

Research Article

Ratchanok Preechasil^{1*}, Nattawut Thamrongchai²

Implementation of Educational Technology in Thailand: A Comprehensive Study on Its Impact and Challenges

Corresponding Author: **Ratchanok Preechasil**: Mahasarakham University, Mahasarakham, Thailand;

ratchanok.preechasil@edu.th

Nattawut Thamrongchai; Mahidol University, Nakhon Pathom, Thailand; nattawut.thamrongchai@edu.th

DOI: <https://doi.org/10.54443/ijedl.v2i1.265>

Abstract: The rapid advancement of technology has significantly transformed the education sector globally, with Thailand being no exception. This study aims to explore the implementation of educational technology in Thailand, focusing on the adoption of digital tools, platforms, and innovations that have reshaped the country's educational landscape. The study examines the benefits, challenges, and the effectiveness of educational technology in Thai schools and universities. By reviewing both qualitative and quantitative data collected from educators, students, and administrators, the research offers insights into how technological integration has affected teaching methodologies, student engagement, and academic outcomes. Furthermore, the paper addresses the barriers to successful technology adoption, such as infrastructural limitations, digital literacy gaps, and socio-economic disparities. This study provides recommendations for policymakers and educational institutions to enhance the integration of technology in Thailand's education system.

Keywords: Educational Technology, Digital Tools, Educational Innovation, Technology Adoption.

Introduction

The integration of technology into the educational system has evolved from a novel idea into a fundamental aspect of modern education. Over the last few decades, the use of technology in education has been a global phenomenon, with the objective of enhancing teaching methodologies, increasing student engagement, and improving learning outcomes. Thailand, as a rapidly developing country in Southeast Asia, has also embarked on this journey of integrating educational technology (EdTech) into its schools and universities. The nation's efforts to leverage technology in education have been shaped by various government policies, international partnerships, and private sector initiatives. While these efforts have brought considerable advancements in the educational landscape, challenges still remain, particularly regarding equitable access to technology, teacher training, and the adaptation of educational systems to accommodate these technological changes.

In Thailand, the government has long recognized the importance of technology in transforming the education sector. Policies such as the "Smart Classroom" initiative, which seeks to modernize schools with digital tools and infrastructure, have been a significant step in this direction. Furthermore, Thailand's emphasis on the development of digital literacy and the "One Tablet per Child" project, aimed at providing every student in public schools with a tablet, reflects a strong commitment to ensuring that technology is accessible to students nationwide. These efforts are intended to bridge the digital divide between urban and rural areas and offer all students equal access to educational opportunities, regardless of their socio-economic background.

Educational institutions, from primary schools to universities, have begun integrating various digital tools into their curriculum. Learning Management Systems (LMS) such as Moodle, Google Classroom, and other e-learning platforms have become integral parts of many

institutions, offering students the ability to access learning materials, submit assignments, and engage with instructors in a digital environment. Moreover, the implementation of blended learning models, combining traditional face-to-face instruction with online learning components, has gained significant traction, particularly in the wake of the COVID-19 pandemic.

However, despite the positive strides made in integrating technology, the implementation of EdTech in Thailand is not without its challenges. One of the primary obstacles is the digital divide. While urban schools and universities often have access to advanced technological resources, rural areas continue to face significant barriers such as limited internet connectivity, outdated infrastructure, and a lack of devices. The lack of reliable internet infrastructure in remote areas has made it difficult for students to engage in online learning or take full advantage of digital tools. Furthermore, there is a noticeable gap in the digital literacy skills of both teachers and students. Many educators have limited knowledge and experience in using technology to enhance teaching and learning, which hampers the effective integration of digital tools into the classroom.

In addition to infrastructure and skills challenges, cultural factors also play a role in the adoption of technology in Thai education. Traditional teaching methods, which are often teacher-centered, have been slow to evolve in many schools and universities. In some cases, there is resistance to adopting new technologies due to a lack of understanding of the potential benefits and a preference for established practices. Thus, while the government and educational institutions have made significant efforts to implement EdTech, there is a need for a more comprehensive approach that involves not only the provision of technology but also the development of digital competencies, changes in

teaching methods, and adjustments in educational policy.

The role of EdTech in Thai education has garnered increasing attention in recent years, as educational stakeholders have become more aware of its potential to address longstanding issues such as the quality of education, access to resources, and the development of 21st-century skills. The effective use of technology in the classroom can significantly improve student engagement, facilitate personalized learning, and foster collaboration among students and teachers. Digital tools also offer the possibility of enhancing the learning experience through multimedia resources, simulations, and interactive activities that appeal to diverse learning styles.

Despite the many opportunities presented by educational technology, it is important to examine how these tools are being implemented in Thailand and whether they are achieving their intended outcomes. This study seeks to provide a comprehensive analysis of the implementation of EdTech in Thailand, exploring the benefits, challenges, and the overall effectiveness of educational technology in transforming teaching and learning in Thai schools and universities. The research will also investigate the role of government policies, institutional support, and teacher preparedness in the successful integration of technology in education.

As educational technology continues to play an increasing role in the educational landscape of Thailand, it is crucial to assess the impact of these technological innovations on both students and educators. This study aims to provide insights into the current state of EdTech in Thai education, identify the barriers to its full implementation, and offer recommendations for enhancing its adoption and effectiveness across the country. Through this exploration, the study hopes to contribute to the ongoing discussion about the future of education in Thailand and the

potential of technology to shape the next generation of learners and educators.

In the following sections, the study will delve into the existing literature on EdTech in Thailand, the methods used to collect data on its implementation, and the results of the research. By doing so, it will present a holistic view of the challenges and successes of EdTech adoption in the country, offering both a critical analysis and a roadmap for future developments in this field.

Literature Review

Impact of Educational Technology on Student Learning Outcomes

The integration of EdTech in Thai schools and universities has been shown to enhance student learning outcomes, particularly in terms of engagement, motivation, and academic performance. Numerous studies have explored the positive effects of digital tools such as multimedia presentations, online quizzes, and virtual learning environments on student engagement and achievement. A study by Yuthapong and Phumchusak (2020) found that students who used interactive digital tools in their learning process were more motivated to participate in class activities and exhibited a deeper understanding of the subject matter. These findings align with global research indicating that technology-driven learning can foster critical thinking, problem-solving, and creativity.

In terms of academic performance, digital tools have been linked to improved test scores and higher retention rates. For example, a study by Jintakanon and Chotewut (2019) highlighted that students enrolled in blended learning environments (a combination of traditional and online learning) performed better in exams compared to those in purely traditional classroom settings. The use of educational apps and e-learning platforms allows for personalized learning, where students can progress at their own

pace, reinforcing their understanding and improving outcomes.

Teacher Perceptions and Training in EdTech

The role of teachers is crucial in the successful implementation of EdTech, as their attitudes, skills, and training directly affect the efficacy of technology in the classroom. In Thailand, teacher preparedness remains one of the main barriers to the widespread adoption of digital tools. Studies have shown that many teachers, particularly in rural areas, lack the necessary skills and knowledge to effectively use technology in their teaching. Thanomsak and Ratanasuk (2021) emphasized that although many teachers recognize the potential of technology to improve student learning, they often struggle to integrate digital tools into their lessons due to inadequate training and a lack of confidence in using technology.

Furthermore, a survey by Sakda Chaiyabutr et al. (2020) found that while urban teachers were generally more proficient in using technology, rural teachers faced challenges related to limited access to digital resources and training programs. This gap in teacher training has a significant impact on the effectiveness of EdTech in enhancing learning outcomes, as teachers who are not adequately trained may struggle to incorporate technology in ways that truly benefit their students.

Digital Divide and Socio-Economic Barriers

One of the most significant challenges in the implementation of EdTech in Thailand is the digital divide, which refers to the disparity in access to technology between urban and rural areas. This gap in technological access can be attributed to several factors, including differences in internet connectivity, infrastructure, and socio-economic status. Rural schools in Thailand often face difficulties in accessing high-speed internet, which is essential for the effective use of online learning platforms and digital tools. A study by

Somchai (2022) found that while urban schools were able to integrate technology into their teaching practices seamlessly, rural schools lagged behind due to poor internet connectivity and a lack of digital devices.

The "One Tablet per Child" initiative, which aimed to provide students in public schools with tablets, was a step toward bridging this digital divide. However, the initiative faced significant challenges, such as poor internet access in rural areas and a lack of digital literacy among teachers and students. These socio-economic and infrastructural barriers continue to hinder the widespread and equitable adoption of technology in education.

Government Policies and Institutional Support

The Thai government has played a significant role in promoting the use of technology in education through a range of policies and initiatives. The "Smart Classroom" project, for instance, seeks to transform traditional classrooms into digitally equipped learning environments, providing students with access to interactive learning tools such as tablets, laptops, and multimedia resources. A study by Apisak Boonpattarachai (2021) evaluated the effectiveness of the Smart Classroom initiative, finding that while the project had a positive impact on student engagement and learning outcomes, there were issues related to the lack of teacher training and the need for more robust technical support in schools.

The government has also focused on increasing digital literacy among students and teachers. Various programs and workshops have been established to enhance teachers' digital skills, and policies have been implemented to ensure that schools are equipped with the necessary infrastructure to support the use of technology. However, the success of these initiatives has been uneven across the country. While urban schools and universities have benefited from government support, rural schools

still face significant challenges in accessing technological resources.

In addition to government efforts, Thai universities have also been at the forefront of integrating technology into higher education. Many universities have adopted Learning Management Systems (LMS) to support blended and online learning, which has proven particularly beneficial during the COVID-19 pandemic. A study by Ratchanok Preechasil (2020) on Thai universities' adoption of LMS platforms found that students reported positive experiences with online learning, with flexible learning options allowing them to better manage their time and balance academic commitments with other responsibilities.

Cultural Factors and Resistance to Change

Cultural factors also influence the adoption of educational technology in Thailand. Traditional teaching methods, which are often teacher-centered and focused on rote memorization, remain prevalent in many Thai schools. In this context, teachers may be resistant to adopting new technologies that require changes in their teaching practices. A study by Wichai Pramroj (2022) highlighted that teachers in Thailand were often hesitant to use technology because they felt it would disrupt the established order of the classroom. Many teachers also expressed concerns about losing control over the learning process and the potential for students to become distracted by technology.

Moreover, the attitudes of students and parents toward technology in education can also affect its integration. In Thailand, education is highly valued, and there is often pressure on students to perform well academically. This pressure may lead to resistance to non-traditional teaching methods, such as project-based learning or online learning, which may not align with the traditional expectations of students and parents.

Future Directions and Recommendations

The literature suggests that while the implementation of EdTech in Thailand has shown promising results, there are still significant challenges to overcome. Key recommendations for enhancing the effectiveness of educational technology include the need for continued investment in infrastructure, particularly in rural areas, to ensure that all students have access to the necessary tools for learning. Additionally, the development of comprehensive professional development programs for teachers is crucial to ensure that they have the skills and confidence to integrate technology effectively into their teaching.

Moreover, greater attention must be given to addressing the digital divide by providing students in underserved areas with access to digital devices and high-speed internet. This will require collaboration between the government, educational institutions, and the private sector to ensure that technology is equitably distributed and accessible to all students, regardless of their socio-economic background.

Method

This study employed a mixed-methods approach to explore the implementation of educational technology (EdTech) in Thailand. By combining both quantitative and qualitative data, the research aimed to provide a comprehensive understanding of how EdTech is integrated into Thai education, the benefits it offers, and the challenges faced by educators, students, and institutions. The data was collected from a range of participants, including teachers, students, and educational administrators from schools and universities across both urban and rural areas in Thailand.

To begin, a survey was distributed to 200 teachers and 300 students across different educational institutions in Thailand. The survey focused on gathering information about their

experiences with and attitudes toward educational technology. Participants were asked about the types of digital tools they used, how often they used them, and their perceptions of the effectiveness of these technologies in enhancing learning. In addition to Likert-scale and multiple-choice questions, the survey also included open-ended questions to capture participants' qualitative responses. The online survey method was chosen to ensure broad accessibility, and the response rate was approximately 85%.

In addition to the survey, 20 in-depth interviews were conducted with educational administrators from various institutions. These semi-structured interviews sought to understand institutional policies on the adoption of educational technology, the challenges administrators faced in integrating EdTech, and their perspectives on the future direction of technology in education. The interviews were conducted either in person or via video conferencing, and the conversations were audio-recorded and transcribed for further analysis.

The quantitative survey data was analyzed using descriptive statistics, including frequencies, percentages, and means, to summarize the patterns of technology use among students and teachers. Inferential statistics, such as chi-square tests, were also employed to assess any significant relationships between the availability of technology and its perceived effectiveness in improving learning outcomes. This analysis provided insights into the overall extent of EdTech adoption and its impact on the educational experience.

For the qualitative data, the interviews were analyzed using thematic analysis. Thematic analysis involves identifying, analyzing, and reporting patterns (themes) within the data. Initially, the interview transcripts were carefully reviewed, and key themes related to the research questions were identified. These themes were then grouped into broader categories that reflected the major concerns, challenges, and opportunities

related to EdTech implementation in Thailand. This approach provided a deeper understanding of the institutional and organizational factors influencing the adoption of educational technology.

Throughout the study, ethical considerations were prioritized. All participants provided informed consent, and they were assured of their confidentiality. Participants were also informed that their involvement was voluntary, and they had the right to withdraw from the study at any time without penalty. Data collected from participants were anonymized, ensuring that personal identifiers were removed to maintain privacy and protect the confidentiality of all respondents.

While the mixed-methods approach provided a thorough examination of the issue, there were some limitations. The study focused on a selected sample of teachers, students, and administrators, which may not fully represent the experiences of all educators and learners across Thailand. Additionally, the reliance on self-reported data from surveys and interviews may have introduced biases, such as social desirability bias, where respondents may have provided answers they believed were expected. Lastly, while the study gathered valuable insights from surveys and interviews, it did not include direct classroom observations, which could have further enriched the findings.

Overall, this methodology allowed for a comprehensive and nuanced analysis of the implementation of EdTech in Thailand. By combining both quantitative and qualitative methods, the study sought to capture the diverse perspectives of stakeholders and provide a holistic understanding of the opportunities and challenges associated with the integration of technology in Thai education.

Results and Discussion

Technology Usage in Thai Education

The survey revealed that a significant majority of teachers and students in Thailand use some form of educational technology. Of the 200 teachers surveyed, 85% reported using digital tools regularly in their classrooms. The most commonly used tools included Learning Management Systems (LMS) such as Google Classroom (76%), educational apps (71%), and online resources like YouTube (68%). These platforms were primarily used to share learning materials, assign tasks, and facilitate communication between teachers and students. Among students, 92% reported using digital devices (smartphones, tablets, or computers) for educational purposes, with many indicating that they used them to access online course materials, conduct research, and participate in online discussions.

While technology use was prevalent, the frequency of use varied depending on the educational level and geographical location. Teachers in urban schools reported more frequent use of digital tools, with 90% of urban teachers indicating that they incorporated technology into their lessons at least once a week. In contrast, only 60% of teachers in rural areas used digital tools this frequently, with many reporting that they faced barriers such as inadequate infrastructure and limited access to devices.

Impact of EdTech on Student Engagement and Learning Outcomes

The results indicated a positive relationship between the use of EdTech and student engagement. Approximately 78% of students stated that they found lessons incorporating digital tools more engaging and interactive compared to traditional, lecture-based instruction. Many students mentioned that multimedia resources, such as videos and interactive simulations, made learning more

enjoyable and helped them better understand complex concepts.

Additionally, students who had access to blended learning environments—where traditional teaching methods were combined with online learning—reported higher levels of motivation and academic performance. Among the 300 students surveyed, 63% of those in blended learning environments reported higher test scores and better retention of course content compared to students in solely traditional classrooms. These findings align with previous studies that have suggested that blended learning can enhance learning outcomes by providing students with more personalized learning experiences.

However, the impact of EdTech was not uniform across all regions. In rural areas, students faced challenges related to the availability of high-speed internet and the lack of devices, which hindered their ability to fully engage with online learning materials. In contrast, urban students had greater access to digital resources and better internet connectivity, allowing them to take full advantage of technology-enhanced learning opportunities.

Teacher Perceptions and Training Needs

Teachers in Thailand generally expressed positive attitudes toward the use of EdTech, but there was a noticeable gap in their digital literacy skills. While 82% of teachers acknowledged that technology could improve student engagement and learning outcomes, 45% reported feeling inadequately trained to use technology effectively in their teaching. Many teachers in rural areas indicated that they had limited access to professional development opportunities focused on digital tools and teaching methods. Only 38% of teachers in rural schools had received formal training in using technology in the classroom, compared to 70% of teachers in urban schools.

Furthermore, many teachers expressed concerns about the time and effort required to

integrate technology into their lessons. Although they recognized the potential benefits, some teachers felt overwhelmed by the complexity of new tools and the need for ongoing professional development. These concerns were particularly prominent among older educators, who were less comfortable with technology and more accustomed to traditional teaching methods.

Barriers to EdTech Adoption

The study identified several barriers to the widespread adoption of EdTech in Thailand. The most significant challenge was the digital divide between urban and rural areas. As mentioned earlier, rural schools often lack the infrastructure needed to support technology-enhanced learning. Poor internet connectivity, limited access to digital devices, and outdated classroom facilities were major obstacles reported by educators and students in rural regions. While urban schools had access to modern technologies and high-speed internet, rural schools struggled to implement even basic digital tools.

Another barrier identified by both teachers and administrators was the lack of digital literacy among educators. While many teachers acknowledged the importance of technology in education, they felt unprepared to integrate it effectively into their teaching. This gap in digital skills was compounded by the absence of comprehensive professional development programs tailored to EdTech adoption. Although the Thai government has made efforts to promote digital literacy, these initiatives were not always sufficient or widely accessible, especially in rural areas.

Administrative support also played a crucial role in the successful integration of EdTech. The interviews with 20 administrators revealed that many schools lacked clear policies or strategies for implementing technology in the classroom. While some schools had adopted digital tools on an ad hoc basis, others were still hesitant to integrate technology due to concerns

about costs, teacher resistance, and the perceived disruption of traditional teaching practices.

Institutional and Government Support

The study found that government policies and institutional support have played a critical role in the adoption of EdTech. The Thai government's "One Tablet per Child" initiative, which aimed to provide digital devices to students in public schools, was viewed positively by many participants, although it faced significant challenges. While the initiative increased access to technology in some areas, it was limited by infrastructure issues, such as inadequate internet access in rural schools, and a lack of teacher training to make effective use of the devices. In some cases, the tablets were underutilized due to a lack of content and instructional materials that were compatible with the devices.

At the institutional level, universities in Thailand have been more proactive in adopting EdTech, particularly in higher education. The implementation of Learning Management Systems (LMS) such as Moodle and Blackboard has become standard practice at many Thai universities. Interviews with administrators revealed that while there was a strong institutional push for digitalization, challenges remained in terms of supporting faculty in the transition to online teaching and providing ongoing training for both staff and students.

Recommendations for Future EdTech Integration

The findings of this study suggest several key recommendations for improving the implementation of EdTech in Thailand:

1. Enhanced Infrastructure

A more robust infrastructure is essential to ensure that all students, regardless of their geographical location, have equal access to educational technology. This includes improving internet connectivity, especially in rural areas, and ensuring that schools are

equipped with the necessary devices and technical support.

2. Professional Development

Comprehensive and continuous professional development programs are needed to improve teachers' digital literacy and their ability to integrate technology effectively into the classroom. Training should be tailored to the specific needs of teachers and provide practical strategies for using digital tools to enhance learning.

3. Government and Institutional Support

Stronger collaboration between the government, educational institutions, and the private sector is needed to ensure the equitable distribution of technology and resources. Policies should be developed to support schools and universities in integrating EdTech and overcoming challenges related to funding and infrastructure.

4. Curriculum Development

The development of digital content and educational resources that are compatible with new technologies is essential. This would enable teachers to better integrate technology into their lessons and provide students with more engaging and interactive learning experiences.

The integration of EdTech in Thailand has the potential to transform the educational landscape, providing students with more engaging, personalized, and flexible learning opportunities. However, challenges such as the digital divide, teacher training gaps, and inadequate infrastructure remain significant obstacles. By addressing these issues through targeted policies, infrastructure improvements, and professional development, Thailand can fully harness the power of educational technology and improve the quality of education for all students.

The findings of this study offer valuable insights for policymakers, educators, and administrators in Thailand and other developing

countries seeking to integrate technology into their education systems.

Conclusion

The implementation of educational technology (EdTech) in Thailand has made notable strides in enhancing student engagement, improving learning outcomes, and providing more flexible learning opportunities. As this study has demonstrated, EdTech has the potential to transform traditional educational practices, offering both students and teachers a variety of tools and resources that can enrich the learning experience. However, the successful adoption and integration of EdTech in Thai education are contingent upon addressing several persistent challenges.

The findings of this study highlight the significant benefits of technology in education, particularly in terms of student engagement and academic performance. Students in blended learning environments and those with access to digital tools reported higher motivation and better academic results. Additionally, digital tools have provided students with opportunities for self-paced learning and greater interaction with course content. Despite these advantages, the research also uncovered significant barriers to full implementation, particularly in rural areas. The digital divide remains a critical challenge, with inadequate infrastructure, limited internet access, and the lack of digital devices in remote schools hampering the effectiveness of EdTech. This gap in access to technology exacerbates existing educational inequalities and limits the potential of technology to transform education on a national scale.

Furthermore, the study revealed that while many educators recognize the value of EdTech, a significant portion of teachers lacks the necessary digital skills and confidence to incorporate

technology effectively into their teaching practices. The lack of professional development opportunities and the pressure of adapting to new teaching methodologies were highlighted as key barriers to successful technology integration. Addressing these challenges will require comprehensive teacher training programs and sustained support for educators to help them effectively integrate digital tools into their classrooms.

The Thai government has made significant efforts to promote the use of technology in education through initiatives like the “One Tablet per Child” project and the “Smart Classroom” program. While these initiatives have had some success in providing access to technology, they have been limited by infrastructural issues and insufficient training for teachers. Stronger institutional support and clearer policies are needed to ensure that technology is integrated in a meaningful way, with a focus on both providing the necessary resources and building the capacity of educators to use these tools effectively.

Based on the findings, several recommendations can be made to enhance the integration of EdTech in Thailand’s education system. These include improving internet connectivity, particularly in rural areas, increasing access to digital devices, offering tailored professional development programs for teachers, and ensuring the development of relevant digital content and learning resources. Moreover, fostering collaboration between the government, educational institutions, and the private sector will be essential in overcoming the barriers to technology adoption and ensuring that all students, regardless of their socio-economic background, have equal access to the benefits of EdTech.

In conclusion, while significant progress has been made in integrating EdTech into Thai education, there is still much to be done to overcome the challenges that hinder its widespread adoption. By addressing these barriers and investing in infrastructure, teacher training, and content development, Thailand can harness the full potential of educational technology, improving the quality of education and preparing students for the demands of the digital age. The recommendations provided in this study offer a roadmap for policymakers and educational stakeholders to work together in creating a more equitable, effective, and technology-enhanced educational environment for all students.

References

- Amornrat, S., & Phadung, P. (2021). The Role of Technology in Enhancing Education Quality in Thai Primary Schools. *Asia-Pacific Journal of Education*, 41(2), 123-136.
- Apisak Boonpattarachai, A. (2021). Evaluating the Impact of Smart Classrooms in Thai Schools. *Journal of Educational Technology & Practice*, 56(3), 110-123.
- Chanthawiboon, A. (2019). The Impact of Digital Technologies on Thai Students' Learning Habits. *Education and Technology in Southeast Asia*, 31(2), 101-113.
- Chareonwongsak, P., & Sumeth, T. (2020). Teachers' Perception of Blended Learning in Thai Schools. *Journal of Technology and Education*, 37(5), 1057-1074.
- Chaiyabutr, S., & Boonpraphan, K. (2020). Mobile Learning and Its Effect on Student Learning Outcomes in Thailand. *Journal of Educational Technology*, 45(2), 141-158.
- Jintakanon, S., & Chotewut, P. (2019). Adoption of E-Learning in Thai Universities: Challenges and Opportunities. *Asian Journal of Distance Education*, 34(1), 72-88.
- Khon, A., et al. (2020). The Impact of Tablets on Learning Outcomes in Thai Primary Schools. *Journal of Educational Technology*, 45(2), 123-139.
- Lee, S., & Trakulkasemsuk, T. (2021). The Adoption of Educational Technology in Thailand: A Study on Higher Education Institutions. *International Journal of Educational Research*, 76, 165-177.
- Mak, S., & Song, T. (2020). Digital Tools for Collaborative Learning: A Case Study of Thai University Students. *Journal of Educational Studies*, 25(1), 99-113.
- Matsumoto, T., & Chiawthong, P. (2020). Leveraging EdTech for Active Learning in Thailand's Primary Schools. *International Journal of Learning and Teaching*, 16(3), 45-58.
- Nasiri, R., & Rassaei, E. (2020). Teachers' Competency in Using Technology in Education: A Comparative Study Between Thai and Iranian Teachers. *Asian Journal of Educational Research*, 13(4), 11-23.
- Netrakul, T., & Wongsothorn, K. (2020). The Effectiveness of E-Learning in Thai Higher Education Institutions. *Journal of Educational Technology Development*, 47(4), 121-135.
- Preechasil, R., & Srichanyachon, T. (2020). Teacher Readiness for Blended Learning in Thailand: A Case Study of Public Schools. *Journal of Educational Innovation*, 16(3), 33-48.
- Phadung, P., & Lertpongpiul, J. (2019). The Integration of Digital Learning Tools in Thai Classrooms: A Comparative Study. *Journal of Educational Research & Development*, 44(2), 78-94.
- Pasin, P., & Chantasiri, W. (2021). Exploring the Role of EdTech in Developing Critical Thinking Skills Among Thai Students. *Journal of Educational Psychology*, 56(1),

- 14-26.
- Ratchanok Preechasil, R. (2020). E-learning Adoption in Thai Universities: A Study on Students' Perceptions. *Journal of Educational Research and Practice*, 45(2), 152-165.
- Sakda Chaiyabutr, S., et al. (2020). The Digital Literacy Gap: Challenges in Integrating Technology into Thai Education. *International Journal of Educational Development*, 59, 78-92.
- Sawanpong, P., & Surachai, N. (2021). The Challenges of Implementing the "One Tablet per Child" Program in Rural Thailand. *Journal of Education Policy and Practice*, 29(1), 14-27.
- Somchai, P. (2022). The Digital Divide and Its Impact on Education in Thailand. *Journal of Education and Technology in Developing Countries*, 41(3), 89-102.
- Somboon, W., & Pinyou, D. (2020). The Role of Technology in Facilitating Teacher Professional Development in Thailand. *Asian Journal of Educational Studies*, 15(2), 142-156.
- Suksud, P., & Asawapirom, T. (2021). The Impact of Educational Technology on Teaching Methods in Thai Universities. *Journal of Higher Education and Technology*, 18(4), 214-227.
- Suthichai, K., & Chareonwongsak, P. (2020). Digital Divide and Its Impact on Education Access in Thailand. *Journal of Educational Technology in Southeast Asia*, 40(2), 23-35.
- Thong, S., & Aramsri, C. (2020). Impact of Online Learning Tools on Learning Engagement in Thai Secondary Schools. *Journal of Learning and Education Technology*, 9(3), 94-107.
- Thongcharoen, M., & Chanchai, T. (2021). The Role of Mobile Learning in Enhancing English Language Skills Among Thai Students. *Educational Technology and Language Learning*, 28(1), 55-68.
- Wichai Pramroj, W. (2022). Cultural and Institutional Challenges in Adopting Educational Technology in Thailand. *Asian Journal of Educational Policy and Innovation*, 14(1), 35-50.
- Wongsothorn, K., & Phanupong, P. (2021). Effectiveness of Technology-Enhanced Learning in Thai Secondary Education. *Journal of Educational Technology Integration*, 29(1), 72-85.
- Yuthapong, N., & Phumchusak, S. (2020). Engagement and Motivation in Technology-Enhanced Learning Environments. *Educational Technology Research and Development*, 68(4), 945-960.
- Zhang, Y., & Wang, H. (2019). Online Learning and Its Effect on Thai University Students' Academic Performance. *Journal of Higher Education*, 58(4), 279-291.
- Zaw Thiha, K., & May Zin, M. (2021). Exploring the Integration of Mobile Learning in Thai Secondary Schools. *Journal of Mobile and Ubiquitous Learning*, 9(1), 45-59.
- Zhao, L., & Li, J. (2021). Digital Education Tools and Their Role in Enhancing Student-Centered Learning in Thailand. *International Journal of Digital Education*, 12(2), 101-115.