

Challenges in the Implementation of Digital Learning in Primary School

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ABSTRACT

This study explores the challenges in implementing digital learning platforms in Malaysian public primary schools, focusing on the city of Johor Bahru. Following the COVID-19 pandemic, schools were compelled to transition into digital classrooms, revealing disparities in infrastructure, digital literacy, and pedagogical adaptation. Using a qualitative research approach through document analysis and literature review, the study identified several key barriers, including inadequate infrastructure, insufficient teacher training, limited parental support, and fluctuating student engagement. The study proposes strategies to address these challenges, such as enhancing infrastructure, providing continuous professional development and involving parents more actively. These findings aim to guide policymakers and educators in strengthening digital learning initiatives.

Keywords: Digital learning, primary school, challenges, teacher readiness, student engagement

INTRODUCTION

The integration of digital technology into formal education has transformed learning environments globally, particularly in the wake of the COVID-19 pandemic. Malaysia, like many other nations, was compelled to accelerate its digital learning infrastructure when schools were forced to shut down to curb the spread of the virus in early 2020. As a result, digital learning platforms emerged as the primary means of delivering educational content and maintaining communication between teachers and pupils. In primary schools, this transition presented both unprecedented opportunities and formidable challenges. While technology enabled learning continuity, questions about its effectiveness, particularly in influencing pupil engagement and academic outcomes, remain inadequately addressed (Rahman et al., 2022).

Primary education, which lays the foundational cognitive, emotional, and social skills of children, is a sensitive developmental phase. Therefore, the effectiveness of any instructional model, including digital platforms, must be scrutinized carefully. Platforms such as Google Classroom, Zoom, Microsoft Teams, and WhatsApp were widely used during school closures. These platforms allowed teachers to assign work, conduct virtual lessons, and interact with students asynchronously and synchronously. Despite their widespread adoption, there remains limited empirical evidence regarding their long-term impact on young learners' engagement and academic performance in Malaysian public primary schools (Ismail & Shahril, 2021).

The Malaysia Education Blueprint 2013–2025 underscores the importance of embedding ICT into teaching and learning to prepare students for the 21st century (Ministry of Education Malaysia, 2013). However, actual implementation in primary schools has varied based on location, school resources, teacher readiness, and parental involvement. The COVID-19 pandemic magnified these disparities and brought digital inequality into sharper focus. In more urbanized states such as Selangor, where internet penetration is higher, schools and families were relatively better positioned to transition to digital learning (Yap et al., 2022). Nevertheless, the shift to screen-based learning for children aged 7 to 12 brought up pedagogical concerns regarding attention span, emotional development, and the loss of structured classroom interaction (Tan et al., 2023).

Statement Of Problem

The transition from physical to digital classrooms was a necessary response to a global health emergency, but it

also introduced new pedagogical complexities. In primary schools, where learners are developmentally dependent on direct instruction, tactile engagement, and peer collaboration, digital platforms offer a learning environment that differs significantly from conventional classrooms. Reports suggest that while some pupils adapted well to digital platforms, many experienced learning losses due to poor engagement, technical issues, or lack of support at home (Kamaruddin et al., 2021).

Furthermore, teachers at the primary level often reported difficulties in maintaining discipline and attention during virtual sessions. Many relied on passive content delivery (e.g., pre-recorded videos, worksheets shared via WhatsApp) rather than interactive instruction, which is more engaging but also more technologically demanding (Abdullah & Latif, 2021). This inconsistency raises concerns about the actual impact of digital platforms on pupil learning, especially in key literacy and numeracy domains.

Despite considerable public investment and national-level digital learning campaigns, empirical data on their effectiveness in the Malaysian primary school context is limited. Most available studies focus on higher education or secondary level learning, where students are more autonomous and digitally literate. Therefore, there is a critical need to investigate how digital learning platforms affect younger learners' engagement and academic performance, particularly in diverse socio-economic contexts like Selangor and Johor Bahru, which includes urban, semi-urban, and peri-urban school communities.

Research Objectives

The purpose of this study is to examine the challenges faced when digital learning platforms implemented on pupil engagement and academic performance in Malaysian public primary schools, with a focus on Johor Bahru. It aims to assess the extent to which pupils used digital platforms during and after the pandemic, measure how these platforms influenced different dimensions of engagement (behavioral, emotional, and cognitive), and determine whether such engagement translated into measurable academic gains.

1. To assess the frequency and mode of digital learning platform usage among Year 4 to Year 6 pupils in public primary schools in Johor Bahru.
2. To determine the relationship between digital platform usage and pupil engagement during learning activities.
3. To evaluate the influence of digital learning engagement on academic performance in core subjects.
4. To explore the perceptions of teachers regarding the effectiveness of digital platforms for instructional delivery in primary education.

Research Questions

1. How frequently and in what ways are digital learning platforms used in public primary schools in Johor Bahru?
2. What is the relationship between digital platform usage and levels of pupil engagement?
3. How does pupil engagement with digital platforms affect academic performance in subjects like Mathematics, Bahasa Melayu, and Science?
4. What are teachers' experiences and perceptions regarding the pedagogical value and limitations of digital learning platforms?

THEORETICAL FRAMEWORK: SAMR MODEL

The SAMR Model, introduced by Dr. Ruben Puentedura, serves as a widely accepted framework to evaluate the integration of technology into educational practices. SAMR is an acronym for Substitution, Augmentation, Modification, and Redefinition. This model allows educators to assess whether the use of technology merely replaces traditional tools or leads to a fundamental transformation of the teaching and learning process.

At the first level, Substitution, technology acts as a direct replacement for traditional methods without functional change. For instance, teachers may use Google Forms to deliver assessments that would otherwise be printed on paper. Although it simplifies distribution and collection, the pedagogical process remains unchanged.

The second level, Augmentation, involves a functional improvement over the original method. An example is the use of PowerPoint presentations embedded with videos and audio instructions, which enhance the delivery of content and facilitate better student understanding compared to static textbook explanations.

Modification, the third level, entails a significant redesign of learning tasks enabled by technology. For example, students collaborating on a writing task using Google Docs allows for real-time feedback, shared editing, and continuous discussion, which promotes collaborative and active learning—something not easily achievable through traditional paper-based methods.

At the highest level, Redefinition, technology enables the creation of entirely new tasks that were previously inconceivable. This includes activities such as virtual museum tours using virtual reality (VR), global student debates via video conferencing, or interactive simulations. These activities represent a fundamental shift in the learning experience, enhancing student engagement and expanding the boundaries of the classroom.

In the context of this study, the SAMR model is highly relevant for evaluating the extent to which digital learning platforms have been integrated into primary school education in Malaysia. It helps identify whether teachers are merely substituting traditional methods with digital tools or progressing towards deeper transformation

through technology. Currently, many teachers remain at the Substitution or Augmentation stages, indicating that technology's full potential is yet to be realised.

By applying the SAMR model, this research seeks to determine the level of digital integration in public primary schools and to recommend targeted interventions that can move educators toward the more transformative levels of technology use in pedagogy.

Challenges In Implementation of The Technology in the Classroom Learning

The integration of digital learning in primary classrooms, particularly in the context of public schools in Johor Bahru, has presented several notable challenges. Although digital platforms offer the potential to enhance learning experiences, their successful implementation is dependent on a range of infrastructural, pedagogical, and socioeconomic factors.

Infrastructural Limitations

One of the most significant barriers to effective digital learning implementation is the disparity in infrastructure among schools. Despite Johor Bahru being a relatively developed state, not all schools have equal access to high-speed internet, up-to-date digital devices, or sufficient ICT facilities (Yap, Low, & Ariffin, 2022). In some cases, pupils are forced to share devices with siblings or rely on parents' smartphones for learning, which limits consistent participation.

Digital Literacy Among Teachers and Pupils

Another challenge is the varying levels of digital literacy among both teachers and students. Many primary school teachers, especially those who have served for over a decade, may not have received adequate training in digital pedagogy. This impacts their ability to create engaging content, use interactive tools, or troubleshoot technical issues during lessons (Tan & Rahim, 2021). Likewise, pupils in Year 4 to Year 6 may struggle to navigate certain platforms independently without adult supervision, making learning less effective.

Pedagogical Adaptation

The shift from traditional teaching methods to technology-mediated instruction requires significant changes in pedagogy. However, studies show that many teachers rely on passive approaches like sending pre-recorded videos or worksheets through WhatsApp, rather than adopting more interactive strategies such as live quizzes, collaborative tasks, or real-time feedback (Abdullah & Latif, 2021). This limits student engagement and the potential of digital platforms to support deeper learning.

Parental Involvement and Home Support

Parental involvement is a critical yet often overlooked factor in digital learning at the primary level. In households where parents are less educated or have limited technological skills, students are at a disadvantage. A study in the Klang Valley found that children who received consistent parental support scored significantly higher in digital learning environments (Abdullah & Zaini, 2022).

Student Engagement and Motivation

Maintaining pupil engagement in a digital setting is another major challenge. Unlike in physical classrooms, where teachers can use physical presence and classroom management strategies to sustain attention, digital classrooms often face issues such as screen fatigue, distractions at home, and reduced motivation. Latif et al. (2022) reported a 25% drop in student participation after six months of online learning in primary schools.

Assessment and Monitoring Difficulties

Monitoring student progress and providing timely feedback becomes more complex in digital environments. Teachers report difficulties in assessing whether pupils are genuinely completing tasks on their own and understanding concepts. Additionally, tools like Google Classroom and WhatsApp lack robust features for real-time monitoring or adaptive learning analytics (Nasir et al., 2023).

SUGGESTIONS

To ensure the effective implementation of digital learning in primary schools, several targeted and sustainable measures must be adopted. These suggestions aim to address the multifaceted challenges outlined earlier and support the long-term integration of technology in education.

Improve Technological Infrastructure

All schools must be equipped with essential digital infrastructure, including high-speed internet, sufficient devices such as laptops and tablets, and appropriate educational software. This is crucial to bridge the digital divide between urban and rural schools. Government initiatives such as device lending schemes or technology subsidies for low-income families should be expanded to ensure equitable access to digital learning.

Continuous Professional Development for Teachers

Teachers need ongoing training to build competence and confidence in using digital platforms. Workshops and certification programs should focus not only on technical usage of tools like Google Classroom, Zoom, and educational apps such as Quizizz or Kahoot!, but also on digital pedagogy, classroom management in virtual settings, and effective student engagement strategies. Empowering teachers through continuous learning can result in more dynamic and interactive teaching practices.

Curriculum Alignment and Engaging Content Design

Digital content should be aligned with the national curriculum (KSSR) to ensure learning objectives are met. Educators should be encouraged to integrate elements of gamification, project-based learning, and multimedia resources that foster creativity and critical thinking. Interactive activities can increase motivation and deepen understanding, especially in subjects that are traditionally taught using rote methods.

Strengthen Parental Involvement

Parents play a crucial role in supporting digital learning, particularly in home-based settings. Schools can organize short training sessions or provide easy-to-understand guides and video tutorials in Bahasa Melayu, Tamil, or Mandarin, depending on the local community. Improved parental literacy in digital tools will directly impact students' learning continuity and support system.

Enhance Assessment Tools and Monitoring Systems

Current digital platforms should be upgraded with robust features for formative and summative assessment, such as real-time progress tracking, automated feedback, and learning analytics. Teachers should be trained to utilize digital rubrics, peer-review methods, and hybrid assessment models that combine online and face-to-face evaluations to maintain assessment integrity.

In conclusion, these recommendations emphasize a collaborative, resource-supported, and learner-centered approach to digital education. With strategic planning and consistent stakeholder engagement, digital learning can evolve from a crisis-response measure into a transformative tool that enhances educational outcomes in Malaysian primary schools.

CONCLUSIONS

The COVID-19 pandemic has accelerated the integration of digital learning in Malaysian primary schools, marking a pivotal shift in educational delivery. While platforms such as Google Classroom and Microsoft Teams provide new opportunities for flexible, interactive instruction, their implementation is not without challenges. These include infrastructural limitations, digital literacy gaps, pedagogical shifts, and socio-economic disparities.

The case of public primary schools in Johor Bahru illustrates that while urban settings may have a relative advantage, issues such as teacher readiness, parental support, and student engagement remain critical to success. Effective implementation of digital learning requires not only access to technology but also comprehensive training, inclusive policy planning, and continuous support mechanisms for all stakeholders. By addressing these barriers and embracing a more holistic approach to digital education, Malaysia can ensure that technology enhances rather than hinders the educational development of its young learners.

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