INTERNATIONAL JOURNAL OF ACADEMIC RESEARCH IN PROGRESSIVE EDUCATION & DEVELOPMENT

OPEN ACCESS JOURNAL

Vol 14, Issue 2, (2025) E-ISSN: 2226-6348

The Level of Use of Digital Technology for Teaching and Learning Purposes among SJKC Teachers in Seberang Perai Tengah District

Chiam Ming Jeng, Mohammad Hafiz Zaini

Faculty of Education, Universiti Kebangsaan Malaysia (UKM), Bangi, Malaysia

Corresponding Authors Email: mhz@ukm.edu.my

To Link this Article: http://dx.doi.org/10.6007/IJARPED/v14-i2/25261 DOI:10.6007/IJARPED/v14-i2/25261

Published Online: 15 April 2025

Abstract

This paper focuses on the level of maximization of digital technology use by teachers in Sekolah Jenis Kebangsaan Cina (SJKC) in the Seberang Perai Tengah district, as well as examining various factors that influence the effectiveness of its integration in the teaching and learning (T&L) process. Although Malaysia has introduced several national initiatives to promote the use of digital tools in education, there remains a lack of empirical evidence on how effectively these technologies are being utilized at the school level, particularly in vernacular schools such as SJKC. Many teachers continue to face challenges such as limited infrastructure, lack of targeted professional training, and insufficient administrative support—hindering the full realization of technology's potential in the classroom. This gap highlights the need to investigate the actual extent to which digital technology is integrated into classroom practices and the contextual barriers that may influence its success. The optimal use of digital technology in T&L is not only capable of improving the effectiveness of content delivery but also plays a vital role in enriching students' learning experiences. Furthermore, the integration of technology in education can foster 21st-century skills among students, especially in the areas of digital literacy, critical thinking, problem-solving, and self-directed learning. This paper also reviews relevant literature that provides an in-depth picture of the benefits and challenges associated with educational technology use—including increased student engagement, individualized learning support, and the persistent difficulties teachers face in digital adoption. Based on the findings, this paper proposes strategic recommendations for schools, administrators, and policymakers to empower teachers, enhance access to digital tools, and support technology-based teaching practices in a more systematic and comprehensive manner. Therefore, the outcomes of this study are expected to serve as a valuable reference for advancing digital education transformation at the primary school level, particularly within the context of SJKC.

Keywords: Digital Technology, Teaching and Learning, SJKC

Introduction

In the era of global digitalization, technology plays a pivotal role in shaping various aspects of life, particularly in education. 21st-century education emphasizes digital literacy,

collaboration, and critical thinking skills—competencies essential for developing students who are competitive and future-ready. Research has shown that digital-based learning significantly enhances students' critical thinking and problem-solving abilities (Kusumasari et al., 2024). In alignment with these global trends, Malaysia, through the Malaysian Education Development Plan (PPPM) 2013–2025, has outlined strategic initiatives to strengthen the integration of digital technology in T&L. One of its main objectives is to cultivate digital competencies among both students and educators to enhance the overall quality of educational outcomes.

At the primary school level, Chinese National-Type Schools (SJKC) play a vital role in advancing these national goals. However, the successful integration of digital technology in these schools faces several persistent challenges. These include infrastructural limitations, inconsistent levels of digital proficiency among teachers, and lack of systematic support from school administrations. Teachers in SJKC, particularly in the Seberang Perai Tengah district, are further challenged by their responsibility to deliver a demanding and multilingual curriculum to students from diverse socio-economic backgrounds. The digital divide is especially evident, where students from higher socio-economic status (SES) enjoy greater access to personal devices and stable internet, while others are left behind (Njeri & Taym, 2024).

Despite the growing emphasis on digital education, there is still insufficient evidence regarding the actual practices and extent of digital technology use in vernacular school settings such as SJKC. Understanding how these schools, which represent a significant portion of Malaysia's educational landscape, adopt and adapt digital tools is crucial. This study is motivated by the need to explore whether existing infrastructure, training opportunities, and administrative support are sufficient to enable effective integration of digital technology in SJKC. With the education system striving for inclusivity and quality, it becomes imperative to assess not only whether digital technologies are available, but whether they are used meaningfully to enhance learning. Moreover, this research is timely as it addresses the practical concerns of teachers navigating a hybrid of traditional pedagogy and technological innovation within a culturally unique schooling system.

Although numerous studies have explored the integration of digital tools in mainstream or urban schools, very few have focused specifically on SJKC, particularly in the context of Seberang Perai Tengah. There is a limited understanding of how contextual factors—such as access to technology, the quality of professional training, and institutional support—shape teachers' usage patterns in these schools. Furthermore, much of the existing research has emphasized students' perspectives or learning outcomes, while overlooking the teachers' lived experiences and practical challenges in adopting technology. Past studies also seldom measure the extent of technology maximization in relation to teacher readiness and systemic enablers. This study therefore fills a critical gap by holistically examining the actual level of technology use among SJKC teachers, the influencing factors, and its perceived impact on teaching and learning effectiveness. By doing so, the findings are expected to contribute meaningfully to both academic discourse and policy-making efforts toward equitable and impactful digital education.

Literature Review

Digital Technology

Digital technology has become a transformative force in various sectors, affecting communication, education, healthcare, and agriculture. The evolution from early mechanical devices to advanced digital systems has reshaped the way individuals and organizations operate. Digital technology has evolved significantly, with milestones such as the discovery of the transistor and the rise of the microprocessor, leading to personal computers and smartphones (Mehta & Raza, 2024). Globally, digital technologies such as computers, internet, educational software, mobile applications, and e-learning platforms have become important elements in T&L. In education, digital technology has penetrated the academic environment, improving information processes and promoting innovative teaching methods (Prokimnov & Кириллова, 2024). The integration of digital technology allows students to access learning resources interactively, speeding up the process of understanding, as well as increasing the effectiveness of learning. In addition, it also helps teachers plan lessons more efficiently through the use of tools such as simulations, interactive videos, and learning management systems (LMS).

In Malaysia, the Malaysian Ministry of Education (KPM) has introduced various initiatives to encourage the use of digital technology in education. Among them is the Malaysian Education Development Plan (PPPM) 2013-2025, which emphasizes the use of technology in improving the quality of PdP. Initiatives such as the 1BestariNet Program and Digital Educational Learning Initiative Malaysia (DELIMa) aim to provide technology facilities and digital learning platforms to schools across the country. Although these efforts have had a positive impact, challenges such as the digital divide, resource constraints, and lack of teacher training still prevent the optimal use of technology. Raja Maznah Raja Hussain (2004) discuss how e-learning in higher education institutions in Malaysia allows teachers to adapt PdP according to students' needs through a flexible digital platform. The use of technology such as interactive multimedia, simulations, and digital materials not only makes learning more interesting, but also increases student motivation by giving them control over the learning process.

In addition, digital technology helps students understand abstract concepts by providing interactive visualizations and animations that explain relationships and processes more realistically. This study supports that the integration of technology in T&L makes learning more effective, interactive, and meaningful. Ab Jalil et al. (2015) found that teachers in Malaysia show a willingness to use digital technology, but factors such as insufficient training and infrastructural constraints are often major barriers. Abaricia et al. (2023) examined the use of an e-learning platform based on Learning Management System (LMS) technology in improving the learning experience of students. This study found that LMS allows students to access learning materials more flexibly, manage their learning schedule independently, and interact with content more interactively. In addition, LMS also helps in tracking academic performance as well as providing instant feedback, which contributes to deeper understanding. The findings of the study show that the use of LMS technology can improve students' ability to manage individual learning and improve their academic achievement. A study by Siti Norhidayah Mohd Rasdi (2020) emphasizes that administrative support and school leadership is an important factor in determining the effectiveness of the use of technology in teaching and learning. This study is in line with the findings that show that

teachers who receive guidance, adequate training, and encouragement from the administration are more likely to use technology innovatively in their T&L. Without this support, teachers may face difficulties in integrating technology effectively, thus affecting the potential of digital learning in improving the effectiveness of learning in schools.

Teaching and Learning

Teaching and learning (T&L) refers to the process of interaction between teachers and students that aims to impart knowledge, develop skills, and form values. In the context of education, teaching involves the delivery of information by the teacher through planned pedagogical methods, while learning refers to the process of students acquiring knowledge and skills through experience, understanding, and exploration. Effective T&L requires a balanced approach between traditional methods and technological innovation to meet the needs of today's students. In education studies, teaching is often seen as an activity designed to connect content with student needs. According to Biggs (1996) in constructive alignment theory, the effectiveness of teaching depends on the alignment between learning objectives, teaching methods, and assessment. Learning, on the other hand, focuses more on the student as the main subject in this process, with an emphasis on active and independent learning.

Shulman (1986) through the concept of "Pedagogical Content Knowledge" (PCK) emphasizes that the effectiveness of teaching depends on the teacher's ability to combine content knowledge with teaching strategies. In the context of technology PdP, PCK is expanded to TPACK (Technological, Pedagogical, and Content Knowledge), as suggested by Mishra and Koehler (2006), to illustrate the importance of technology integration in PdP. A study by Hattie (2009) in Visible Learning found that effective PdP is highly dependent on the relationship between teacher and student. He emphasized that constructive feedback and student involvement in the learning process are the main factors that contribute to the success of learning.

In the context of technology, a study by Ertmer et al. (2012) showed that teachers who use technology effectively in T&L tend to have high self-confidence in the technology's ability to improve student learning. However, factors such as professional training and adequate technical support play an important role in ensuring the successful integration of technology in T&L. A study by Hasin et al. (2022) examine the issues and challenges of digital learning in the context of the transformation of Malaysian education after the Covid-19 pandemic. The findings of the study show that the use of digital technology such as e-learning platforms, interactive videos, and mobile applications has increased the level of student involvement in the learning process. This technology provides a more flexible and interactive learning environment, allowing students to access learning materials more easily and increasing their motivation. However, this study also emphasizes challenges such as the digital divide and the lack of technology skills among teachers that can hinder the effectiveness of using technology in education. Therefore, although digital technology has had a positive impact on student engagement, sufficient support in terms of teacher training and infrastructure is still needed to ensure more effective implementation.

Past Related Studies

	Title	Authors	Year	Digital Technology	Teaching and learning,	SJKC	Data Analysis	Country
1	Mobile Assistive Technology for Dyslexic Children: A Significant Review	Mohamad, M., Abdullah, N., Rahim, N., Sanmugam, M., & Takajo, H.	2024	/	/		Quantitative and Qualitative	Malaysia
2	The Effect of Interactive Media Based on Animated Video on Natural Science Process Skills in Elementary School	Sinambela, B., & Pratiwi, I.	2024	/	/		Quantitative	Indonesia
3	Exploring Voice Input Translation Function of Google Translate Application Potential as a Reinforcing Tool in Mandarin Listening and Speaking Learning	Lian, T. Y., Ru, C. J., Li, Y., & Yeap, C. K.	2024	/	/		Quantitative	Perak, Malaysia
4	The Impact of Digital Education on Malaysian Students: A Significant Review	Hanafi, M. F. H., Abdullah, A. H., Jaafar, R., & Razally, M. Y.	2024	/	/		Quantitative and Qualitative	Malaysia
5	Teacher Innovation in Elementary School Education: Improving the Quality of	Susilawati, S., Nurul Yaqin, M. Z., Chakim, A., Putri, C. A., & Pepridel, N. I. Y.	2024	/	/		Qualitative	Indonesia

	Learning in the Digital Era							
6	Academic Assessments and iPads: Performance of Students from a Low Performing Urban Elementary School	Reynolds, J. L., Aspiranti, K. B., Henze, E. E. C., & Kall, L. M.	2024	/	/		Quantitative	United States
7	Primary School Science Teachers' Attitude towards Using Virtual Learning Environment (VLE) In Teaching Science	Mohammed Yousef Mai , Ghaneshwary R. Muruges.	2022	/	/		Quantitative	Taiping and Cameron Highlands, Malaysia
8	Promoting Gender Inclusion in Education Through ICT	MEJÍA-SALAZAR, G., CARRILLO-BELTRÁN, J. C. C., Gómez-Campos, S. G., & RAMÍREZ-JIMÉNEZ, A.	2023	/	/		Quantitative	Mexico
9	Programa um computador por aluno: efetivação de uma política pública de inclusão digital?	Batista, D. M.	2024	/	/		Qualitative	Brazil
10	ICT Teachers' Vision and Experience in Developing Digital Skills of Primary School Students in Computer Science Lessons	Katyetova, A. & Symbat, I.	2025	/	/		Qualitative	Kazakhstan

The above articles explored 10 studies related to the concept of digital technology in various educational contexts ranging from the year 2022 until 2025. The participants in the studies came from different backgrounds involving teachers and students from secondary and primary levels of education. Some of the key findings of these studies include a significant portion of the studies, specifically 6 out 10, have a primary focus on primary school level of education. Next, all 10 studies emphasize the importance of applying digital technology in teaching and learning in schools. Based on the research methodology, half of the reviewd articles, 5 out of 10 employ quantitative research approach, 3 studies relies on qualitative research approach which offers a deeper understanding of digital technology in school and two research utilises mixed-method approach. From the global scope, the studies above showcase a diverse geographical distribution. Four studies are conducted in Malaysia, one originates respectively from Kazakhstan, Brazil, Mexico and United States and two in Indonesia. Hence, this representation exhibits the application of digital technology in different educational settings. Below are some literature reviews on the articles selected.

First, Susilawati et al. (2024) explored innovation in primary school teacher education with an emphasis on the use of digital technology to improve the quality of learning. This study uses a descriptive qualitative approach and was conducted at MI Al-Lathifiyah, involving teachers who have applied digital technology in their teaching process. Data was collected through in-depth interviews, participatory observation, and documentation analysis. This study examines how teachers use digital technology in their classrooms to improve learning effectiveness, identifying factors that hinder or support teachers in adapting digital technology, including the availability of infrastructure, professional training, and school administration support. This study also evaluates how the use of digital technology affects the student's learning experience, including motivation, conceptual understanding, and interaction in class. However, there is a limitation of this study which is the need for a wider research sample. The research is focused on one institution only, namely MI Al-Lathifiyah, which may not represent the situation in other schools with different contexts. Therefore, more schools and teachers from various backgrounds need to be involved to improve the generalization of the study results.

Next, a study by Mohammed Yousef Mai and Ghaneshwary R. Muruges (2022) focuses on the attitude of primary school science teachers towards the use of virtual learning environments (VLE) in teaching science in Taiping and Cameron Highlands, Malaysia. Data was collected through questionnaires and interviews to understand the experiences and perceptions of teachers in the use of VLE. The identified research gap is the lack of in-depth studies on the relationship between teachers' professional training and the effectiveness of VLE use in Science teaching. By linking the effective use of VLEs with professional training, the study was able to identify key characteristics of training that lead to improved science teaching. This can help policy makers and educational institutions to design more effective training programs so that teachers can really use technology optimally.

A study conducted by Katyetova Aliya and Issabayeva Symbat (2025) focuses on the views and experiences of ICT teachers in developing the digital skills of primary school students in the subject of Computer Science. The main focus of the study is to understand the challenges, teaching strategies, as well as teachers' readiness in integrating digital technology in their classes. In addition, the study also examines how ICT teachers in Kazakhstan see their role in

shaping students' digital skills and the extent to which the current curriculum supports such efforts. This study involved 289 ICT teachers of public and private schools, school-gymnasiums, and lyceum schools in Kazakhstan. There is a research gap in this study where there is a lack of research on external factors that influence digital learning. The study did not consider the influence of home environment, level of parental support, or school infrastructure in developing students' digital skills. This will provide a more comprehensive and practical picture of the challenges and solutions in developing students' digital skills.

Based on the above studies, the research gaps identified include limited participant scope, insufficient exploration of external influences like parental support and school infrastructure, and the lack of a direct link between professional training and effective technology use. Addressing these gaps would enhance the generalizability of findings, provide a more holistic understanding of factors influencing digital learning, and help design targeted teacher training programs to optimize technology integration for improved student outcomes.

Conclusion

In conclusion, this paper provides a comprehensive review of existing literature and contextual findings related to the integration of digital technology in education, particularly within the SJKC school context. By examining both the benefits and barriers associated with digital technology use, the study contributes valuable insights into the current state of digital readiness and application among primary school educators. The findings suggest an urgent need for further empirical research that not only investigates the impact of digital technology on teaching effectiveness, student engagement, and learning outcomes, but also addresses the persistent gaps in teacher digital competency, administrative support, and equitable student access to technological resources.

This study’s contribution lies in its focus on a specific and underrepresented educational context—Chinese national-type schools—offering a nuanced understanding of how technology is (or is not) being maximized in real-world teaching scenarios. By identifying the most influential factors affecting usage, such as ease of access, professional training, and school-level support, this research can inform future interventions and policy development. These findings also emphasize the importance of teacher empowerment, sustained infrastructure investment, and targeted professional development programs in ensuring successful and inclusive technology integration.

Ultimately, the study offers a foundational reference for stakeholders—including educators, policymakers, and researchers—seeking to strengthen Malaysia’s digital education agenda. It contributes both theoretically, by applying the Technology-to-Task Fit framework, and practically, by outlining clear recommendations that can guide digital transformation efforts at the school level. Through this, the study advances the broader discourse on how digital tools can be effectively leveraged to promote equitable, engaging, and future-ready learning environments.

References

Ab Jalil, H., Abdul Rahman, F., & Abu Samah, B. (2015). TVET Teacher Professionalism in Malaysia: Issues and Challenges. Asian Social Science, 11(18), 1–8. https://doi.org/10.5539/ass.v11n18p1

Abaricia, C. P., & Delos Santos, M. L. C. (2023). Enhancing E-Learning System Through Learning Management System (LMS) Technologies: Reshape The Learner Experience. arXiv preprint arXiv:2309.12354. https://arxiv.org/abs/2309.12354

Batista, D. M. (2024). Programa um computador por aluno : efetivação de uma política pública de inclusão digital? https://doi.org/10.26512/2011.07.tcc.2292

Biggs, J. B. (1996). Enhancing teaching through constructive alignment. Higher Education, 32(3), 347–364. https://doi.org/10.1007/BF00138871

Ertmer, P. A., Ottenbreit-Leftwich, A. T., Sadik, O., Sendurur, E., & Sendurur, P. (2012). Teacher beliefs and technology integration practices: A critical relationship. Computers & Education, 59(2), 423–435.

Hanafi, M. F. H., Abdullah, A. H., Jaafar, R., & Razally, M. Y. (2024). The impact of digital education on malaysian students: a significant review. International Journal of Education, Psychology and Counseling. https://doi.org/10.35631/ijepc.953011

Hasin, I., Othman, R., Abdullah, N. S., Mohd Yusoff, K., & Ab Rahman, M. R. (2022). Isu dan Cabaran Pembelajaran Digital dalam Transformasi Pendidikan Negara Pasca Covid-19. Jurnal Pendidikan Bitara UPSI, 15(2), 23–32. https://doi.org/10.37134/bitara.vol15.2.3.2022

Hattie, J. (2009). Visible learning: A synthesis of over 800 meta-analyses relating to achievement. Routledge.

Katyetova, A., & Symbat, I. (2025). ICT Teachers' Vision and Experience in Developing Digital Skills of Primary School Students in Computer Science Lessons. https://doi.org/10.20944/preprints202501.1893.v1

Lian, T. Y., Ru, C. J., Li, Y., & Yeap, C. K. (2024). Exploring Voice Input Translation Function of Google Translate Application Potential as a Reinforcing Tool in Mandarin Listening and Speaking Learning. International Journal of Research and Innovation in Social Science, VIII(X), 438–449. https://doi.org/10.47772/ijriss.2024.8100037

Mejía-salazar, G., Carrillo-beltrán, J. C. C., Gómez-campos, S. G., & Ramírez-jiménez, A. (2023). Promoting gender inclusion in education through ICT. Revista de Tecnología y Educación. https://doi.org/10.35429/jtae.2023.18.7.1.10

Mishra, P., & Koehler, M. J. (2006). Technological pedagogical content knowledge: A framework for teacher knowledge. Teachers College Record, 108(6), 1017-1054. https://doi.org/10.1111/j.1467-9620.2006.00684.x

Mohamad, M., Abdullah, N., Rahim, N., Sanmugam, M., & Takajo, H. (2024). Mobile Assistive Technology for Dyslexic Children: A Significant Review. Journal of Advanced Research in Applied Sciences and Engineering Technology, 51(2), 57–70. https://doi.org/10.37934/araset.51.2.5770

Nikolay, N., Prokimnov., E., A., Кириллова. (2024). Digital technologies in science and education (achievements, trends and effects). Прикладная информатика, 19(3):22-46. doi: 10.37791/2687-0649-2024-19-3-22-46

Mehta, P., Raza, M. (2024). Computer technology. 81-89. doi: 10.58532/nbennurthch10

Raja Maznah Raja Hussain. 2004. eLearning in higher education institutions in Malaysia. E-Mentor, 5, 1–6.

Reynolds, J. L., Aspiranti, K. B., Henze, E. E. C., & Kall, L. M. (2024). Academic Assessments and iPads: Performance of Students from a Low Performing Urban Elementary School. Contemporary School Psychology. https://doi.org/10.1007/s40688-024-00527-2

Shulman, L. S. (1986). Those who understand: Knowledge growth in teaching. Educational Researcher, 15(2), 4–14. https://doi.org/10.3102/0013189X015002004

Sinambela, B., & Pratiwi, I. (2024). The Effect of Interactive Media Based on Animated Video on Natural Science Process Skills in Elementary School. Edunesia, 5(3), 1282–1294. https://doi.org/10.51276/edu.v5i3.921

Rasdi, S. N. (2020). Faktor-faktor yang mempengaruhi penggunaan teknologi dalam pengajaran dan pembelajaran dalam kalangan guru di Malaysia. Universiti Malaya.

Susilawati, S., Nurul Yaqin, M. Z., Chakim, A., Putri, C. A., & Pepridel, N. I. Y. (2024). Teacher Innovation in Elementary School Education: Improving the Quality of Learning in the Digital Era. 9(1), 320. https://doi.org/10.18860/icied.v9i1.3160