceptance of technology (Samson et al., 2021). A paper can support this by Karata (2021). To improve teachers' acceptance, they should first understand the 21st-century skills to enhance their teaching. Wong et al. (2016) explained that teachers must have a positive attitude towards the effective use of computers and the school's environment for teachers to perform blended learning.

2.2 Learning online readiness

As the pandemic started, many schools were forced into quarantine and maintain social distancing. The only way that education could go on is by having it online, and it has taken a toll on many of those who are not prepared to receive it. Adedoyin and Soykan (2020) explained that for successful online learning to occur, proper planning for teachers and learners' readiness is needed. Unfortunately, not everyone is ready to receive this challenge. Paliwal and Singh (2021) state that if schools can provide adequate support to their teachers by organising good training sessions in conducting online teaching, the learning outcome would be satisfactory. However, not all teachers are not ready to teach online. Scherer et al. (2021) reported in their study that only several teachers lack the skill while others lack other factors. For example, internet coverage or adequate devices. Hence schools should provide support according to the teacher's needs.

3. Research Method

This study reviewed several papers to explore the underlining problem learners face within low-income families. The pieces ranged from 2016 to 2021 from the Google Scholar database, which also included 'grey' literature (e.g., conference proceedings). The keyword used for the search included "challenge in online learning," "challenges of e-learning," "challenges learning online," and "issues of learning online."

As seen in Table 2, there is an increase in teachers' and learners' challenges while teaching and learning online. Throughout Table 2, it is shown that technology has been a recurring problem that learners and teachers face. Technology would cover the available devices and the availability of internet connections for their usage. From 2019 onwards, the socio-economical factor has been seen to be a problem. A study by Fishbane and Tomer (2020) found that as poverty increased, the rate of internet availability decreases. As a result, learners with low socioeconomic power to afford broadband connections are most prone to fall behind or encounter new challenges in online education. Other problems such as having a negative experience, having no motivation, or lack of focus that did not accrue during the previous years are surfacing as the year progresses. This may be due to the lack of interactions with peers, which causes learners to feel isolated hence being a problem for their learning (Roy, 2021).

Table 2: The issue and challenges of online learning according to literature review

		Technology	Time	The transition from face-to-face to online	Training	Digital competence	Support	Content	Assessment and supervision	Socio-economic factor	Communication	Negative past experience	Motivation and self-disciple	Human and pets' intrusions	Compatibility	Lack of focus	Isolation and connectivity
1.	Islam et al. (2015)	x	x	x	x												
2.	Ghavifekr et al. (2016)	x	x		x	x											
3.	Johnson et al. (2016)				x		x										
4.	Kebritchi et al. (2017)		x	x				x									
5.	Ahmed et al. (2018)	x		x				x	x								
6.	Sarvestani et al. (2019)	x	x			x	x		x	x	x						
7.	Kibuku et al. (2020)	x		x	x					x		x					
8.	Kasani et al. (2020)	x	x	x	x	x	x	x	x	x	x		x				
9.	Adedoyin & Soykan (2020)	x				x			x	x				x	x		
10.	Mallick (2021)	x		x	x		x		x	x	x			x			
11.	Roy (2021)					x				x		x	x			x	x
12.	Behera & Sarkar (2021)	x				x			x						x	x	x
	Total	**9**	**5**	**6**	**6**	**6**	**4**	**3**	**6**	**6**	**3**	**2**	**2**	**2**	**2**	**2**	**2**

Besides looking into literature reviews, this study also reviewed several theories to create a conceptual framework from the existing problem. To find the suitable theory, this study searched from the same database but with keywords that include "theories of learning and technology," "learning and technology model," and "acceptance of technology in learning".

Of all the existing theories and models analyzed, this study took the Technology-to-Performance Chain model, derived from Goodhue and Thompson's task technology fit theory (1995 as cited in Huang & Chuang, 2016). This model offers a systematic depiction of the approach in which technology, user tasks, and usage influence the changes of a system. To positively impact individual performance, an information system must first be used and second be a good fit with the technology supports (Goodhue & Thompson, 1995).

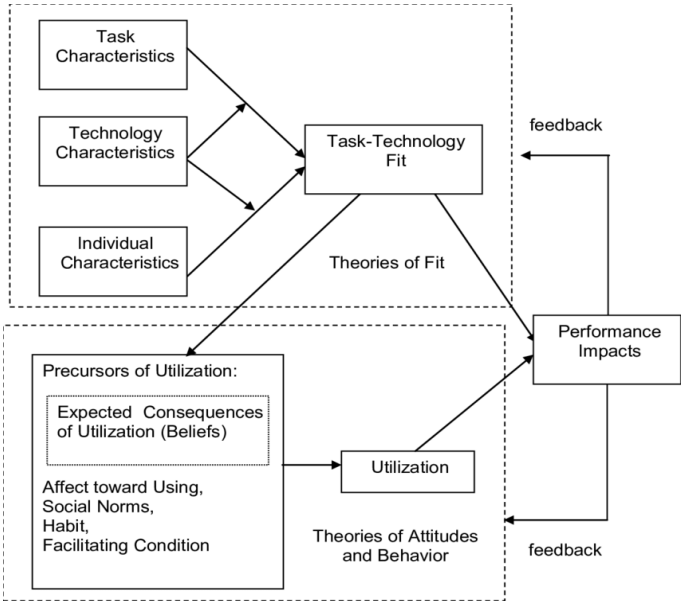

Figure 1: Technology-to-Performance Chain model
(Goodhue & Thompson, 1995)

4. Proposed Conceptual Model

Based on the challenges and the model discussed in the earlier section, this paper proposes a conceptual model of challenges that affect the interactive tools in promoting independent learning, visualized in Figure 2. This model aims to design a learning environment that is mindful of learners' challenges while using interactive tools for independent learning.

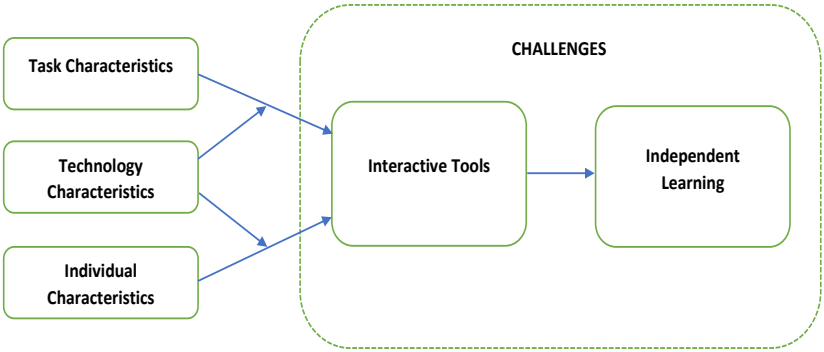

Figure 2: The Proposed Conceptual Model

4.1 Characteristics

The framework adopted the task, technology, and individual characteristics from the technology-to-performance chain model by Goodhue and Thompson (1995). Huang and Chuang (2016) explain that this model helps user and establishments with the mastery of utilization and performance impact. Task characteristic is the job requirements, technology characteristic is the technology's functionality, and individual characteristic is the abilities of an individual using said technology. Depending on the user's attitude, it affects the usage of the technology to complete the task given. The technology characteristics should cater to the task given. In addition, the characteristic of an individual to use the interactive tool will then facilitate learners' interactive learning effectively.

4.2 Interactive tools

Interactive learning is a concept that is similar to computer-based media (Firdausy & Prasetyo, 2020). Due to the benefits of using interactive tools to help teachers convey information and deliver messages to learners, teachers are known to utilize these tools to the fullest, especially for successful classroom learning (Ade Muslimat et al., 2021). These tools range from the conference platforms (e.g., Zoom, Google meet, Microsoft Team), interactive websites (e.g., Kahoot!, Quizizz, Neopod), entertainment (e.g., YouTube, Netflix, Disney Plus) to social media (e.g., Facebook, Instagram, Twitter). These tools correspond to the task, technology, and individual characteristic so that for

teachers to use the said tools, they must create a lesson that features are well suited for the class they wish to conduct.

4.3 Independent learning

Livingston (2012) states that independent learning is a process where learners control their learning. Since learners control their learning process, they should decide how they strategize their learning and have the right to choose from the available tools and resources to learn (Al Maani, 2019). Moreover, it is no doubt that interactive tools can bring out independent learning since learning does not necessarily need to be in a physical classroom (Papadakis, 2018). With the internet being readily available, learners are able to be in charge of their learning just with a click of a button. However, this invites challenges when learners are unprepared for the necessary environment and equipment (Thompson et al., 2021). Independent learning will come naturally when learners can mitigate the challenges present while using interactive tools.

4.4 Challenges

Previous papers (Ghavifekr et al., 2016; Kebritchi et al., 2017; Adedoyin & Soykan, 2020) do not deny the presence of challenges that come with the transition from face-to-face learning to going online. Students who do not have the proper environment and tools for learning online won't produce the intended results (Adnan & Anwar, 2020). According to Arora et al. (2020), challenges are unavoidable if executed wrongly. The challenges act as the moderator between the tools and independent learning in the conceptual model. As previously discussed, interactive tools can promote independent learning. However, learners cannot carry out independent learning due to their challenges in their own homes. Learners from the B40 families would encounter challenges that affect their use of the interactive tools, which hinder their practice of independent learning.

5. Discussion

Although the social distancing rule is compulsory and with advancing technology, teachers could use online sources to create meaningful and interactive learning using interactive tools. According to Raja and Nagasubramani (2018), it is impossible to survive in the current era if one lacks technology. However, learners from

the B40 families would encounter challenges for not utilizing online learning fully. Some may never even consider exploring the available online platforms when facing challenges (Singhavi & Basargekar, 2019). Hence, future studies could explore the many interactive learning materials that may help teachers adapt lessons to engage learners from the B40 income group. A further study could then use to observe teachers' readiness in conducting online classes for learners and how they mitigate the challenges faced by the learners in their studies.

6. Conclusion

This study adopted several factors from the technology-to-performance chain model from Goodhue and Thompson (1995) to understand the need for an interactive tool to be effective. It is known that interactive tools are an effective way to promote independent learning. Unfortunately, with the challenges of learners from the B40 families, they are regrettably unable to be a part of these experiences. Examples of the challenges learners may face are connectivity, lack of skill in using the tools available, or lack of device that could cater to their learning. As society transits learning from physical classes to going online, the results of this study would assist future educators and module creators in discovering better methods or strategies that would accommodate the needs and what learners lack while undergoing lessons. The proposed model can also be modified for future works that could cater to future learning environments.

7. Recommendation

The current study proposed a conceptual model that could guide educators in understanding the need for an interactive tool to be effective. However, there are several limitations that, if investigated, could improve the model.

It would be recommended that more literature research be done to fully understand learners' challenges and how educators mitigate those challenges. For example, studies on other challenges learners face from those already stated in this study. Future research may look into educators teaching styles and challenges that they may face while conducting lessons. At the same time, future studies may also research the type of interactive tools or strategies educators use when they face challenges with learners from low-income families. Besides that, investigating learners' learning styles may also help improve the current study. Finally, it would be recommended that using

a mix of qualitative and quantitative methods to collect data would capture the whole essence of the study.

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