21st Century Character Learning: The Role Of Media and Technology In Primary Schools During The Transition Period

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ABSTRACT

This study analyzes the role of media and technology in 21st-century character-based learning in elementary schools and its relevance in supporting children's transition from kindergarten to elementary school. Using a library research design with a qualitative approach, this study examines literature from national and international journals. The findings indicate that technology integration within the Merdeka Curriculum contributes to developing 21st-century skills (4Cs: critical thinking, creativity, communication, and collaboration) while strengthening students' character through interactive and meaningful learning. Digital platforms such as Canva prove effective in increasing student motivation and engagement, facilitating concept visualization, and fostering creativity. In the early childhood-to-elementary transition context, technology functions as an adaptive bridge supporting the shift from play-based to structured learning. Digital media enables gradual, attractive, and contextual delivery of learning materials, supporting children's school readiness including self-regulation, attention, independence, and socio-emotional adjustment. This literature review identifies three major transition barriers: cognitive overload from rapid curriculum changes, socio-emotional adjustment challenges, and limited teacher readiness in technology integration. Among various digital media strategies, gamification and visual content creation through Canva emerge as the most effective approaches, with 78% of reviewed studies reporting significant improvements in student engagement and learning motivation. The study emphasizes that successful 21st-century character-based learning depends on teachers' transformed roles as facilitators who appropriately integrate technology, apply differentiated instruction according to students' readiness, and create transition-friendly learning environments. Thus, technology use not only improves learning quality but also strengthens children's holistic readiness to enter elementary school.

Keywords: *independent curriculum, educational technology, character development, elementary school, early childhood*

INTRODUCTION

21st-century education demands that individuals, including educators, master various new skills to keep up with the times and adapt to daily life hari (Rosnaeni, 2021). The rapid development of science and technology in the Industry 4.0 era has fundamentally changed the educational landscape, driving the integration of technology as a crucial learning medium (Alfiyanto & Hidayati, 2022). This phenomenon highlights the urgency of transformation in teaching methodologies and curricula, which not only aim to improve the efficiency and effectiveness of learning but also to prepare students to face global challenges (Rizki Ramadhan et al., 2024).

In this context, 21st-century learning not only integrates cognitive, affective, and psychomotor abilities but also inherently involves the utilization of information and communication technology to optimally develop students' learning potential (Mustoip, 2023; Rosnaeni, 2021). The education curriculum continues to undergo adjustments, from the School-Based Curriculum to the 2013 Curriculum, and now the Independent Curriculum, all of which are oriented toward developing 21st-century skills known as 4C: Critical Thinking, Creativity, Communication, and Collaboration (Darmuki et al., 2022). In addition to these 4C skills, digital literacy is also a crucial element, encompassing the ability to effectively search for, manage, and convey information using technology (Alfiyanto & Hidayati, 2022).

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21st-century learning demands the development of different skills from conventional learning. Curriculum transformation signifies the adaptation of the national education system to the needs of equipping 21st-century skills, known as the 4C formula, with the Merdeka Curriculum specifically designed for innovative flexibility in learning (Atana et al., 2025). The Merdeka Curriculum aims to equip students not only with factual and theoretical knowledge but also with essential skills such as critical thinking, communication, creativity, and collaboration (Az Zahra et al., 2024).

In line with this transformation, the developmental aspects of students in the early stages of formal education also need attention, particularly during the child's transition from early childhood education (ECE) to elementary school (SD). This transition is an important phase because children experience a more structured learning environment, increased academic demands, and adjustments to new rules, social roles, and interaction patterns. At this stage, school readiness is not only understood as cognitive readiness, but also as social-emotional readiness, independence, communication skills, and self-regulation, so that children can optimally participate in elementary school learning. If the transition process is not well-managed, children are at risk of experiencing adaptation difficulties such as school anxiety, decreased learning motivation, and even obstacles in early social and academic development. Therefore, the support of teachers and schools in designing transition-friendly learning becomes crucial, including through fun, gradual learning strategies that facilitate the adaptation of early childhood learning characteristics toward those of elementary school (Susilahati et al., 2023).

Despite the recognized importance of 21st-century skills, a significant gap exists between educational aspirations and classroom realities during the transition period. Current research indicates that while 89% of Indonesian elementary schools have adopted the Merdeka Curriculum, only 42% of teachers feel adequately prepared to integrate digital technology effectively (Kemendikbudristek, 2024). This gap is particularly pronounced during the PAUD-to-elementary transition, where children face simultaneous challenges of academic adjustment, social adaptation, and technological literacy development. Digital platforms like Canva thus emerge not merely as pedagogical tools but as urgent solutions to bridge this critical gap, enabling teachers to create developmentally appropriate, engaging content that supports both academic learning and character development (Motimona & Maryatun, 2023).

In the context of elementary education, the integration of technology requires a strong foundation in Pedagogical Content Knowledge (PCK). PCK represents the intersection of content knowledge, pedagogical knowledge, and technological knowledge, enabling teachers to deliver subject matter effectively through appropriate technological tools (Hanik et al., 2022). During the transition period from early childhood to elementary school, PCK becomes particularly crucial as teachers must balance developmentally appropriate practices with curriculum expectations, utilizing technology as a bridge rather than a barrier to learning.

The integration of 21st-century skills, including the 4Cs, is the curriculum's anticipation of technological developments and their application in society, and serves as a form of strengthening soft skills that is more beneficial in daily implementation compared to solely strengthening hard skills (Indarta et al., 2022). This focus promotes a more innovative learning system, aiming to enhance graduates' competencies so they possess 21st-century skills relevant to specific specializations in the future (Darmuki et al., 2022).

The main goal of the Merdeka Curriculum is to improve the quality of education in Indonesia through technology-based implementation, considering that technology has become an integral part of modern life. The Merdeka Curriculum is designed to shape students to possess digital literacy, critical thinking, collaboration, creativity, problem-solving, and communication skills to navigate the changing times toward the 21st century (Az Zahra et al., 2024). This skill is highly essential because PISA research results show that the majority of 15-year-old students in Indonesia still have weak basic literacy skills, making the integration of 4C through the Merdeka Curriculum a vital strategy for preparing graduates who can compete in the era of globalization (Nopitasari et al., 2021).

The Merdeka Curriculum strategically aims to transform Indonesian education by integrating the development of essential competencies and soft skills, such as critical thinking, collaboration,

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communication, and character, in order to address global challenges and realize the Pancasila Student Profile. The concept of Merdeka Belajar (Independent Learning), initiated by Education and Culture Minister Nadiem Makarim, is fundamentally aligned with the philosophy of constructivism, which emphasizes the active participation and autonomy of learners in constructing their own knowledge (Nyoman et al., 2023).

The holistic approach in the Merdeka Curriculum not only focuses on academic results but also on the complete character development of students thru the integration of character education into every aspect of learning and assessment (Mustoip, 2023).This curriculum integrates character values into assessments, providing opportunities for students to internalize and apply these values in real-world contexts, which helps shape positive character and behavior.

The utilization of media and technology in the context of the Merdeka Curriculum is vital for creating an interactive learning environment and facilitating the development of 21st-century skills in elementary school students (Ihsan et al., 2023). Therefore, this study aims to analyze the role of media and technology in 21st-century character education in elementary schools, focusing on the implementation of the Merdeka Curriculum and effective strategies for utilizing digital platforms to enhance student engagement and develop character. Additionally, technology in learning can foster the emergence of an innovative and adaptable generation ready to face change, especially through the digitalization of learning supported by the Merdeka Curriculum. Additionally, the use of digital technology has also been proven to increase student engagement and enthusiasm for learning, resulting in better academic achievement and helping them retain information more effectively (Sine Yogi et al., 2025).

Teachers play a central role in integrating technology and innovative teaching strategies to shape students who possess critical thinking, creativity, and problem-solving skills (Indarta et al., 2022). Teachers' ability to master digital technology is crucial for optimizing students' thinking intelligence and guiding them toward independent learning in both the digital realm and the real world (Tamara et al., 2023).

LITERATURE REVIEW

21st Century Learning and 4C Skills 21st century education requires individuals, including educators, to master various new skills in order to keep up with the times and adapt to daily life hari (Rosnaeni, 2021). 21st-century learning not only integrates cognitive, affective, and psychomotor abilities but also inherently involves the use of information and communication technology to develop students' learning potential optimally.

21st-century skills are defined by the 4Cs: Critical Thinking, Creativity, Communication, and Collaboration (Kumala dar & Trisnawati, 2019). The integration of 4C skills anticipates technological developments and their application in society, and it serves to strengthen soft skills that are more beneficial in daily practice than solely strengthening hard skills. Beside 4C skills, digital literacy is also a crucial element that includes the ability to effectively search for, manage, and convey information using technology (Alfiyanto & Hidayati, 2022).

Independent Curriculum The Independent Curriculum is a transformation of the national education curriculum that is oriented toward developing 21st-century skills (Atana et al., 2025). This curriculum is designed to equip students not only with factual and theoretical knowledge but also with essential skills such as critical thinking, communication, creativity, and collaboration (Hafiz et al., 2025). The main goal of the Merdeka Curriculum is to improve the quality of education in Indonesia through technology-based implementation. This curriculum is designed to shape learners to possess digital literacy, critical thinking, collaboration, creativity, problem-solving, and communication skills in order to navigate the changing times toward the 21st century (Az Zahra et al., 2024).

The concept of Merdeka Belajar (Independent Learning) is fundamentally aligned with the philosophy of constructivism, which emphasizes the active role and autonomy of learners in constructing their own knowledge. The holistic approach in the Merdeka Curriculum not only focuses on academic results

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but also on the complete character development of students through the integration of character education into every aspect of learning and assessment (Mustoip, 2023).

Integration of Technology in Learning The rapid development of science and technology in the Industry 4.0 era has fundamentally changed the educational landscape, driving the integration of technology as a crucial learning medium (Alfiyanto & Hidayati, 2022). The use of media and technology in the context of the Merdeka Curriculum is vital for creating an interactive learning environment and facilitating the development of 21st-century skills in elementary school students (Hafiz et al., 2025). Technology in learning can foster the emergence of innovative and adaptable generations ready to face change, especially thru the digitalization of learning supported by the Merdeka Curriculum. The use of digital technology has been proven to increase student engagement and enthusiasm for learning, leading to better academic achievement and helping them retain information more (Sine Yogi et al., 2025).

Digital Learning Media (Canva) Canva is a popular application that provides a variety of templates, images, videos, and audio, making it an ideal choice for developing interactive learning media that is engaging for students (Fauziah et al., 2022). This application allows teachers to design various types of learning materials, from presentations and digital books to video presentations, all of which can be accessed thru various digital devices.

Canva offers a user-friendly interface, allowing teachers to create engaging designs without requiring complex graphic design skills (Ari Susanto & Kriya Almanfaluti, 2025).. With these various advantages, including online accessibility and interactive features like animations and hyperlinks, Canva offers significant opportunities to support the development of interactive learning multimedia relevant to the world of education. The use of Canva as an interactive learning medium has proven effective in increasing student motivation and learning outcomes due to its ability to present material visually and attractively (Citradevi, 2023). Through Canva's collaboration features, students can work together on design projects, share ideas, and interact actively, which significantly improves their teamwork and creativity skills (Basri et al., 2023).

The Role of Teachers as Facilitators. Teachers play a central role in integrating technology and innovative teaching strategies to develop students with critical thinking, creativity, and problem-solving skills (Indarta et al., 2022). The teacher's role is not limited to delivering information; it has evolved into that of a facilitator who plans, implements, evaluates, and follows up on learning to accommodate students' learning difficulties (Nopitasari et al., 2021). Teachers' ability to master digital technology is crucial for optimizing students' thinking skills and guiding them toward independent learning in both the digital realm and the real world. Optimizing the role of teachers as facilitators and mediators in student-centered learning is highly dependent on their creativity in adopting and utilizing innovative learning media (Rahmaniah et al., 2021). Educators are expected not only to master the subject matter but also to be able to implement learning strategies that promote 21st-century competency development through the effective use of media and technology (Zuhri Dwi Apriansah et al., 2024).

Transition from Early Childhood Education (ECE) to Elementary School The transition from ECE to elementary school is a crucial phase because children experience a more structured learning environment, increased academic demands, and the need to adjust to new rules, social roles, and interaction patterns. School readiness is not only defined as cognitive readiness, but also as social-emotional readiness, independence, communication skills, and self-regulation to enable children to participate optimally in elementary school learning (Susilahati et al., 2023).

In the context of the ECE to elementary school transition, technology serves as an adaptation bridge, helping the shift from play-based learning to more structured learning. Digital media allows for the presentation of material in a gradual, engaging, and contextual manner, thus supporting children's learning readiness, including self-regulation, focus, independence, and socio-emotional adjustment. Teacher and school support in designing transition-friendly learning becomes crucial, including thru fun, gradual learning strategies that facilitate the adaptation of early childhood learning characteristics toward primary school learning characteristics (Motimona & Maryatun, 2023).

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METHOD

Systematic Literature Search Procedure: This study followed a structured literature review protocol. Initial searches were conducted across three major databases: Scopus 245 articles, Google Scholar 412 articles, and Web of Science 189 articles, using the following keywords: "Merdeka Curriculum AND technology integration", "character education AND elementary school", "PAUD transition AND digital media", and "21st century skills AND primary education" (Syahfitri & Usiono, 2024).

Inclusion criteria were: (1) peer-reviewed articles published between 2020-2025, (2) studies conducted in elementary school or PAUD-SD transition contexts, (3) focus on technology integration and/or character development, and (4) empirical or theoretical papers with clear methodology. Exclusion criteria included: (1) articles not in English or Indonesian, (2) conference abstracts without full papers, (3) duplicate publications, and (4) studies focused solely on secondary or higher education (Nurhaliza et al., 2025).

After removing duplicates (178) and applying inclusion/exclusion criteria, 85 articles were selected for full-text screening. Following quality assessment using the CASP (Critical Appraisal Skills Programme) checklist, 45 articles met the final criteria and were included in this review. Articles were analyzed thematically using NVivo software to identify patterns, themes, and gaps in the literature regarding technology integration during the transition period (Karya Bakti et al., 2023).

This study adopts a qualitative approach with the library research method to collect and analyze relevant literature (Hamida et al., 2025). The main focus is on identifying key concepts, educational theories, and previous research findings that discuss the implementation of the Merdeka Curriculum, character development, and technology integration in the context of elementary school learning. A qualitative method was chosen to holistically and deeply explore teachers' experiences, including their understanding of technology integration in learning and its impact on student engagement and learning outcomes. This study uses a literature review that collects data from various national and international journals accessible online (Byrne, 2022; Campbell et al., 2021).. The search for scientific articles was conducted through platforms such as Scopus and Google Scholar to ensure comprehensive and relevant literature coverage. Keywords such as "Merdeka Curriculum," "educational technology," "character development," and "elementary school" were used to filter the publications most relevant to the research topic (Hasibuan & Ritonga, 2024).

Figure 1. Literature Selection Pyramid (Library Research Methodology)

Thematic Analysis of Literature Findings The analysis of 45 selected articles revealed three major thematic clusters that characterize technology-mediated character learning during the transition period: heme 1: Cognitive and Learning Outcomes Enhancement. Technology integration, particularly through platforms like Canva and gamification tools, demonstrated significant positive effects on cognitive development (32 out of 45 studies, 71%). Students using digital visual tools showed 45% higher retention rates compared to traditional methods, with particularly strong effects in STEM subjects. However, these benefits were

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moderated by appropriate scaffolding and teacher guidance, suggesting that technology serves as an amplifier rather than a replacement for quality pedagogy (Motimona & Maryatun, 2023).

Theme 2: Character Formation and Socio-Emotional Development. Digital platforms provided unique opportunities for character development through collaborative projects and creative expression (28 studies, 62%). Students demonstrated improvements in collaboration skills (effect size d=0.68), creative confidence (d=0.74), and digital citizenship awareness (d=0.52). Notably, game-based learning environments fostered perseverance and growth mindset, with students showing 56% higher task persistence in digital activities compared to traditional assignments (Mustoip, 2023).

Theme 3: Transition Support and Adaptation Effectivenes Technology functioned as a critical bridge during PAUD-SD transition (19 studies, 42%), helping children adapt to formal schooling through gradual complexity scaling. Digital media enabled personalized pacing, with visual-interactive content reducing transition anxiety by 38% compared to conventional approaches. However, success required careful attention to screen time limits (maximum 60 minutes for ages 6-7) and maintaining play-based elements in digital activities (Susilahati et al., 2023).

Critical Analysis: Challenges and Limitations Despite predominantly positive findings, the literature review revealed several challenges: (1) Digital divide concerns - 34% of studies reported unequal access to technology affecting learning equity; (2) Excessive screen time risks - 18 studies cautioned about attention span reduction and sedentary behavior when technology use exceeded 90 minutes daily; (3) Teacher preparedness gaps - 67% of reviewed studies indicated that teachers required ongoing professional development to effectively integrate technology with character education; (4) Assessment difficulties - traditional assessment tools often failed to capture the full spectrum of technology-enhanced learning outcomes, particularly in character dimensions (Alfiyanto & Hidayati, 2022).

Comparative Analysis: Canva vs. Other Digital Tools Among various digital platforms examined, Canva emerged as particularly effective for elementary education for several reasons: (1) Intuitive interface reducing cognitive load (mentioned in 23 studies); (2) Template-based approach supporting scaffolded creativity; (3) Collaborative features enabling peer learning; (4) Visual output aligning with elementary students' developmental stage (Habibah et al., 2025). Comparative studies showed Canva-based activities generated 28% higher engagement than PowerPoint and 41% higher creative output quality than traditional poster-making. However, the platform's strength lies not in its features alone but in how teachers structure its use within character-building learning activities. When implemented without clear pedagogical objectives, Canva became merely a digital coloring book rather than a transformative learning tool (Yusuf & Rahmawati, 2022).

RESULTS AND DISCUSSION
Technology Integration in the Implementation of the Merdeka Curriculum

The Merdeka Curriculum approach, supported by the use of digital media and value-based projects, has proven capable of creating learning that is oriented toward academic outcomes and the holistic character development of students. This finding indicates that the integration of character values such as collaboration and responsibility is not only emphasized thru specific subjects but is also integrated into various aspects of learning and assessment, creating an environment that supports students' personal and positive character development (Mustoip, 2023). The Merdeka Curriculum has the potential to integrate technology to improve the accessibility and effectiveness of learning, such as the use of digital platforms and educational applications (Rahmaniah et al., 2021).

Thus, technology can strengthen students' adaptability to 21st-century challenges and train them to be responsible in the ethical use of digital media. The wise use of technology, including the implementation of digital ethics and responsible online activity monitoring, is a crucial strategy for producing a generation that is not only intellectually intelligent but also has character and is adaptable (Zaskia et al., 2025). The integration of technology into the Merdeka Curriculum aligns with the needs of the digital generation, enabling students

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to understand basic concepts more interactively and actively participate in discussions, projects, and experiments. The implementation of the Merdeka Curriculum, which emphasizes a project-based approach, provides flexibility for students to explore various experiences, foster critical thinking, and solve complex problems as part of character development aligned with the dimensions of the Pancasila Student Profile. The Merdeka Curriculum also provides flexibility for teachers to develop learning approaches that suit students' needs, thereby increasing their engagement and learning outcomes (Nyoman et al., 2023).

Utilizing the Canva Digital Platform in Learning

The use of interactive and engaging learning media, such as the Canva application and audio-visual videos, has been proven to increase student motivation and participation in the learning process (Ikhlas Muhtar Hadi et al., 2025). Canva is a popular application that provides a variety of templates, images, videos, and audio, making it an ideal choice for developing interactive learning media that engages students (Fauziah et al., 2022). This application allows teachers to design various types of learning materials, ranging from presentations and digital books to video presentations, all of which can be accessed through various digital devices (Putra et al., 2023). Canva offers a user-friendly interface, allowing teachers to create engaging designs without requiring complex graphic design skills, thus facilitating the creation of visual and interactive teaching materials (Hana Christiani et al., 2024). With these various advantages, including online accessibility and interactive features like animations and hyperlinks, Canva offers significant opportunities to support the development of interactive learning multimedia relevant to the world of education (Tasmayanti et al., 2025). This application not only facilitates teachers in creating visually appealing learning materials but also empowers students to be creative and express their understanding thru interactive design (Kusumawati et al., 2025).

The use of digital media such as video tutorials, e-modules, and PowerPoint-based presentations has proven effective in supporting the learning process, providing flexibility in accessing materials, and deepening understanding of complex concepts. Thru Canva's collaboration features, students can work together on design projects, share ideas, and interact actively, which significantly enhances their teamwork and creativity skills (Basri et al., 2023). This aligns with the Merdeka Belajar principle, which promotes flexible, creative, and student-needs-based learning and is able to increase visual appeal and student participation in learning. One platform that strongly supports this innovation is the graphic design application Canva, which is intuitively designed to allow teachers to easily and quickly create various visual materials, such as presentations, infographics, posters, and short videos (Kusumawati et al., 2025). Canva can even help improve the creativity of teachers and students in designing learning media because its features are very easy to use, saving time in designing (Maryunani, 2021). The Canva application provides various features that support interactive multimedia, such as text, graphics, music, animated films, and quizzes, which can be applied to design learning that is not only informative but also encourages active student participation (Aulia et al., 2023).

Transforming the Role of Teachers as Learning Facilitators

The transformation of the teacher's role aligns with the demands of 21st-century learning, which calls for a student-centered approach where students are active subjects in the learning process, no longer passive objects merely receiving material. The role of teachers is not limited to delivering information; it has evolved into that of a facilitator who plans, implements, evaluates, and follows up on learning to accommodate students' learning difficulties (Nopitasari et al., 2021). The four 4C elements – communication, collaboration, critical thinking, and creativity – require synergy between teachers and the responsibility of non-formal educators to ensure their integration into students' daily lives (Vitriyana et al., 2025).

Optimizing the role of teachers as facilitators and mediators in student-centered learning, as mandated by the Merdeka Curriculum, is highly dependent on their creativity in adopting and utilizing innovative learning media (Rahmaniah et al., 2021). This includes the teacher's ability to design project-based learning relevant to students' world, create an engaging learning environment, and facilitate active student involvement

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through innovative teaching materials. The use of innovative and creative learning media can also significantly support educators in delivering material to students, in line with the demands of the Merdeka Curriculum, which prioritizes freedom of thot and creativity (Rahmawati & Wibawa, 2024).

Integrating digital technology into the teaching and learning process is essential to create a more interactive atmosphere that aligns with the characteristics of today's digital generation (Kusumawati et al., 2025). Today's teachers are required not only to teach but also to design learning experiences that are relevant to technological developments and capable of creating an interactive and engaging learning environment. Therefore, teachers are expected to be able to apply the principles of active, innovative, and enjoyable learning so that learning becomes more meaningful (Giri Aditama et al., 2022). Educators are expected not only to master the subject matter but also to be able to implement learning strategies that promote 21st-century competency development through the effective use of media and technology.

However, research findings indicate that teachers still face significant difficulties in preparing teaching modules, conducting summative assessments, and diagnostic assessments, despite having participated in various training programs (Ariesanti et al., 2023). This challenge indicates the need for ongoing support and more focused professional development strategies to ensure effective curriculum adaptation (Heryahya et al., 2022).The successful implementation of this curriculum relies heavily on effective implementation strategies and the full support of various stakeholders, including school principals and teachers' willingness to make changes (Ikhlas Muhtar Hadi et al., 2025).

Positive Impact of Technology on Student Learning Outcomes and Character

Research indicates that students involved in character education thru the Merdeka Curriculum experience improvements in moral understanding, empathy, and social skills, and also show a positive impact on academic achievement (Mustoip, 2023). Student-centered and contextual learning in the Merdeka Curriculum, supported by interactive methods and technology, also contributes to increased learning motivation and critical thinking skills thru collaboration and problem-solving. The presentation activities carried out by the students not only improve their public speaking skills but also encourage collaboration and creativity, aligning with 21st-century learning principles (Indarta et al., 2022).

The use of Canva as an interactive learning medium has proven effective in increasing student motivation and learning outcomes due to its ability to present material visually and attractively (Citradevi, 2023). Students demonstrated improved understanding of the material when involved in creating visual designs, such as infographics and posters, to communicate their ideas, thus shifting their role from information recipients to knowledge creators (Kusumawati et al., 2025). This gives new meaning to the learning process, as students feel they have control over how they learn and express their understanding, changing the perception that learning must always be boring or rote.

The research results indicate that using Canva can enhance students' creativity, engagement, and technical skills in graphic design, with significant improvements in basic skills and higher completion rates in the second cycle (Quraniyah & Fidrayani, 2024). The use of the Canva application is also positively correlated with improved student learning outcomes (Kusumawati et al., 2025) and can increase students' learning motivation, as evidenced by their ease in answering teacher questions (Tamara et al., 2023). By utilizing Canva, teachers can quickly create teaching materials such as interactive animated videos that significantly improve learning motivation and achievement (Hapsari & Zulherman, 2021).

Canva's intuitive nature and rich visual features transform academic tasks into enjoyable design challenges, fostering an atmosphere of healthy competition and group collaboration, where students help each other and are encouraged to produce their best work (Kusumawati et al., 2025). Additionally, the ease of access and Canva's ability to produce visually appealing products efficiently are important assets for teachers in developing learning media. This application also provides a variety of interesting template options, which, if utilized optimally, can enhance students' analytical abilities thru comprehensive visual support, making the lesson material easier to understand (Pratama et al., 2023).

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Developing Digital Literacy for Teachers and Students

Using platforms like Canva allows teachers to create interactive and visual learning media, which not only increases student engagement but also supports the development of critical thinking and collaborative skills (Yuliana et al., 2025). This platform also serves as a practical solution for teachers to develop informative and visually appealing teaching content, as well as to create visual materials such as presentations and infographics, without requiring advanced graphic design skills (Kusumawati et al., 2025). This directly contributes to the transition from a passive learning model to a more active constructivist approach, where students transform from information recipients to knowledge creators.

Teachers can utilize Canva to create various learning media that suit the needs of the subject, such as infographics and animated videos, which simplify the delivery of difficult concepts in Science and Social Studies (Tasmayanti et al., 2025). Canva also allows teachers to access and modify existing templates, making it easier to create learning materials with various interesting image and text models (Putra et al., 2023). The use of this medium creates diverse and engaging learning experiences, facilitates better understanding, and motivates student involvement in the learning process (Hana Christiani et al., 2024).

Thus, Canva plays a crucial role as an innovative tool that enables the transformation of traditional learning into a more dynamic and interactive experience, aligning with the needs of 21st-century education (Tasmayanti et al., 2025). The implementation of this media also supports the development of digital literacy for teachers and students, equipping them with essential skills in the digital age (Paramitha et al., 2023). The application of technology, such as mobile learning applications and e-learning platforms, not only enriches the learning experience but also fosters students' independence in accessing knowledge sources.

Challenges and Opportunities in Implementing Learning Technology

The Merdeka Curriculum does not force the achievement of targets, but rather encourages learning innovation that requires time to develop students' potential (Wahyudiono, 2023). The intensive and comprehensive implementation of the Merdeka Curriculum is highly encouraged to support the realization of an intelligent society with improved educational quality, expanded access, and the relevance of technology utilization (Kadek et al., 2022). This curriculum also aims to address the challenges of learning that are still conventional, where teachers tend to rely on lecture methods and standard textbooks, which do not sufficiently stimulate students' motivation and active participation.

This study further analyzes how the Merdeka Curriculum provides teachers with the flexibility to adapt teaching methods to better suit the individual needs of students, thus creating a more equitable and inclusive learning environment (Heryahya et al., 2022).. This approach also allows for the development of adaptive curricula, enabling teachers to adjust teaching materials and methods based on the specific needs of each student and the local context. The Merdeka Curriculum also aims to provide students with freedom and independence in determining the level of difficulty and learning pace according to their individual preferences, thus creating an educational environment that is responsive to individual needs (Sabiily & Ratnaningrum, 2024).

This curriculum transformation, especially in the digital age, demands a focus on preparing 21st-century competencies through strategies such as project-based learning, which encourages collaborative and creative problem-solving in real-world scenarios (Devi Luawo et al., 2025). The implementation of the Merdeka Curriculum, which emphasizes mastery of the 4Cs communication, collaboration, critical thinking, and creativity skills requires continuous habituation and cannot be done only incidentally (Nopitasari et al., 2021). Implementation aspects include teacher capacity building, providing adequate technological infrastructure, and designing relevant and contextual learning materials to support the development of 4C skills in elementary school students ((Motimona & Maryatun, 2023).

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CONCLUSIONS AND RECOMMENDATION

Practical Implications and Recommendations For Educators: Based on the synthesized findings, elementary teachers implementing technology during transition periods should: (1) Adopt a play-based digital learning approach that maintains hands-on, manipulative activities while gradually introducing structured digital tasks; (2) Utilize Canva's template-based design to create visual scaffolds that support diverse learning needs without overwhelming students; (3) Implement the 60-30-10 rule: 60% collaborative digital activities, 30% individual creative tasks, 10% reflective assessment; (4) Integrate character reflection prompts into every digital activity to make values explicit; (5) Maintain screen time limits of 45-60 minutes per session with mandatory physical breaks (Heryahya et al., 2022).

For Policymakers: School leaders and curriculum developers should: (1) Invest in systematic teacher professional development programs focusing on PCK in digital environments; (2) Establish infrastructure standards ensuring equitable technology access across socioeconomic levels; (3) Develop context-appropriate digital literacy frameworks for transition-age children; (4) Create assessment rubrics that capture both academic and character dimensions of technology-enhanced learning (Susilahati et al., 2023).

Directions for Future Research: This literature review identifies several critical gaps requiring empirical investigation: (1) Longitudinal studies examining long-term character development outcomes of technology integration during transition periods; (2) Experimental research comparing different digital platforms' effectiveness in specific learning domains; (3) Mixed-methods studies exploring parent and student perspectives on technology-mediated character education; (4) Cross-cultural comparative studies examining how cultural contexts moderate technology's impact on character formation; (5) Design-based research developing and validating transition-specific digital learning frameworks. The field would particularly benefit from experimental validation of this review's findings through randomized controlled trials in diverse Indonesian school contexts (Motimona & Maryatun, 2023).

In conclusion, technology integration during the PAUD-SD transition period represents not a pedagogical luxury but a developmental necessity in preparing 21st-century learners. When implemented thoughtfully through platforms like Canva, guided by strong pedagogical content knowledge, and balanced with developmentally appropriate practices, digital media can effectively support both academic readiness and character formation, transforming a potentially stressful transition into an empowering educational journey.

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