

Exploring the Role of the Merdeka Curriculum in Enhancing Digital Literacy: A Qualitative Study in Indonesian Schools

Umi Rosidah¹, Maftuhah², Syamsul Arifin³, Abdul Haris⁴

¹ Universitas Muhammadiyah Malang, Indonesia; umirosidah1234@gmail.com

² Sekolah Tinggi Ilmu Tarbiyah Muhammadiyah Paciran, Indonesia; kireina1704@gmail.com

³ Universitas Muhammadiyah Malang, Indonesia; syamsarifin@umm.ac.id

⁴ Universitas Muhammadiyah Malang, Indonesia; haris@umm.ac.id

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ABSTRACT

Digital literacy has become an essential competency for students to participate critically and effectively in technology-rich learning environments. Despite increasing attention to digital education in Indonesia, limited attention has been given to how the Merdeka Curriculum facilitates digital literacy through everyday classroom practices. This study explored the role of the Merdeka Curriculum in strengthening digital literacy, particularly through project-based learning, technology integration, and digital learning practices in Indonesian schools. A descriptive qualitative approach was employed involving teachers, students, and school principals from several schools implementing the Merdeka Curriculum. Data were collected through in-depth interviews, classroom observations, and document analysis and analyzed thematically, with triangulation and participant confirmation used to strengthen the credibility of the findings. The findings revealed three interrelated themes. First, technology-supported and project-based learning enabled students to search for and evaluate digital information, collaborate through digital platforms, and present learning outcomes using multimedia. Second, teachers' digital capacity influenced the consistency and quality of technology integration in classroom instruction. Third, school-based programs contributed to strengthening a digital literacy culture. However, unequal technological infrastructure, limited internet access, and variations in teachers' digital competence constrained implementation across schools. These findings indicate that the Merdeka Curriculum provides pedagogical flexibility for developing digital literacy, but its implementation depends on teacher capacity and institutional readiness. Sustainable professional development, equitable digital infrastructure, and institutional support are therefore essential for strengthening digital literacy within the Merdeka Curriculum.

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Corresponding Author:

Maftuhah

Sekolah Tinggi Ilmu Tarbiyah Muhammadiyah Paciran, Indonesia; kireina1704@gmail.com

1. INTRODUCTION

The rapid development of information and communication technology has transformed educational practices and reshaped the competencies students need to participate effectively in contemporary society. In this context, digital literacy has become an essential component of twenty-first-century education because students are increasingly required to interact with diverse forms of digital information in both academic and everyday settings. Digital literacy extends beyond the technical ability to operate digital devices; it encompasses the ability to search for, understand, evaluate, create, and use digital information critically and responsibly (Habibah, 2022). These competencies are particularly important because students are no longer positioned merely as consumers of information but are increasingly expected to evaluate information critically, solve problems, collaborate, and produce knowledge through digital environments (Cynthia & Sihotang, 2024; Sugiarto & Farid, 2023). Consequently, strengthening digital literacy has become an important educational priority in preparing students to respond to the increasingly complex demands of the digital era.

In Indonesia, the implementation of the Merdeka Curriculum provides an important context for strengthening these competencies. The curriculum offers schools and teachers greater flexibility in designing learning experiences according to students' needs and educational contexts while emphasizing student-centered learning and the development of individual potential (Anggraini et al., 2024). Its flexible orientation creates opportunities for teachers to incorporate digital resources and innovative instructional approaches into classroom practices. In particular, the emphasis on project-oriented and contextual learning can provide students with opportunities to use digital technology not merely as a supporting tool but as an integral component of the learning process (Brutu et al., 2023). From this perspective, the Merdeka Curriculum potentially provides a pedagogical framework through which digital literacy can be developed through authentic and meaningful learning experiences.

Project-based learning is particularly relevant to this process because it connects conceptual knowledge with practical activities that require students to investigate problems, collaborate, create products, and communicate their learning outcomes. When supported by digital technology, project-based activities can encourage students to search for information from multiple sources, communicate and collaborate through digital platforms, and produce multimedia learning outputs. Such practices can contribute not only to students' technological skills but also to critical thinking, creativity, communication, and collaboration (Maftuhah, 2024). Digital technology can therefore function as more than an instructional medium; when integrated with appropriate pedagogical practices, it can become a means through which students actively construct knowledge and develop competencies relevant to twenty-first-century learning.

However, the integration of digital literacy into the Merdeka Curriculum is not automatically achieved through the availability or use of technology. Schools continue to face substantial differences in technological infrastructure, internet connectivity, access to digital devices, and teachers' readiness to integrate technology into pedagogical practices. These conditions may result in uneven implementation of technology-supported learning across educational settings (Ashari et al., 2024). Teachers are particularly important in this process because the educational value of digital technology depends on their capacity to select appropriate digital resources, design meaningful learning activities, and guide students in using information critically and responsibly. Studies on the management of digitalization within the Merdeka Curriculum similarly indicate that effective technology integration requires not only technological resources but also teacher capacity and institutional support (Sa'id et al., 2024). Therefore, understanding digital literacy development requires attention to the interaction between curriculum flexibility, classroom pedagogy, teacher competence, and school-level conditions.

Previous research has addressed different dimensions of digital literacy and curriculum implementation in Indonesian education. Studies have discussed digital literacy as a means of strengthening students' critical thinking and problem-solving abilities (Cynthia & Sihotang, 2024), teacher digital competence within the Merdeka Curriculum framework (Habibah, 2022), and digital literacy as a

foundation for character development in contemporary society (Sugiarto & Farid, 2023). Other studies have examined literacy development within curriculum implementation (Ashari et al., 2024), the management of Merdeka Curriculum digitalization (Sa'id et al., 2024), and the implementation of coding-based learning within the curriculum (Alindra et al., 2024). Collectively, these studies demonstrate growing scholarly attention to digital transformation, curriculum reform, and technology-supported education in Indonesia.

Nevertheless, an important gap remains in understanding how the Merdeka Curriculum facilitates digital literacy at the level of everyday classroom practice. Much of the existing discussion addresses digital literacy, curriculum implementation, or technology adoption as related but relatively separate issues. Less attention has been given to the ways curriculum flexibility is translated into concrete practices through project-based learning, digital collaboration, information-search activities, multimedia production, and teachers' instructional strategies. Furthermore, implementation challenges such as differences in teachers' digital competence, technological infrastructure, internet accessibility, and institutional support require closer examination because these contextual conditions may influence how consistently digital literacy is developed across schools. This gap suggests the need for empirical investigation that moves beyond conceptual discussions of curriculum policy and examines how digital literacy is actually enacted within school practices.

Accordingly, the novelty of this study lies in examining the operational relationship between the Merdeka Curriculum and digital literacy development through actual classroom and school practices. Rather than viewing digital literacy merely as the ability to use technological tools, this study examines how project-based learning, technology integration, teachers' digital capacity, and school digital literacy culture interact in the implementation of the curriculum. This perspective provides a more contextual understanding of how curriculum flexibility can facilitate digital literacy while simultaneously revealing the conditions that support or constrain its implementation.

Based on this research gap, this study aims to explore how the Merdeka Curriculum supports the strengthening of digital literacy in Indonesian schools, particularly through project-based learning and the integration of digital technology into classroom practices. It also examines the challenges experienced by teachers and schools in implementing digital literacy within the Merdeka Curriculum framework. By examining these dimensions, the study is expected to contribute empirical insights into the relationship between curriculum implementation, pedagogical practices, teacher capacity, and digital literacy development in Indonesian educational contexts.

2. METHODS

2.1 Research Design and Setting

This study employed a descriptive qualitative approach to explore the role of the Merdeka Curriculum in strengthening digital literacy in Indonesian schools. The qualitative approach was selected because the study focused on understanding educational practices, participants' experiences, and the contextual conditions surrounding the integration of digital technology within the implementation of the Merdeka Curriculum.

The study was conducted as a case study involving several schools in Indonesia that had implemented the Merdeka Curriculum. The investigation focused particularly on three interconnected aspects of digital literacy implementation: the use of technology in classroom learning, the implementation of project-based learning, and the utilization of digital content and resources. This design enabled the study to examine how the principles of the Merdeka Curriculum were translated into actual digital learning practices in school settings.

2.2 Participants

The participants consisted of teachers, students, and school principals from schools implementing the Merdeka Curriculum. These three groups were involved because they represented different perspectives on the implementation of digital literacy in schools. Teachers provided information regarding instructional practices, project-based learning, and the integration of technology into classroom activities. Students provided perspectives on their experiences in using digital technology and resources during learning activities. School principals contributed information concerning school policies, institutional support, and the conditions influencing the implementation of the Merdeka Curriculum and digital literacy programs.

The involvement of these different participant groups allowed the study to examine digital literacy implementation from classroom and institutional perspectives and to compare information obtained from different sources.

2.3 Data Collection

Data were collected through three complementary techniques: in-depth interviews, classroom observations, and document analysis. The use of multiple data-collection techniques enabled the researchers to obtain information about participants' experiences while also examining how digital literacy practices were implemented in actual school and classroom contexts.

In-depth interviews were conducted with teachers, students, and school principals. The interviews explored participants' experiences and perspectives regarding the implementation of the Merdeka Curriculum, the use of digital technology in learning, project-based learning practices, teachers' digital competence, institutional support, and challenges encountered in strengthening digital literacy.

Classroom observations were conducted to examine the implementation of digital technology and project-based learning in teaching and learning activities. The observations focused on how teachers incorporated digital technology into instruction and how students used digital devices, platforms, and online resources to search for information, complete learning tasks, collaborate with peers, and present project outcomes. Attention was also given to contextual conditions that influenced technology-supported learning, particularly the availability of technological infrastructure and internet access.

Document analysis was conducted to complement the interview and observation data. The documents examined included curriculum-related materials, lesson plans, and reports associated with digital literacy and technology-supported learning in the participating schools. The documents were used to identify how digital literacy, technology integration, and project-based learning were incorporated into instructional planning and school practices.

2.4 Data Analysis

The collected data were analyzed using thematic analysis. The analysis began with data reduction, in which information obtained from interviews, classroom observations, and documents was reviewed and relevant information was selected according to the objectives of the study. The selected data were then organized and compared to identify recurring patterns related to the implementation of digital literacy within the Merdeka Curriculum.

Relevant data were subsequently grouped into categories based on similarities in meaning and implementation practices. Through this process, the categories were organized into broader themes representing the major patterns identified across the data sources. The analysis focused particularly on technology integration in learning activities, teachers' digital capacity, the development of digital literacy culture in schools, and the challenges affecting their implementation.

The themes were then interpreted in relation to the research objectives to explain how the Merdeka Curriculum supported digital literacy practices in school contexts. Evidence obtained from interviews was compared with classroom observations and relevant documents to ensure that the interpretation of the findings was grounded in multiple sources of data. The analysis ultimately informed the major themes

presented in the findings concerning technology integration, teacher capacity, and the strengthening of digital literacy culture in schools.

2.5 Trustworthiness of the Findings

The trustworthiness of the findings was strengthened through triangulation and participant confirmation. Triangulation was conducted by comparing evidence obtained through interviews, classroom observations, and document analysis. Information provided by teachers, students, and school principals was also examined across participant groups to identify consistencies and variations in their experiences and perspectives.

In addition, participant confirmation was used to validate the interpretation of the main findings. Participants were asked to confirm the relevant findings to reduce the possibility of misinterpretation and to ensure that the researchers' interpretations appropriately represented the experiences and conditions identified during data collection.

The combination of multiple data sources, multiple participant perspectives, triangulation, and participant confirmation was used to enhance the credibility of the qualitative findings and provide a more comprehensive understanding of digital literacy implementation within the Merdeka Curriculum.

3. FINDINGS AND DISCUSSION

3.1 Findings

The thematic analysis of interview, observation, and document data identified three interrelated themes concerning the implementation of digital literacy within the Merdeka Curriculum: (1) technology integration in learning activities, (2) teachers' digital capacity as a key factor in technology-supported learning, and (3) the development of a digital literacy culture at the school level. Across these themes, the findings also revealed differences in implementation associated with technological infrastructure, internet access, and teachers' ability to use digital technologies in instructional practices.

3.1.1 Technology Integration in Learning Activities

The findings indicated that digital technology had become an increasingly visible component of classroom learning in the schools implementing the Merdeka Curriculum. Teachers incorporated various digital platforms and applications, including Google Classroom, Canva, YouTube, and presentation applications, to support teaching activities and project-based learning. Students used smartphones, laptops, and online resources to search for information, complete assignments, collaborate with peers, and prepare multimedia presentations.

Classroom observations showed that technology-supported activities encouraged students to participate more actively in the learning process. Rather than relying exclusively on information provided by teachers or printed learning materials, students searched for information from digital sources and compared information obtained from different websites. Digital technology was also used to communicate learning outcomes, particularly through presentations and other multimedia products.

The integration of technology was particularly evident in project-based learning activities. Digital resources supported different stages of project completion, from information searching and collaborative work to the preparation and presentation of project outcomes. One teacher described students' responses to this learning process:

"Students are more enthusiastic when learning uses digital media because they can search for information directly and work collaboratively on projects."

This observation suggests that digital technology was used not only as a medium for delivering instructional content but also as a tool through which students engaged in information searching,

collaboration, and project production. These practices reflected several aspects of digital literacy identified in the study, particularly students' engagement with digital information and their use of digital tools to support learning activities.

However, the extent of technology integration varied across the participating schools. Schools with adequate technological infrastructure and stable internet connectivity were able to implement digital learning activities more consistently. In contrast, limited internet access and technological resources constrained the regular use of digital learning in other school contexts. Thus, although the Merdeka Curriculum provided opportunities for technology-supported learning, the realization of these opportunities differed according to the technological conditions available within each school.

3.1.2 Teachers' Digital Capacity in Technology-Supported Learning

The second theme concerned teachers' digital capacity and its role in supporting the implementation of digital literacy. The findings indicated that teachers differed in their confidence and ability to integrate digital technologies into classroom instruction. Several schools responded to this condition by providing workshops, mentoring activities, and training programs intended to strengthen teachers' abilities to use educational technology and implement project-based learning.

Teachers who participated in digital training demonstrated greater confidence in using digital platforms and incorporating technology into instructional activities. The findings also indicated that these teachers were better positioned to guide students in using digital resources critically and responsibly. Training was perceived as relevant not only to the technical use of digital tools but also to their application in teaching, assessment, and student collaboration. As one participant explained:

"The training programs helped teachers understand how technology can be integrated into learning activities, assessments, and student collaboration."

Despite these capacity-building initiatives, differences in teachers' technological abilities remained evident. Some teachers continued to experience difficulties in adapting to digital learning systems, particularly when using online assessment platforms and interactive learning applications. These differences affected the consistency with which technology-supported learning and digital literacy activities were implemented across classrooms.

The findings, therefore, indicate that the availability of technology alone did not determine the extent of digital integration. Teachers' ability to incorporate digital resources into pedagogical practices was also an important implementation condition. Where teachers possessed stronger digital skills and had access to professional development, technology could be integrated into a wider range of instructional activities. Where such competencies remained limited, the use of digital technology was less consistent.

3.1.3 Strengthening a Digital Literacy Culture in Schools

The third theme showed that digital literacy development extended beyond individual classroom activities. Several schools attempted to establish a broader digital literacy culture through school-based programs and activities. These initiatives included digital content competitions, coding workshops, multimedia projects, and digital reading programs designed to increase students' engagement with digital technology.

Classroom and school observations indicated that students were becoming more familiar with digital learning environments and online collaborative practices. One observed activity involved students creating educational videos related to environmental awareness and uploading their work to the school's digital platform as part of a project-based learning activity. This activity illustrates how students engaged with digital technology not only to access information but also to produce and communicate digital content.

The school-based initiatives also demonstrated that digital literacy practices could be embedded in activities extending beyond routine technology use. Students were provided with opportunities to create

digital products, participate in technology-related activities, and interact with digital learning resources. In this sense, digital literacy was reflected in both classroom learning and broader school programs.

Nevertheless, the development of a sustainable digital literacy culture was not uniform across the schools. Limited technological infrastructure, unequal access to digital devices, and unstable internet connections continued to restrict participation in digital activities. The findings also indicated that some schools lacked sufficient institutional support and sustainable programs to maintain digital literacy initiatives consistently.

Taken together, the three themes show that digital literacy within the implementation of the Merdeka Curriculum operated across interconnected classroom, teacher, and school-level dimensions. At the classroom level, digital technologies supported information searching, collaboration, project work, and multimedia production. At the teacher level, digital competence influenced how consistently these technologies could be incorporated into instruction. At the school level, institutional programs and technological conditions shaped opportunities to develop digital literacy beyond individual classroom activities. The findings therefore demonstrate that the implementation of digital literacy was not determined by curriculum flexibility alone but was closely associated with teachers' digital capacity, technological infrastructure, internet accessibility, and institutional support.

3.2 Discussion

The findings demonstrate that the Merdeka Curriculum provides pedagogical opportunities for strengthening digital literacy by enabling technology to be integrated into student-centered and project-based learning. Students used digital resources not only to access information but also to compare information from different sources, collaborate with peers, and communicate learning outcomes through multimedia. This finding suggests that digital literacy within the Merdeka Curriculum extends beyond technical proficiency in operating digital devices. Instead, it is embedded in learning practices that require students to locate, evaluate, use, and communicate information through digital environments. This interpretation is consistent with Habibah (2022), who emphasizes that digital competence within the Merdeka Curriculum involves meaningful engagement with technology rather than technical ability alone. It also supports the argument of Cynthia and Sihotang (2024) that digital literacy can contribute to critical thinking and problem-solving when students actively engage with digital information.

Project-based learning appears to provide an important pedagogical context for this integration. The findings showed that students used technology across different stages of project activities, including searching for information, collaborating, completing assignments, and presenting project outcomes. Technology therefore functioned as part of the learning process rather than merely as a medium for delivering instructional materials. This finding is consistent with Wahyudi et al. (2024), who identify technology-supported project-based learning as an approach that connects technology use with collaboration, problem solving, and the production of learning outcomes. Similarly, Maftuhah (2024) emphasizes the potential of digital literacy practices to strengthen critical and creative abilities. The present findings extend these perspectives by showing that the flexibility offered by the Merdeka Curriculum can create space for teachers to connect project-oriented pedagogy with digital practices in everyday classroom activities.

However, the findings also indicate that curriculum flexibility alone is insufficient to produce consistent digital literacy practices. Teachers' digital capacity emerged as a central condition influencing how technology was translated into instructional practice. Teachers who had participated in training appeared more confident in using digital platforms and incorporating technology into learning, assessment, and collaboration, whereas some teachers continued to experience difficulties with online assessment systems and interactive applications. This finding reinforces the argument that teachers should be understood not simply as users of educational technology but as pedagogical agents who determine how digital tools are incorporated into meaningful learning experiences. Habibah (2022) similarly

highlights the importance of developing teachers' digital competence within the Merdeka Curriculum, while Sa'id et al. (2024) identify teacher readiness as an important component in the management of curriculum digitalization.

The importance of professional development identified in this study also suggests that teacher training should move beyond instruction in the technical operation of applications. Effective digital integration requires teachers to understand how technology can support pedagogical objectives, student collaboration, assessment, critical engagement with information, and project-based learning. This interpretation is consistent with Lestari and Iryanti (2024), who associate teachers' digital literacy strategies with the development of students' critical thinking, and with Wohlfart and Wagner (2024), who emphasize the changing role of teachers in digitally transformed educational environments. Consequently, strengthening teacher capacity requires continuous professional development that connects technological competence with pedagogical decision-making rather than isolated technology training.

At the institutional level, the findings reveal that digital literacy was also strengthened through school-based activities such as digital content competitions, coding workshops, multimedia projects, and digital reading programs. These activities indicate that digital literacy can develop as part of a broader school culture rather than remaining confined to individual classroom lessons. Such an environment can provide students with repeated opportunities to engage with digital resources, produce digital content, and participate in collaborative learning. This finding aligns with Irvani and Anisah (2024), who highlight the relationship between infrastructure, innovation, and digital literacy development among school learners. It also corresponds with the view that digital literacy should be incorporated into educational practices in ways that encourage students to engage critically and productively with technology (Sugiarto & Farid, 2023).

Nevertheless, the findings reveal an important tension between the pedagogical possibilities of the Merdeka Curriculum and the material conditions required to realize them. Schools with adequate infrastructure and stable internet connectivity were able to implement technology-supported learning more consistently, whereas limited internet access, unequal availability of digital devices, and insufficient institutional support constrained implementation in other contexts. Similar concerns regarding unequal technology integration have been identified by Kusumawati et al. (2025), while Kusuma and Ixfina (2023) emphasize the importance of supporting infrastructure in developing technology-based learning environments. These findings indicate that curriculum reform cannot be separated from questions of digital access. Greater pedagogical autonomy may create opportunities for innovation, but schools require sufficient technological and institutional resources to transform that autonomy into sustained classroom practice.

Taken together, the findings suggest that the contribution of the Merdeka Curriculum to digital literacy can be understood through the interaction of three interconnected dimensions: pedagogical practice, teacher capacity, and the school digital ecosystem. At the pedagogical level, project-based and technology-supported activities provide opportunities for students to search for information, collaborate, and create digital products. At the teacher level, digital and pedagogical competence influences the quality and consistency of these learning experiences. At the institutional level, infrastructure, internet connectivity, professional development, and school programs determine whether digital literacy practices can be sustained. This interconnected perspective extends discussions that treat technology integration primarily as the availability or use of digital tools by showing that digital literacy development depends on the alignment between curriculum flexibility, teacher competence, pedagogical design, and institutional readiness.

These findings have practical implications for the implementation of the Merdeka Curriculum. Efforts to strengthen digital literacy should therefore not focus exclusively on providing devices or digital platforms. Schools and educational policymakers need to combine infrastructure development with sustained teacher professional development and institutional programs that embed digital literacy into

everyday learning. Particular attention should be given to schools experiencing limitations in connectivity and access to digital resources to prevent differences in technological conditions from producing unequal opportunities for digital learning. In this sense, the potential of the Merdeka Curriculum to strengthen digital literacy depends not simply on the presence of technology but on whether schools can develop an educational ecosystem in which technology, pedagogy, teacher capacity, and institutional support operate in a coordinated and sustainable manner.

4. CONCLUSION

This study concludes that the Merdeka Curriculum provides meaningful pedagogical opportunities for strengthening digital literacy in Indonesian schools by enabling the integration of digital technology with student-centered and project-based learning. The findings demonstrate that digital literacy development occurs through three interconnected dimensions: pedagogical practice, teacher capacity, and the school digital ecosystem. At the classroom level, technology-supported and project-based activities enabled students to search for and evaluate digital information, collaborate through digital platforms, and communicate learning outcomes using multimedia. At the teacher level, digital competence influenced the quality and consistency of technology integration, indicating that professional development is essential for transforming technological resources into meaningful learning experiences. At the institutional level, school-based digital programs, technological infrastructure, internet connectivity, and institutional support shaped the sustainability of digital literacy practices. These findings suggest that curriculum flexibility alone is insufficient to ensure effective digital literacy development; its potential depends on the alignment of pedagogical design, teacher competence, technological access, and institutional readiness. Therefore, strengthening digital literacy within the Merdeka Curriculum requires sustained teacher professional development, equitable access to digital infrastructure, and consistent school-level support. Although the qualitative scope of this study limits the broader generalization of its findings, it provides a contextual understanding of how the Merdeka Curriculum is translated into digital literacy practices in school settings. Future research should involve broader educational contexts and comparative or quantitative approaches to examine how these interconnected dimensions influence digital literacy development across different school and regional settings.

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