DIGITAL POVERTY PHENOMENON AMONG B40 SCHOOL STUDENTS IN KEDAH, MALAYSIA

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ABSTRACT

The COVID-19 pandemic highlighted the essential role of information and communication technology (ICT) in education as students shifted to home-based learning from classroom learning in school. However, this transition also exposed significant disparities in ICT access, amplifying digital poverty among disadvantaged groups, particularly B40 households in rural Malaysia. This study examines digital poverty among B40 school students in Kedah focusing in three rural districts by exploring its categories, contributing digital poverty factors among the school students, and students' perceptions of technology in online learning. A qualitative research design was adopted, involving structured interviews with 55 students from rural schools in Baling, Sik, and Pulau Tuba, Langkawi. The findings indicated that digital poverty among B40 students is driven by limited access to digital tools, unreliable internet connectivity, low ICT literacy, and economic challenges especially within financial problems. These barriers hinder students' learning experiences, emphasizing the stark disparities in ICT adoption between rural and urban regions. While online learning holds a significant potential, students' perceptions of its effectiveness remain moderate, largely due to inadequate infrastructure and insufficient preparation. The study underscores the urgent need for targeted interventions to combat digital poverty issues including enhancing the school ICT infrastructure, providing affordable digital tools for students, and fostering digital literacy among the students. These initiatives are crucial for ensuring equitable access to education and supporting Malaysia's progress towards becoming a digitally inclusive society. The findings provide actionable insights for policymakers and digital stakeholders in developing strategies to bridge the digital poverty, particularly for vulnerable student populations.

Keywords: Digital poverty; B40 students; Online learning; ICT access; Rural education

ABSTRAK

Pandemik COVID-19 telah menyerlahkan peranan penting teknologi maklumat dan komunikasi (ICT) dalam pendidikan apabila pelajar beralih kepada pembelajaran di rumah dari pembelajaran di sekolah. Walau bagaimanapun, peralihan ini turut mendedahkan jurang yang ketara dalam akses ICT, meningkatkan kemiskinan digital dalam kalangan kumpulan yang kurang bernasib baik, terutamanya isi rumah B40 di luar bandar Malaysia. Kajian ini mengkaji kemiskinan digital dalam kalangan pelajar sekolah B40 di Kedah dalam tiga daerah dengan meneroka kategori, faktor penyumbang kepada kemiskinan digital dalam kalangan pelajar, dan persepsi pelajar terhadap teknologi dalam pembelajaran dalam talian. Reka bentuk penyelidikan kualitatif telah diguna pakai, yang melibatkan temu bual berstruktur dengan 55 pelajar dari sekolah luar bandar di Baling, Sik, dan Pulau Tuba, Langkawi. Penemuan menunjukkan bahawa kemiskinan digital dalam kalangan pelajar B40 berpunca daripada akses terhad kepada alat digital, ketersambungan internet yang tidak stabil, celik ICT yang rendah, dan cabaran ekonomi. Faktor ini menghalang pengalaman pembelajaran pelajar, menekankan perbezaan ketara dalam penggunaan ICT antara kawasan luar bandar dan bandar. Walaupun pembelajaran dalam talian mempunyai potensi yang ketara, persepsi pelajar tentang keberkesanannya kekal sederhana di mana sebahagian besarnya disebabkan oleh infrastruktur yang tidak mencukupi dan persediaan yang tidak mencukupi. Kajian ini menekankan keperluan kepada intervensi yang bersasar dalam memerangi kemiskinan digital termasuklah meningkatkan infrastruktur ICT, menyediakan alat digital mampu milik dan memupuk celik digital. Inisiatif ini penting untuk memastikan akses pendidikan yang saksama dan menyokong kemajuan Malaysia ke arah menjadi masyarakat yang inklusif secara

digital. Penemuan ini menawarkan pandangan yang boleh dilaksanakan untuk penggubal dasar dan pihak berkepentingan digital dalam membangunkan strategi untuk merapatkan jurang kemiskinan digital, terutamanya bagi populasi pelajar yang terlibat.

Kata kunci: Kemiskinan digital; Pelajar B40; Pembelajaran dalam talian; Akses ICT; Pendidikan luar bandar

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CHAPTER 1: INTRODUCTION

1.0 Background of the Research

The recent COVID-19 pandemic has resulted in a tremendous increase in Information and Communication Technology (ICT) usage and highlighted the importance of the Internet and technology within the education sector due to the nationwide lockdown and social distancing norms (Reza et al., 2021). Given that students must adapt their learning using ICT for home-based learning, ICT adoption has become part of their daily lives. The rapid adoption of modern and advanced ICT following the Fourth Industrial Revolution (IR 4.0) further increases the learning situation for students (Sidin et al., 2020).

Hence, the Malaysian government implemented the Movement Control Order (MCO) resulting in new norms in the aspect of education in March 2020 (Razak & Rusli, 2022). School students need to correspond to government rules by adapting themselves to their learning- online or home-based- using ICT, to ensure that they can continue to have access to education (Ohtman et al., 2020). However, the exponential increase in ICT during the COVID-19 pandemic exerts some negative impacts towards online learners, especially those belonging to vulnerable communities. Nurhani et al (2023) reports that in 2020, the digital poverty rate increased from 5.6 percent in 2019 to 8.4 per cent. Malaysiakini (2023) notes that based on the Department of Statistics Malaysia, the absolute digital poverty rate had reached 6.2 per cent in 2022. It is also discovered that 75% of the Malaysian population lives in urban areas, and 30% of them are classified as being 'digitally poor.'

Malaysian education systems have been disrupted, reinforcing the societal divide between those who have access to online learning and those who do not. Youth,

especially from vulnerable communities, face two main issues; a lack of digital infrastructure, and home environments that are not conducive to learning. The digital poverty includes lack of access to devices (smartphones or laptops) with stable Internet to support their online learning. Malaysian government has made certain initiatives to assist students in dealing with this issue. In April 2020, the government introduced the educational TV program also known as Kelas@rumah (Mukundan, 2021). These courses began as an alternative for school students who were unable to access the Internet. Thus, household TV penetration is higher (about 92%) than Internet penetration (roughly 83%), however many households from B40 income status have neither. They experience limitations to education facilities, healthcare, and daily necessities as they have no source of income during the COVID-19 pandemic.

Disadvantaged people in Malaysia tend to be called the B40 group, implying that they earn the bottom 40% of their monthly income in Malaysia. These households are the most disadvantaged and are considered poor in the country (Mohamed et al., 2021). Typically, they earn below RM5000 monthly, lower than the Malaysian average household income at RM7,111 (Department of Statistics Malaysia, 2023). These people live in rural regions since their ICT percentage usage is at 89.1% compared to those residing in urban areas (ICT percentage usage at 98.1%). This shows that disadvantaged people especially those from the B40 income status are falling behind in terms of ICT access in learning. Therefore, further analysis has been conducted, leading to a striking reality- that there emerges digital poverty within the Kedah region since it is a region that has low Internet penetration, poor ICT usage during online learning within youths and the lowest rank in terms of the mean for the household income. Despite numerous barriers, these youths interviewed remain hopeful about their future. They stated that the COVID-19 pandemic has taught them to acquire

resilience, adapt to changes, and deal with adversities. Therefore, the research found that the role of ICT usage within school students, especially those within B40 income status is very important to lessen the gap of digital poverty in Malaysia. This research can help Malaysian educational authorities to lay out sound and effective solutions to address this pressing digital poverty issue.

1.1 Problem Statement

One of the main issues faced during MCO is the digital poverty, particularly affecting the academic continuity for school students from the B40 income status who struggle in accessing online learning due to poor Internet connection and limited access to ICT resources (Amini et al.,2024). On the other hand, Malaysia is still undergoing the process of becoming a developed country; a circumstance that has sparked concern among some scholars. If digital poverty issues are not addressed and fixed properly, the country may fall even farther behind in the development of global digitalization (Reza et al., 2021). For example, through the research such as (Chung et al., 2020) concentrating on the tech-deprived, and Adams et al., 2018, highlighting that exceptionalism results in diverse digital inequalities, this inequality actually hinders online learning efficiency and causes extra educational disadvantages for many students.

In addition to poor ICT access, the abrupt shift to online learning has thrown some light on the digital poverty levels, ICT availability and ICT literacy among students. For instance, the existing research indicate that people with higher income (Eynon & Malmberg, 2020; Mohamed et al., 2021) or higher educational level (Scheerder et al., 2019; Ibrahim & Othman, 2022) are more likely to benefit from the use of ICT in learning since they have all the resources adequately. Many disadvantaged students

cannot afford to purchase a smartphone for online learning purposes and reliable Internet connection since those are prohibitively expensive (Azar, et al., 2022) and this statement was supported by Department of Statistics Malaysia (2023). Malaysians who live in urban areas use computers 98.1% more frequently than those who live in rural areas at 89.1%. Other findings from a survey led by the Ministry of Education (MOE) in Malaysia found that 37% of students (including pre-primary, primary and secondary) do not have digital devices and only 6-9% of students owned a personal computer/laptop (Hamid & Khalidi, 2020). Nonetheless, the devices in itself will not help, if the problem of poor Internet connection did not solve properly. It shows that disadvantaged people have fallen behind in terms of access to ICT. Moreover, the lack of access to ICT may affect their population segment, whether driven by economic poverty or other conditions that make it difficult for them to use ICT for learning (Barrantes, 2014). This lack of preparedness was a significant obstacle during the pandemic, as there was limited access to the necessary tools and infrastructure that warrant successful online learning.

Furthermore, studies on online learning have become prevalent after the pandemic, such as the effectiveness of several online teaching styles that impact higher student performance (Tang et al., 2020), students' perceptions of online learning (Baczek et al., 2021), and students' learning environment throughout the outbreak (Suryaman et al., 2020). The pandemic also draws everyone's attention to the effectiveness of online learning methods compared to the traditional face-to-face classroom learning. A study conducted by (Sundarasen, et al., 2020) revealed that during the extended period of online learning, disadvantaged students commonly face stress and anxiety as their main struggle during online learning; as noted by (Magid et al., 2023), the emotions of feeling 'isolated' further contributed to digital poverty. Due to the absence of face-

to-face interaction with peers and teachers, students not only became less social but also had a decrease in motivation that affected their learning. Since students were not together in a classroom, this made them less likely to be engaged with their learning and it is difficult for an individual to study alone at home without proper guidance. This shows that students encountered a variety of difficulties when learning at home and perceived technology as a nuisance to their learning since they lacked the tools, that they are ICT-illiterate, and that they have a limited Internet connection.

At a systematic level, the pandemic has highlighted the need for policy reforms in the Malaysian educational sector. Mokhtar and Baharin (2024) emphasized that the COVID-19 pandemic brought attention to issues concerning equal access to ICT and the readiness of schools to embark upon a large-scale shift to digitalization. It is important to have policies that support the development of appropriate ICT tools, ICT literacy and skills, provide training for educators on online teaching method and create a curriculum that considers the mental health of disadvantaged students during online learning. Thus, this research aims to study digital poverty category, factors and B40 school students' perceived ICT in online learning. It aims to provide data-driven insights into the interest of disadvantaged students to use appropriate online learning platforms and aid in the upcoming policies and strategies to enhance digital education by improving ICT availability, literacy and positive perceptions toward ICT, and ensuring the continuity of online learning in education.

1.2 Research Question

This research aims to study digital poverty among B40 school students in three chosen rural districts in Kedah which are Sik, Baling and Pulau Tuba, Langkawi. Therefore, the following research questions that have been constructed for this research are:

1. How can digital poverty among B40 school students be categorized?
2. What are the factors of digital poverty among B40 school students?
3. How do B40 school students perceive ICT in online learning?

1.3 Research Objectives

This research intends to spread awareness among the federation, policymakers, or digital-related organizations so that they can help the groups which are really in need of ICT for their online learning purposes. Thus, to achieve this intent, the objectives of this research are as follows:

1. To determine the categories of digital poverty among B40 school students.
2. To identify the factors of digital poverty among B40 school students.
3. To investigate how B40 school students perceive ICT in online learning.

1.4 Significance of the Research

The findings in this research are expected to help in improving the understanding of theoretical and practical perspectives and providing critical data and knowledge for digital poverty issues.

Theoretically, this research adds to the understanding of the variables deployed from personal demographics such as age, job position, level of educational attainment and the size of the household which is relevant to distinguish the various digital

poverty categories among B40 school students. Therefore, this research is using the Van Dijk's Theory of Digital Divide to be perpetuated throughout the entire research process of accessing and using ICT in education (Pick & Sarkar, 2016). The core of this theory is important because the demographics of these disadvantaged students have led to the digital divide (Dijk, 2000). This research will provide an understanding of the category, factors, and students' perceived technology in their online learning using Van Dijk's theory, which will be used as a benchmark in developing a model for digital poverty.

Practically, based on the combination of the construct from the previous literature regarding digital poverty, the findings of this research are expected to help the communities understand how the implementation and development of ICT will affect the educational sector, particularly among B40 school students. A good understanding among the government and policymakers may help raise public awareness about the extent of digital poverty in Malaysia, especially in the chosen district of Kedah. It will provide a platform of assistance that could be of interest to other organizations that share the same characteristics related to ICT in developing effective strategies to influence ICT usage in Malaysia, as well as opening new research opportunities in various fields such as ICT governance legislative measure, economics, finance, and other fields that may be involved.

1.5 Scope of the Research

This research focuses on digital poverty issues during online learning among B40 school students, especially in primary and secondary schools in chosen districts in Kedah, Malaysia. The research scope has been limited to three rural districts which are Baling, Sik and Pulau Tuba, Langkawi because this area requires development support

and attention according to Kedah Education Department or *Jabatan Pendidikan Negeri Kedah* (JPNK) and Higher Learning Ministry or *Kementerian Pendidikan Tinggi* (KPT) records. These areas have limited access to Internet due to their geographical limitations which renders the disadvantaged students unable to fully utilize ICT during their online learning (Hamzah & Ahmad, 2020). Moreover, these three areas have many schools with less than 100 students, according to Kedah District Education Office (PPD).

A qualitative approach is used in this research and employs a purposive sampling technique using one-on-one interview for data collection since the schools have limited number of students and they need to collect data based on their reactions, opinions, beliefs and experience for further analysis. Informants are school students with B40 income status and they will be chosen randomly by their respective school. Informants were interviewed separately on a structured way using a standardized set of questions that resonates with the research objectives.

1.6 Limitation of the Research

This research has met certain limitations during the writing process which are; time constraints, lack of previous studies and the limitation in the scope of discussion.

Due to time constraints, each interview session was restricted to approximately 20 minutes to accommodate the study timeline and logistical considerations. These constraints may limit the comprehensiveness of the findings, but every effort was made to ensure that the selected areas and interview sessions provided meaningful insights relevant to the study's objectives.

Attempting to compensate for the lack of previous studies, the research focus rests mainly on digital poverty particularly within Malaysia context. Due to the lack of

previous studies, the research focuses primarily on digital poverty in Malaysia. However, there are research that can be used as a reference because most thorough studies shed light on foreign countries and address issues surrounding digital divide. Digital poverty is an emerging and comprehensive subject which demands additional research.

Additionally, this study was conducted in selected rural areas within Kedah, given the constraints of time and resources. Due to these limitations, not all rural areas could be included in the scope of the research. The selection of study areas was based on the recommendations provided by the *Jabatan Pendidikan Negeri Kedah* (JPNK).

1.7 Definition of Key Terms

To facilitate the understanding of this study, the following terms are defined:

1. COVID-19. An infectious virus spillover from an intermediary animal host into the human population. It spreads primarily from person to person through small droplets from the nose or mouth, expelled when a person with COVID-19 coughs or sneezes (World Health Organization, 2021).
2. Movement Control Order (MCO). Partial lockdown, signifies a major step taken by the Malaysian Government to contain the COVID-19 pandemic. It prohibits mass movements and gatherings at all places nationwide including religious services, and it demands the closure of all business premises except manufacturers, suppliers, retailers, and food outlets. Learning institutions of all types at all levels were closed in addition to all government and private premises (Wiss, 2020).
3. B40 Income Status. Refers to the bottom 40% of their monthly income in Malaysia. These households are the most disadvantaged and poor in the country (Mohamed et al., 2021). There are four crucial income categories of B40 income status, which

are B1 (earning less than RM2,499), B2 (earning less than RM3,169), B3 (earning less than RM3,969), and B4 (earning less than RM4,849). Typically, they earn below RM5000 monthly, lower than the Malaysian average household income at RM7,111.

4. Malaysian Communications and Multimedia Commission (MCMC). MCMC regulates and promotes the development of the communications and multimedia industry which includes telecommunications, broadcasting, and online activities, postal services and digital certification (Nor, 1998).

1.8 Organization of the Research

There are five (5) chapters in this research. The research background, problem statement, research questions, research objectives, the significance of the research, scope of the research, limitation of the research and research organization are all covered in the first chapter, which is introductory in nature. The second chapter is a study of literature, which assesses and employs the works of other scholars on the relevant topic, their methods and techniques, and the scholars' opinions on their perspectives on digital poverty issues in the education sector. The third chapter on research data focuses on research methodology. The fourth chapter focuses on the data analysis and findings from the informants, while the fifth chapter discusses the research findings. Last but not least, the sixth chapter ends with the inevitable conclusion of the research.

CHAPTER 2: LITERATURE REVIEW

2.0 Introduction

This chapter provides an overview of previous studies on digital poverty issues. This is more comprehensive research that intends to explore the definition of digital poverty, the underpinning theory, the digital poverty level, the determining factors of digital poverty, Malaysia B40 Income Status, the digital poverty situation within the Malaysian education and the initiatives by the Malaysian government regarding digital poverty issues. This chapter then concludes with a summary.

2.1 Definition of Digital Poverty

Bornman (2015), stated that "*by the end of the twentieth century, societies all over the world needed transformation. The changes represent the beginning of the information age*". The phrase means that ICT is crucial in social, political, economic and educational aspects of modern societies. Hence, the MCO during the COVID-19 pandemic has fully made use of the Internet and regarded ICT as an essential need for daily life, unfortunately with students being forced to adapt in online learning, thus possibly unintentionally exacerbating the digital poverty issues further amid the improper measure and approach (Aissaoui, 2021).

Digital poverty is a global issue characterized by the lack of access to ICT, primarily facilitated by the use of ICT for daily usage. Therefore, scholars from across the world have offered several definitions of digital poverty terms with ICT as a primary usage, which is as stated in Table 2.1 below:

Table 2.1
Definition of Digital Poverty

No.	Author (Year)	Definition of Digital Poverty
1.	Mariscal & Galperin (2006)	A concept that seeks to grasp the multiple dimensions of inadequate levels of access to ICT services by people and organizations, as well as the barriers to their productive use.
2.	Barrantes (2007- 2014)	The lack of goods and services based on ICT. The lack of goods and services can, at the same time, be analyzed from two different perspectives. One is ICT demand in the marginalized sectors, and two, is the low-income or economically poor people lacking ICT.

3.	Hernikawat et al. (2016)	The limitation of access and use of digital technology caused by economic factors by not having the ability and knowledge to use technology (illiterate).
4.	Susanto (2018)	The lack of not only digital access but also knowledge or skills in using ICT.
5.	Allmann (2021)	The inability [of individuals] to interact with the online world fully, when, where, and how an individual needs to. It exacerbates and is exacerbated by other socio-economic, educational, racial, linguistic, gender, and health inequalities. It is both the product and the cause of other forms of socio-economic disadvantage.
6.	Shahren et al. (2021)	It is a situation where the person has limited devices to access the Internet and low access to an Internet connection where they may face limited learning resources and tools such as computers and Internet access.
7.	Ibrahim & Ohtman (2022)	Characterized as social practice, with the use of various digital technologies, involving reading, writing, and multimodal interpretation.
8.	Salleh et al. (2023)	The absence of access to, and proficiency in, information and communication technology among individuals in underserved and marginalized communities.

According to the viewpoints above, digital poverty can be summarized as a lack of both cognitive and physical access to ICT. Digital poverty may also be termed as an inability to fully engage with the digital world when, where, and how one needs to. The gaps in age, health, racial or ethnicity, education, and socioeconomic status are also becoming more severe as a country becomes more developed, which causes the digital poverty issues to worsen. The digital poverty issues are the result of the forms of socioeconomic disadvantage after the outbreak. Therefore, it is important to address the needs of a person in ICT especially within education.

2.2 Underpinning Theory

The theory of digital divide of Jan A.G.M Van Dijk was developed over a seventeen-year period, culminating in full presentation and explanation in book form (Dijk J. V., 2005). The fundamental theory describes that those inequalities of personal position and background will result in the inequalities in ICT resources and access. The digital divide is perpetuated throughout the entire process of accessing and using ICT within the society. The model steps assess the varying categories for each individual, which leads to other factors for digital inequalities. The full model is shown in Figure 2.1 below:

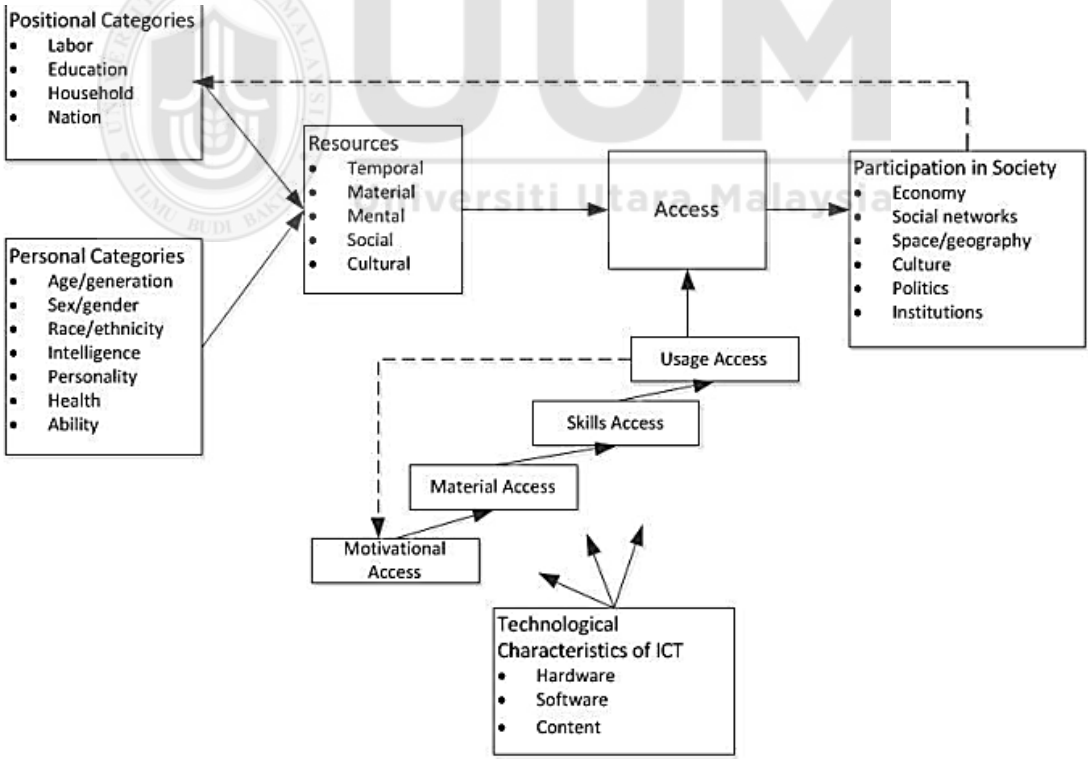

Figure 2.1
Theory of van Dijk for Digital Divide
Source: Dijk J. V., 2005

The individuals' personal and positional categories are indicators known in the digital inequalities literature which influence the ICT access and usage. These categories under the van Dijk's theory contribute to inequalities in digitally-related literature for scholars such as Pick & Nishida, 2015; Afzal et al., 2023 and Aissaoui, 2021. Personal categories are thought to influence ICT resources as well. Individual factors such as age, gender, knowledge, and health can influence the extent to which ICT resources are used. For example, knowledge resources availability would be different for youths versus elderly people. The personal categories can contribute to the amount of time available for ICT activities based on their age and gender.

The imbalance of the combined personal and positional categories will impact the amount of ICT resources used or accessed by an individual. Hence, the resources including time, material, social, culture and knowledge mental health are also unevenly distributed (Pick & Sarkar, 2016). According to the theory, unbalanced ICT resources combined with limited access to ICT will result in a variety of factors that contribute to digital inequalities in the society, including usage, skill, material, and motivational access. These access requirements are linked to technological aspects of ICT, such as the availability of hardware, software, and ICT content. If the resources, access, and technological characteristics of ICT are not fully utilized, the society would suffer from digital inequities. In the context of digital poverty, this concept can serve as a framework to develop a conceptual model.

Furthermore, once the overall access is attained, the access will lead to societal impacts which include the impacts on education, economy, politics, cultural aspects, and through the social networking within geographical locations (Meinrath et al., 2013). This theory is more complex, as it emphasizes digital divide as an individual characteristic in the process of gaining ICT resources and access. The determinants of

digital inequalities can be traced through this theory to several possible aspects. For example, a positional aspect might be a barrier all along the way in ICT access, such as a student in a rural area would have less ICT access than the students living in an urban area. Regarding the ICT base characteristics, disadvantaged students especially from the B40 income status might not be able to afford 5G smartphones or a full-featured laptop for learning. Thus, the digital poverty issues can further be reinforced by using this theory with positional and personal inequalities taking the credit as the starting point for the research findings.

2.3 Digital Poverty Level

The concept of digital poverty became widely recognized after a study published by Barrantes in 2007 entitled 'Analysis of ICT Demand: What is Digital Poverty and How to Measure It?'. Digital poverty, as defined by Barrantes in 2007, refers to the lack of access to ICT for certain populations due to the economic or other factors. It can be categorized into four groups: those with low incomes or disadvantaged skills, those with basic ICT skills, those with a lack of demand for ICT, and those who consider ICT unnecessary. It is perhaps eye-opening that despite having access to technology, some individuals choose not to use it.

Taking this classification into account, marginalized groups with low income are not the only ones who are digitally poor. Therefore, four levels of digital poverty have been identified, as indicated in Table 2.2 below:

Table 2.2
Description of Digital Poverty Levels

Level	Variables	Description of Examples

I	Low-income people that have poor socioeconomic situations and who are dealing with various obstacles that prevent them from using ICT even if it is minimal.	Restrictions in buying physical access such as smartphones, laptops, tablets to help them during digital days, ICT illiteracy and supply restrictions such as no electricity, no Internet access and limited skills in using ICT.
II	Low-income people that have poor socioeconomic situations but have the knowledge and skills in using ICT.	Restrictions in buying physical access and supply restrictions but they are ICT-literate (knowledge and skills)
III	Low-income people that have poor socioeconomic situations and do not want to use ICT despite having the knowledge and skills.	Restrictions in buying physical access and supply restrictions but they are ICT literate (knowledge and skills) but do not feel the need to use the ICT.
IV	People that have no socioeconomic problems and feel that there is no need to use ICT.	Mostly consist of older people, different cultures, the generation gap, and geographical situations.

Source: Barrantes, 2007

Digital poverty is closely related to people with unfulfilled basic requirements in doing their tasks (for example within education, students that did not have adequate ICT tools to assist them in doing their homework during online learning). People that do not meet their ICT basic needs are considered as digitally poor. Barrantes emphasized that the willingness and seriousness with which low-income individuals utilize ICT is another piece of evidence that these issues must be addressed further, especially the factors that cause digital poverty.

2.4 Determining Factors of Digital Poverty in Digital Learning

The issue of digital poverty is pressing in the context of household income, and the effects of COVID-19 outbreak have further accelerated the digitalization of the modern economy (Aissaoui, 2021). The lockdown during the outbreak has made the use of the Internet even more essential to daily life with students forced to take lessons online. Hence, careful considerations by educators, the government or other organizations related to ICT should be in place for a successful expansion of online learning for students, especially those living in rural areas with the lack of resources (Azhar et al., 2021). There is a number of factors that contribute to digital poverty in general namely physical, knowledge, social and economic factors.

2.4.1 Physical Factors

Subsequently, the physical factors of digital poverty in education can be divided into three aspects which are Internet access, hardware and software accessibility, and the ability to create an adequate learning environment within the student's household (Barrantes, 2007; Liao et al., 2016; Rossler et al., 2017; Mohamed et al., 2021). These three aspects have an impact on the online learning process to further ensure that students can perform well. However, low-income households and the government were unable to meet every student's physical needs sufficiently when the COVID-19 outbreak caused the closure of schools. They are still falling short in providing their children and students with the comfort, convenience, and requirements conducive for learning online (Sarimah, 2021).

Digital poverty among students occurs because of the lack in hardware and software access, for example, smartphones, laptops, and tablets related to ICT tools

(Mohamed et al., 2021). The inability of households to purchase tools for their children is one aspect that contributes to digital poverty because the children do not have any tools that can help them access online learning classes. Some of the households will have to share their available tools with their siblings and parents, altogether hindering them from studying properly (Ali et al., 2024). During COVID-19 outbreak and its aftermath, a lot of parents use their personal computers or smartphones to work from home. If there is only one study tool within their household, choosing between earning money is more important than buying new expensive study tools for their children to learn (Rakib et al., 2022). Therefore, parents will choose the option that will allow them to support their families with daily necessities rather than supporting their children's learning and well-being.

Furthermore, Internet connection is one of the aspects that contributes to digital poverty among students for their online learning. The effectiveness of Internet connection at home for educational purposes is influenced by the quality of ICT tools, updated software and reliable Internet rates in line with prior studies (Dawood et al., 2019; Hanafi et al., 2024). Students would be hindered from attending classes using online learning platforms if their Internet connection was unstable because of the low bandwidth or low megabytes (for example, Google Meet, Webex, Zoom) since those platforms require a strong reliable connection (Omar et al., 2021). If problems surrounding the local service provider bandwidth arise because of lags and glitches, this also causes educators to have a problem delivering their lessons, and as a result, online classes cannot be implemented properly (Basar et al., 2021).

Moreover, the lack of a learning environment for students' online learning within their household is also one of the reasons that leads to digital poverty. Some students might not be able to participate in online classes because of discouraging house

environment, especially if they come from poor households (Dijk, 2000). During the outbreak, students frequently live with their families and participate in online learning at the same time. As another example, students from resourceful households can use the fast-track Internet and learn in a study room with a complete set of facilities, compared to students born in a poor household with limited resources and facilities. For example, poor students may be learning on the floor since their house cannot afford tables and chairs for their studies and they may also be learning in a non-conducive environment (Voorhis et al., 2013). They are also under pressure with their house location, where it can be difficult to access an Internet, and this discourages poor students from continuing their studies online (McKie, 2020).

However, not all parents can adequately provide ICT tools and Internet requirements at home, which makes it difficult to adapt to this new norm to progress easily and effectively (Mohamed et al., 2021). This is due to the existence of limitations from parents, particularly those who come from a poor family background with only enough money for daily necessities such as food, and this will undoubtedly further lead to the difficulty in having to provide their children with ICT tools or facilities.

2.4.2 Knowledge Factor

Knowledge is crucial when it comes to ICT, a concept that must be considered seriously before implementing or changing the education system. According to Ghavifekr et al. (2016), ICT literacy and skills is defined as an individual ability to utilize ICT for daily needs. Students who experience digital poverty typically have a low level ICT literacy and skills since they do not have enough resources. It requires more than just owning a device and having Internet access since students also need to

be able to use ICT tools (cognitive understanding and skills utilizing the ICT). For example, copying or moving a file, saving a document, or sending an email, etc which are all related to digital literacy and skills (Hanafi et al., 2024).

It will undoubtedly be challenging for students who are ICT illiterate to adjust to the changing times which necessitate technological skills for learning (Gina et al., 2019). However, if neither the educator nor the students have a strong understanding and skills of ICT, it will be difficult for them to carry out online learning during class because the entire learning session and activities must be performed and submitted online (Mohamed et al., 2021). It is thus, important to be literate in ICT.

In addition, online learning trains students to be more independent while requiring them to think critically, creatively, and intellectually. Given these circumstances, online learning requires a deeper analysis than just comprehension and concentration (Dede, 2014). As a result, students must be knowledgeable in using ICT to ensure that online classes for learning may proceed successfully and efficiently.

2.4.3 Social Factor

The concept of motivation and emotional support or physiology is largely influenced by attitudes towards ICT, which are essential for implementing ICT into students' learning (Gerli et al., 2022). Negative attitudes, such as technology anxiety make it less likely that students will use the ICT tools and lead to them feeling pressured academically (Fu, 2013). The definition of academic pressure is when students are stressed when it comes to meeting and obeying certain requirements during learning, resulting in an unfavourable circumstance that does not make them happy (Ibrahim & Othman, 2022). Things that affect their well-being during the learning process can also induce anxiety.

In this case, anxiety during online learning is expressed by avoiding ICT, complaining about it and how it affects their education, and trying to spend as little time digitally as necessary (Mohamed et al., 2021). Therefore, motivation and emotional support especially support from their parents, educators, and among their peers is essential for students when they encounter challenges when learning online, particularly during the COVID-19 outbreak (Chiu et al., 2021).

Furthermore, since there is a physical distance between the students and their educators during online learning following the implementation of MCO, social aspects are a must for the students as they can seek support and guidance for learning (Ibrahim & Othman, 2022). Despite being geographically separated, students communicate with educators through a variety of platforms and media, including the social media, email, phone calls, and other methods (Zainudin et al., 2023). Limited support from educators will affect them emotionally and physically, especially if they need support.

Moreover, motivated and fully supported students tend to have good learning outcomes and develop an enthusiasm for studying, claimed Azhar & Adnan (2022). A student lacking in motivation may reduce their anticipation for learning online and influence their academic performance. Students must obtain additional moral support from others in order to remain enthusiastic and motivated to continue their online learning, as they are forced to explore unfamiliar, and unknown knowledge. Online learning increases the risk of mental tension and anxiety (Ibrahim & Othman, 2022). As this implies, it is critical to address this issue completely.

2.4.4 Economic Factor

The outbreak of the COVID-19 also caused most of the society to experience financial problems, especially for poor households and this further affected their children's

online learning (Mohamed et al., 2021). Although the overall household income may seem considerable, numerous people in poor income groups have had a certain degree of financial collapse during the outbreak (Digital Poverty Alliance, 2022). Consequently, households dealing with such problems would find it difficult to meet their children's needs in terms of ICT tools, Internet connection purchases, and other things related to online learning (Ibrahim & Othman, 2022). Daily necessities (for example, food) become their priority instead of using the money to cater for their children's learning needs. The financial difficulties that a poor household faces inevitably contribute to learning difficulties for students because their financial situation has become unstable and limited (Norazlan et al., 2020).

People expected that households with high incomes would have multiple tools and peripherals owned by students, compared to people with lower incomes. They would logically have more tablets, laptops, and smartphones. They also have more educational resources. Students from lower income households are more likely to own second-hand tools and deal with old hardware and software issues (Barrantes, 2007). Similar scenarios arise in the context of Internet subscriptions, which are probably more expensive for households with lower incomes to afford. Students with lower income households only have limited Internet megabytes or poor Internet speed (Eynon & Malmberg, 2020).

Subsequently, those disadvantaged students become digitally excluded from their learning since they no longer have access to their online classes. Fortunately, the Malaysian government has been supplying all users with 1GB of Internet access per day beginning April 1 (Gong, 2020). However, due to geographical constraints, some students have been unable to access the Internet (Azlan et al., 2021). Unfortunately, while technology and facilities are available, they are not of a satisfactory level for

these poor students to use, as online learning requires not just Internet access but also a high-speed Internet connection (Copeland et al., 2020) . Hence, those from the B40 income status in Malaysia may be one of the most affected.

2.5 Situation of Malaysia B40 Income Status

Many school students in Malaysia are living in poverty as they come from B40 income status (low-income) households and live in rural areas (Bakar et al., 2023). They depend only on old tools that naturally cannot support fast-speed Internet access and are not suitable for online learning purposes (NC Broadband, 2023). They also may not have either the Internet or ICT tools to help them with their online learning and have difficulties in adjusting to new learning environments, simply due to the lack of access (Reddick et al., 2020).

Moreover, B40 stands for the bottom 40% of household income in Malaysia, M40 for the middle 40%, and T20 for the top 20%. The B40 income range for 2024 has not yet been updated. Following the general results of the most recent survey, shown in Table 2.3, Department of Statistics Malaysia (2023) revised the income criteria for the B40, M40, and T20 household groups. It is established that many B40 income status households that live in rural areas do not earn above RM2000 per month.

Table 2.3
Income Range Group in Malaysia

Year	B40	M40	T20
2022 - recent income range	Less than RM4,849	Less than RM10,959	More than RM15,039

Source: Department of Statistic Malaysia, 2023

The mean of the monthly household gross income by strata, and the state in Malaysia from 2012 until 2019 shows that there is a wide gap between urban and rural areas with RM8,635 in urban, and RM5,004 in rural areas. In other words, there is a RM3,631 difference, which is as shown in Table 2.4 below.

Table 2.4
Mean of Monthly Household Gross Income by Strata and State, Malaysia

Malaysia	2012	2014	2016	2019
Strata				
Urban	5,742	6,833	7,671	8,635
Rural	3,080	3,831	4,359	5,004
State				
Johor	4,658	6,207	6,928	8,013
Kedah	3,425	4,478	4,971	5,522
Kelantan	3,168	3,715	4,214	4,874
Melaka	4.759	6,046	6,849	7,741
Negeri Sembilan	4,576	5,271	5,887	6,707
Pahang	3,745	4,343	5,012	5,667
Pulau Pinang	5,055	5,993	6,771	7,774
Perak	3,548	4,268	5,065	5,645
Perlis	3,538	4,445	4,998	5,476
Selangor	7,023	8,252	9,463	10,827
Terengganu	3,967	4,816	5,776	6,815
W.P Kuala Lumpur	8,586	10,629	11,692	12,257
W.P Putrajaya	8,101	10,401	11,555	12,840

Source: Department of Statistics Malaysia, 2022

According to Department of Statistics Malaysia (2022), urban Internet users have outnumbered the rural Internet users by 98.1% (urban) and 89.1% (rural), indicating that rural areas have fewer infrastructural and digital facilities and poorer access. Despite Malaysia's score card of 96.0% of households having Internet access, the issue of digital poverty in education persists, particularly between urban and rural areas.

The COVID-19 outbreak has majorly affected many Malaysians' incomes in 2020 and 2021. The outbreak had caused many Malaysians to move into lower-income categories, but the situation improved in 2022. Referring to Figure 2.2, the household

disposable income range, the Department of Statistics establishes that there is no change in the percentage which household income is below RM6,000, especially in the Kedah region.

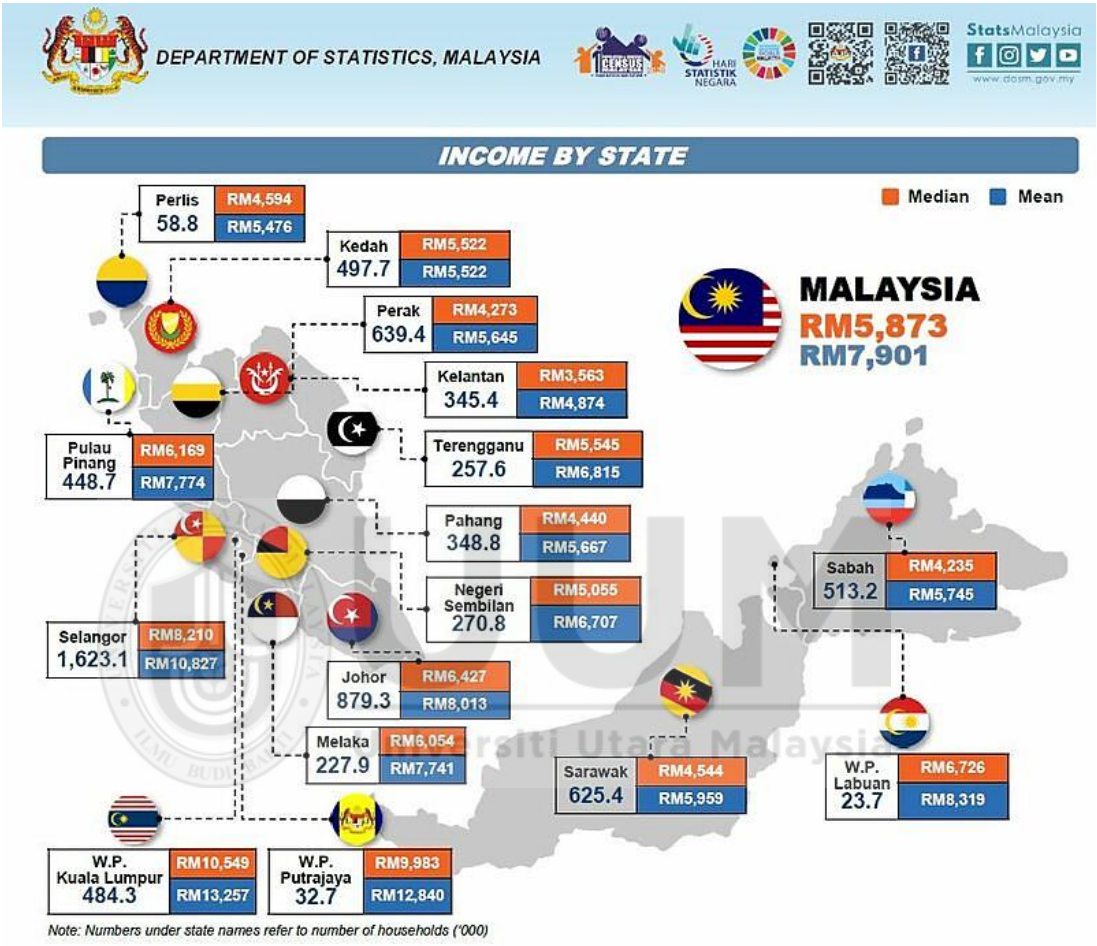

Figure 2.2
Household Disposable Income in Malaysia
Source: Department of Statistics Malaysia, 2023

Students are facing latent digital poverty issues with their online learning after the COVID-19 outbreak, which widens the gap between students who have physical access to resources such as ICT tools, and disadvantaged students who simply do not have access (for example, low-income households) (Dawood et al., 2019). Without access to the ICT tools and the Internet, students are at a disadvantage in learning

properly. They cannot participate easily in digital class or hone their skills effectively. Scholars assume that the main cause of digital poverty is inequality in terms of the access to the Internet (Azar et al., 2022; Eynon & Malmberg, 2020; Ghavifekr et al., 2016).

Another survey revealed that up to 900,000 students and 6% of Malaysian parents owned personal computers, tablets, laptops, and cell phones. Of the 36.7%, more than a third do not possess proper tools (Yoh, 2020). In order to address the inequality further, Figure 2.3 shows the data of physical access to ICT services and equipment between urban and rural areas (Department of Statistics Malaysia, 2023). It can be seen that there is a huge difference between them which perfectly describes the digital poverty in Malaysia.

Furthermore, Datin Noor Azimah Abdul Rahim, the chairperson of the Parent Action Group for Education (PAGE) Malaysia, has given a response; 'Most homes that only possess smartphones or those who have adequate Internet access may have one laptop or desktop only, which some parents may require for work', and her response has proven to be the truth (Lim, 2020). Some ICT tools are unable to facilitate online learning. Some families do not have computers or just have older models, and those who do may have a slow or unreliable Internet connection with limited bandwidth, which causes their children's online learning to be interrupted (Barrot et al., 2021). These restrictions will make it difficult for them to learn online because they lack the resources they need, like high-speed Internet connections and assistive digitals (Dawood et al., 2019). Furthermore, for schools that have relied on traditional teaching methods, transitioning to a completely new medium was not an easy task for smooth utilization (Hu, 2024).

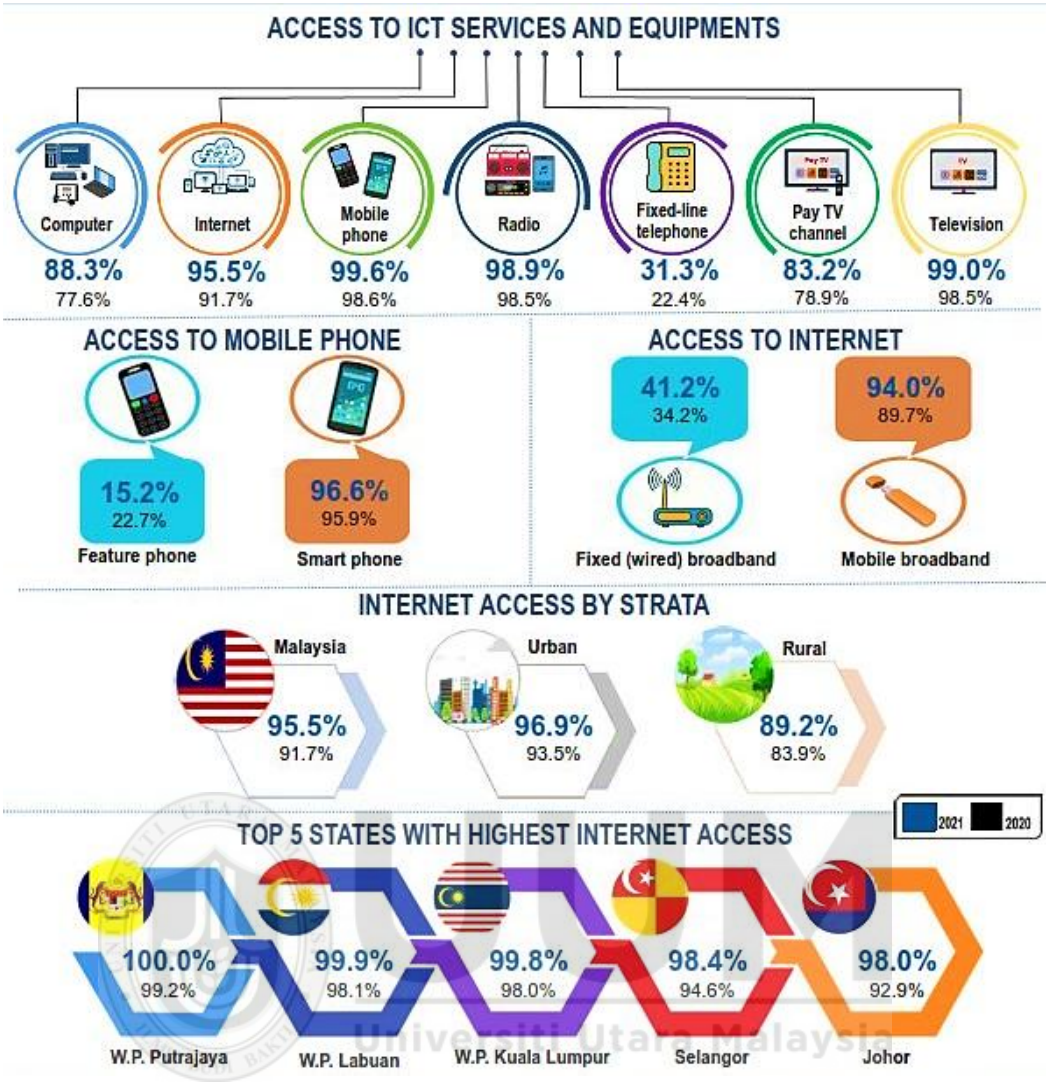

Figure 2.3
Overview of Physical Access to ICT and Internet between Urban and Rural Areas
Source: Department of Statistics Malaysia, 2023

Apart from that, digital poverty within education exists because of the fact that the lack of digital usage that school students experienced during the outbreak was influenced by the stability of their household income, which was impacted by Malaysia's high levels of the economy between the states. The cost of subscribing to a local service provider with an unlimited quota at home is roughly RM89 to RM299 per month, which is considered an exorbitant amount for them to have (Shahren et al., 2021). Thus, poor students will be hindered from engaging in online learning because

their Internet has minimal data, and thus, it is not reliable to support the online platforms (for example, Webex, Zoom or Google Classroom) that they use for learning that usually require a strong and fast Internet connection (Ibrahim & Othman, 2022).

It is undeniable that students in urban areas just have a greater chance to enjoy significantly faster Internet than those living in rural areas. For example, students that reside in Kuala Lumpur can access high-speed Internet at speeds of up to 800 megabytes per second, compared to rural regions such as Kedah, the connection is much slower, and some areas of the area do not have access to the Internet due to where they are geographically (Jafar et al., 2022). This will hinder the rural students from joining online classes properly. If local service provider bandwidth issues arise because of lags and glitches, educators' ability to conduct classes will also be affected (Das et al., 2021).

While the Internet is the key access for students to engage in digital lessons, there are multiple variables that can lead to digital poverty. For example, the lack of access to the Internet (not having sufficient megabytes and reliable bandwidth), lack of digital literacy to use the ICT tool properly, inadequate infrastructure (not having reliable electricity), lack of access to tools (such as computers, laptop, and other tools) and lack of conducive house environment for learning (IEEE, 2021), may occur for those of the B40 income status. This shows that Malaysians who live in rural areas are falling behind in terms of the access to the Internet.

Digital poverty will continue to be a barrier in the Malaysian education sector until it can bridge the inequality between rural and urban areas and there is a way to make it accessible to everyone, especially for students of the B40 status. Therefore, it is important for the government to address these factors wisely by providing suitable assistance or working together with network providers to enhance the Internet

connectivity surrounding their areas for a better learning experience for the students in rural areas.

2.6 Initiatives by Malaysian Government in E-Digital Poverty Issues

Since 2014, the Ministry of Education Malaysia (MoE) has implemented ICT-based learning (Nordin & Alias, 2023). Educators have received training and lessons on using computer hardware and software. The utilization of technology and the Internet can enhance students' proficiency in using computers and networks. Additionally, students can enhance their communication skills by interacting with peers across national boundaries (Seethal & Baskaran, 2019). However, digital poverty issues that need to be addressed in facing this digital education are still worth giving attention (Abdullah et al., 2021).

In Malaysia, the rate of Internet usage is roughly 75.6% in urban areas and only 24.4% in rural areas (Isa et al., 2023). The National Broadband Plan (NBP) and Rural connection Programs were created by the Malaysian government to connect all Malaysians to the local service provider, enhance the ICT infrastructure in rural areas, and raise ICT literacy to address these issues (Ayob et al., 2022). The government has made efforts to accelerate the development of digital technology, but it remains seen as a slow process because of the lack of ICT infrastructure in poor rural areas, a lack of ICT knowledge and expertise among educators and a lack of financial incentives (Ye & Yang, 2020).

Furthermore, The Sun Daily (2020) indicated that since the outbreak, parents have come to accept the fact that online learning has now become an essential part of the new norm. However, 37%, or 1.7 million students, of the Ministry of Education enrolment, were found to have lacked the devices necessary to participate in digital

classes. They lacked the ICT tools, such as a laptop, tablet, or computer (Global Education Monitoring Report Team, 2023). This shows that roughly 1.7 million primary and secondary school students fall into the digital poverty level. Ahmad Johnie Zawawi (Member of the House of Representatives of Malaysia), in his speech to the Dewan Rakyat, had asked the government to investigate the Internet connection issue in rural and remote places. "There they do not have access (to the Internet) and have no computers. Many parents cannot afford to buy a computer", said the Member of Parliament Malaysia, from Sarawak, who also proposed that a special fund be allocated to address the digital issue as a measure to reduce the students' lack of ICT tools (BERNAMA, 2020).

Another initiative from the government is that the Ministry of Education has approved an allocation of RM50.4 billion (15.6%) of the overall RM322.5 billion national budget under Budget 2021. In contrast, a sizable portion of the budget has been allocated to the Ministry of Communications and Multimedia to alleviate digital poverty (Jaafar, 2020). The National Digital Network (JENDELA) as the initiative of the federal government, which seeks to enhance the Internet access in 430 schools nationwide, has been allocated RM500 million to close the digital gap. A total of RM7.4 billion was allocated to the Malaysian Communications and Multimedia Commission (MCMC) for the expansion of local service providers in rural areas in 2021 and 2022 (BERNAMA, 2022).

On the other hand, Malaysia Budget 2021 has allocated to the Cerdik Fund RM150 million to purchase devices for 150,000 students at 500 schools as part of a trial effort, run under the direction of the Hasanah Foundation (Ministry of Finance Malaysia, 2020). However, just a portion of the 1.7 million students who lacks the access to the devices needed for online learning will profit from this initiative. It should be

highlighted that most of these students from B40 households, typically make less than RM4,800 per month. The majority of B40 households' monthly Telecom bills are frequently higher than their other two utility bills, even though there is still room for improvement in terms of the Internet connection and telecommunication company services (BERNAMA, 2020). Consequently, eight million members of the B40 group would benefit from the RM1.5 billion allocated in Budget 2021 to improve the Internet connection in the form of an RM180 per person. The intended target group will undoubtedly profit from this.

Moreover, according to Fadhlina Sidek (Minister of Education), as far as the budget is concerned, it is on the right track to address digital poverty, which includes failing schools that lack ICT tools. Given that learning sessions were more digitalized during the COVID-19 outbreak, she claimed that the lack of resources associated with poverty could affect students' ability to learn (BERNAMA, 2023). In providing students with a pleasant and conducive environment in which they can study, Fadhlina claimed that in Budget 2023, the government had focused on the infrastructure that was in need, mainly for the declining schools in rural locations.

In conclusion, there are a lot of measures and initiatives given by the Malaysian government to address the digital poverty issues among the B40 household status. However, digital poverty percentages between urban and rural areas show great differences at 98.1% (Urban) and 89.1% (Rural) (Department of Statistics Malaysia, 2023). Hence, it is important to conduct this research so that government initiatives further improve help to the poor students who are really in need of technology for their studies.

2.7 Chapter Summary

The findings in this research are expected to help provide critical information and knowledge regarding digital poverty. This research adds to the understanding of the variables deployed from various scholars as aforementioned. Therefore, the Van Dijk's theory is an attempt to describe the different personal and positional categories that influence students' ICT access. The paradigm is useful for education because it will help educators focus on their students' needs in learning to help them realize their potential and lead fulfilling lives rather than simply achieving the goals intended in the syllabus . Implementing a suitable ICT into the education system may help the students in their learning performance, and measuring the factors using Van Dijk's theory is a good way to achieve better results. This research will provide an understanding of the categories, factors, and students' perceived technology in their online learning.

CHAPTER 3: RESEARCH METHODOLOGY

3.0 Introduction

This chapter provides an overview of this research methodology and information regarding the research design, describes the various stages of the research which include the selection of informants, data collection procedures, and data analysis process. This chapter ends with a summary of the research.

3.1 Research Design

A qualitative method as in phenomenological research is employed in this research. The qualitative method serves as a theoretical tool for educational research and has an explorative, descriptive, and contextual design (Alhazmi & Kaufmann, 2022). Due to its qualitative nature, it provides the chance to learn more about the characteristics of informants' behaviours, experiences, and viewpoints on digital poverty issues (Correa & Pavez, 2016). The purpose of its exploration is to gain a richer understanding of their experiences and to be able to discover and represent the realities and perceptions of the informants involved in, and affected by, online learning.

Qualitative research is deemed suitable for this research as the objectives of this research are to spread digital poverty awareness among the federation, policymakers, or digital-related organizations so that they can help the students who are really in need of ICT for their studies. Thematic analysis is used to identify various themes regarding the digital poverty category, factors, and the school students' perceived technology in their online learning. A one-to-one interview with a purposive sampling technique is adopted and this method facilitates an understanding of digital poverty among informants.

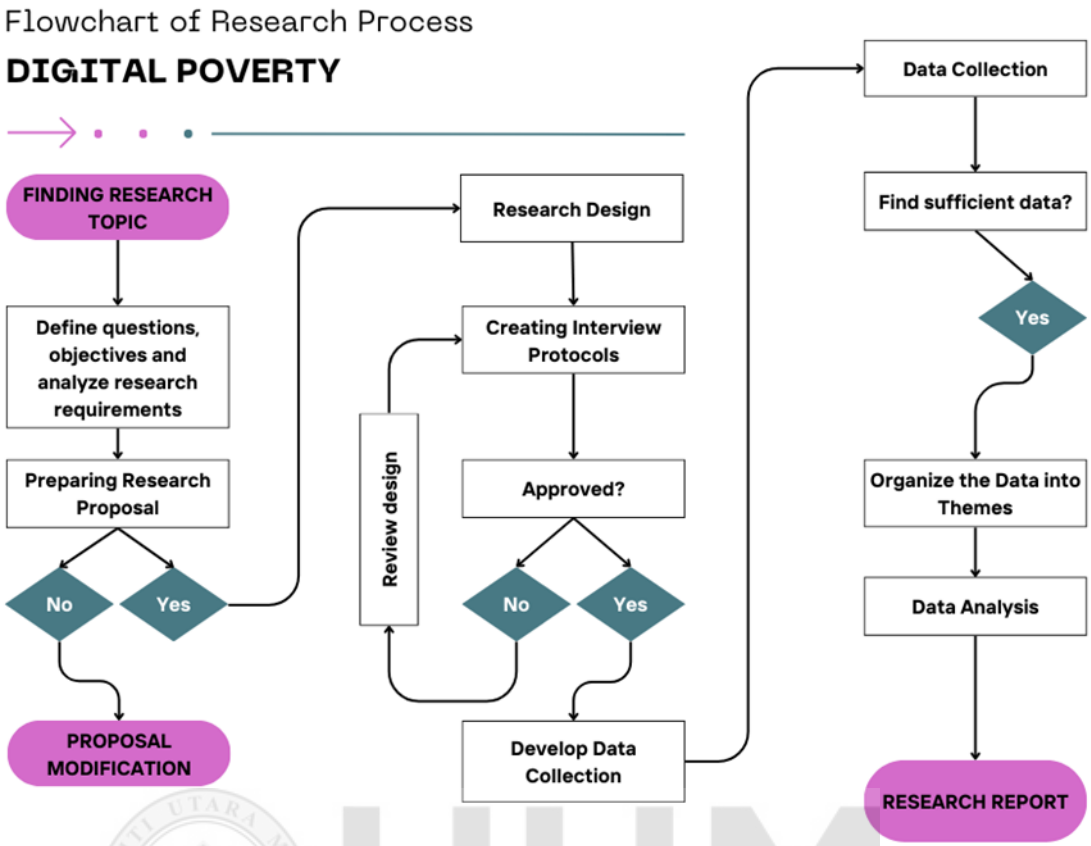

Figure 3.1
The Flowchart of the Research Process

Figure 3.1 illustrates this research design process. The first step in preparing a research proposal is to find a research topic by identifying the current issues and reading relevant materials to comprehend the issues. Then, define research questions and objectives based on the issue while discussing with other researchers. The research questions and objectives serve as a basic need to find literature findings.

A research proposal is a crucial initial stage of the research. After being approved by other researchers, the next step is to choose an appropriate research design to be applied and to create interview protocols for data collection. Research design involves choosing the sample size and research techniques, preparing interview protocols, and preparing for the data collection expenditures properly.

After the research design is completed properly, data collection begins in the chosen scope while informants are interviewed according to the interview protocol. After gathering sufficient information, the researcher provides the analysis (organizing the data into themes) and engages in discussions with the other researchers to gain additional insights. The research findings are then presented in the final research report.

3.2 Population and Sample

The selected location is Kedah, Malaysia because the percentage of school students using ICT for learning is lower than other regions. Even though the percentage has drastically increased over one year, it still needs to be explored further (Department of Statistics Malaysia, 2023). There is also a previous study by Yahaya et al. (2020), that indicates the need for a better education delivery system in rural areas, and their research scope was in Baling and Pulau Tuba, Langkawi, Kedah. Other than that, BERNAMA (2021) published about a village in Sik, Kedah chosen for the pioneer hardcore poverty eradication project. This further highlights the Sik district as a hardcore poverty area that needs to be given attention.

Furthermore, the percentage of households with Internet access is lower than in other regions which are 93.8% (Baling), 93.1% (Sik), and 97.5% (Pulau Langkawi) (Siddharta, 2023). Even though the percentage is higher than 90%, *Jabatan Pendidikan Negeri Kedah* (JPNK) claimed that the students' online learning performance during the MCO was unsatisfactory and lacking compared to other districts. Moreover, the families from these schools have the gross income less than RM2,000 which is below the poverty line, and they are recorded as grade B schools (Schools with less than 100 students) which will be more relevant for this research.

Primary data were collected through interviews at three schools from primary and secondary schools in each location - Baling, Sik, and Pulau Tuba, Langkawi as recommended by JPNK and Ministry of Higher Education (KPT). This study employs a purposive sampling technique for informants since the school will prepare random students who hail from the B40 status (low-income household) and who are especially experienced with online learning during the COVID-19 outbreak. Purposive sampling is a non-probability sampling technique used in qualitative research to select participants based on specific characteristics or experiences and the goal is to identify participants who can provide rich and diverse data to enhance the research findings. Table 3.1 displays the region, recommended schools and the number of informants involved.

Table 3.1
State, Perspective Schools and the Number of Informants Involved

State in Kedah	School	Number of Informants
Baling	1. SK Kampong Keda	7
	2. SJKT Ladang Pelam	6
	3. SMK Bongor	6
Sik	1. SK Kota Aur	6
	2. SJKC Chung Hwa	6
	3. SMK Jeneri	6
Pulau Tuba, Langkawi	1. SK Pulau Tuba	6
	2. SK Selat Bagan Nyior	6
	3. SMK Langkawi Pulau Tuba	6
TOTAL	**9**	**55**

3.3 Ethical Consideration

Ethics is considered in the process of collecting the research data. The informant's verbal consent is obtained and deemed appropriate. The necessary precautions have been taken to ensure that any possible risk or negative impact on the informants is avoided or minimized. The researcher also emphasized clearly during interview session with the informants that every informant's response will be kept confidential and protected as it would only be used for the research data.

3.4 Data Collection

Several B40 school students will be randomly chosen by their respective schools to be interviewed in one-on-one method, and approximately 55 students were assigned to be interviewed. To achieve samples that were representative of this study topic, the samples were stratified based on their B40 status. They are chosen as informants because they are the ones who are the most affected in their online learning during the COVID-19 outbreak in the years from 2019 to 2022. They will provide adequate data for this research objective regarding digital poverty issues.

3.4.1 One-on-One Interview

This is a research technique using one-on-one interview in which the researcher asks a subset of questions to one informant at a time. This research employs purposive and structured interviews, which involve asking a preset list of questions in a particular sequence. Then, the informants' responses and feedback are measured using closed-ended questions using generated themes from the findings. This structure enables more focused and personalized interview sessions and engagement between the researcher and informants. The collected data will be the primary data for this research.

3.4.2 Interview Protocol

An interview protocol is a form designed containing instructions for the process of the informant interview, the questions to be asked, with some space to take notes for their responses from the interview session. Table 3.2 shows the interview protocol throughout the interview session, while table 3.3 shows the research interview guidelines.

Table 3.2
Interview Protocol

Stage	Activity
Before the interview	1. Prepare and print the interview questions' guidelines so that important notes can be taken. 2. Obtain the school contact information for an appointment with the principal to discuss research details. 3. Do budget on the transportation fare, researcher accommodation and souvenirs for school and informants. 4. Confirm the interview time and suitable place- the best place would be far from noises and disturbance.
During interview	1. Meet the school representatives to prepare the interview space and seating. 2. Greet the informants provided by the school politely. 3. Introduce researcher's background and aim of the research to the informants. 4. Assure the informants' confidentiality for the research. 5. Obtain the permission to record the interview sessions. 6. Ask the questions using the printed interview guidelines. 7. Pay close attention to the informant's answers and write down important details.

Interview Conclusion	1. Request additional feedback regarding the research topic. 2. Perform a final check on the collected data from informants. 3. Obtain the informants' permission, and whether researcher could contact them again if further information is required. 4. Take group pictures as evidence for this research progress and give souvenirs to informants as a token of appreciation for the data given.

Table 3.3
Interview Questions Guidelines

No.	Interview Questions
Physical	
1.	Do you have Internet access at home? If yes, what about its speed?
2.	What type of tools do you use when studying online? Who do the tools belong to?
3.	Do you need to buy new tools during the MCO period? If yes, who bought the tools?
4.	How do you perceive technology in an online learning environment?
5.	What about other siblings who were at home during the MCO?
6.	Which area do you use for studying online?
7.	How comfortable is the area that you use for studying online?
8.	Which do you prefer, learning at home or learning in school? Please explain.
Knowledge	
1.	Can you turn the tools on and off by yourself?
2.	Have you used the website before? If so, what did you utilize it for? (For instance, looking up homework on YouTube, playing games, etc.)
3.	How do you feel about online learning during MCO?

	Is it enjoyable, or not?
4.	Before starting the online class, who assists you in turning on and off the laptop or other devices?
5.	What platform did your teacher use for online learning?
6.	Can you follow what your teacher is saying? Do you find it difficult or simple to follow the teachers' instructions when learning online?
7.	Did your class use video calls (For example Google Meet) for online classes? If yes, do you know how to mute/unmute the audio? If yes, do you know how to on/off the video?
8.	Can you tell me about your online study experience during MCO?
Social	
1.	Do you have a WhatsApp group or another medium for online classes?
2.	Who told you to use tools for your online study?
3.	Does your teacher give motivational support? If yes, how far does your teacher support you?
4.	Do your parents give motivational support? If yes, how far do your parents support you?
5.	Do your friends give motivational support? If yes, how far do your parents support you?
6.	During the MCO period, do you socialize with your teacher and friends? If yes, what medium did you use, and for what purpose?
7.	How did your teacher assist you in using the devices for online learning? Did your teacher guide you?
8.	Is all your homework completed on time throughout the online study? How did you send the homework to your teacher? What is the reason for not finishing your homework?
Economic	
1.	Who is the owner of the tools you use at home to study online?
2.	Did you have any difficulty purchasing Internet access on a weekly/monthly basis for online study? If so, what exactly is the issue?
3.	How did you solve the problem regarding Internet access?

4.	What about the cost of Internet usage? Is it worth it for online study?
5.	Did you feel stressed about buying the Internet weekly/monthly?
6.	Do you get funding from your school or the government in the form of free technology, unlimited Internet access, or capital to buy tools for studying online?

3.5 Data Analysis

The collected data from the interview sessions were used as clarification. In support of the research topic matters, the audio recorded was transcribed to generate information from the informants. The thematic analysis is being employed to measure the data. It is a process of identifying themes within the collected data for discovering, translating, and reporting the themes according to (Braun & Clarke, 2008). Table 3.4 shows the overview of this research using the six-phase framework for doing a thematic analysis. This research is using manual coding which is reading through the data, also manually developing and assigning codes and themes.

Table 3.4
Six-Phase Steps for Doing a Thematic Analysis

	Phase/Step	Descriptions
1.	**Become familiar with the collected data**	Recording the informants' answers to the research interview questions using a phone recorder, then transcribing the collected data in a Google Document for easy review.
2.	**Generate initial codes**	Use open coding to develop and modify the codes by way of working through the coding process after transcription using Taguette.
3.	**Review the codes and search for themes**	The themes captured refer to the research question and objectives. It is characterized by its significance accordingly which are the category, factors of digital poverty and B40

		school students' perceived technology during their online learning.
4.	**Review the themes**	Review, modify and develop preliminary themes which are relevant to the research objectives and the data that strongly support the themes.
5.	**Define the themes**	Finalize the core themes while refining them with research objectives.
6.	**Write-up sessions**	The endpoint of research: Journal article or dissertation

Source: Maguire and Delahunt, 2017

3.5.1 Themes

The data collected for this research were thematically analysed properly. Initial codes were generated after verifying the transcripts and becoming familiar with the data by using the interview question guidelines (refer to Table 3.3). Generated codes were then organized into three potential themes by using an interactive process within the research objectives to ensure that they reflected the codes and retained their original context. The three themes that emerged from the informants' transcripts are:

➔ Theme 1: Category of digital poverty

➔ Theme 2: The factor of digital poverty.

➔ Theme 3: B40 school students' perceived technology during their online learning.

Furthermore, Table 3.5 shows the themes and sub-themes after verifying the codes using the transcript. Researcher quoted some of the statements gathered from the informants as a support for the research findings.

Table 3.5
Classification of Themes, Sub-themes and Codes in this Research

Themes	Sub-Themes	Codes
Category of digital poverty among B40 school students.	1. Profile	● Age ● Household size ● Parents' occupation
	2. Category	● ICT tools availability ● ICT literacy ● Mode of Internet access
The factor of digital poverty among B40 school students.	1. Physical	● ICT tools for online learning ● Internet connectivity ● House environment
	2. Knowledge	● ICT literacy and skills ● Cognitive understanding
	3. Social	● Motivational support from parents, teachers and friends ● Students' relationship with teachers
	4. Economic	● Financial problems ● Internet purchasing ● Initiative acceptance
B40 school students perceive technology during their online learning.	1. perceptiveness	● Feelings and experienced ● Students' opinions

3.5.2 Triangulation

Triangulation is a technique used to boost the validity and trustworthiness of this research findings. Credibility refers to trustworthiness and how credible this study is, whereas validity is concerned with how properly a study represents or evaluates the

notions or concepts being studied. In this research context, two teachers from respective schools have been interviewed as triangulation informants to measure the research work's trustworthiness and authenticity of the data given by the B40 school students.

3.6 Chapter Summary

This chapter outlines how this research is conducted, illustrating the flow of research design and process to select the informants, the method used for data collection and the approach used in analysing the collected data. The objectives of this research are to determine the categories, and the factors of digital poverty among B40 school students and to investigate the students' perceived technology in their online learning environment. The next chapter sheds light on the research findings established from the data collection analysis

CHAPTER 4: RESEARCH FINDINGS AND ANALYSIS

4.0 Introduction

The interpretation of analysis from the informants is the gist of this chapter. The analysis is written in sequence according to the generated themes (refer table 3.5) and related to research objectives. The thematic analysis method has provided convincing and verifiable data. This chapter ends with a summary of the research findings.

4.1 Analysis of Generated Themes

Theme i: Category of Digital Poverty within B40 School Students

- Informant Profile (Data collected on informants' age, household size and parents' occupation and they are listed in B40 income status)
- Category Listing (The data for the students' category of digital poverty is analysed from their ICT tools availability, ICT literacy and their mode of Internet access.

Theme ii: Factor of Digital Poverty within B40 School Students

- Factor of Digital Poverty
- Physical (Data were collected from informants' ICT tools, Internet connectivity and their house environment)
- Knowledge (Data were collected from ICT literacy, skills and cognitive knowledge from informants)
- Social (Data were collected from motivational support and informants' relationship with their teachers during online learning)
- Economic (Data were collected using informants' financial problems, Internet purchasing/month and initiative acceptance from their school or government)

Theme iii: B40 School Students Perceive ICT during Online Learning

- B40 School Students' Perceived ICT during Online Learning
- Perceiveness (Data were collected from informants'feelings and experience using ICT during their online learning and from their opinion/belief in ICT for learning)

Figure 4.1
Analysis of Generated Themes

4.2 Theme i: Category of Digital Poverty Among B40 School Students

4.2.1 Sub-theme: Profile of the Informants

In this segment, the researcher presents the informants' profiles containing their code, age, number of siblings and parents' occupation as an initial view of the subject in this research for B40 school students in Sik, Baling, and Pulau Tuba, Langkawi.

Table 4.1
Informants' Profile, Baling

No.	Informants Code	Age (Year)	Number of siblings	Occupation	
				Father	**Mother**
Baling					
1.	BM1	10	2 people	Factory	School security
2.	BM2	9	5 people	Farmer	In Singapore
3.	BM3	12	3 people	Work labor	Factory operator
4.	BM4	10	3 people	Farmer	School security
5.	BM5	9	5 people	Deceased	Farmer
6.	BM6	9	4 people	Lorry driver	Housewife
7.	BM7	11	3 people	Market seller	Housewife
8.	BM8	12	4 people	Rubber tapper	Burger seller
9.	BM9	12	3 people	Lorry driver	Housewife
10.	BM10	11	5 people	Dato Aziz Store	Kindergarten teacher
11.	BM11	11	3 people	Lorry driver	Housewife
12.	BM12	11	5 people	Work labor	Housewife
13.	BM13	11	4 people	Rubber tapper	Cake seller
14.	BM14	16	2 people	Deceased	School cleaner
15.	BM15	14	13 people	Deceased	Housewife
16.	BM16	14	2 people	Café drink maker	Housewife
17.	BM17	16	6 people	School security	Housewife

18.	BM18	14	2 people	Carpenter	Housewife
19.	BM19	16	3 people	No information	Housewife

According to table 4.1, informants from rural schools in Baling, Kedah were from the B40 status. There are 19 informants from the age of 9 to 16 years old. Most of the students have siblings with minimum 2 people within the household and the maximum is 13 people (informants' code BM15). It can be seen that the informants' parents have limited sources of financial income since most of their fathers work in various agricultural sections such as a farmer, market seller, rubber tapper while their mothers are mostly housewives that have no income. The informants' parents' finances dropped rapidly during the COVID-19 outbreak since they were unable to work and some of them must look for another part-time job to provide food for their children.

Table 4.2
Informants Profile, Sik

No.	**Informants Code**	**Age (Year)**	**Number of siblings**	**Occupation**	
				Father	**Mother**
Sik					
1.	SM1	11	3 people	Rubber tapper	Housewife
2.	SM2	10	4 people	Fisherman	Housewife
3.	SM3	8	4 people	Deceased	Nursery
4.	SM4	12	No information	Fishermen	Housewife
5.	SM5	10	5 people	Rubber tapper	Housewife
6.	SM6	12	4 people	Deceased	Housewife
7.	SM7	12	3 people	Fruit seller	Store clerk
8.	SM8	11	2 people	Housewife (Dialysis)	Waiter
9.	SM9	12	3 people	Rubber tapper	Housewife

10.	SM10	12	3 people	No information	Cleaner
11.	SM11	11	3 people	Carpenter	Deceased
12.	SM12	11	5 people	Lorry driver	Housewife
13.	SM13	16	8 people	Rubber tapper	Housewife
14.	SM14	17	3 people	Rubber tapper	School security
15.	SM15	13	7 people	Rubber tapper	Housewife
16.	SM16	13	7 people	Rubber tapper	Housewife
17.	SM17	17	4 people	Rubber tapper	Cake seller
18.	SM18	16	4 people	Carpenter	Housewife

According to Table 4.2, informants were from rural schools in Sik, Kedah and they are of the B40 status. There are 18 informants from the age 8 to 17. Most of the students have siblings with minimum 3 people within the household and the maximum is 7 people. One of the informants has no information regarding his sibling within the household. It can be seen that the informants' parents also have limited sources of financial income since most of their fathers work in some highly demanding agricultural sections such as rubber-tapping, while their mothers are mostly housewives that do not provide any income to the household.

Table 4.3
Informants Profile, Pulau Tuba Langkawi

No.	**Informants Code**	**Age (Year)**	**Number of siblings**	**Occupation**	
				Father	**Mother**
Pulau Tuba, Langkawi					
1.	TM1	12	4 people	Lawn mower	Housewife
2.	TM2	12	5 people	No information	Work with Tokwan
3.	TM3	12	2 people	Jetty	Housewife
4.	TM4	12	7 people	Fisherman	Housewife

5.	TM5	12	3 people	Carpenter	Housewife
6.	TM6	12	2 people	Fisherman	Kindergarten assistant
7.	TM7	12	No siblings	Lorry driver	Driving school teacher
8.	TM8	12	5 people	School teacher	Police
9.	TM9	12	4 people	No information	Nursery
10.	TM10	11	3 people	Hotel	Housewife (Dialysis)
11.	TM11	12	5 people	Fisherman	Housewife
12.	TM12	12	4 people	Craftsman	Cake seller
13.	TM13	15	5 people	Deceased	No information
14.	TM14	17	12 people	Retired teacher	SPI Kafa
15.	TM15	15	4 people	Not working	No information
16.	TM16	16	3 people	Self-employed	Cleaner
17.	TM17	16	4 people	SMK Langkawi clerk	Cleaner
18.	TM18	16	4 people	Guard security	Housewife

According to Table 4.3, informants were from rural schools in Pulau Tuba, Langkawi, Kedah and they are also of the B40 status. There are 18 informants with the age from 11 to 17 years old (Data with the older ones). Most of the students have siblings with minimum 4 people within the household and the maximum is 12 people (informants' code TM14). One of the informants has no sibling within the household. Most of their fathers work as fishermen since Pulau Tuba is a fishing island, while most of the informants' mothers are working as a cleaner, nursery, kindergarten assistant, a teacher and a policewoman.

4.2.2 Sub-theme: Category of Digital Poverty

The digital poverty category among B40 school students is determined using Barrantes's (2005) level of digital poverty as a benchmark. This research has classified digital poverty among B40 school students into four categories which are generated as A, B, C and D. The overall data for B40 school students category is presented in Table 4.7. Three generated codes have provided robust answers to adhere with the research objectives which are ICT tools availability, ICT literacy and students' mode of Internet access with the statements provided by the informants. Their statements will automatically classify the informant's category of digital poverty.

Financial issues are not a major aspect in measuring the categories of digital poverty among the students. The question was raised to discover whether informants had access to ICT tools during their online learning. In accordance with the ICT tools used for online learning, findings indicate that most of the informants have no ownership of any ICT tools such as a smartphone, laptop or tablet as stated below.

"...sometimes I use daddy phone, sometimes I use mommy phone" BM7

"...borrowing my mother phone to study online"……..……..SM6

"...using Tokwan phone" ……..……..TM11

Table 4.4 shows that 38 out of 55 informants share ICT tools with their parents or siblings due to financial constraints during the outbreak. This indicates that most informants come from low-income households who lack the necessary ICT tools for effective online learning.

Table 4.4
Informants' ICT Tools' Availability for Online Learning

Type of ICT Tools	Status	Number of Informants
Smartphone	Sharing	36
	Not sharing	14
Laptop	Sharing	2
	Not sharing	0
Tablet/iPad	Sharing	0
	Not sharing	3
TOTAL		55

Even though most of the informants lack ICT tools availability, this cannot determine their category of digital poverty appropriately. Thus, researcher then asked the informants a question regarding their ICT literacy; whether they have the knowledge or skills in utilizing the ICT tools they had during online learning. According to the findings in table 4.5, 39 out of 55 informants had basic ICT literacy and skills in using available tools during online learning. They can turn on and off their devices and communicate effectively, particularly through texting and chatting with their teachers and friends.

"Can open the phone myself" ……..…….....…….…….. .BM5

"I can turn on/off the phone by myself" ……..…….…..…….....BM12

"I don't find it difficult to use the phone" …… ……..…….....TM2

However, the others do not have basic literacy and skills to operate their ICT tools to see the Internet content even though they were equipped with ICT tools during learning. This is because they do not have enough guidance and experience with digital applications or their functions using their available ICT tools since they are sharing

them with their parents and the others. This further limits their ability to edit content or create basic knowledge representations like mind maps, graphic images, and posters.

"I do not know how to use the website or using the phone. I need help from my mum to use it" ……..BM7

"I don't know about websites. I use my mom phone only for WhatsApp. Mostly for school work sent by teacher" ……BM15

Table 4.5
Informants' ICT Literacy and Skills in Using Available ICT Tools

ICT Literacy and Skills	Number of Informants
Possess ICT Literacy and Skills	39
Do not possess ICT Literacy and Skills	16
TOTAL	**55**

The mode of Internet access, ICT tools availability, and ICT literacy of informants significantly impact their online learning and play an important role to measure the digital poverty category, since online learning is dependent on the Internet- whether it has a fast or slow connection within their geographical areas. The mode of Internet access (for example, Mobile data or Wi-Fi) includes informants' Internet connection bandwidth (speed) and local service providers that they use for online learning. Based on the findings, S6 stated that the Internet bandwidth around their house area is poor and has bad connections for proper learning. They are under pressure when they study from their locations, as it is challenging to access an Internet network, and this discourages the informants from continuing their learning via the Internet.

*"I have no Internet…I did not study since there was no Internet at my area" ……..*S6

S2 also mentioned the difficulties in accessing Internet connections in their area, despite parents owning phones, as local service providers like Digi, Celcom, Maxis, or Unifi do not provide reliable Internet connectivity. This indicates that they are lacking access to the Internet.

*"…I just sit at home helping my mother doing house chores because there is no line near my house. I cannot study if there is no Internet connection. Both of my parents phones are there but there is no Line. E"…… ……..*S2

Most students face limited Internet access for online learning due to financial issues and geographical location. Despite having Internet access, low data (megabytes) and slow connections in their areas hinder their participation in online classes.

*"…the Internet is not fast enough. There was a time when my teacher is talking during Google Meet, I cannot hear them well because it's sometimes stuck and sometimes I was forced out from Google Meet" ……..*BM7

*"The Internet around my area is so slow, I cannot study well" ……..*TM16

*"The line is very problematic. At that time, I'm using Celcom, there was no line. Then I changed to Maxis, there was also no line. Digi also the same around my area"..*SM13

Table 4.6 provides an overview of informants mode of Internet access with poor bandwidth within their geographical area. 43 out of 55 informants have mode of Internet access which is mobile data. Many informants use the mobile data from their

parents' or relatives' ICT tools because of the fact that they cannot afford to install the Wi-Fi since the price is mostly RM80 and above per month. The low-income families depend on mobile data (around RM15 to RM30 per month) which they can barely afford.

There were also issues about having the Internet but their local service provider around the geographical area did not support the Internet connection strongly and that made it harder for their online learning. The unavailability of the Internet, poor Internet bandwidth provided by the local provider has posed a serious problem for those who are poor since they cannot learn efficiently. Thus, this affects their online learning experience, leading to poor performance in education.

Table 4.6
Informants' Mode of Internet Access and Bandwidth

Mode of Internet Access	Internet Bandwidth	Number of Informants
Mobile Data (Celcom/Maxis/Digi)	Poor	45
	Strong	2
Wi-Fi (Unifi)	Poor	2
	Strong	5
No Internet Access Mode		1
TOTAL		**55**

It can be seen that the informants are eager to learn digitally but their difficulties in acquiring ICT tools, their lack of ICT literacy and poor Internet access mode around their areas make them lose the enthusiasm for learning. These three codes have provided the overall category of digital poverty among B40 school students in Kedah rural schools, which is as shown in table 4.7.

Table 4.7

Category of Digital Poverty among B40 School Students in Kedah Rural Schools

Category	Descriptions	Number of Informants
A	Those from low-income households have dealt with various difficulties during online learning (Lack of ICT tools, did not have ICT literacy and had extreme financial issues).	12
B	Those from low-income households have dealt with minimal difficulties during online learning (Lack of ICT tools and did not have ICT literacy)	4
C	Those from the low-income households have dealt with minimal difficulties during online learning (Lack of ICT tools and have ICT literacy but they struggle to learn because of the Internet problems surrounding their areas)	39
D	Those from low-income households deal with no difficulties during online learning but feel that there is no need to use the ICT during online learning.	0
TOTAL		**55**

The research reveals that most B40 school students in Baling, Sik, and Pulau Tuba, Langkawi, Kedah, are classified as C, with 39 out of 55 students coming from low-income households experiencing minor difficulties in online learning due to the lack of ICT tools.

4.3 Theme ii: Factor of Digital Poverty Among B40 School Students

In this segment, the researcher presents some digital poverty factors among B40 school students that lead to their difficulties and low performance in education. Investigating its roots is crucial for digital organizations, educators, and the educational sector to strategize and implement improvements. There are four factors (sub-themes) generated

from the reviewed codes (each will be called as an aspect) namely the physical, knowledge, social and economic factors.

4.3.1 Sub-theme: Physical Factor

The physical factor in digital poverty among B40 school students can be divided into three aspects, namely the ICT tools used for their online learning, Internet connectivity and a conducive learning environment as shown in Figure 4.2. These three aspects influence the informants learning in this new norm as digitalization serves as their learning base. Furthermore, these three aspects are closely related to ensure smooth online learning and student engagement during lessons.

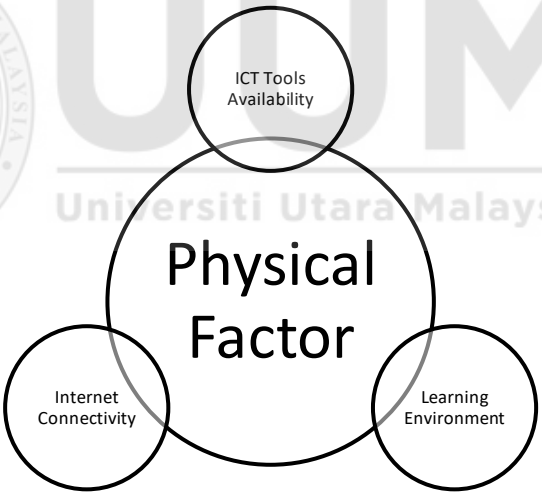

Figure 4.2
Physical Factor and Reviewed Codes

4.3.1.1 ICT Tools Availability

In accordance with the tools used for online learning, the need for good and sophisticated tools plays an important role in ensuring a good experience in learning. Findings indicate that 38 out of 55 informants lack the ownership of ICT tools like smartphones, laptops, or tablets as stated by SM2 and TM9. They further stated that

their parents are struggling to afford ICT tools like smartphones for online learning, requiring them to share within the family, further making it difficult for them to focus and learn effectively.

"Mom's phone…. I share the phone with my mum" ……SM2

"*I don't have a phone, using my father Vivo phone to do my homework" ……TM9*

S1 and S4 reported issues with sharing digital tools, including quarrelling with parents or siblings and being unable to access teacher lessons via Google Meet. This explains that a digital tool is a necessity for every student to have in order to continue with better learning sessions. They want to learn digitally but the lack of ICT tools hinders them from enrolling in the class and this makes the relationship between families even more strained. Thus, they will give up on attending their online classes

"Sometimes we quarrel when sharing the phone for our online class" ……SM1

"Yes, we sharing the phone and sometimes when we have online class, we don't have enough phone to study and quarrel among us who attend the class first" ……SM17

Another instance involves an informant's relatives using and taking the phone that his parents purchased without considering the implications for their learning. The informants struggle with online class enrolment due to the limited ICT tools and he prioritizes his sister's class over his own, fearing that his sister will be punished for her missed classes. The student further stated that he only enrolled in digital classes through Google Meet once and after that, he studied solely using the printed materials provided by the school.

"I share the phone with three people which is me, Maksu and my sister. My sister sometimes asks father to buy her a new phone because the Vivo phone has broken down and cannot be used. My father had already bought two phones, one for my sister and one for him but my uncle took the phone from my sister. So, she did not have a phone to do her homework online. I sometimes did not attend my online class since I gave the phone to my sister. She will be scolded by her teacher if she does not attend her online class, such as harsh punishment from the teacher" BM9

In order to verify the informant's lack of ICT tool availability, their teachers indicate that students usually share their ICT tools with family members and they often struggle to attend online classes, as shown below.

"…these students are from poor household; hence they cannot buy a phone for their online learning. They share the phone with their parents or siblings."…… BC1

"They have a lack of tools for my online class. They sometimes share one phone with their siblings or parents. So, when I ask them why they cannot attend to my online class, they will answer that their siblings are using the phone" ……SC3

Additionally, 50 out of 55 informants use phones for their online learning (refer to Table 4.8). Only 5 of them are using laptops or tablets and the rest of them are using phones that are older, and non-supportive software for latest digital applications (for example, Google Drive, Google Classroom, Padlet or video conferencing platforms). The informants' ICT tools can support Google Meet and download some received documents, but they cannot edit directly from their tools. As a result, informants are

struggling to complete their homework in the pdf format and fall further behind in online learning than their peers, which is as stated by SM6 below.

"I didn't buy a new phone, but I feel like buying one because it is difficult to study, there are a lot of things that my mother has in her phone for work, so it gets mixed up with my schoolwork. Also, my mother phone is old one and I cannot download the task that teacher sent in the WhatsApp group" ……SM6

The informants' statements regarding the lack of ICT tools availability are supported by their respective school teachers;

"The students did not have their own smartphones or laptops. They cannot attend to out Google Meet because they did not have phones when their parents are working. If their parents go to work, how can students do their homework or attend class?.....BC7

"Students do not have ICT tools only…"……TC10

"Not all students have their own laptop of Wi-Fi. Some household use only one phone and need to share among themselves. These are the students that cannot attend the online class well during MCO and being left behind in education."……SC5

Table 4.8
ICT Tools Availability during Informants' Online Learning

Type of ICT Tools	Status	Number of Informants
Smartphone	Sharing	36
	Not sharing	14
Laptop	Sharing	2
	Not sharing	0
Tablet/iPad	Sharing	0

	Not sharing	3
TOTAL		55

4.3.1.2 Internet Connectivity

The Internet is crucial for students' education growth, as the digital transformation in schools has significantly increased their usage of the Internet for learning. Students who lack reliable Internet access in their area struggle to connect to online learning platforms. Thus, it has posed difficulties for some students to fully participate in their online learning. The reason given was that some informants face challenges in online learning due to poor electricity and Internet connection in the rural areas. As stated by TM2.

".... the Internet is not very good. There is no electricity at night, so it is quite difficult to study online at night"……..TM2

According to the findings, BM5 stated that they do not have Internet connectivity because their area has low Internet connection with any of the local service providers. Informant SM14 expressed similar concerns about the difficulty in obtaining a reliable Internet connection in the area. Although both parents own their phones, the informants are unable to access the online learning because their Internet area does not support any Internet-based platforms. As a result, they are under pressure from their locations, where it is challenging to access an Internet network, and this discourages them from continuing their learning via the Internet.

*"I have no Internet…I did not study since there was no Internet at my area" *BM5

*"...just sit at home helping my parents because there is no line near the house. Both of my parents' phones are there but there is no line. Line E" ……..*SM14

The informants' statements regarding unreliable Internet connection in their neighbourhood were backed up by their teachers. Due to the unreliable Internet connection within their areas, the teachers are also struggling with online teaching .

*"The Internet connection is not very fast during MCO period since everyone will be using the Internet, so the connection will be slow. At first, I use mobile data but then have problem since I cannot access to the Internet. So, I changed to Wi-Fi. However, my area did not support much the Wi-Fi line. When I go to the Internet centre, they said that my area is really lack in reliable Internet connection" ……..*BC4

*"I use mobile data during MCO and that time, I really have problem regarding Internet connection. I cannot teach my students properly since I cannot access to Google Meet because the Internet is very slow" ……*TC3

*"My area did not have strong Internet connection. I was feeling stressed at that time because my online class was suddenly just going offline due to poor Internet. My students said that the teacher disappeared from the class and I need to waste a lot of time to reconnect again with my students" ……*SC3

In addition, several informants indicated that they accessed the Internet through their parents' phones using Hotspot or mobile data, sharing ICT tools within the household. However, they tend to experience slow connections during video

conferencing classes using platforms like Google Meet, Webex, or Zoom due to the need for fast and reliable Internet connection.

*"The Internet around my area is so slow, I cannot study well…" ……..*TM16

*"…the Internet is not fast enough. There was a time when my teacher is talking during Google Meet, I cannot hear them well because its sometime stuck and sometimes I was forced out from Google Meet" ……..……..*BM7

*"The line is very problematic. That time, I am using Celcom, there was no line. Then I changed to Maxis but also has no line. Digi also the same around my area"….*SM13

Table 4.9 shows the informants the overall information about having Internet access.. Even though the Internet usage can lead to a variety of opportunities and benefits for the students, not many of them have similar or any access to the Internet, especially those who reside in rural areas. This is why limited access to the Internet is one of the aspects that leads to the increased digital poverty.

Table 4.9
Informants' Internet Access Information

Mode of Internet Access	**Internet Bandwidth**	**Number of Informants**
Mobile Data	Poor	45
(Celcom/Maxis/Digi)	Strong	2
Wi-Fi	Poor	2
(Unifi)	Strong	5
No Internet Access Mode		1
TOTAL		**55**

4.3.1.3 Learning Environment

Students' learning environments play an important role because they will affect the learning outcomes for the students. Light, noise, and house facilities can impact students' focus, mood, behaviour, motivation, social interaction, and stress levels in online learning. In contrast, informants stated that they have inadequate facilities, family conflicts, disruptive siblings, house chores, and the lack of designated online learning areas.

"Living room is not very comfortable to learn because people are passing by, and the bedroom is sharing with other siblings which makes the room full with their quarrelling" …….. TM2

*"The area where my house is located is a bit rural, so it's noisy because sometimes there are motorbikes and cars passing by. It's so noisy that I can't focus on what the teacher is saying in the online class. Another thing is that when I study at home, I have to do a lot of other work, like helping mom clean the house" ……..*SM13

*"I have to go outside near the paddy field to learn online because the people in the house are very noisy which bothers me to hear what the teacher is saying" *TM18

Students who struggle with an effective home learning may avoid digital studies, leading to them feeling ashamed and to decreased academic performance. For example, being ashamed of the study situation, as stated by TM11, can negatively impact the learning.

"Just sit on the house floor. Sometimes the living room, sometimes in the room. Uncomfortable because I can't write well. There is pain in my back because we don't

*have a study desk. Sometimes I did not do the homework and joining the class because I'm ashamed my friends seeing me study on the floor" ……..*TM11

Compared to the aforementioned, informants who have a designated online learning space within their household feel more comfortable and perform better academically, or specifically in completing their teachers' homework. As stated by BM4 and SM18:

*"My father provides me a space for my online learning. Okay, comfortable" *BM4

*"When I study online, my father finds wood to make a small table for me to study. He even made the chair himself in order for me to learn well" ……..……*SM18

Table 4.10 shows the data of informants regarding their learning environments. It can be seen that 43 out of 55 informants are dealing with the non-conducive learning environment during their online learning. Hence, school students experience digital poverty due to the uncomfortable, non-conducive learning environments, affecting their well-being compared to those in positive, conducive environments. A conducive learning environment enhances students' enthusiasm and focus, ensuring a smooth learning session and preventing them from getting distracted, from the lessons conducted.

Table 4.10
Informants' Learning Environments

Learning Environment	Number of Informants

Conducive	12
Not conducive	43
TOTAL	**55**

4.3.2 Sub-theme: Knowledge Factor

ICT knowledge is crucial for students' learning sessions and daily activities in the new norms. Digital poverty often arises from students lacking sufficient ICT knowledge due to the early stages of online learning and their lack of experience with ICT tools. The knowledge factor in digital poverty among B40 school students can be divided into three aspects, namely ICT literacy and skills and cognitive understanding, as shown in figure 4.3.

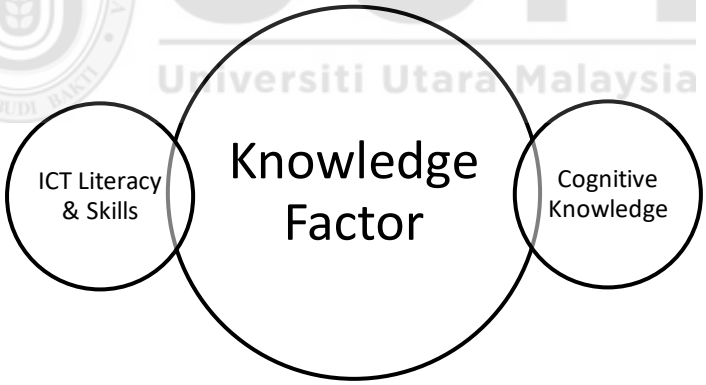

Figure 4.3
Knowledge Factor and Reviewed Codes

4.3.2.1 ICT Literacy and Skills

In accordance with ICT literacy and skills, the researcher conducts a basic questioning session with the informants to ascertain their knowledge and proficiency in utilizing

the tools. The aim is to determine if they can independently activate or deactivate the available ICT tools. The data from Table 4.11 indicates that 16 out of 55 informants are uncertain about how to effectively use their tools during online learning.

Table 4.11
Informants' ICT Literacy and Skills

ICT Literacy and Skills	Number of Informants
Possess ICT Literacy and Skills	39
Do not possess ICT Literacy and Skills	16
TOTAL	**55**

TM9 and SM15 claimed that they cannot use phones without assistance, indicating that they may miss classes if their parents or siblings are unavailable during online learning. This aspect contributes to their digital poverty.

"I don't know how to use the phone without my mother" ……..TM9

"No, I don't know how to on or off the phone by myself" ……..SM15

The researcher inquired about the informants' ability to mute or unmute the video conferencing like in Google Meet or Webex platform, to facilitate their responses. The study indicates that most students struggle with muting and unmuting videos during online learning and that they require assistance. SM2 and TM3 gained the support to use the digital tools from their parents and siblings to access their learning. The statement suggests that they lack the fundamental ICT skills required to operate their tools.

"I do not know how. My mother and father help me with that" …….. SM2

*"I found it a little hard to mute, I ask my sister about that" ……..……*TM3

Nevertheless, certain informants were unclear about muting or unmuting the video conferencing sessions, with the parents or siblings expected to assist students before the class begins. Subsequently, students are required to remain seated in front of the camera and attend to their teacher until the end of the class. The teacher will promptly end the class video, and students' parents or siblings will provide assistance after the class comes to an end.

*"I know only a little bit. If teacher suddenly call my name, I will keep talking since the laptop did not have to click anything for me to speak" ……..*BM7
*"No. I just leave the laptop with video on until the class end" ……..*SM18

BM9 had to deal with some Internet connection issues that hamper his ability to properly learn about muting or unmuting video conferencing platforms, and this prevents them from participating in online classes.

*"I did not finish in learning the mute and unmute because I have poor Internet connection in accessing to online class" ……..……*BM9
*"I did not finish in learning the mute and unmute because I have poor Internet connection in accessing to online class and I cannot use the phone since my mother are using it" ……..……..*SM6

4.3.2.2 Cognitive Knowledge

Other than that, students' basic cognitive understanding was also being questioned in this study. Cognitive understanding involves critical thinking, problem-solving, and decision-making, requiring the ability to evaluate and apply new knowledge acquired from online learning environments. Interactive educational content enhances language, literacy, and numeracy skills, but some informants lack the exposure to ICT tools like Google, limiting their exposure in learning. This is primarily because, not only that there is poor connection in the areas, informants also tend to share the tools with their parents, causing them to have limited time of usage. Hence, further exploration into the Internet has become limited.

"I cannot access the website. If Maksu give me the opportunity in using her phone, then I maybe can open it" ……BM9

"I do not know about websites. Mother only give me permission to use the phone only for WhatsApp……BM15

"I don't know about websites, especially Google. I do not know how" ……SM16

In comparison to that, TM8 demonstrated better cognitive knowledge than the others as TM8 has been exposed to the skills and knowledge needed in using the available ICT tools prepared for them, such as smartphones. This implies that students' ICT tools availability will help them in exploring the websites and other digital applications (for example, YouTube). Thus, the students will improve further in their basic cognitive understanding during online learning.

*"I know how to use the Google website to search for school work. Chatting with my friends online and then listening to music in YouTube using my own phone" ……*TM8

A deeper comprehension of ICT understanding may help students to study more effectively since they can follow the teacher's instructions in an online class and they will be more capable when the teacher assigns homework. As stated by BM13 and TM15:

*"I can understand the teacher well because they are using voice note in WhatsApp group. I know how to hear the audio" ……*BM13

*"Yes, I can follow the teaching. I understand it well because teacher sent document through WhatsApp and ask us to search the answer using YouTube. I can do it well"……*TM15

On the contrary, BM14 and SM1 lack basic ICT knowledge and cognitive understanding when using ICT tools. They are prone to misunderstand the teacher's instructions and they find it difficult to follow along in an online class since they are disoriented and unsure of things that need to be completed.

*"...I cannot afford to follow teacher instructions. I really did not understand what my teachers when they giving the task using document in WhatsApp"……*BM14

*"Sometimes I can follow but sometimes I cannot since it is hard then I feel dizzy. It is hard to follow the instruction during online class especially for Science and Mathematics subjects because of calculations" ……*SM1

In summary, most of the students lack the knowledge and ICT skills in using ICT tools for learning, contributing to digital poverty (refer table 4.12). The students have the desire to explore into digital applications but they are restrained by the lack of tools such as smartphones or laptops, and the low Internet connectivity. Students' limited knowledge of ICT will prevent them from completing their homework that the teacher assigns and this will reduce their motivation in learning. Therefore, the ICT tools ownership and Internet connectivity are related toward defining the students' ICT literacy and understanding because those can certainly elevate the students' resources properly during learning.

Table 4.12
Informants' Cognitive Knowledge

ICT Literacy and Skills	Number of Informants
Possess cognitive knowledge	7
Do not possess cognitive knowledge	48
TOTAL	**55**

4.3.3 Sub-theme: Social Factor

Digital poverty is not solely attributed to ICT tools and Internet connectivity. Social factors also play a crucial role, as most students were not exposed to digital tools at a young age. The social factor in digital poverty among B40 school students can be divided into two aspects, namely motivational support from their parents, teachers and friends, and informants' relationship with teachers. This is as shown in Figure 4.4.

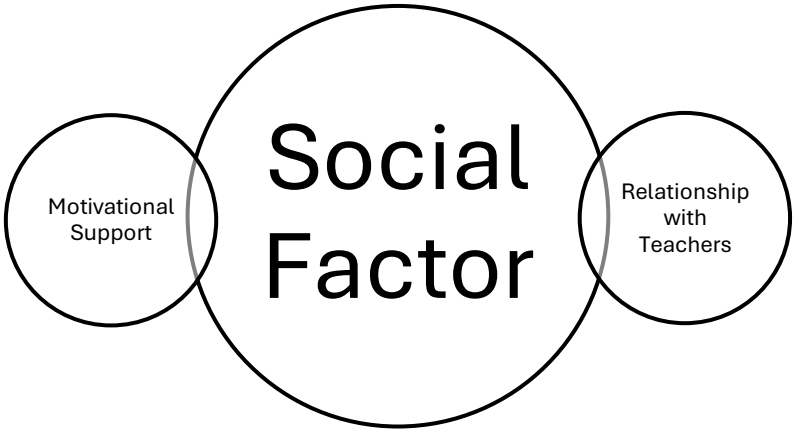

Figure 4.4
Social Factor and Reviewed Codes

4.3.3.1 Motivational Support

Motivated students achieve better learning outcomes, while the lack of motivation can leave a negative impact on the future academic performance. To maintain passion and motivation in online learning, students require increased moral support from their immediate surroundings. According to the support from their parents, TM5's and BM10's parents can see that they are trying their best to support and ensure that their children can study in a good and perfect environment, despite their dire financial needs. They are also motivated to study, thanks to their parents' support.

"Yes, they give support to me, for example if I'm not okay, they will give encouragement. If I am feeling stressed, they will talk with me regarding my homework,

*and I will tell them about my problems. They also lend me their phone when I want to do my homework. It relieves my stress a little bit" ……..…*TM5

*"There is. They give words of encouragement and lend me their phone for class. They also help me prepare my online school work like, if I do not understand how to open Google, I can ask help from them" ……*BM10

Parental support significantly boosts the motivation and active participation of these students in online learning. Unlike SM6 who does not have the support from the parents, the informant often suffers from emotional damage, fearing to ask questions or foster relationships with them. Neglect is one type of child abuse leading to various consequences on their development. Hence, this situation has a negative impact on the students and makes them want to prevent themselves from studying online. During this period, children still desire parental attention, despite the fact that they are already responsible for their own tasks, as their socialization and interaction with friends and the community are limited.

"I seldom ask my mother because whenever I ask her, she will tell me to search for the answer myself and sometimes she will ignore me. I also cannot use the phone because my mum has it and she said there was no Internet connection. No use in studying"…… …SM6

Furthermore, the social support within their peers such as their friends is also important since they are able to help each other overcome the challenges of new norms in online learning. However, most of the informants stated that they did not communicate with their friends often, since they did not have an ownership of any

digital tool such as a smartphone, because they share the tools with their parents. Thus, it is hard for them to communicate with each other especially during online learning where face-to-face communication is limited, and this will contribute to digital poverty among the B40 school students.

"No chat with my friends because I use my father phone, he will get angry if I use the phone for too long" ……..……SM15

"I did not chat with my friends since that time I do not have their phone numbers yet. Also there is no use because there is no line here" ……..BM10

In addition, teacher support also plays an important role to ensure that the learning can progress smoothly. TM9 mentioned that the classroom teacher assists them to understand the use of digital tools for a better learning experience. TM9 may not have experienced emotional abuse since the informants received the assistance they required and were able to ask the teacher questions without fear of reprimands. TM9 are prone to finish the schoolwork on time if they did not have any difficulties with digital tools or Internet connectivity, since they receive positive response and assistance.

"Teacher has helped me when I have problems with online learning, teaching me how to use the Google meet. She also helps me when I asked her about the homework problem which I cannot understand…I also chat my teacher to send back the photos of schoolwork that I missed because sometimes my mum phone need to be format, the storage full and also low Internet connection and my teacher just sent me the missed homework. She is not angry with me when I asked her"……..TM9

However, for some students like S5 and S6, they suffered some emotional abuse and were afraid to ask certain questions regarding schoolwork, or foster a relationship with their teacher because the teacher failed to provide assistance and positive encouragement due to unfavourable comments or reprimands. They have some difficulties and lack the motivation to complete their schoolwork because they receive little assistance from the teachers.

Additionally, they lack the courage to question their teachers, fearing criticisms and reprimands for every question they ask. This is one of the factors that contribute to digital poverty among B40 school students since it lowers their motivation to learn, and that it has an adverse effect on their psychological well-being. It can be seen that the social support from the teachers is important for students' well-being in online learning.

"No, I didn't ask my teacher because I am scared, she will scold me again"

*"Sometimes but I do it afterwards. The teacher got angry and reprimanded me on WhatsApp when I did not send my homework. I did not send it because I do not know how to do it even though I asked my friends. Sometimes there was no Internet connection also I did not have the spirit to finish my homework" ……..…….....*SM8

"I seldom ask the teacher because whenever I ask them, they will tell me to search for the answer myself and sometimes they will ignore me since I am always absent from their lessons. I did not attend their lessons because I have no phone and Internet connection"

*"…the teacher asked about the time of the online class and the teacher asked for it, but did not send it since they always ignored my problems" ……..……*SM13

In a nutshell, for students to learn effectively and actively when attending the online classes, they require motivational support from their parents and teachers. Insufficient assistance may cause the students to lag in their learning, widening the gap of digital poverty issues. Table 4.13 shows the overall data for informants' motivational support.

Table 4.13
Informants' Motivational Support from their Parents and Teachers

Motivational Support	Number of Informants
From their parents	
Receive support during online learning	47
Did not receive support during online learning	8
TOTAL	**55**
From their teachers	
Receive support during online learning	49
Did not receive support during online learning	6
TOTAL	**55**

4.3.3.2 Relationship with Teachers

Informants' relationships with teachers are crucial for online learning, as they facilitate communication and guidance, resulting in better retention of good connections and better adaptation to online learning. Students will enjoy the classes, will often ask questions, and finish school work on time if they have access to tools and the Internet. They are eager to learn and receive positive feedback and rewards.

"There is. If I cannot join the Google Meet, I will WhatsApp my teacher and say that I can't enter. Teacher then said it is okay and she will find another way later to help me with the school work properly"

*"I take a picture and give it to my teacher. I sent it through WhatsApp, and I finished all of the homework given by them so that they will praise me".....*BM10

"I chat with my teacher to send back the photos of schoolwork that I missed because sometimes the phone needs to be formatted, the storage is full and also has a low Internet connection. My teacher said it is okay to send the schoolwork late as long as I complete it"

*"Take a picture and send it to the teacher on WhatsApp. The teacher has prepared a module. Teacher told me to go get the module from the school guard. After completing the module, the teacher told me to send the module to the guard again for him to check. I finish the module and get a reward from my teacher" ……..*SM16

The informants' teachers also stated that they have provided assistance and kept in touch with their students during online learning. They made an effort to maintain their relationship with the informants in a variety of ways since they need to have an update about their students' well-being.

*"I utilized dancing and singing method in my class to make it more enjoyable for my students. I cannot visit them during COVID, therefore I will either provide my students present of money when they finished their homework. This method will keep my students to always attending to my online class" ……..……*BC4

"I made my own special WhatsApp group for my students. There, we can relax and have conversation that is not involved with PdPR. With this method, I can see which

*one of my students have problems and I will help them by chatting casually and not pressure them further" ……..*TC2

Informants that have difficulties with their teacher guidance or have a poor relationship with their teachers are more unfortunate. Affected by teachers who failed to provide their students with positive feedback and encouragement due to their unfavourable comments and lack of guidance, SM8 and SM13 have suffered emotional damage and are afraid to ask questions or foster a good connection or relationship with them. This will have a negative impact for them, preventing the informants from studying digitally effectively.

*"I did not ask my teacher any questions because I am scared that she will scold me since the first time I ask her during online class, she scold me with other friends. She also told us not to ask any question during class"……..*SM10

"I seldom ask the teacher. Whenever I ask them a question about schoolwork, they will tell me to search for the answer by myself using the Internet. They also sometimes ignore me during online class or my text in WhatsApp" …….. BM13

Thus, students need to learn effectively when enrolled in digital classes since they require both physiological and motivational assistance in adjusting to the changes. Since it was their first time using an online learning environment, the motivational support of their parents, friends and teachers with proper guidance was especially important during that time. Insufficient motivation, guidance or relationship may cause the students to lag in their studies at critical moments, worsening the problem of digital

poverty among them. Table 4.14 shows the overall data for informants' relationship with their teachers during online learning.

Table 4.14
Informants' Relationship with their Teachers during Online Learning

Informants Relationship with their Teachers during Online Learning	Number of Informants
Receive a good relationship and learning feedback	46
Did not receive a good relationship and learning feedback	9
TOTAL	**55**

4.3.4 Sub-theme: Economic Factor

Digital poverty in the economy is linked to financial problems, particularly during the COVID-19 outbreak, which has significantly impacted the B40 households. Hence, the economic factor is a very important factor that affects the students' online learning and this is intertwined with the other factors. The economic factor in digital poverty among B40 school students can be divided into three aspects which are financial problems, Internet purchasing and initiative acceptance from the informants, as shown in figure 4.5.

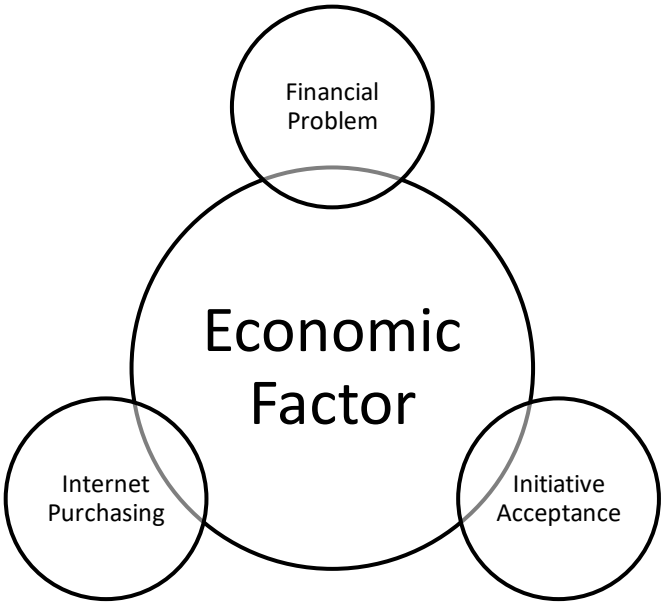

Figure 4.5
Economic Factor and Reviewed Codes

4.3.4.1 Financial Problems

In accordance with financial problems, B40 school students face challenges in acquiring digital tools, purchasing data, and creating a conducive learning environment due to financial issues. The findings are significantly influenced by financial constraints, as informants' parents struggle to provide adequate ICT tools that can assist the students' learning process. As stated by SM5 and SM15:

*"We have financial problems since my mum said it was hard for her to bring food daily for our house. She also said that it is hard to buy the Internet because she has no money. She only prepared enough for us to eat everyday" ……*SM5

*"There was a time when my father did not pay the bill because we did not have enough money. We barely got to eat every day because of COVID-19, my father cannot go outside to work to earn some money" ……*SM15

Parents often struggle to provide their children with the necessary ICT tools for online learning, despite having access to technology and the Internet. BM19 and SM17 stated that they also need to work in order to help or aid their parents financially. This implies that their financial issue is extremely serious.

*"Sometimes I have to use my own money for my mother. I do part time work. If someone offer a job, I will finish the job and they will give me some money. The money then I will give to my mother since she needs to buy some groceries" ……..*BM19

*"If my parents have difficulties in providing me with anything I need, I will find my own money doing some part time jobs. Sometimes I did not enter my online class since I am busy working to have some money" ……..*SM17

In short, Table 4.15 below shows that all of the informants (55 out of 55) are experiencing household financial difficulties while learning online because all of them are of the B40 income status. 3 out of 55 informants have minor financial problems because they can still afford to buy a smartphone, but 17 informants have moderate concerns regarding their finances. A moderate level of financial problems indicates that the informants' households can continue to manage their online learning adequately, but a high level of financial problems affects 37 informants. These 37 informants face challenges in utilizing ICT tools for online learning, and their household has the lowest income.

Table 4.15
Informants' Household Financial Problems

Household Financial	Level of problem	Number of Informants
Has financial problems	Minor	3
	Moderate	17
	High	35
Do not have financial problems		0
TOTAL		**55**

4.3.4.2 Internet Purchasing

Many informants lack reliable Internet connectivity, despite owning ICT tools for online learning, affecting their progress and indicating a need for improved Internet purchasing. The researcher inquired about the cost of Internet access among informants who primarily rely on the mobile data without Wi-Fi. BM14, BM18 and SM14 stated the cost of data for the phone Internet connection, which they thought is cost-prohibitive and that they cannot afford to have home Wi-fi.

*"…. online, it was around RM25/month. It is expensive" ……..*BM14

*"It was so expensive for the Internet. RM12 for a week and RM35 for a month. There was never enough data when subscribing to the Internet since my teacher always makes an online class using Google Meet. It is always stuck" ……..*BM18

*"…sometimes the price is RM35/month. If for one week it was RM15 and RM5 for a day. However, the data is limited to only opening the WhatsApp and download some document that teacher sent in WhatsApp group" ……..*SM14

B40 households struggle to afford RM35 monthly Internet access for their children, and yet, parents struggle to provide adequate data for online learning. Parents find it a burden to afford expensive Internet connections with unlimited data, leading to students' frustration and inability to effectively use the digital platforms, as stated by SM2.

*"I did not study because there was no Internet connection during MCO. My parents just prioritize earning money for food at home. Besides that, if I have Internet, I also cannot join my online class since I have limited data and poor connection" ……*SM2

The finding (refer table 4.16) reveals that some parents of the informants require financial assistance from their relatives to purchase the Internet for online learning. Informants' parents struggle financially, indicating that they require financial assistance from relatives to purchase the Internet for children's online learning, highlighting their grave financial needs.

"My mother needs to borrow some money from her siblings to buy Internet for my online learning. I feel sorry for her…"……SM4

"My Pak Tan helped us by giving my father some money. He is my uncle"…….SM15

Table 4.16
Informants' Internet Purchasing Level

Internet Purchasing Level	Number of Informants
Requires Financial Assistance	52
Does not require Financial Assistance	3
TOTAL	**55**

4.3.4.3 Initiative Acceptance

Furthermore, for the third aspect which is initiative acceptance, the government has announced a free 1GB data per day as its initiative for all to be used each day, and this is applicable up until Dec 31. Google Meet or Zoom sessions require 810MB per hour of data usage, consuming 80% of the government's free data. If students have three classes a day, they need at least 2.4GB of Internet data per day. Therefore, B40 school students often struggle to meet their daily 2.4GB Internet data requirement for online classes, citing high costs for additional data subscriptions.

However, some of the informants stated that they did not receive any of the government or school initiatives such as phones, tablets or free Internet to help with their online learning as reiterated by SM6 and TM13. Despite being from the B40 household, most informants did not receive any initiatives from their schools or government. Refer to Table 4.17 for the overall data of the informants' initiative acceptance from the school or government.

"No, I did not receive any…"……SM6

"I have never receive any of phones or Internet data from school"……TM13

Table 4.17
Informants' Initiative Acceptance from School or Government

Initiative Acceptance	Number of Informants
From School	
Receive initiative acceptance	4
Did not receive initiative acceptance	51
TOTAL	**55**
From Government	
Receive initiative acceptance	1

Did not receive initiative acceptance	54
TOTAL	**55**

In summary, the major factor which is the lack of ICT tools and Internet connectivity at home, has affected the students' learning, and this is mostly caused by their economic factor, or financial issues.

Students in Kedah rural areas, particularly Baling, Sik, and Pulau Tuba, Langkawi, are struggling to utilize ICT effectively for online learning due to the aforementioned challenges. The rapid growth of ICT innovation, especially with 5G technology implementation, necessitates careful consideration of physical, knowledge, social, and economic factors to overcome their challenges. The government should implement reliable oversight and accountability measures to promote equal access to ICT, especially for digitally poor individuals from the B40 income status.

4.4 Theme iii: B40 School Students Perceive Technology During their Online Learning

Perceptiveness involves knowing events through senses, the awareness of organic processes, past experiences, and variables that hinder the individual ability to distinguish between direct truth and immediate belief. The researcher explores how B40 school students perceive technology in online learning, focusing on feelings, experience, and opinions, as illustrated in figure 4.6.

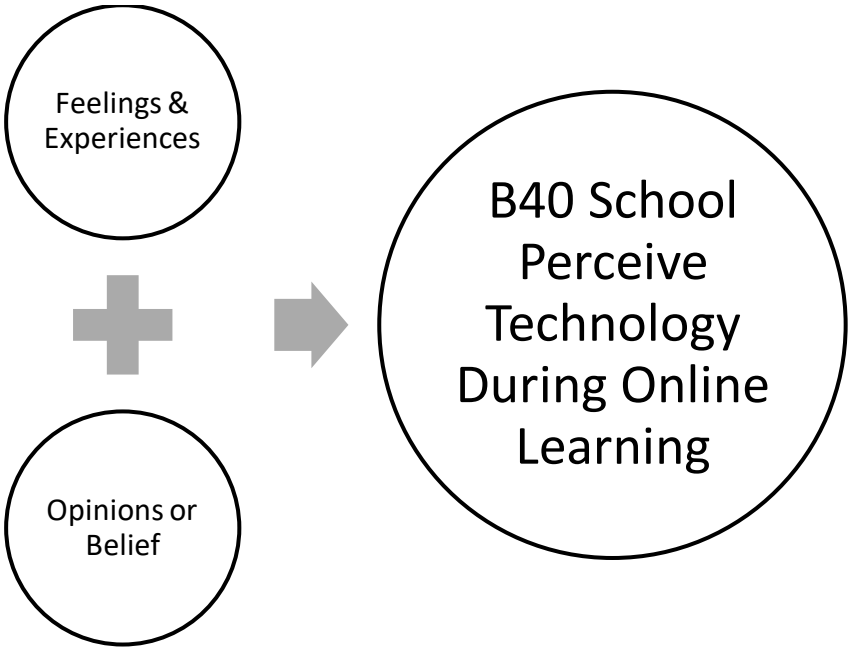

Figure 4.6
Reviewed Codes for B40 School Students' Perceived Technology during Online Learning

ICT's influence on learning has changed students' experiences and patterns, with varying feelings towards online learning, particularly on the negative side. On the positive side, ICT can enhance student engagement and focus by providing various tools for note-taking, questioning, and participation in discussions.

However, informants revealed the negative aspects of their online learning, including boring classrooms, lack of ICT tools, and poor Internet connection, leading to lower motivation and less enjoyment of online learning.

*"It is not fun and a little different. If I study at school, I can understand what the teacher teaches, but if I study online, there is not much that the teacher shares to learn also with the Internet problem" ……..*SM6

"I feel bored because I cannot come to school. At home, I have to study alone by myself. If I come to school, I can understand better since there are my friends and teachers. If

I don't know an answer, I can ask the teacher directly. At home, there was no line for online classes, I had to ask the teachers again when there was a line and I tend to forget that which make me late in submitting my homework"……TM7

"It is less fun since I need to learn at home. I also have a problem with the Internet. Apart from that, I do not understand the teacher explanation because it's not face-to-face. Friends are less responsive, less come to class too" ……TM17

Furthermore, the lack of ICT tools and poor Internet connectivity will negatively impact informants' feelings and experiences, as they struggle to learn effectively. The researcher asked about the level of pressure informants experienced during online learning due to these difficulties, with most informants admitting that they were feeling stressed. Thus, this has led to the students giving up on their learning as stated by BM15 and TM2.

"I am feeling stressed because I cannot attend my online class properly. I do not have a phone and also my area did not support Celcom connection. I was always forced out from Google Meet because of no Internet. After being forced out, I just turn off mother's phone and go watching TV since I cannot learn either way" ……BM15

"Yes, I am feeling stressed sometimes. When I wanted to enter my online class, there was no Internet connection. Sometimes I feel like I do not want to study anymore because that problem always occurs when I am trying to study".....TM2

Additionally, TM18 stated that students experiencing scolding and the difficulty learning digitally have increased stress levels and are more likely to skip class. They

were initially eager to learn online due to the unfamiliar and new experiences, but faced numerous challenges that ultimately led to their failure in learning effectively.

"It's fun to learn, but it's just like, I cannot understand much when learning. After that, when I asked the teacher to repeat, he was angry and told me that I was not focused. But it was because of the line being stuck and make me forced out from the Google Meet too. So it's not fun because I am getting a scold by the teacher so I skip the class"……TM18

An informant expressed the desire to abandon her studies due to stress during online learning, lacking the support from teachers, friends, or parents. This posed a serious problem since education is important for students to thrive and improve further in their lives. Addressing students' experiences using ICT during online learning is crucial to prevent them from stopping and thriving in education.

"I am feeling stressed, I want to give up on my studies. No one will help me anyway with my studies".……TM13

Moreover, students' opinions on ICT in online learning suggest that appropriate ICTs can enhance self-pacing, reduce stress, and improve learning outcomes. For example, students can access class video recordings and lesson materials anytime through a simple platform like Telegram, which uses the low data mode for downloading videos or documents. They can also adjust their learning speed according to their current abilities, since Telegram data cannot be deleted unless the moderator deletes the group chat. The informant shared that he found learning using Telegram

easy due to the fact that it allows sharing with siblings and also Telegram has low Internet data usage.

"One of my teachers made a Telegram group instead of Google Meet and it really helps me a lot since I can access the video homework anytime, I want even though the phone is being formatted. I learn through video that teacher sent in it too" …….SM11

Apart from that, one of the informants mentioned about the requirement of personal technology that can support them during online classes as stated by BM19.

"If I was given an opportunity to get my own computer or smartphone, I think it would be even better for my learning. It will be easier to see what the teacher is showing on the screen because I need a wide screen while I study" ……..BM19

Aside from that, TM7 and SM13 urged the government to support the development of stable Internet connectivity in their areas so that digital classes are more easily accessible.

"...fix the Internet line near this tuba area, give it a little speed please"……TM7

"Only the Internet part is the main problem for me. I think the government can help upgrade the line near my area because it is difficult to attend my online class and study online. If government can fix the connection, I think my online study will be much better after this"……SM13

Informants' opinions are likely to be more positive if online classes were simpler, easier to access, and lessons could be conducted using one ICT tool. Thus, a proper measurement of students' perception of ICT usage in online learning is crucial to alleviate their learning struggles.

4.5 Chapter Summary

The COVID-19 pandemic has worsened the digital poverty in education, particularly among students who lack access to the Internet and ICT tools. The shift from traditional classrooms to online learning has led to the difficulties in accessing educational resources. Financial issues and the lack of Internet connectivity significantly impact students' online learning experience. ICT tools like smartphones and tablets enhance learning, but the lack of Internet access hinders proper study, homework completion, and exacerbates the digital poverty gap.

CHAPTER 5: DISCUSSION AND CONCLUSION

5.0 Introduction

A summary of the research is presented, and findings of the study are discussed and interpreted as an overview in this chapter. The research objectives regarding digital poverty among B40 school students especially in Kedah rural schools are examined. The conclusions are based on the purpose, research questions and results of the research.

5.1 Discussion of the Research

5.1.1 Category of Digital Poverty

Categories of the B40 status vary according to different individuals and their situations. Thus, it is imperative to determine how and why one group is able and the other one is unable to adopt, access, and use ICT. Individual position and background contribute to resource inequalities in digital access (Lytheatis et al., 2022). When discussing digital poverty, personal categorical inequalities include age, gender, race, education, and ethnicity (Dijk, 2017), which can serve as a benchmark for the digital poverty category in education.

The category of B40 school students is measured based on their characteristics using Barrantes's (2007) level of digital poverty as a benchmark. The research result indicates that B40 school students in rural areas require significant assistance and

support with technology and reliable Internet connections. Findings from Mohamed et al., (2021) and Abdullah et al., (2021) state that the students especially those from disadvantaged households require assistance using ICT tools and need a reliable Internet connection in order to use the tools effectively for their learning. Additionally, their findings also stated that urban areas have robust Internet connectivity and strong access, while rural areas are less likely to provide digital services and access to their residents similar to the findings established by Morris et al., (2022). Solutions to this specific problem, along with financial problems must be overcome to reduce the inequalities of digital poverty among rural and urban areas.

The research result reveals that 39 out of 55 B40 Kedah rural school students, mainly from low-income households, face minimal difficulties in online learning due to the lack of ICT tools and Internet access. Findings from Naim et al., (2024) highlighted the urgent need to tackle digital inequalities, not only for B40 students but for all, emphasizing the importance of effective interventions to minimize these disparities in the realm of online and remote learning (Fang et al., 2022). Thus, differences in the socioeconomic status frequently result in disparities in educational attainment when accessing resources (for example, smartphones and computers for educational purposes) (Joshi et al., 2024).

The data indicates that the region's Internet usage is significantly influenced by the absence of reliable and high-quality Internet connectivity. Kedah is one of Malaysia's poorest states, with a population of around 2.072 million. Most of them reside in rural areas (Azhar, 2022). The study reveals that the access to digital knowledge is significantly influenced by student's household income and demographics, with those near towns having better access. This could be due to the colonial government's

psychosocial deprivation and devaluation, further causing them to lag behind in terms of development (Dawood et al., 2019).

Regular maintenance and repair of digital resources is critical for the efficient and safe operation of the ICT adoption for online learners, not only at the expense of the community. The community report on the failure of digital resources should be thoroughly investigated by the appropriate government agencies (Verhoef et al., 2021). Digital resources should also be located closer to the community for easier access. Having to walk a distance and travel to town to get Internet access indicates that ICT is indeed important and highly desired by Kedah students especially those of the B40 status.

In addition, aspects such as culture, family dynamics, and poverty can significantly hinder students' digital literacy (Mohamed et al., 2021). Students from lower socio-economic backgrounds tend to spend more time on the social media but are exposed to less informative content. Disadvantaged students often lack the necessary digital skills, leading to passive ICT consumption and usage during online learning. Digital poverty is a global issue, but access to ICT is a basic citizen right (Afzal et al., 20223). Positive change is needed to align students with the Malaysian identity within the education sector.

5.1.2 Factor of Digital Poverty

Digital poverty is a pressing issue due to household financial crises and the acceleration of modern economy digitization spurred by the Covid-19 outbreak (Aissaoui, 2021). The lockdown has heightened the necessity of the Internet in daily life, which means that students are also forced to engage in online learning. Hence,

students from the B40 status have already been disadvantaged due to their lower socioeconomic backgrounds, the lack of ICT skills, and lower housing tenure. The study identifies four digital poverty factors among B40 students in Baling, Sik and Pulau Tuba, Langkawi rural school: physical, knowledge, social, and economic access. The most crucial factors to consider are the availability of suitable digital tools, reliable Internet connectivity, ICT literacy, and economic status.

The physical component of the lack of digital tools, insufficient Internet connectivity, and an appropriate learning environment interferes with online learning. B40 students lack the access to digital tools and ownership, making learning difficult as they may have to share with relatives. This data is in line with a study from (Ali et al., 2024). Modern technologies dictate that some phones used by students can be incompatible with new software, hardware, applications, or study platforms, further making online learning an issue to resolve. Other than that, Miah, (2024) indicates that students from low-income families and minority groups are less likely to have access to digital technologies, leading to lower academic achievement and poorer educational outcomes. Students from low-income families or minority backgrounds are more likely to have limited access to technology and the Internet, which can further widen the digital poverty gap.

The Internet connectivity significantly influences online education, and is thus crucial, as noted by Deursen & Dijk (2011). The COVID-19 pandemic has forced Malaysia to implement lockdowns, resulting in a significant shift to online learning and challenges for B40 students' Internet connectivity. The students in their rural areas face difficulties in accessing their lessons due to inadequate Internet connectivity. Students without Internet access struggle to learn efficiently due to the lack of digital tools like smartphones and laptops, leading to difficulties in completing homework

(Shahren et al., 2021). Additionally, a report by the World Bank found that globally, only 53% of households have access to the Internet (World Bank Group, 2019). Thus, the absence of dependable, high-speed Internet will exacerbate the digital poverty gap.

ICT literacy including the skills in using the digital tools and the understanding of cognitive knowledge is crucial for the students to grasp (Negoro et al., 2023). ICT literacy encompasses the comprehensive understanding, use, analysis, development, and distribution of texts through reading and writing in their broadest terms. This involves skills related to alphabetic printing and digital technology, including conventional skills (Barrot et al., 2021). The research result revealed that students lacked adequate knowledge in using digital tools like smartphones and ICT, including browsing websites, navigating documents, and downloading files. Other scholars emphasize the importance of ICT skills for students which enable them to effectively use their available home-based ICT tools (Ghavifekr et al., 2016; Hamzah & Ahmad, 2020; Ibrahim & Othman, 2022; Mohamed et al., 2021). Limited access to technology can also lead to a lack of digital skills. Students who do not have access to technology and the Internet may not have the opportunity to develop the digital literacy skills that are increasingly important in today's society (Lechman & Popowska, 2022).

According to Barrantes (2007), B40 students frequently reside below the poverty line in terms of their economic status. Their parents, who are financially disadvantaged due to low wages or disability allowances, cannot afford digital tools like smartphones given this limited financial support. They are also facing difficulties in purchasing data for Internet connectivity (Nordin & Alias, 2023). Disadvantaged students are digitally excluded from their learning due to the lack of access to their classes.

Fortunately, the Malaysian government has been supplying all users with 1GB of Internet access per day beginning April 1 (Yakin, Yahcob, & Januin, 2021). Some students were unable to access the Internet due to geographical constraints (Hashim et al., 2020). Despite the availability of technology and facilities, online learning still lacks satisfactory quality due to the need for high-speed Internet connection (Copeland et al., 2020). The government should collaborate with network providers to improve the Internet connectivity in rural areas automatically, enhancing the learning experience for students.

5.1.3 Students Perceive Technology during their Online Learning

As the Covid-19 pandemic progresses, students' perceptions of online lectures are shifting towards the belief that these methods are highly effective. Online learning during the pandemic was found to effectively reduce the spread of the Covid-19 virus (Wijayanengtias & Claretta, 2020). The data indicates that students' perceptions of the effectiveness of classes are generally mediocre. However, numerous students' opinions suggest that online learning has not been properly integrated in this pandemic period. Agarwal and Kaushik's (2020) research suggests that there are diverse perceptions of online learning. Poor infrastructure, inadequate knowledge preparation for teachers and students, challenges in providing credible evaluations, and insufficient assessment of skills are some of the aspects that have been perceived as issues. Thus, the pandemic has widened economic disparities, making it more difficult for low-income families to afford digital resources and technology needed for remote learning (Petchame et al., 2023)

The research findings are supported by additional data. Syauqi et al. (2020) discovered that there were varied perceptions of online learning students. Perceptions of online learning include limited teacher clarity, where only a few percent of students deemed it beneficial, despite the difficulty in accessing learning resources. While there arose some negative reactions from students, online learning remains a viable option for many students. Research shows that students respond positively to online learning when it is well-designed and planned, as discovered by Basar et al. (2021). Research indicates positive perceptions of online learning implementation from students, teachers, and parents (Stecula & Wolniak, 2022). Encouraging students to improve and manage their learning primarily means exploring the cultural realm, and situating the co-ordinates and mindsets of today's student generation, as well as proposing a range of learning applications consistent with the meanings and the learning practices put in place.

5.2 Model of Digital Poverty

This research is using the Van Dijk's theory as a benchmark to produce a conceptual model as shown in Figure 5.1 below.

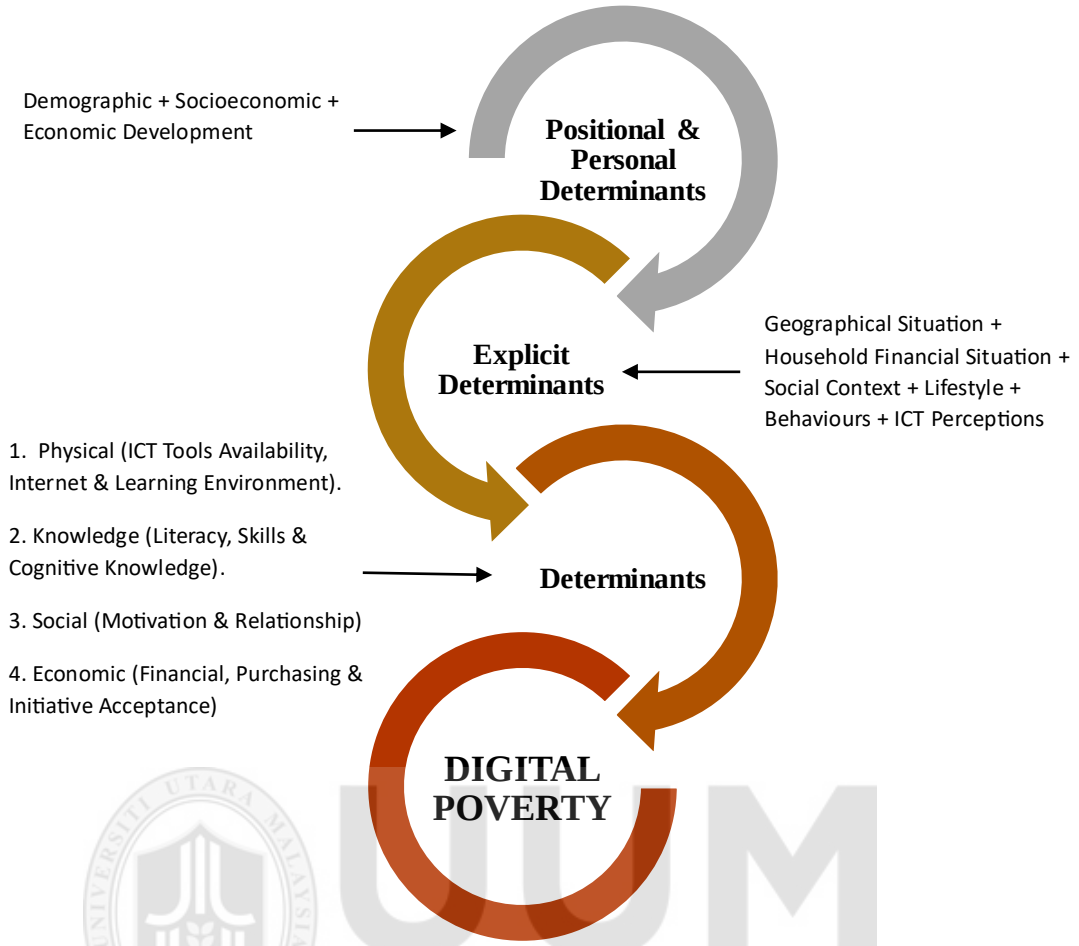

Figure 5.1
Conceptual Model of the Research

Digital poverty is the inability of people to meet their ICT basic needs. It is exacerbated by demographic, socioeconomic and economic development inequalities. It is the cause of other forms of socioeconomic disadvantages affecting the low-income people. The digital poverty model in this research is based on the Van Dijk Theory "Digital Divide," which aims to identify the category, factor and perceptiveness of students' digital poverty within Kedah rural schools.

Other scholars have long described inequalities in access to ICT as the 'digital divide'. Once it is conceived as the absolute gap between those that can acquire ICT and those who cannot acquire ICTs, people have understood the 'digital divide' as a

constellations of diverse but intersecting inequalities with salient gaps in physical (Ict tools availability, Internet connectivity and learning environment), knowledge (ICT literacy, skills and cognitive knowledge), social (motivation and relationships) and economic (financial, Internet purchasing and initiative acceptance) gaps that introduce another division called *digital poverty*.

In addition, the benchmark of digital poverty is always changing as the digital world evolves. Therefore, digital poverty is an important issue to address especially when it has widened to the emergency level. It can be disrupted by those four determinants, meaning that students can fall in and out of digital inclusion at various points within their learning.

This model explores the four determinants of digital poverty which are physical, knowledge, social and economic determinants in an effort to capture the complexity of digital poverty but also to provide useful and contemporary categories for thinking about solutions in decreasing the gap. Although a substantial amount of academic research has looked into various aspects of digital poverty, it is still under reference in other sectors such as in the Government, businesses, agriculture and industry. This research aims to bridge the disconnection by integrating some of the most important and critical findings from other scholars into broader data on digital poverty especially in Kedah, Malaysia.

5.3 Recommendations

Based on the literature and research reviewed, the following are some recommendations to address the digital poverty within education especially for the disadvantaged students in rural areas:

Increased access to ICT and Internet connectivity. Efforts should be made to increase the access to ICT and Internet for the students in low-income households such as B40 and communities. The efforts include providing learning laptops, tablets or other devices for the students and ensuring that they have access to reliable and fast Internet connectivity within their geographical areas.

Address the ICT affordability issues. The cost of ICT and Internet connection can be a barrier for students in low-income households. Efforts should be made to address affordability issues for ICT such as providing low-cost Internet options suitable for online learning or offering subsidies for ICT tools.

Next, the provision of ICT literacy and skills training. ICT literacy and skills training should be provided to students and their families to ensure that they have the skills necessary to effectively use the ICT tools. This can be done through good school campaigns that promote training.

Moreover, another recommendation is to address equity in access to ICT resources. Schools should ensure that all of the students have equal access to ICT resources such as online textbooks and educational software suitable for online learning. This can be achieved through initiatives like ICT textbook adoption and the use of open educational resources. The schools can also make a system in collecting data to ensure that all of the students have access to the ICT resources.

Next, increase the funding for ICT infrastructure. Many schools and communities within the rural areas lack the ICT infrastructure necessary to provide equal access to ICT and the Internet. Increasing the funding for the ICT infrastructure can help to address digital poverty issues and ensure that all students have access to ICT resources they need to properly attend their online learning.

Lastly, support blended and online learning. Blended and online learning models can help to address the digital poverty issues by providing the students with access to ICT resources regardless of their geographical locations. Schools should ensure that all students have access to the necessary ICT and resources to participate in these models.

CONCLUSION

The COVID-19 outbreak has drawn greater awareness of the issue of digital poverty. Within the broader scope of this research, digital poverty goes beyond a mere lack of information and communication technology resources and knowledge. It is closely

connected to various elements of the living environment, such as the physical surroundings, financial circumstances, social support, and accommodation. The transition from the pandemic to the endemic phase today, requires students to get used to a lifestyle laden with digital tools. It is imperative that efforts be made to remove obstructions to access, enhance the knowledge and abilities of B40 school students in Sik, and recognize and overcome any possible obstacles to learning.

The study findings indicate that physical, knowledge, social, and economic factors alone are insufficient to measure digital poverty's impact on student performance. However, physical factors, such as the availability of a suitable learning environment, have an impact on the online learning process. Malaysian educational settings need to acknowledge and overcome these challenges by offering suitable technological capabilities, competent guidance, and reinforcing effective methods and practices that promote student engagement in online learning.

There are a lot of skills that students need to have in order to live fulfilling and productive lives, and these depend on their academic performance. The pandemic still poses a threat to he most disadvantaged people in the society. Education is a vital component in the effort to enhance the achievement in the students' lives, and the society will fall behind again, putting yet another generation at stake. Surely this can be overcome if any of the arguments raised in this work strikes a chord to the relevant parties.

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APPENDICES

Interview Protocol. Protocol is written in malay language for informants.

Susunan Temubual Murid-Murid Sekolah

1. Kata-kata aluan/sesi ice breaking/mewujudkan hubungan baik
    a. Pengkaji perkenalkan diri
    b. Mengucapkan terima kasih di atas kesudian menjadi informan untuk berkongsi maklumat dengan pengkaji
    c. Menghuraikan dasar kajian dan tujuan temubual
    d. Menyatakan kerahasiaan informan/pemberi maklumat
    e. Menyatakan tempoh jangkaan sesi temubual dijalankan
    f. Mendapatkan persetujuan informan untuk merakamkan temu bual tersebut
    g. Bolehkan anda menceritakan kepada saya serba sedikit latar belakang anda:

    Nama:_____

    Darjah/ tingkatan:_____

    Sekolah:_____

    Umur:_____

    Bil. Adik beradik:_____

    Umur adik beradik:_____

    Bangsa:_____

    Pekerjaan ibu:_____

    Pekerjaan bapa:_____

2. Persoalan kajian: Untuk menyiasat faktor/tahap kemiskinan digital dalam kalangan pelajar komuniti B40.

Faktor Pengetahuan
● Boleh tak adik ceritakan pengalaman sewaktu kelas online semasa PKP? ● Bagaimana perasaan adik semasa belajar sepanjang PKP? Pada waktu tersebut, adik belajar di rumah. ● Bagaimanakah perasaan adik sewaktu belajar dari rumah? Seronok tak gunakan komputer untuk belajar? ● Siapa yang bantu buka atau on kan komputer sebelum nak mula belajar? ● Adik boleh on sendiri komputer? ● Adik boleh ikut/follow cikgu mengajar secara online?

- Cikgu gunakan platform apa untuk mengajar online? Adik boleh ikut tak? Senang atau susah?
- Adik reti tak menggunakan website? Kalau reti guna untuk apa? Sama ada main game/dengar lagu atau tengok youtube?
- Tau tak bila nak mute/unmute?
- Tau tak bila nak on/off video?

Faktor Fizikal (demografi, peranti digital, suasana belajar)

- Bagaimanakah keadaan belajar di rumah sewaktu PKP?
- Apakah peranti yang adik guna semasa belajar online? Siapa punya?
- Di rumah adik ada capaian Internet? Kalau ada laju tak capaian tersebut?
- Jelaskan perasaan adik, yang manakah adik merasa seronok, belajar online guna komputer atau belajar dengan datang ke sekolah?
- Sepanjang tempoh PKP, ada tak kena beli gadget baru?
- Jika ada, beli gadget apa? Siapa yang belikan gadget tu?
- Di rumah semasa belajar online, ruang mana yang digunakan untuk belajar?
- Sejauhmana keselesaan ruang belajar?
- Bagaimana dengan adik – beradik yang lain sewaktu belajar online di rumah?
- Seandainya berkongsi gajet, ada masalah tak bila berkongsi – contoh waktu kelas sama dengan ahli keluarga yang lain. Adakah adik akan memberitahu cikgu?

Faktor Sosial (rakan sebaya, cikgu, famili)

- Bagaimanakah cikgu memainkan peranan dalam menggunakan komputer ketika belajar? Cikgu bantu tak?
- Ada WhatsApp Group tak untuk kelas? Atau lain-lain platform?
- Siapa suruh gunakan computer/laptop/telefon bimbit semasa belajar online?
- Sepanjang PKP, berhubung tak dengan kawan-kawan sekelas? berhubung guna medium apa? Untuk tujuan apa?
- Sepanjang PKP berhubung tak dengan cikgu–cikgu? Berhubung guna medium apa? Untuk tujuan apa?
- Cikgu-cikgu ada beri semangat tak? Sejauh Mana cikgu-cikgu berikan semangat tu?
- Kawan-kawan ada beri semangat tak? Sejauh mana kawan-kawan berikan semangat?
- Ibu bapa ada berikan semangat tak? Sejauhmana ibu bapa memberikan semangat? Bagaimana ibu bapa membantu adik?
- Semua kerja sekolah siap tak waktu belajar online? Bagaimana cara hantar kerja sekolah tu?
- Ada tak kes tidak dapat siapkan kerja sekolah?
- Seandainya kes tidak siap, mengapakah kerja sekolah adik tidak dapat disiapkan? Jelaskan.

Faktor Ekonomi

- Gajet/peranti yang adik gunakan untuk belajar online di rumah kepunyaan siapa?

- Ada masalah tak untuk langgan Internet setiap minggu/bulan untuk belajar online?
- Jika ada, apakah masalah itu?
- Bagaimanakah masalah itu diatasi?
- Ada perasaan macam tertekan tak untuk beli data setiap minggu/bulan?
- Adik menerima sebarang bantuan gadget dari pihak sekolah atau kerajaan?
- Bagaimana dengan kos melanggan Internet?berbaloi tak?

3. Penutup/menamatkan sesi temu bual
    a. Akhir sekali, adakah terdapat apa-apa lagi yang ingin dinyatakan oleh informan?
    b. Bolehkan saya menemui anda semula sekiranya terdapat perkara yang perlu diberikan pencerahan?
    c. Adakah anda sedia dihubungi untuk semakan salinan transkrip temu bual?
    d. Pengkaji mengucapkan terima kasih di atas kesudian informan memberikan maklumat yang diperlukan.