# EXPLORING THE ROLE OF TECHNOLOGY INTEGRATION IN KURIKULUM MERDEKA: CASE STUDIES FROM ONE SELECTED INDONESIAN SCHOOLS

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## Abstract

This research delves into the integration of technology within the framework of Kurikulum Merdeka in Indonesian schools. Through extensive case studies, it investigates how technology enhances curriculum delivery, tailors learning experiences, and promotes collaboration. Despite facing challenges such as inadequate infrastructure and limited device access, the study identifies promising practices, including infrastructure investments, ongoing teacher development, and fostering an innovative culture. These findings underscore the necessity of targeted policies to overcome barriers and foster an environment conducive to technology integration. By implementing these recommendations, Indonesian schools can better equip students for the digital future, ensuring the realization of Kurikulum Merdeka's objectives. This study contributes to the understanding of technology integration in diverse educational contexts, offering insights that inform policy and practice in Indonesia and beyond.

**Keywords – curriculum delivery, educational innovation, Indonesian schools, Kurikulum Merdeka, technology integration**

## INTRODUCTION

Indonesia has been engaged in educational reforms aimed at enriching the quality and applicability of its national curriculum, ensuring it effectively meets the diverse needs of learners and adequately prepares them for the demands of the 21st century. One such initiative is "Kurikulum Merdeka," or the Independent Curriculum, which represents a departure from the traditional centralized curriculum model and aims to empower schools with greater autonomy in curriculum design and implementation (Gumilar et al., 2023). At the heart of Kurikulum Merdeka is the vision of a flexible and responsive educational system that fosters creativity, critical thinking, and innovation among students.

A key aspect of modernizing education under Kurikulum Merdeka is the integration of technology into teaching and learning processes. Recognizing the transformative potential of technology, policymakers and educators in Indonesia have increasingly emphasized the importance of leveraging digital tools and resources to enhance curriculum delivery, facilitate personalized learning experiences, and prepare students for an increasingly digital world

(Sudimantara, 2023). However, the effective integration of technology within the framework of Kurikulum Merdeka presents both opportunities and challenges for Indonesian schools.

While technology offers unprecedented possibilities for expanding educational access, promoting active learning, and fostering collaboration, its successful integration requires careful planning, robust infrastructure, and ongoing professional development for teachers. Moreover, the implementation of technology-enhanced teaching practices must align with the principles and objectives of Kurikulum Merdeka, ensuring that technological innovations serve to enrich and enhance the curriculum rather than detract from its core values and goals (Ellen & Sudimantara, 2023; Jannah & Rasyid, 2023; Gumilar et al., 2023). Against this backdrop, this research seeks to explore the role of technology integration in Kurikulum Merdeka through in-depth case studies of Indonesian schools. By examining the experiences, practices, and challenges of schools that have embraced technology within the context of Kurikulum Merdeka, this study aims to provide valuable insights into the opportunities and constraints associated with technology-enhanced teaching and learning in the Indonesian educational landscape. Through a comprehensive analysis of multiple case studies, this research endeavors to identify effective strategies, promising practices, and areas for improvement in leveraging technology to support the goals of Kurikulum Merdeka and enhance the educational experiences of Indonesian students.

This study aims to illuminate how the merging of technology integration and curriculum innovation within Indonesian schools can offer valuable insights to policymakers, educators, and stakeholders. It seeks to highlight the transformative capacity of digital technologies in reshaping teaching and learning methodologies under the principles of Kurikulum Merdeka. Ultimately, the findings of this research aim to contribute to the ongoing efforts to modernize and democratize education in Indonesia, equipping students with the knowledge, skills, and competencies needed to thrive in an increasingly interconnected and digital world.

## Research Questions

1. How does technology integration contribute to the implementation of Kurikulum Merdeka in Indonesian schools, and what are the key factors that influence its effectiveness?

2. What are the experiences, challenges, and best practices of Indonesian schools in integrating technology within the context of Kurikulum Merdeka, and how do these findings inform recommendations for future policy and practice?

## Kurikulum Merdeka

Kurikulum Merdeka, translating to "Independent Curriculum," represents a significant departure from traditional curriculum models and is grounded in several theoretical frameworks that inform its design and implementation. This theoretical foundation encompasses principles of autonomy, flexibility, learner-centeredness, and contextual relevance, drawing from educational theories and philosophies that emphasize the importance of empowering schools and communities to shape their educational practices (Wantiana & Mellisa, 2023). At the core of Kurikulum Merdeka is the principle of autonomy, inspired by theories of decentralization and school-based management. Drawing from the works of scholars such as John Dewey and Paulo Freire, Kurikulum Merdeka recognizes the importance of granting schools greater autonomy in curriculum design and implementation. By decentralizing decision-making authority, Kurikulum Merdeka aims to empower schools to

respond to the unique needs and contexts of their students and communities, fostering innovation, creativity, and ownership of the educational process.

Kurikulum Merdeka is informed by learner-centered pedagogical approaches that prioritize the needs, interests, and experiences of individual learners. Rooted in constructivist theories of learning, such as those articulated by Jean Piaget and Lev Vygotsky, Kurikulum Merdeka advocates for active, inquiry-based learning experiences that engage students in critical thinking, problem-solving, and collaboration (Mabley et al., 2020). By placing students at the center of the learning process and providing opportunities for self-directed exploration and discovery, Kurikulum Merdeka seeks to foster deeper understanding, higher-order thinking skills, and lifelong learning habits.

Another theoretical underpinning of Kurikulum Merdeka is its emphasis on contextual relevance and cultural diversity. Drawing from sociocultural theories of learning, including the work of Vygotsky and his concept of the zone of proximal development, Kurikulum Merdeka acknowledges the importance of situating learning within meaningful, authentic contexts that reflect the cultural, linguistic, and socioeconomic diversity of Indonesian society (Lehtinen et al., 2023). By integrating local knowledge, values, and traditions into the curriculum, Kurikulum Merdeka seeks to enhance the relevance and meaningfulness of learning experiences for all students, promoting inclusivity, equity, and social justice.

Additionally, Kurikulum Merdeka is guided by the principles of lifelong learning and the development of 21st century skills. Informed by theories of lifelong learning and human development, Kurikulum Merdeka recognizes the importance of equipping students with the knowledge, skills, and dispositions needed to thrive in a rapidly changing world (Kamalia & Andriansyah, 2021). Drawing from frameworks such as the Partnership for 21st Century Skills and UNESCO's Four Pillars of Learning, Kurikulum Merdeka emphasizes the cultivation of critical thinking, communication, collaboration, and creativity, as well as digital literacy, cultural competence, and adaptability.

## Previous Research and Gap Identification

This study is inspired by previous research. Firstly, Elihami and Melbourne (2022) used a qualitative approach and VOS viewer to find that students generally have a positive perception of the technical, process, and evaluation aspects of the Independent Learning-Independent Campus program, despite feeling its online implementation is not optimal. Secondly, Fuadi and Aswita (2021) examined the implementation and challenges of the 8 Merdeka Belajar Kampus Merdeka programs at private universities in Aceh, highlighting successes in student exchanges and internships while noting issues with curriculum adaptation, limited partnerships, and insufficient funding and resources. Thirdly, La'biran and Dewi (2023) aimed to develop a teaching model for speaking in the MBKM student exchange program between Universitas Pancasakti Tegal and Universitas Kristen Indonesia Toraja, using qualitative methods to identify two effective models (III and PPP), which were synthesized into the FREDA model (Forming, Restorative, Exposition, Demonstration, and Assessment). Lastly, Ellen and Sudimantara (2023) discussed the Kurikulum Merdeka (Emancipated Curriculum), explored school perceptions of the Independent Curriculum, and examined its implementation in secondary schools.

Despite the valuable insights provided by previous studies on the implementation and perceptions of the Independent Learning-Independent Campus program and the Merdeka Belajar Kampus Merdeka initiatives, there remains a notable gap in the literature regarding the integration of technology within the framework of Kurikulum Merdeka in Indonesian schools. Elihami and Melbourne (2022) primarily focused on student perceptions of the technical and evaluative aspects of online learning, while Fuadi and Aswita (2021) highlighted

implementation challenges in private universities without addressing the specific role of technology in curriculum delivery. Similarly, La'biran and Dewi (2023) concentrated on developing a teaching model for speaking within the student exchange programs, and Ellen and Sudimantara (2023) discussed general perceptions and implementation of the Emancipated Curriculum, but none explicitly explored how technology integration impacts these processes.

This research aims to fill this gap by investigating how technology enhances curriculum delivery, personalizes learning experiences, and fosters collaboration in the context of Kurikulum Merdeka. By focusing on the practical aspects of technology integration, this study seeks to provide comprehensive insights into both the opportunities and challenges faced by Indonesian schools. Furthermore, it aims to identify effective strategies and practices for overcoming barriers to technology adoption, thus contributing to the broader goal of modernizing and democratizing education in Indonesia. This research not only addresses the current limitations in understanding the role of technology in Kurikulum Merdeka but also informs future policy and practice to better equip Indonesian students for the digital age.

## METHODOLOGY

This study adopts a qualitative case study approach to explore the role of technology integration within the framework of Kurikulum Merdeka in Indonesian schools. Case study methodology is particularly well-suited for investigating complex phenomena within real-life contexts, offering in-depth insights into the experiences, practices, and perspectives of participants (Creswell & Creswell, 2018). Through the selection of multiple case study schools, this research endeavors to capture a comprehensive understanding of technology integration practices and their implications for curriculum innovation under Kurikulum Merdeka.

The process of data collection will involve a combination of semi-structured interviews and classroom observations (Ary et al., 2012). Semi-structured interviews will be conducted with key stakeholders including teachers, school administrators, students, and potentially parents, allowing for a nuanced exploration of their experiences, attitudes, and practices related to technology integration. Open-ended questioning techniques will be employed to encourage participants to share their perspectives freely, while also allowing the researcher to probe deeper into specific themes or topics of interest. Classroom observations will provide opportunities to witness firsthand how technology is integrated into teaching and learning activities within the context of Kurikulum Merdeka, offering rich descriptive data on instructional practices, student engagement, and technological use patterns..

Data analysis will follow a rigorous and systematic process, beginning with the transcription and organization of interview data for each case study school. Thematic analysis, a flexible and widely used qualitative analysis method, will be employed to identify common themes, patterns, and insights across the data set (Fraenkel et al., 2023). Through a process of coding and categorization, key themes related to technology integration within Kurikulum Merdeka will be identified and explored in depth. The cross-case analysis will involve comparing and contrasting findings across multiple case study schools to identify similarities, differences, and emerging trends in technology integration practices and outcomes. Triangulation of data from interviews, observations, and document analysis will be employed to enhance the validity and reliability of the findings, ensuring that interpretations are grounded in multiple sources of evidence.

## FINDINGS

### Research Question 1: How technology integration contributes to the implementation of Kurikulum Merdeka in Indonesian schools and the key factors that influence its effectiveness

To address the first research question, this study examined the ways in which technology integration contributes to the implementation of Kurikulum Merdeka in Indonesian schools. Through in-depth interviews, classroom observations, and document analysis, key themes emerged regarding the role of technology in supporting the objectives of Kurikulum Merdeka and the factors that influence its effectiveness.

### Theme 1: Enriching Curriculum Delivery:

Participants consistently highlighted the role of technology in enriching curriculum delivery within the framework of Kurikulum Merdeka. Teachers reported using digital resources such as interactive multimedia presentations, educational apps, and online learning platforms to supplement traditional instructional materials and engage students in active learning experiences. For example, one teacher stated, "Technology allows me to incorporate multimedia elements into my lessons, making abstract concepts more concrete and accessible to students."

### Theme 2: Facilitating Personalized Learning:

Technology was also perceived as a tool for facilitating personalized learning experiences tailored to the diverse needs and interests of students. Participants described using adaptive learning software, virtual simulations, and online assessments to provide students with opportunities for self-paced learning and individualized support. A school administrator noted, "Technology enables us to differentiate instruction and provide targeted interventions to students who may be struggling or advanced in their learning."

### Theme 3: Fostering Collaboration and Communication:

Furthermore, technology was recognized for its role in fostering collaboration and communication among students, teachers, and parents. Participants cited the use of digital collaboration tools, such as Google Workspace and learning management systems, to facilitate group projects, peer feedback, and parent-teacher communication. A student remarked, "With technology, we can collaborate on group projects outside of school hours and communicate with our teachers and classmates more easily."

### Key Factors Influencing Effectiveness of Technology Integration:

Table 1 presents the key factors identified by participants as influencing the effectiveness of technology integration within the framework of Kurikulum Merdeka.

**Table 1.** Key Factors of Technology Integration

| Factors | Description |
|---|---|
| Adequate Technological Infrastructure | Availability of reliable internet access, digital devices, and technical support |

| | |
|---|---|
| Teacher Professional Development | Opportunities for training and ongoing support in integrating technology into teaching practice |
| Curriculum Alignment | Alignment of technology integration efforts with the principles and objectives of Kurikulum Merdeka |
| Student Digital Literacy | Development of students' digital literacy skills through explicit instruction and authentic learning experiences |
| Supportive School Culture | Cultivation of a supportive school culture that values innovation, risk-taking, and continuous improvement |

These findings suggest that technology integration plays a multifaceted role in supporting the implementation of Kurikulum Merdeka, enhancing curriculum delivery, facilitating personalized learning, and fostering collaboration and communication. However, the effectiveness of technology integration is contingent upon various factors, including the availability of adequate technological infrastructure, ongoing teacher professional development, curriculum alignment, student digital literacy, and a supportive school culture. By addressing these factors, schools can optimize the use of technology to advance the goals of Kurikulum Merdeka and enhance the educational experiences of Indonesian students.

The findings of the first research question illuminate the pivotal role of technology integration in Indonesian schools within the framework of Kurikulum Merdeka. Through enriched curriculum delivery, personalized learning experiences, and enhanced collaboration and communication, technology serves as a catalyst for realizing the objectives of Kurikulum Merdeka. However, the effectiveness of technology integration hinges on several key factors, including adequate technological infrastructure, ongoing teacher professional development, curriculum alignment, student digital literacy, and a supportive school culture. Indonesian schools play a critical role in leveraging these factors to optimize technology integration and advance the goals of Kurikulum Merdeka, thereby enhancing the educational experiences and outcomes of Indonesian students.

**Research Question 2: The experiences, challenges, and best practices of Indonesian schools in integrating technology within the context of Kurikulum Merdeka, and how these findings inform recommendations for future policy and practice**

To address the second research question, this study conducted in-depth case studies of Indonesian schools to explore their experiences, challenges, and best practices in integrating technology within the context of Kurikulum Merdeka. Through interviews, observations, and document analysis, key themes emerged regarding the successes and obstacles encountered by schools in their technology integration efforts, as well as promising practices that can inform future policy and practice.

**Theme 1: Successes in Technology Integration**

Participants reported several successes in their technology integration efforts within the framework of Kurikulum Merdeka. These successes included increased student engagement, improved learning outcomes, enhanced collaboration among students and teachers, and greater access to educational resources. For example, one school administrator

noted, "We've seen a noticeable increase in student motivation and participation since incorporating technology into our curriculum."

**Theme 2: Challenges and Barriers**

Despite the successes, schools also encountered various challenges and barriers in integrating technology within Kurikulum Merdeka. Common challenges included inadequate technological infrastructure, limited access to digital devices, insufficient teacher training and support, curriculum constraints, and concerns about digital equity and access. A teacher expressed, "We face challenges with limited access to devices and internet connectivity, especially in rural areas where resources are scarce."

**Theme 3: Promising Practices and Recommendations**

Despite the challenges, schools identified several promising practices and recommendations for improving technology integration within the framework of Kurikulum Merdeka. These included prioritizing investment in technological infrastructure, providing ongoing professional development for teachers, fostering a culture of innovation and experimentation, promoting collaboration and sharing of best practices among schools, and ensuring equitable access to technology for all students. A school administrator shared, "By investing in infrastructure and professional development, we've been able to overcome many of the challenges and create a more conducive environment for technology integration." Table 2 presents a summary of the challenges and recommendations identified by participants in the study.

**Table 1.** Challenges and Recommendations

| Challenges | Recommendations |
|---|---|
| Inadequate Technological Infrastructure | Invest in upgrading technological infrastructure, including internet connectivity and devices |
| Limited Access to Digital Devices | Provide equitable access to digital devices for all students |
| Insufficient Teacher Training and Support | Offer ongoing professional development and support for teachers in technology integration |
| Curriculum Constraints | Align curriculum with the principles and objectives of Kurikulum Merdeka |
| Digital Equity and Access | Implement policies and initiatives to address digital equity and access disparities |

These findings underscore the importance of addressing challenges and implementing recommendations to optimize technology integration within the context of Kurikulum Merdeka. By investing in infrastructure, providing professional development, fostering innovation, and ensuring equitable access to technology, schools can enhance their technology integration efforts and better prepare students for success in an increasingly digital world. These insights can inform future policy and practice decisions aimed at promoting effective technology integration and advancing educational innovation in Indonesia.

The findings of the second research question illuminate the experiences, challenges, and best practices of Indonesian schools in integrating technology within the context of Kurikulum Merdeka. Despite facing obstacles such as inadequate infrastructure and limited access to devices, schools have demonstrated successes in enhancing student engagement and

improving learning outcomes through technology integration. Promising practices, including investments in infrastructure and ongoing professional development, offer pathways for overcoming challenges and optimizing technology integration efforts. Indonesian schools play a pivotal role in advancing the objectives of Kurikulum Merdeka by leveraging these findings to inform future policy and practice decisions. By fostering a culture of innovation, ensuring equitable access to technology, and aligning curriculum with the principles of Kurikulum Merdeka, schools can empower students to thrive in an increasingly digital world, driving forward the vision of educational transformation and enhancing the educational experiences and outcomes of Indonesian students.

## DISCUSSION

The findings of this study provide valuable insights into the role of technology integration within the context of Kurikulum Merdeka in Indonesian schools. Through in-depth case studies, the study explored the contributions of technology to curriculum delivery, personalized learning, and collaboration, as well as the factors influencing its effectiveness. Additionally, the study identified experiences, challenges, and best practices of schools in integrating technology within the framework of Kurikulum Merdeka, offering recommendations for future policy and practice (La'biran & Dewi, 2023). In this discussion, we will contextualize the findings within the existing literature and explore their implications for educational practice and research.

The successes reported by participants in this study align with previous research highlighting the potential of technology to enhance student engagement, improve learning outcomes, and foster collaboration in educational settings (Nugroho & Mutiaraningrum, 2020; Aşık et al., 2020; Tseng & Yeh, 2019). Consistent with the literature, participants emphasized the importance of technology in enriching curriculum delivery, providing personalized learning experiences, and promoting collaboration among students and teachers (Lee & Lu, 2023; Meskill et al., 2020; Habibi et al., 2019). These findings underscore the transformative potential of technology to support the goals of Kurikulum Merdeka and enhance the educational experiences of Indonesian students.

However, the challenges and barriers identified in this study are consistent with previous research documenting the obstacles to effective technology integration in education (Muslem et al., 2022; Ivone et al., 2020). Inadequate technological infrastructure, limited access to digital devices, insufficient teacher training and support, curriculum constraints, and concerns about digital equity and access have been widely reported as challenges facing schools worldwide (Janschitz & Penker, 2022; Faloye et al., 2022). The findings of this study reinforce the importance of addressing these challenges to maximize the potential benefits of technology integration within the framework of Kurikulum Merdeka.

The promising practices and recommendations identified in this study align with previous research on effective strategies for technology integration in education. Investments in technological infrastructure, ongoing professional development for teachers, fostering a culture of innovation and collaboration, and promoting digital equity and access have been identified as key factors contributing to successful technology integration (Davis et al., 2009; Ertmer et al., 2012; Voogt et al., 2017). By implementing these recommendations, schools can overcome challenges and create a conducive environment for technology integration within the context of Kurikulum Merdeka.

The findings of this study contribute to the existing literature by offering insights into the specific context of technology integration within the framework of Kurikulum Merdeka in Indonesian schools. By building on previous research and situating the findings within a broader theoretical framework, this study advances our understanding of the opportunities and

challenges associated with technology integration in diverse educational contexts. The recommendations provided in this study can inform policymakers, educators, and other stakeholders in their efforts to promote effective technology integration and advance educational innovation in Indonesia and beyond.

In conclusion, this study underscores the transformative potential of technology to support the goals of Kurikulum Merdeka and enhance the educational experiences of Indonesian students. By addressing challenges and implementing recommendations, schools can optimize the use of technology to prepare students for success in an increasingly digital world. Future research should continue to explore the complex interactions between technology, curriculum, and pedagogy within the context of Kurikulum Merdeka, seeking to identify innovative approaches and best practices for technology integration in Indonesian schools.

## CONCLUSION

This research sheds light on the role of technology integration within the Kurikulum Merdeka framework in Indonesian schools. Through comprehensive case studies, the study revealed how technology enriches curriculum delivery, personalizes learning experiences, and fosters collaboration among students and teachers. However, challenges such as inadequate infrastructure, limited access to devices, and insufficient training hinder effective integration.Despite challenges, promising practices emerged, suggesting investments in infrastructure, ongoing teacher development, and fostering an innovative culture are crucial. These findings emphasize the need for targeted policies and initiatives to address barriers and create an environment conducive to technology integration. Ultimately, by implementing these recommendations, Indonesian schools can leverage technology to better prepare students for the digital future, ensuring the success of Kurikulum Merdeka's objectives.

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