Exploring Digital Education: Experiential Insights of ESL Teachers in Rural Malaysian Schools

Kaleena Halene Donald & Harwati Hashim

Faculty of Education, Universiti Kebangsaan Malaysia, Bangi, Malaysia

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ABSTRACT

The rapid advancement of technology has revolutionized the education sector, presenting new opportunities for teaching and learning. However, rural schools face significant hurdles in embracing digital education. These challenges include inadequate infrastructure, unreliable internet connectivity, limited access to digital tools, and a lack of professional development for educators. Such barriers exacerbate the digital divide, leaving rural students at a disadvantage compared to their urban counterparts. This issue is particularly evident in rural Malaysia, where schools in underdeveloped areas, such as a district in Sabah, Malaysia, struggle to implement digital learning effectively. Addressing these challenges is crucial to ensuring equitable access to quality education and closing the gap between urban and rural communities. This qualitative research delves into the implementation of digital education in rural Malaysia. By examining the experiences of educators through a phenomenological lens, the study provides insights into teachers' subjective viewpoints and perceptions regarding digital pedagogy. Key findings reveal instructional methodologies, barriers to adoption, network connectivity issues, implementation successes and challenges, and strategies to overcome these obstacles. Highlighting the importance of addressing infrastructure deficiencies and offering professional development opportunities, this study contributes valuable insights for policymakers and educators striving to bridge the digital divide and promote equal educational opportunities in rural Malaysia.

Keywords: Digital education, rural schools, English as a Second Language (ESL), Technology-Enhanced Language Learning

INTRODUCTION

In today's rapidly advancing world, the omnipresence of technology mandates continuous adaptation to keep pace with its swift evolution. Malaysia's active engagement in Industry 4.0 underscores the critical importance of nurturing a technologically proficient generation for sustained economic growth within an increasingly globalized, technology-driven landscape (Bujang et al., 2020). To this end, the concept of "Education 4.0" emphasizes the seamless integration of technology into everyday learning experiences, as advocated by Hajar Halili (2019). Educational institutions stand at the forefront of this endeavour. By aligning teaching methodologies with the skill sets demanded by the future workforce, they can effectively equip students with the requisite 21st-century knowledge and capabilities necessary to navigate the challenges posed by the Fourth Industrial Revolution (Ghavifekr & Wong, 2021). As aptly noted by Dunwill (2016), technological advancements continually redefine teaching methods and learning environments, highlighting the necessity for educational institutions to adapt accordingly.

Mobile learning tools have emerged as a critical component in the modern educational landscape, particularly in addressing educational disparities between urban and rural areas. These tools, which encompass a range of digital platforms and applications accessible via smartphones, tablets, and other mobile devices, offer an innovative solution to traditional educational barriers. In rural areas, where geographical isolation, lack of infrastructure, and insufficient access to qualified teachers often hinder educational opportunities, mobile learning provides an alternative pathway for students to engage with learning materials, interact with educators, and develop essential skills. The flexibility and accessibility of mobile learning tools allow students in rural areas to overcome challenges such as long distances to schools, limited educational resources, and

inconsistent access to teachers. This has the potential to significantly transform the educational landscape in rural settings by offering a more inclusive and equitable learning environment. With the proliferation of smartphones and mobile technology, mobile learning has the potential to bridge the gap in educational access, making it an essential tool for enhancing rural education globally, including in Malaysia.

Digital teaching strategies, which encompass a diverse array of technology-driven approaches, offer a compelling solution to this challenge. Through the strategic utilization of these strategies, educators can foster deeper student engagement and demonstrably enhance learning outcomes (Haleem et al., 2022). Moreover, the globalization of education underscores the imperative of incorporating digital technologies into the learning process. For today's digitally native generation, integrating technology into classrooms holds immense potential to significantly enhance the learning experience. Such integration has the capacity to ignite curiosity, elevate participation levels, and create a more captivating learning environment, thereby sustaining student interest in the subject matter while minimizing distractions (Haleem et al., 2022).

Recognizing education as the cornerstone of a knowledge-based society, Malaysia has embarked on a strategic initiative to cultivate a digitally literate populace. This initiative is deemed critical for realizing the nation's vision of attaining developed nation status in the digital era. With education serving as the catalyst, Malaysia aims to equip its youth with the requisite skills and knowledge to emerge as proficient and adept contributors in their respective domains, thereby advancing the agenda of transitioning towards a knowledge-driven economy. In pursuit of this objective, policymakers have underscored the imperative of comprehensively integrating information technology (IT) across all tiers of the education system. This holistic approach is viewed as indispensable for empowering students with the skill sets and knowledge base essential for thriving in an increasingly digitalized and information-centric world. By embracing this initiative, Malaysia seeks to not only modernize its educational landscape but also foster the broader goals of national progress and development.

To spearhead this transformative journey, the Ministry of Education (MOE) has proactively launched the ICT Transformation Plan 2019-2023 (Ministry of Education Malaysia, 2019) (Hamzah et al., 2021). This strategic blueprint serves as the keystone of Malaysia's digital education agenda, with its primary aim being the cultivation of a contemporary learning environment across Malaysian educational institutions, spanning from primary schools to higher education. Central to this endeavour is the cultivation of learners' proficiency in information and technology, alongside their professional development. Through the establishment of a modernized educational ecosystem, students will be equipped with the requisite skills and competencies to navigate the complexities of the 21st century adeptly, positioning them for success across academic and professional domains. Nevertheless, the journey towards digital transformation in Malaysian education is not without its challenges. Educational institutions continue to grapple with the pressure to adapt and prepare for the demand of a 21st-century education system inherently driven by technology (Ghavifekr & Wong, 2021).

A critical challenge confronting Malaysian education is the uneven distribution of technological resources between urban and rural schools. This manifests as a digital divide characterized by limited internet connectivity and inadequate network coverage in rural areas. This significantly hinders the effective integration of technology into classrooms, impeding the adoption of modern pedagogical approaches (World Bank, 2019). Further exacerbating this disparity is the lack of resources in rural schools. Compared to their urban counterparts, these institutions often face a scarcity of essential digital tools, such as computers, tablets, and interactive whiteboards (Tan & Kaur, 2019). Moreover, a potential skills gap among rural educators can further widen the gap. Research suggests that these teachers may require additional training to confidently utilize technology for instructional purposes, creating a disparity in teacher skillsets compared to urban educators (Hamed et al., 2018). The cumulative effect of these factors is demonstrably reflected in educational outcomes. Students in urban areas consistently outperform their rural peers in digital reading proficiency, highlighting the impact of the technology gap (OECD, 2019). Although, the government has continuously given adequate attention and support for the digitalized education system (Ministry of Education, 2012), the key focus is how rural primary schools are moving forward and where they are making the most progress.

This research investigates the implementation of digital education in rural Malaysian schools through the lens of teacher experiences. By gathering first-hand accounts from educators, the study aims to provide a nuanced

understanding of teacher experiential insights and their perceptions toward digital teaching in a rural setting. Special attention is given to the unique challenges faced by educators teaching English as a Second Language (ESL), where digital tools have the potential to enhance language acquisition but are often hindered by infrastructural and pedagogical barriers. To address the stated objectives, this research endeavour seeks to explore and provide insights into the following inquiries:

1. What are the ESL teachers' experiential insights into integrating digital teaching practices in a rural school?

2. What are the challenges faced by primary school teachers in integrating digital teaching practices to enhance ESL learning in a rural school?

LITERATURE REVIEW

Hasan, Murat, and Kemal (2007) characterize rural areas as typically having small populations and inadequate infrastructure, rendering them less attractive for organizational investment. According to the National Statistics Department of Malaysia (2013), rural areas are officially designated regions with limited urban expansion and populations of fewer than 10,000 people (Halili & Sulaiman, 2018). Globally, rural communities frequently struggle with insufficient technological resources and fail to capitalize on the advantages of ICT advancements (Hasan et al., 2007; Halili, 2019). Siti (2014) highlighted that these communities face numerous challenges, including limited infrastructure, financial constraints preventing the purchase of ICT equipment, lack of ICT knowledge, insufficient skills, and inadequate training. Despite Malaysia's efforts to introduce various programs aimed at providing internet access in rural areas, significant obstacles persist, hindering the full realization of ICT benefits (Halili, 2019).

The impact of mobile learning tools on rural education has been widely researched, with numerous studies indicating positive outcomes in terms of improving access, engagement, and academic performance. According to a report by UNESCO (2018), mobile learning has become a powerful tool for educational equity, particularly in low-resource settings. A study conducted in Kenya by Muli and Wambugu (2020) demonstrated that mobile phones provided rural students with access to learning materials and online courses, leading to increased academic performance and retention rates. In India, mobile learning initiatives have been instrumental in providing students in rural areas with interactive learning content, overcoming the lack of physical infrastructure in schools (Kumar & Gupta, 2019). These findings are echoed in research from South America, where mobile learning tools have been credited with reducing educational disparities between urban and rural students by enabling remote learning opportunities (UNESCO, 2019). In the context of Malaysia, the use of mobile learning tools presents a unique opportunity to address the educational challenges faced by rural students. Despite significant progress in digital infrastructure, rural areas in Malaysia still face challenges such as inadequate internet connectivity, a lack of digital literacy, and limited access to mobile devices.

Efforts by the Ministry of Education (MOE) to elevate the quality of education in rural areas to match that of urban regions have been met with persistent disparities due to insufficient facilities, educational gaps, lower academic performance, inadequate teaching aids, and limited ICT resources (Raman, Othman, & Affandi, 2019; Hasin & Nasir, 2021). Many rural schools lack the necessary technological infrastructure and support materials essential for effectively integrating ICT into teaching and learning processes. Time constraints further restrict the use of ICT in education. Moreover, students face challenges in accessing the internet due to a lack of essential equipment, such as laptops and desktops, and unstable internet connectivity in rural areas (Hasin & Nasir, 2021). Recognizing these challenges, the Malaysian government implemented the Malaysia Education Blueprint 2013-2025, which aims to improve technology access and digital resources in rural and remote areas (Ministry of Education Malaysia, 2012). This initiative includes projects like 1BestariNet, designed to provide internet access and virtual learning environments to all 10,000 schools. However, the initiative has not yielded equitable results, as rural schools continue to experience poor internet connectivity due to weak network reception in these areas. The lack of adequate technological infrastructure support for rural schools is a primary reason why the costly 1BestariNet project has failed to bridge the gap between rural and urban students, ("With poor tech reach, 1BestariNet will leave rural students further behind, says DAP MP", 2018). Concrete evidence

presented by ("Education Ministry Admits Gap in Digital Skills between Rural, Urban Schools", 2024) underscores that this disparity remains a significant issue:

The Ministry of Education (MoE) has admitted that students in the rural areas, including in Sarawak, are at a disadvantage as they have limited access and opportunities to develop digital skills than their urban peers. Minister Fadhlina Sidek, in acknowledging this scenario, said it had put rural students into a vulnerable position in today's technology-driven world. However, the ministry is always trying to do its best towards ensuring that the digital gap between rural and urban schools would be minimized by equipping all schools with high-speed Internet access, digital devices and other IT facilities, in stages.

Despite the challenges, digital teaching offers numerous opportunities for enhancing learning outcomes in rural schools. Digital technologies can facilitate interactive and engaging instructional experiences, catering to diverse learning styles and preferences (Creswell & Poth, 2018). Moreover, digital resources provide access to a wealth of educational content and materials, overcoming geographical limitations and expanding learning opportunities for rural students (Merriam & Tisdell, 2016). By leveraging digital teaching methods, educators can create dynamic and personalized learning environments that promote student engagement and academic success.

Consistent with the literature review, initial findings from prior research suggest that synthesizing information from various studies can help establish a more robust and scientific knowledge base. The conceptual framework of this study is grounded in the Technology Acceptance Model (TAM), proposed by Fred Davis in 1989, which serves as a theoretical lens for understanding teachers' acceptance and use of digital education technologies in Malaysian schools. TAM posits that two primary factors—perceived usefulness (PU) and perceived ease of use (PEOU)—significantly influence users' acceptance of technology (Davis, 1989).

Perceived usefulness (PU) refers to the belief that utilizing a specific technology will enhance job performance or productivity. In rural schools, the perceived usefulness of digital education technologies plays a crucial role in determining their adoption. Teachers' belief in the ability of digital tools to improve teaching effectiveness, particularly in the context of ESL (English as a Second Language) instruction, directly influences their willingness to incorporate these tools into their teaching practices. Research suggests that teachers in rural areas who have positive experiences with technology, particularly when the tools align with their teaching needs, such as enhancing vocabulary acquisition or enabling interactive learning (Ghavifekr & Wong, 2021), are more likely to view these tools as useful. In contrast, teachers facing unreliable internet connectivity or inadequate training may perceive digital technologies as ineffective, further exacerbating the gap in digital skill development between rural and urban schools (Hasin & Nasir, 2021). This gap highlights the importance of addressing the factors that influence PU, including the availability of training programs, access to relevant digital resources, and improvements in infrastructure.

Perceived ease of use (PEOU), on the other hand, involves the perception of how easy or difficult it is to use a technology. For rural educators, the perceived ease of use of digital tools is equally important in shaping their attitudes toward technology adoption. The complexity of new technologies and the lack of user-friendly interfaces can discourage teachers from fully utilizing digital tools in their classrooms. This is particularly problematic in rural areas, where teachers may have limited exposure to ICT and lack the technical support necessary to troubleshoot problems (Hasin & Nasir, 2021). However, when teachers have access to simple, intuitive platforms that do not require significant technical expertise, they are more likely to integrate digital tools into their teaching practices. This ease of use can be significantly enhanced by providing adequate training and professional development opportunities, particularly those that focus on ESL-specific technologies, as well as by ensuring that support systems are in place to assist teachers in overcoming technical challenges (Tan & Kaur, 2019).

In this study, TAM is utilized to explore how teachers in rural Malaysian schools perceive the usefulness and ease of use of digital education technologies, with a focus on teaching ESL. Through interviews and observations, data on teachers' attitudes, experiences, and challenges in integrating digital tools for ESL instruction are collected to identify themes and patterns. Barriers such as inadequate infrastructure, limited training in ESL-specific tools, and connectivity issues are expected to negatively impact PEOU, leading to

reluctance in adopting digital tools (Tan & Kaur, 2019). Conversely, facilitators such as positive experiences with ESL technology, peer collaboration, effective ESL training programs, and supportive environments are anticipated to enhance both PU and PEOU.

The ultimate objective is to develop strategies that address identified barriers and leverage facilitators to improve technology acceptance. Proposed interventions include infrastructure improvements, comprehensive training programs on ESL-specific digital tools, fostering peer collaboration and knowledge-sharing, and ensuring access to high-quality ESL digital resources and technical support (Raman et al., 2019). By addressing factors influencing PU and PEOU, the study aims to enhance the adoption of digital technologies for ESL instruction among teachers in rural Malaysian schools, leading to improved language teaching efficiency and student engagement in learning English (Halili & Sulaiman, 2018). Insights from this study are expected to inform policymakers and educators in designing digital education initiatives tailored to the needs of ESL instruction, ensuring successful technology integration in Malaysian educational settings.

The figure below illustrates the conceptual framework of the Technology Acceptance Model (TAM), emphasizing how teachers in rural Malaysian schools perceive the usefulness and ease of use of digital education technologies in the context of ESL teaching.

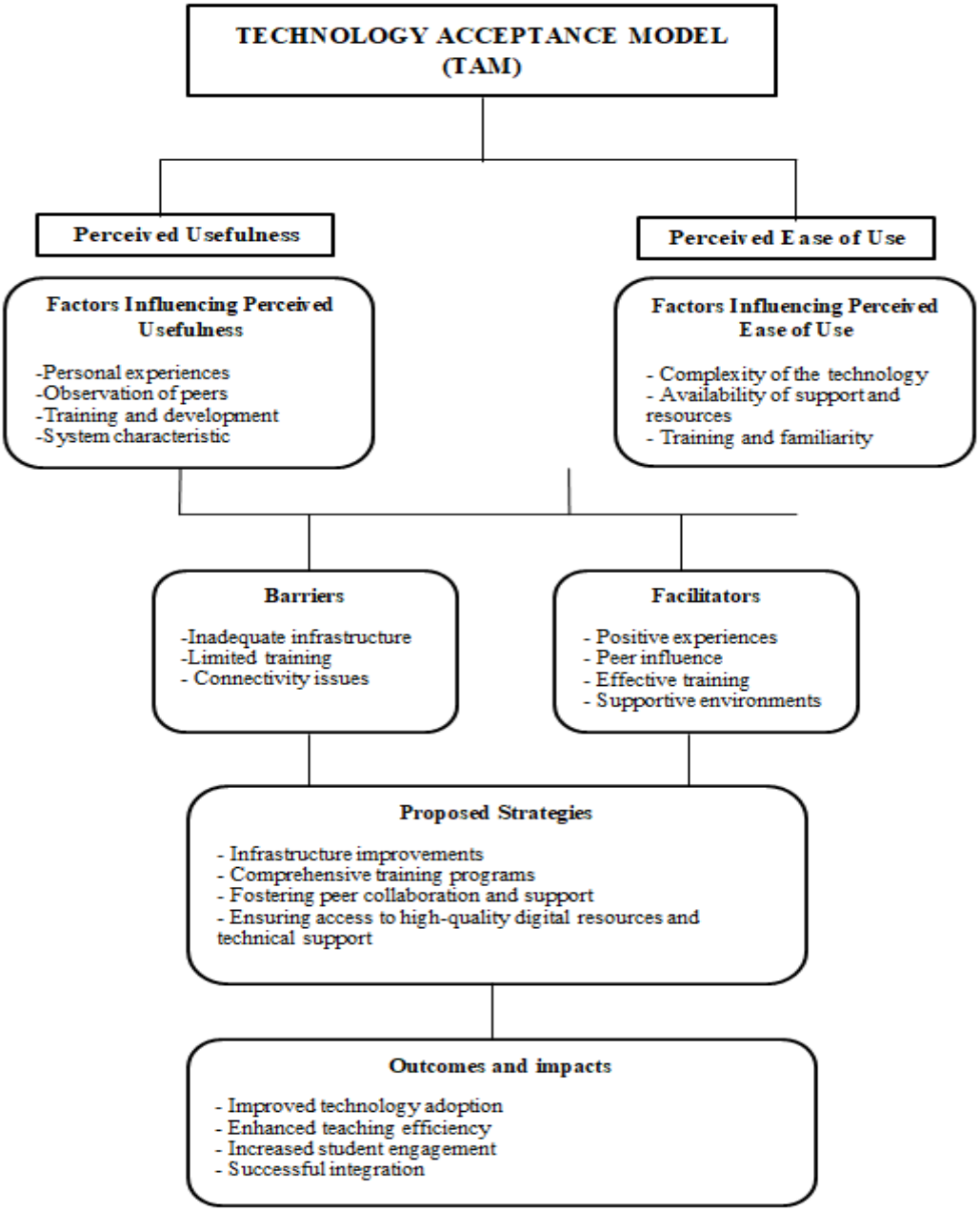

Figure 1. Conceptual Framework

METHODOLOGY

Research Design

To delve deeper into the lived experiences of rural teachers grappling with digital learning, this study employs a qualitative phenomenological approach. As described by Creswell and Poth (2017), phenomenology centres on exploring individuals' subjective interpretations and experiences of a particular phenomenon. In this context, the focus is on understanding the experiences of six dedicated teachers serving in a rural primary school in a district in Sabah. This approach provides rich, nuanced data that highlights the teachers' personal experiences with integrating digital education into their classrooms. By delving into the subjective meanings and interpretations they attribute to their roles, experiences, and interactions within the rural school environment, the study aims to shed light on their unique insights and perceptions towards integrating digital teaching practices in this specific setting.

Qualitative research methods, like phenomenology, are well-suited for in-depth exploration of complex phenomena (Merriam, 2009). Through semi-structured interviews, the researcher can gain rich, nuanced perspectives from the teachers. These discussions will explore the subjective meanings they attach to their experiences working with digital learning in a rural school environment, fostering a holistic understanding of the factors influencing their persistence. The rural primary school setting in a district in Sabah, is particularly significant due to the unique challenges these schools often face, such as limited infrastructure, resource scarcity, specific community dynamics, and geographical isolation (Tan & Kaur, 2019). By focusing on teachers within this specific context, the study aims to uncover how these contextual factors shape their experiences with navigating digital learning.

It is important to note that while the phenomenological approach allows for deep exploration, the sample size of six teachers from one rural school limits the generalizability of the findings. The study does not aim to make broad generalizations but instead seeks to provide a detailed understanding of the experiences of this specific group of teachers. The small, focused sample provides valuable, context-specific insights, but future research with a larger and more geographically diverse sample would offer a broader understanding of digital education in rural schools across Malaysia. The qualitative nature of this approach allows the researcher to capture the complexity and diversity of teacher experiences, providing a more comprehensive understanding of the phenomenon under investigation (Merriam, 2009). Through rigorous data analysis techniques, such as thematic analysis, the researcher can identify recurring themes, patterns, and insights emerging from the teachers' narratives. While the study uses a smaller sample size of six teachers, this approach allows for a deeper exploration of their lived experiences.

Research Participations

This study employs purposive sampling to select participants who can provide rich, relevant, and diverse insights into the implementation of digital education in rural Malaysian schools. Purposive sampling allows for the intentional selection of participants based on specific criteria relevant to the research objectives, ensuring that the selected individuals can offer valuable perspectives and experiences pertinent to the study (Patton, 2002).

The study includes six teachers from a rural primary school in a district in Sabah,Malaysia. The participants are equally distributed by gender, with three female and three male teachers. This balanced representation helps ensure that the study captures a range of perspectives and experiences, providing a more comprehensive understanding of the challenges and opportunities associated with digital education in rural settings (Creswell & Poth, 2018).

To be included in the study, teachers had to meet specific criteria. Firstly, participants must have been teaching in a rural school for three years or more. This criterion ensures that the teachers have sufficient experience and familiarity with the rural educational context and the challenges and opportunities associated with implementing digital education in such settings. Having teachers with a substantial duration of experience in rural schools helps provide a deeper insight into the persistent issues and long-term impacts of digital

education initiatives (Merriam & Tisdell, 2016). Secondly, teachers must be actively involved in or have experience with using digital technologies in their teaching practices. This involvement could include integrating digital tools into their lesson plans, participating in ICT training, or using educational software to enhance student learning. Ensuring that the participants have first-hand experience with digital education technologies is crucial for gathering relevant data on the practical aspects of technology integration in rural classrooms (Baxter & Jack, 2008).

Lastly, teachers must be willing to share their experiences and insights through in-depth interviews. Participation is voluntary, and teachers must provide informed consent to take part in the study. This criterion is essential for ethical research practice, ensuring that participants are fully aware of the study's purpose, procedures, and their rights, including the right to withdraw from the study at any time without any repercussions (Orb, Eisenhauer, & Wynaden, 2001). Before the commencement of the study, ethical approval was obtained from the relevant educational authorities. Participants were informed about the purpose of the research, the procedures involved, and their rights as participants, including the right to withdraw from the study at any time without any repercussions. All data collected from the participants was anonymized to protect their identities and ensure confidentiality (Smith, 2003).

Data Collection and Analysis

In this qualitative study investigating the implementation of digital education in rural Malaysian schools, a multifaceted approach to data collection and analysis was adopted to ensure a comprehensive understanding of the phenomenon. Semi-structured interviews were conducted with teachers from a rural primary school in a district in Sabah, allowing participants to share their experiences, perceptions, and challenges regarding digital education (Smith, 2003). Concurrently, observation methods were employed to observe classroom dynamics and the integration of digital technologies in teaching practices (Merriam & Tisdell, 2016). These data collection methods were chosen to provide rich, contextual insights into the complex realities of digital education in rural settings.

Following data collection, a rigorous analysis process ensued. Triangulation of data was employed, comparing and contrasting information gathered through interviews and observations to enhance the validity and reliability of the findings (Creswell & Poth, 2018). Additionally, thematic analysis was utilized to identify recurring patterns, themes, and concepts within the qualitative data (Braun & Clarke, 2006). This systematic approach involved coding the data, organizing codes into broader themes, and interpreting their significance in relation to the research questions. Although the study employs a limited sample size, it prioritizes depth over breadth, focusing on the rich, contextual data provided by these teachers. This in-depth approach allows the study to uncover nuanced insights into the specific challenges and successes they encounter in implementing digital education in a rural school setting. By employing a combination of data collection methods and rigorous analysis techniques, this study aims to offer a nuanced understanding of the challenges and opportunities associated with the implementation of digital education in rural Malaysian schools, contributing valuable insights to both research and practice in the field of education

FINDINGS

The integration of digital teaching practices into rural schools represents a significant step toward transforming education and improving student outcomes, especially in remote and underserved regions. While digital tools have the potential to enhance teaching effectiveness, foster greater student engagement, and expand access to diverse learning resources, their implementation in rural areas often faces unique challenges. In rural Malaysian schools, factors such as inadequate infrastructure, limited access to technology, and insufficient teacher training create barriers to effectively adopting digital teaching methods. This research seeks to explore the experiences of primary school teachers in a rural school, with a focus on the opportunities and challenges they encounter in integrating digital tools into their classrooms. To guide this investigation, the study is framed around two central research questions. These questions are designed to uncover both the advantages that teachers perceive in using digital tools and the obstacles they face in their efforts to adopt technology in their teaching practices. By exploring the teachers' insights, the research aims to identify strategies for overcoming these challenges and advancing digital education in rural schools.

To address these research questions, thematic analysis was used to analyse the qualitative data gathered from semi-structured interviews with six primary school teachers (T1 to T6) from a rural primary school in Kota Kinabatangan, Sabah. These teachers provided first-hand insights into their experiences with integrating digital teaching tools and methods into their classrooms. The interviews were complemented by classroom observations and a review of relevant academic literature, which helped to contextualize and validate the findings.

The analysis reveals several key themes, each corresponding to different aspects of the teachers' experiences:

1. **Perceptions of Instructional Methods**
2. **Successes/Challenges in Implementation**
3. **Barriers to Digital Teaching Adoption**
4. **Impact of Limited Network Connectivity**
5. **Strategies for Overcoming Barriers**

These themes reflect the complexities of digital teaching in rural contexts and are organized under the two main research questions:

Research Question 1: What are the ESL teachers' experiential insights into integrating digital teaching practices in a rural school?

This question aimed to explore the teachers' perspectives on the integration of digital teaching practices, focusing on both the advantages and challenges they encountered. The following themes emerged:

Perceptions of Instructional Methods

In rural schools, the theme of "Perceptions of Instructional Methods" holds significant importance due to the unique context and challenges faced by educators in these settings. Teachers working in rural schools often encounter distinct circumstances that may influence their instructional choices. Factors such as limited resources, diverse student populations, and geographic isolation can impact the perceived effectiveness of different teaching approaches (Smith & Brown, 2020). In this context, educators' perceptions of traditional versus digital teaching methods may be shaped by considerations such as access to technology infrastructure, availability of digital resources, and the readiness of students to engage with digital learning tools. Additionally, teachers' own comfort and proficiency with technology may influence their attitudes towards digital teaching.

The preference for traditional teaching methods among rural school teachers can be attributed to several practical challenges and logistical issues. According to respondents T1, T2, T3, and T4, traditional teaching is favoured because it is easier to implement and less time-consuming compared to digital teaching. Respondent T2 highlighted, *"setting up the laptop and projector really takes up a lot of time. There have been times when I couldn't finish my lesson because of the time crunch."* The implication here is that the efficiency of lesson delivery is compromised, making traditional methods more appealing due to their simplicity and ease of execution (Smith & Brown, 2020).

Additionally, respondent T3 mentioned,*"in urban schools, classrooms already have projectors built in, so teachers just plug in their laptops and get started. It's so much quicker and saves time, unlike here in rural schools where we have to set everything up ourselves and lack such built-in facilities. Teachers in rural areas must book projectors in advance, and setting up the equipment can be cumbersome and time-consuming."* This additional burden makes it difficult for teachers to incorporate digital teaching consistently (Tan & Kaur, 2019). The logistical hurdles associated with digital teaching in rural settings lead teachers to opt for traditional methods, which do not require extensive preparation or technological setup. This choice is driven by the need to maximize instructional time and ensure that lesson plans are fully covered without interruptions.

Furthermore, the preference for traditional teaching methods may also reflect a broader issue of inadequate support and infrastructure in rural schools. The lack of readily available digital resources, combined with the time-consuming nature of setting up temporary solutions, highlights the disparity between urban and rural educational environments. This disparity underscores the necessity for targeted interventions to improve digital infrastructure in rural schools (Hamed, Rahman, & Ibrahim, 2018). Both T5 and T6 are proficient in digital teaching and mentioned that they typically incorporate it two to three times a week. However, they also acknowledged the necessity of using traditional teaching methods. They noted that poor network reception often hampers their ability to rely solely on digital methods. Additionally, they find that students cope better with traditional approaches. When employing digital teaching, they need to spend extra time guiding students who are not fully accustomed to using digital tools, making traditional methods more practical in certain situations.

Successes/Challenges in Implementation

Successes in Implementation

The integration of digital teaching methods in rural Malaysian schools has seen some notable successes. Respondents T5 and T6 highlighted various personal initiatives and strategies that have yielded positive outcomes. For instance, T5 responded, *"Investing in my own wireless projector has really helped. Now I can easily add videos and other multimedia to my lessons, and the kids seem more interested and engaged."* Despite the financial burden, this investment has enhanced the learning experience by providing visual and interactive elements that capture students' attention and aid in understanding complex concepts (Hamed, Rahman, & Ibrahim, 2018). Based on personal observation, T5 has implemented various engaging digital teaching activities utilizing platforms such as Kahoot and YouTube, effectively capturing students' attention and fostering their interest in the subject matter. T5 expressed, *"I really prefer using digital teaching methods since the kids are so immersed in the digital world these days. But the problem is, with all the limitations we face, I can't always use them as much as I'd like to."* Moreover, T6 mentioned, *"I've had better luck with digital teaching in smaller classes. I just use my laptop to present lessons and get the kids involved with some fun interactive activities. It works pretty well!"* This approach has allowed for more personalized instruction and immediate feedback, which are critical components of effective teaching and learning (Ghavifekr & Wong, 2021). Both teachers' commitment to overcoming infrastructural limitations demonstrates the potential for digital teaching to positively impact education in rural areas when creative solutions are employed.

Challenges in Implementation

However, the journey towards effective digital education in rural schools is fraught with significant challenges. One of the foremost issues is the lack of adequate infrastructure. As highlighted by respondents T1, T2, T3, and T4, the absence of built-in technological facilities such as projectors and stable internet connections severely hampers the ability to conduct digital lessons (Tan & Kaur, 2019). Teachers often spend valuable time setting up equipment, which reduces the actual instructional time available for teaching (Hasin & Nasir, 2021). This issue is compounded by the need to book shared resources in advance, adding logistical hurdles to the already challenging task of teaching in resource-constrained environments.

Another major challenge is the limited access to reliable internet connectivity. This problem not only affects the ability to stream online content and access digital resources but also limits the use of interactive and collaborative tools that are central to modern digital pedagogy (Halili & Sulaiman, 2018). As a result, teachers are often forced to revert to traditional teaching methods, which, although familiar, do not leverage the full potential of digital tools to enhance learning outcomes (World Bank, 2019). T3 mentioned, *"when the internet's down, I have no choice but to stick with offline tools like PowerPoint. It takes a bit of prep work beforehand, but it's the only way to keep things running smoothly. It's not as interactive as some of the other digital tools, but it works in these rural schools where connectivity is an issue."* Furthermore, there is a significant disparity in the digital literacy levels among teachers and students. Many rural teachers, despite their willingness to adopt digital methods, lack the necessary training and ongoing professional development to effectively integrate technology into their teaching practices (Raman, Othman, & Affandi, 2019). This gap in skills and knowledge often leads to a reliance on traditional methods, even when digital tools are available

Research Question 2: What are the challenges faced by primary school teachers in integrating digital teaching practices to enhance ESL learning in a rural school?

This question focused on identifying the barriers that teachers face in the adoption of digital teaching tools and methods. Several significant themes emerged regarding the barriers to effective digital teaching.

Barriers to Digital Teaching Adoption

One of the primary obstacles is the lack of adequate technological infrastructure. Respondents T1, T2, and T4 pointed out that the limited availability of essential digital tools such as computers, projectors, and reliable internet connectivity significantly hampers their ability to implement digital teaching methods effectively. In rural schools, teachers often have to book projectors in advance and spend a considerable amount of time setting them up, which detracts from instructional time (Tan & Kaur, 2019). Additionally, the unreliable network reception in rural areas makes it difficult to access online resources and conduct interactive lessons that rely on stable internet connections (Hamed, Rahman, & Ibrahim, 2018).

Another critical barrier is the insufficient training for teachers on how to effectively use digital tools in their teaching practices. Respondents T1 stated, *"a lot of teachers here in rural schools aren't really familiar with using digital tools because there just aren't many opportunities for training. It's tough when there's no support to help them get comfortable with the technology."* This gap in knowledge and skills means that even when digital tools are available, they are often underutilized or not used to their full potential (Ghavifekr & Wan Athirah, 2015). Continuous professional development and targeted training programs are essential to equip teachers with the necessary skills to integrate digital tools into their teaching repertoire effectively. The cumulative effect of these barriers is a significant impact on teaching and learning outcomes in rural schools. The inability to integrate digital tools effectively means that students in rural areas may not receive the same quality of education as their urban counterparts, who benefit from more advanced and readily available technological resources (Raman, Othman, & Affandi, 2019). This disparity in access to digital education contributes to the widening educational gap between rural and urban students, affecting their overall academic performance and future opportunities.

Conversely, respondents T5 and T6 do not view the rural setting as an obstacle to incorporating digital teaching methods. T5 mentioned that he purchased his own wireless projector, allowing him to use it at his convenience without relying on the school's equipment. Although the cost of the projector was significant, T5 felt it was necessary for the benefit of his students. However, he acknowledged, *"my power bank doesn't last long, only a few hours, so usually I will only be able to get through one or two class sessions before needing to recharge. It's a bit of a hassle, especially since there aren't many power outlets available."* Similarly, T6 utilizes his laptop to present lessons, but he admitted this approach is only feasible for smaller classes. For larger groups of students, the effectiveness of this method diminishes.

Impact of Limited Network Connectivity

Limited network connectivity significantly impacts the adoption and effectiveness of digital teaching in rural Malaysian schools. Respondents T1, T2, T3, and T4 highlighted that unreliable internet access is one of the primary barriers to implementing digital teaching methods effectively. T2 mentioned that frequent disruptions in connectivity not only waste time but also disrupt the flow of lessons, leading to incomplete coverage of planned material (Tan & Kaur, 2019). This sentiment was echoed by T3, who pointed out that while urban schools often have stable internet connections and readily available technological infrastructure, rural schools lag in this regard, making the setup for digital lessons cumbersome and time-consuming (Hamed et al., 2018).

Moreover, the lack of consistent and high-speed internet hampers teachers' ability to utilize online resources and interactive platforms, which are integral to modern digital pedagogy (World Bank, 2019). T4 highlighted, *"a lot of rural students don't have internet at home, so they can't really do any digital assignments or access online resources after school. It makes it even harder for them to keep up with the lessons."* This creates a significant gap in learning opportunities between students in urban and rural areas, further exacerbating educational inequities (OECD, 2019).T5 and T6, while more adept at integrating digital tools, also face

challenges due to connectivity issues. T5's use of a personal wireless projector is a workaround, but the limited battery life of his power bank restricts the duration of its use, especially in the absence of reliable power sources in the classroom (Halili & Sulaiman, 2018). T6's strategy of using a laptop for smaller classes is similarly constrained by network reliability, making it impractical for larger groups and more interactive digital lessons (Hasin & Nasir, 2021). The Malaysian government has recognized these challenges and has included strategies in the Malaysia Education Blueprint 2013-2025 to improve internet access and digital resources in rural schools (Ministry of Education Malaysia, 2012). Despite these efforts, progress has been slow, and many rural schools continue to struggle with inadequate network infrastructure. Ensuring reliable internet connectivity remains a critical step towards bridging the digital divide and enabling effective digital education in rural areas (Halili, 2019).

Strategies for Overcoming Barriers

In addressing the challenges posed by limited network connectivity and inadequate technological infrastructure in rural schools, several strategies have been proposed by educators and policymakers alike.

One effective strategy involves leveraging offline resources and applications. Respondents T3 and T5 highlighted the use of offline apps such as PowerPoint as a workaround for poor network reception. By preparing materials in advance and utilizing offline tools, teachers can ensure continuity in digital teaching despite connectivity issues (Hamed, Rahman, & Ibrahim, 2018). Additionally, investing in personal resources can mitigate infrastructure limitations. As mentioned by T5, purchasing a personal wireless projector has enabled him to conduct digital lessons independently of school resources. While this may incur initial costs, it offers greater flexibility and reliability in delivering digital content (Ghavifekr & Wong, 2021). Moreover, advocating for improved infrastructure and technology access is crucial. Educators can collaborate with relevant stakeholders, including school administrators and government agencies, to advocate for the provision of essential resources such as projectors and stable internet connectivity. By raising awareness of the challenges faced in rural schools, educators can garner support for initiatives aimed at enhancing technology access (Raman, Othman, & Affandi, 2019).

Professional development and training programs are also essential for equipping educators with the skills needed to effectively integrate technology into their teaching practices. Continuous training sessions on digital teaching tools and strategies can empower teachers to navigate technological challenges and maximize the potential of digital resources (Halili & Sulaiman, 2018). Furthermore, fostering collaboration and knowledge-sharing among educators can facilitate the exchange of best practices and innovative approaches to digital teaching. Platforms for peer learning and networking enable educators to learn from each other's experiences and collectively develop solutions to common challenges (Hasin & Nasir, 2021). Ultimately, a multifaceted approach that combines offline resources, personal investments, advocacy efforts, professional development, and collaboration is essential for overcoming barriers to digital teaching in rural schools and ensuring equitable access to quality education for all students.

The findings of this study align with the Technology Acceptance Model (TAM), which posits that perceived usefulness and perceived ease of use are critical factors influencing the adoption of technology (Davis, 1989). In the context of rural Malaysian schools, teachers' perceptions of digital teaching methods highlight these TAM constructs.

Perceived Usefulness

Teachers such as T5 and T6 recognize the benefits of digital teaching in enhancing student engagement and learning outcomes. They perceive digital tools as offering advantages like interactivity and multimedia content that traditional methods may not provide (Ghavifekr & Wong, 2021). This supports the TAM concept that users are more likely to accept technology if they perceive it as beneficial to their teaching effectiveness.

Perceived Ease of Use

Conversely, respondents T1, T2, and T3 express concerns about the time-consuming setup of digital tools and the challenges of managing them in resource-constrained rural school environments (Hasin & Nasir, 2021).

These difficulties underscore the TAM principle that perceived ease of use affects technology adoption; if digital tools are perceived as cumbersome or difficult to use, teachers may prefer traditional methods despite recognizing the benefits of digital teaching.

External Variables

External factors such as technological infrastructure and professional development opportunities significantly influence the perceived ease of use and usefulness of digital teaching methods. Limited infrastructure, as highlighted by T1, T2, and T3, poses barriers to effective digital integration in rural schools (Tan & Kaur, 2019). Insufficient training, as noted by respondents T1 and T4, further complicates the adoption of digital tools by affecting teachers' confidence and skills (Halili & Sulaiman, 2018).

Behavioural Intention to Use

Despite challenges, teachers like T5 and T6 demonstrate a strong intention to use digital teaching methods by investing in personal resources and finding creative solutions to overcome infrastructural limitations (Hamed, Rahman, & Ibrahim, 2018). This aligns with TAM's assertion that perceived usefulness and ease of use influence behavioural intention to use technology. Therefore, applying TAM to the study's findings provides insights into why some rural Malaysian teachers adopt digital teaching methods while others hesitate. Addressing infrastructure challenges and enhancing professional development opportunities are crucial steps toward improving the acceptance and effectiveness of digital teaching in rural education settings.

DISCUSSION

Education remains a pivotal tool for societal advancement, yet rural schools in Malaysia often face significant challenges in achieving educational equity. These disparities underscore the need for targeted interventions that address the unique obstacles faced by these schools. The use of mobile learning technologies offers a practical solution to address the challenges faced by rural schools in Malaysia. With mobile phone penetration reaching even remote communities, leveraging mobile platforms could effectively enhance educational access. For example, the success of the M-Education Project in South Africa, which delivered content via SMS and mobile apps, demonstrates how mobile learning can bridge gaps in under-resourced areas (Sarr & Mbaye, 2019). A similar initiative tailored to Malaysian contexts could incorporate content aligned with the national curriculum and offer materials in Malay and other indigenous languages. Such an approach would cater to rural students who lack access to libraries or well-equipped schools. Furthermore, partnerships with telecommunications companies to subsidize or waive data costs for educational apps could make digital education more accessible. In Malaysia, programs like the e-Tunai initiative, which promotes digital literacy and access, could be expanded to include rural schools, ensuring that mobile learning solutions are both affordable and sustainable.

Empowering Teachers Through Digital Literacy Programs

A critical challenge for rural Malaysian schools is the limited digital literacy of educators, which hinders the integration of technology in classrooms. Teacher training programs like the Guru Digital Program in Indonesia have successfully addressed this issue by equipping educators with digital skills tailored to resource-constrained environments (Hartono, 2020). Malaysia could adopt a similar approach by providing comprehensive training that includes the use of low-bandwidth solutions such as offline learning applications and preloaded devices. For example, training modules could focus on creating engaging lessons using tools like PowerPoint, as well as integrating free educational platforms like Kahoot or Google Classroom in offline modes. Additionally, the Ministry of Education could collaborate with teacher training institutes to design continuous professional development programs for rural educators. By enhancing teachers' confidence and capabilities with digital tools, students in rural areas could benefit from more dynamic and interactive learning experiences.

Innovative Infrastructure Solutions: Solar-Powered Learning Tools

Infrastructure challenges, such as unreliable electricity, remain a significant issue in Malaysian rural schools, particularly in East Malaysia and Orang Asli communities. A proven solution to such issues is the use of solar-powered e-learning tools, as demonstrated by the Solar-Powered E-Learning Project in Nigeria. This initiative provided schools in areas without stable electricity with solar-powered tablets and devices preloaded with educational content, which led to improved academic outcomes). In Malaysia, rural schools in Sarawak and Sabah could greatly benefit from similar interventions. For example, solar-powered digital classrooms equipped with tablets containing preloaded syllabus content in Malay could allow students to access resources even in the absence of internet or electricity. Collaborations with agencies such as Tenaga Nasional Berhad and renewable energy organizations could support the rollout of solar-powered educational infrastructure in these areas.

The Role of Interactive Technologies and Contextual Adaptation

Although the emphasis on offline tools such as PowerPoint is pragmatic for rural Malaysian schools, integrating interactive technologies could significantly enhance learning outcomes. Adaptive mobile learning applications, which adjust content to students' individual paces, have shown success in improving engagement and retention in rural settings. For instance, the BridgeIT program in the Philippines, which used mobile phones and TVs to deliver interactive STEM lessons, was highly effective in resource-constrained schools (UNESCO, 2015). In Malaysia, a similar program could be tailored to rural school needs, particularly by developing apps that feature gamified STEM lessons or quizzes in Malay, Iban, or Dusun languages. The Ministry of Education could collaborate with tech companies to develop such tools and pilot them in underserved communities. Additionally, NGOs specializing in education, like Teach For Malaysia, could play a pivotal role in distributing and adapting these technologies to local contexts. By incorporating culturally relevant content and ensuring ease of use, such tools would align with the unique needs of Malaysian rural schools.

CONCLUSION

In conclusion, the integration of digital teaching methods in rural schools presents both challenges and opportunities. In environments where access to advanced digital technology is limited or unreliable, employing simple, low-tech solutions can significantly enhance the educational experience. For instance, offline tools like PowerPoint can serve as a workaround for poor internet connectivity, enabling teachers to prepare and deliver instructional content in advance (Hamed, Rahman, & Ibrahim, 2018). This approach ensures that lessons can proceed smoothly even in rural schools facing internet challenges. Additionally, Malaysian offline apps such as i-LEARN Ace provide valuable learning resources, including interactive content and practice exercises tailored to the Malaysian curriculum, benefiting both students and educators in remote areas. To further enrich the learning process, teachers should actively seek out and incorporate more offline apps. These tools can introduce new dimensions to lessons, enhancing interactivity and engagement for students, particularly in settings with limited digital connectivity. Another effective strategy is leveraging educational programs broadcast on platforms like Didik TV, managed by the Ministry of Education, which cover a wide range of subjects and can be scheduled for specific viewing times. This approach not only enhances lesson engagement but also ensures accessibility for students without consistent internet access.

Moreover, traditional teaching methods continue to play a crucial role in enriching learning experiences. Teachers can prioritize lectures, facilitate group discussions, and organize hands-on activities to foster active participation and critical thinking among students. These methods not only deepen understanding but also promote collaborative learning within the classroom environment. During periods of intermittent internet availability, educators can optimize these opportunities by downloading essential resources such as lesson plans and eBooks beforehand. This preparation guarantees uninterrupted delivery of curriculum content and provides additional learning opportunities during offline periods. Furthermore, implementing project-based learning and interactive teaching techniques can further enhance student engagement and cultivate critical thinking skills (Topping, 2005). Encouraging collaborative learning through group activities and peer teaching also nurtures teamwork abilities and reinforces understanding among students.

By prioritizing these alternative approaches and integrating offline educational tools with traditional teaching methods, rural schools in Malaysia can establish a resilient learning environment that effectively addresses challenges associated with limited online resources. This comprehensive approach not only supports continuous learning but also enhances student engagement and academic achievement in remote educational settings. While rural areas often face limitations in technology infrastructure and resources, digital technologies offer immense potential to enhance learning experiences and outcomes for students. By addressing infrastructure needs, providing professional development opportunities for educators, and fostering collaboration among stakeholders, rural schools can effectively integrate digital teaching practices into their instructional strategies. It is essential for policymakers, educators, and communities to work together to bridge the digital divide and ensure equitable access to quality education in rural areas. By leveraging digital technologies and innovative teaching methods, rural schools can create dynamic learning environments that empower students and prepare them for success in the digital age.

Moving forward, continued investment in technology infrastructure, ongoing professional development for educators, and strategic partnerships between schools, government agencies, and community organizations will be crucial for realizing the full potential of digital teaching in rural schools. Through collective efforts and a commitment to educational equity, rural communities can harness the transformative power of digital technologies to provide high-quality education for all students. In essence, while there are challenges to overcome, the integration of digital teaching in rural schools represents a promising opportunity to enhance educational outcomes and empower students to thrive in an increasingly digital world. With dedication, collaboration, and strategic planning, rural schools can embrace digital teaching practices and ensure that all students have access to the resources and opportunities they need to succeed.

REFERENCES

1. Baxter, P., & Jack, S. (2008). Qualitative case study methodology: Study design and implementation for novice researchers. The Qualitative Report, 13(4), 544-559.
2. Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. Qualitative Research in Psychology, 3(2), 77-101.
3. Bujang, S. D. A., Selamat, A., Krejcar, O., Maresova, P., & Nguyen, N. T. (2020). Digital Learning Demand for future Education 4.0—Case Studies at Malaysia education Institutions. Informatics, 7(2), 13. https://doi.org/10.3390/informatics7020013
4. Creswell, J. W., & Poth, C. N. (2017). Qualitative inquiry and research design: Choosing among five approaches (4th ed.).Sage Publications.
5. Creswell, J. W., & Poth, C. N. (2018). Qualitative inquiry and research design: Choosing among five approaches (4th ed.). Sage Publications.
6. Davis, F. D. (1989). Perceived usefulness, perceived ease of use, and user acceptance of information technology. MIS Quarterly, 13(3), 319-340.
7. Dunwill, E. (2016). 4 changes that will shape the classroom of the future: Making education fully technological. Accessed from https://elearningindustry.com/4-changes-will-shape-classroom-of-the-future-making-education-fully-technological.
8. Education Ministry admits gap in digital skills between rural, urban schools. (2024, April 30). Malay Mail. https://www.malaymail.com/news/malaysia/2024/04/30/education-ministry-admits-gap-in-digital-skills-between-rural-urban-schools/131622#google_vignette
9. Ghavifekr, S., & Wan Athirah, W. R. (2015). Teaching and learning with technology: Effectiveness of ICT integration in schools. International Journal of Research in Education and Science (IJRES), 1(2), 175-191.
10. Ghavifekr, S., & Wong, S. Y. (2021). Technology leadership in Malaysian schools. International Journal of Asian Business and Information Management, 13(2), 1–18. https://doi.org/10.4018/ijabim.20220701.oa3
11. Hajar Halili, S. (2019). Technological Advancements In Education 4.0. The Online Journal of Distance Education and e-Learning, 7(1). https://www.tojsat.net/journals/tojdel/articles/v07i01/v07i01-08.pdf

12. Haleem, A., Javaid, M., Qadri, M. A., & Suman, R. (2022). Understanding the role of digital technologies in education: A review. Sustainable Operations and Computers, 3, 275–285. https://doi.org/10.1016/j.susoc.2022.05.004
13. Halili, S. H., & Sulaiman, H. (2018). Factors influencing the rural students' acceptance of using ICT for educational purposes. Kasetsart Journal of Social Sciences. https://doi.org/10.1016/j.kjss.2017.12.022
14. Hamed, S. Z., Rahman, A. N. A., & Ibrahim, N. A. (2018). Challenges and opportunities for integrating ICT in rural primary schools in Malaysia. Journal of Educational Technology & Development and Exchange (JETDX), 11(1), 1-14.
15. Hamzah, N. H., Nasir, M. K. M., & Wahab, J. A. (2021). The Effects of Principals' Digital Leadership on Teachers' Digital Teaching during the Covid-19 Pandemic in Malaysia. Journal of Education and E-learning Research, 8(2), 216–221. https://doi.org/10.20448/journal.509.2021.82.216.221
16. Hargreaves, A., & Fullan, M. (2012). Professional Capital: Transforming Teaching in Every School. Teachers College Press.
17. Hartono, S. (2020). The impact of digital literacy programs on education in rural areas. Journal of Educational Development, 15(3), 112–125.
18. Hasan, A., Murat, S., & Kemal, E. (2007). Challenge of rural people to reduce digital divide in globalized world: Theory and practice. Government Information Quarterly, 24, 60e70.
19. Hasin, I., & Nasir, M. K. M. (2021). The effectiveness of the use of information and communication technology (ICT) in rural secondary schools in Malaysia. Journal of Education and E-learning Research, 8(1), 59–64. https://doi.org/10.20448/journal.509.2021.81.59.64
20. https:/www.malaymail.com/news/Malaysia/2014/11/18/with-poor-tech-reach-1bestarinet-will-leave-rural-students-further-behind-s/785323
21. Kumar, R., & Gupta, P. (2019). Mobile learning initiatives for rural education in India: Challenges and prospects. Journal of Rural Education and Development, 45(1), 78-92.
22. Merriam, S. B. (2009). Qualitative research: A guide to design and implementation (2nd ed.). Jossey-Bass.
23. Merriam, S. B., & Tisdell, E. J. (2016). Qualitative research: A guide to design and implementation (4th ed.). Jossey-Bass.
24. Ministry of Education Malaysia. (2012). Malaysia Education Blueprint 2013-2025. Putrajaya: Ministry of Education Malaysia.
25. Muli, A. J., & Wambugu, P. (2020). The impact of mobile learning on rural students' academic performance in Kenya. International Journal of Education and Development, 10(1), 22-34.
26. OECD (Organisation for Economic Co-operation and Development). (2019). PISA 2018 Results (Volume I): What Students Know and Can Do. Retrieved from OECD iLibrary.
27. Orb, A., Eisenhauer, L., & Wynaden, D. (2001). Ethics in qualitative research. Journal of Nursing Scholarship, 33(1), 93-96.
28. Patton, M. Q. (2002). Qualitative research and evaluation methods (3rd ed.). Sage Publications.
29. Raman, A., Othman, N., & Affandi, S. (2019). Digital divide among urban and rural students in Malaysia: Challenges and recommendations. Malaysian Journal of Learning and Instruction, 16(1), 105-129.
30. Raman, K., Othman, N., & Affandi, H. M. (2019). Information communication and technology (ICT) usage gaps between urban and rural schools. Malaysian Journal of Education, 44(1SI), 109-119.
31. Sarr, D., & Mbaye, I. (2019). M-Education in South Africa: Bridging the gap in rural education. African Journal of Educational Technology, 18(1), 45–58.
32. Siti, M. R. (2014). The development of information and communication technology (ICT) in rural as well as issues related (Unpublished doctoral dissertation). Universiti Sains Malaysia, Pulau Pinang.
33. Smith, J. A. (2003). Qualitative psychology: A practical guide to research methods .Sage Publications.
34. Smith, J. A., & Brown, L. K. (2020). Exploring Teacher Perceptions of Instructional Methods in Rural Schools. Journal of Rural Education, 15(2), 45-58.
35. Tan, J. P. L., & Kaur, H. (2019). Urban-rural technology gap in Malaysia: An exploratory study. International Journal of Asia Pacific Studies, 14(2), 75-90.
36. Topping, K. J. (2005). Trends in Peer Learning. Educational Psychology, 25(6), 631-645.
37. UNESCO. (2015). BridgeIT: A scalable model for improving education in rural settings. Retrieved from https://unesdoc.unesco.org/ark:/48223/pf0000216284

38. UNESCO. (2018). Mobile learning for educational equity: Global trends and perspectives. UNESCO Publishing.
39. UNESCO. (2019). The power of mobile learning in reducing educational disparities. UNESCO Publishing.
40. With poor tech reach, 1BestariNet will leave rural students further behind, says DAP MP. (2018, November 14). Malay Mail.
41. World Bank. (2019). World Development Report 2019: The Changing Nature of Work. Retrieved from World Bank website.