Lectura: Jurnal Pendidikan
Volume 16, Nomor 2, Agustus 2025, Halaman 640-653
P-ISSN: 2086-4876
E-ISSN: 2549-063X
DOI: https://doi.org/10.31849/3tfvzb59
Link: https://journal.unilak.ac.id/index.php/lectura/article/view/27938

Utilization of Technology Media in Era 4.0 on Students' Creativity in Elementary Schools

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Submitted: 01-07-2025 Accepted: 15-07-2025 Published: 10-08-2025

Abstract
In the era of the Industrial Revolution 4.0, fostering creativity at the elementary level is essential for equipping students with the critical thinking and problem-solving skills needed to adapt to rapid technological change. This study explores how the use of technology-based media influences student creativity in elementary schools. Employing a qualitative descriptive approach, data were collected through classroom observations, semi-structured interviews with teachers and students, and documentation across five selected public elementary schools in Cirebon City, Indonesia. The research focuses on how digital tools, such as learning videos, Canva, PowerPoint, and Wordwall, are integrated into classroom instruction and how they affect students' learning interest, active engagement, and satisfaction. The findings showed that technology-supported learning environments contribute positively to the development of four core indicators of creativity: fluency, flexibility, originality, and elaboration. Students demonstrated greater confidence in generating and expressing ideas, adapted learning strategies independently, and produced more detailed and original work using digital platforms. Teachers also observed higher motivation and participation levels during technology-enhanced lessons. These results underscore the importance of incorporating digital media into pedagogical design to foster creativity among young learners. In conclusion, integrating technology-based media into elementary education effectively fosters students' creativity by enhancing their idea generation, adaptability, and originality, while simultaneously increasing their motivation and active participation in the learning process.

Keywords: creativity, technology, learning environment, elementary education, Industrial Revolution 4.0

INTRODUCTION

Since the onset of the Industrial Revolution 4.0, digital media has become integral to educational innovation, especially in elementary school classrooms. The utilization of technology media in the Era 4.0 has significantly influenced the cultivation of creativity among elementary school students, particularly when integrated with student-centered pedagogies such as Project-Based Learning (PjBL). Hermansyah et al. (2025) demonstrated that PjBL strategies in *Madrasah Ibtidaiyah* (MI) enhanced student creativity by promoting contextual problem-solving and active learning participation, which are essential components in 21st-century classrooms. Similarly, Ramadhan & Hindun (2023) emphasized that positioning students as problem-solvers through PjBL fosters critical and creative thinking. Judijanto et al. (2024) further expanded on this by showing how the use of innovative tools like Box's Spoke in community-based projects can enhance creativity beyond the traditional classroom, offering experiential learning opportunities that stimulate imagination and design thinking. Complementing these findings, Fanani & Rizal (2025) noted that PjBL also supports learner autonomy, an important aspect when integrating digital media, as students are required to make decisions, reflect, and iterate. This view is supported by Solissa et al. (2024), who found that the implementation of PjBL not only enhanced creativity but also improved academic achievement, suggesting a multifaceted benefit of combining technology and project-based strategies. Furthermore, Fathonah et al. (2023) highlighted how elementary students developed creativity through exploration, collaboration, and reflection in PjBL environments enriched with digital tools. Taken together, these studies underscore that in the context of Era 4.0, creativity is most effectively nurtured when technological media are utilized within pedagogical frameworks that emphasize active learning, autonomy, and authentic problem-solving.

In the dynamic landscape of the Industrial Revolution 4.0, the demands of the workforce and society have shifted significantly. Individuals are expected not only to possess cognitive competence but also to demonstrate creative problem-solving abilities, adaptability, and innovation in the face of complex and changing conditions (Alamsyah et al., 2023). Education, therefore, plays a critical role in equipping students with these 21st-century skills. Among these, creativity stands out as a fundamental skill that empowers learners to think divergently, generate original ideas, and approach problems from multiple perspectives (Runco & Jaeger, 2022). Media plays a crucial role in enhancing the clarity of learning materials that students may find unclear or difficult to understand, while also serving as a tool to foster interest, motivation, and enthusiasm during the learning process (Martati et al., 2025).

Despite its central role in preparing students for future challenges, creativity development in elementary education remains largely underemphasized. In many classrooms, traditional pedagogical practices still dominate—emphasizing rote memorization, standardized assessments, and passive reception of information (Hasanah, 2021; Melati et al., 2023). These approaches tend to limit students' opportunities to think independently, solve problems creatively, or engage in open-ended exploration. As a result, young learners are often disengaged from the learning process and lack the foundational skills needed for innovation, adaptability, and lifelong learning. This pedagogical mismatch has raised increasing concern among educators, researchers, and policymakers, especially in the context of the Industrial Revolution 4.0, which demands higher-order thinking, creativity, and digital competence from learners. The rapid integration of technology into every aspect of life has further emphasized the urgency to

reform early education by embedding creative thinking into the curriculum from the earliest stages.

To address this gap, there is a growing shift toward integrating digital media into elementary learning environments. Technology tools such as Canva, Wordwall, PowerPoint, and educational videos offer visually engaging and interactive platforms that support idea generation, collaboration, and creative expression. These tools not only help students visualize abstract concepts but also provide opportunities for differentiated and student-centered learning. In this context, fostering creativity is no longer seen as an optional skill but as a core educational objective, essential for nurturing a generation capable of thriving in an ever-evolving, digitally connected world. A key reason for the stagnation of creativity development at the elementary level is the lack of access to diverse, interactive, and student-centered learning experiences. Many teachers still rely heavily on textbooks and verbal instruction, which do not adequately stimulate students' imagination or allow for creative exploration. Furthermore, classroom environments are often structured in ways that restrict collaboration, curiosity, and critical inquiry, all of which are essential for nurturing creativity. As a result, students may become disengaged, less motivated to learn, and unprepared to face the demands of a knowledge-based and innovation-driven society (Ananda et al., 2023; Sari et al., 2024).

In response to the evolving demands of 21st-century education and the challenges of cultivating higher-order thinking in young learners, the integration of technology into the learning process has emerged as a promising and necessary innovation. Traditional pedagogical methods often fall short in addressing the need for creativity, engagement, and personalization, especially in elementary classrooms where students are still developing foundational skills. The integration of digital media offers an effective pathway to bridge this gap. Various digital tools such as Canva, PowerPoint, Wordwall, and educational videos provide interactive, visually rich platforms that can foster creative thinking and expression (Amanda et al., 2024; Nurmala et al., 2021). These technologies empower students to visualize abstract concepts, manipulate multimedia elements, and explore diverse perspectives, skills essential for developing fluency and flexibility in creativity. Moreover, students are encouraged to produce digital content such as posters, presentations, or short videos, which require originality and elaboration, two critical components of creative output.

In addition to fostering creativity, digital tools enable differentiated instruction by accommodating various learning styles and allowing students to progress at their own pace. Through interactive platforms, learners engage with content in ways that are personally meaningful, thus promoting deeper understanding and sustained motivation (Yuliani & Nugraha, 2024). The application of such technology aligns with the principles of student-centered learning and provides a foundation for developing lifelong learning skills. As such, meaningful integration of digital media is not only a technological advancement but also a pedagogical shift toward more inclusive, innovative, and creativity-driven education.

Empirical studies have increasingly confirmed the potential of technology in enhancing student creativity, engagement, and overall learning outcomes. Interactive digital platforms offer a range of features that not only support content delivery but also stimulate students' cognitive and emotional engagement with learning materials. For instance, research by Kurniawan & Wu (2024) emphasizes that digital tools can foster both cognitive and affective domains by promoting learner autonomy, timely feedback, and opportunities for collaboration. These factors are crucial in building a learning

environment where students feel empowered to express their ideas creatively and explore problems from multiple angles.

Similarly, Amanda et al. (2024) found that the integration of Canva in creative assignments significantly increased students' motivation and originality, particularly in tasks involving visual communication. Through design-based tasks, students were encouraged to make creative decisions, experiment with layout and color, and express personal ideas, thus enhancing the development of key creativity indicators such as originality and elaboration. However, much of the existing research is concentrated on secondary or higher education settings, where students generally possess a foundation of digital literacy and are developmentally more autonomous. Far less attention has been directed toward understanding how such tools function in elementary school classrooms, particularly with younger learners who are still developing basic cognitive, social, and digital competencies. Exploring the impact of technology on creativity at the elementary level is therefore essential, not only to fill this research gap but also to inform age-appropriate pedagogical strategies that leverage digital tools for creative growth from an early age.

This gap in the literature underscores the need for research that investigates how digital learning media can foster creativity in elementary-level students. The elementary stage is a critical period for cognitive and socio-emotional growth, where foundational skills such as imagination, self-expression, and divergent thinking begin to form. In the Indonesian context, the urgency of this issue is particularly evident. Many public elementary schools still face challenges in adopting creative learning approaches due to infrastructure limitations, insufficient training in digital pedagogy, and lack of systemic support. By focusing on young learners and their interactions with educational technology, this research contributes meaningfully to both theoretical discourse and practical application in the field of education. Theoretically, it enriches current understandings of creativity development at the elementary level, a domain that remains underexplored, particularly within the context of developing countries. While much of the existing literature has examined the role of digital tools in secondary or tertiary education, limited attention has been paid to how such tools function in early education settings, where students are just beginning to form the foundational skills needed for creative expression and independent learning.

This study bridges that gap by examining how digital platforms can be harnessed to cultivate creativity, specifically in terms of fluency, flexibility, originality, and elaboration, among elementary school students. In doing so, it also highlights the developmental appropriateness of various tools and strategies that can effectively engage young learners cognitively, emotionally, and socially. Practically, the study offers actionable recommendations for educators and policymakers seeking to design inclusive, student-centered curricula that integrate technology meaningfully. By identifying how specific digital tools influence creative behaviors, the research supports informed decision-making in instructional design, teacher training, and infrastructure investment. More importantly, the findings align with the broader educational goal of preparing a future-ready generation—students equipped not only with technical knowledge but also with the creative capacity to adapt, innovate, and lead in a rapidly changing global environment driven by technology and information.

METHOD

This study applied a qualitative descriptive approach to explore how technology-based media influences student creativity in elementary schools. This approach emphasizes naturalistic inquiry to describe phenomena from participants' perspectives within their real learning environment. The research was conducted in five public elementary schools (*Sekolah Dasar Negeri*/SDN) in Cirebon City: SDN Merapi, SDN Bima, SDN Pegambiran 1, SDN Pulasaren 4, and SDN Kartini 2. These schools were selected based on their accessibility, active collaboration with higher education institutions, and prior experience integrating digital tools in learning, criteria that supported both the relevance and feasibility of the study. Participants included classroom teachers and students from grades I to VI, selected purposively. Teachers involved had implemented technology-based learning for at least one semester, while students had actively participated in digital learning activities.

Data were collected through observations, semi-structured interviews, and documentation. Observations focused on classroom practices involving digital tools (e.g., Canva, Wordwall, PowerPoint). Interviews explored teachers' and students' experiences with technology use and its impact on creative learning. Documentation included teaching materials and student-created digital products (e.g., posters, videos).

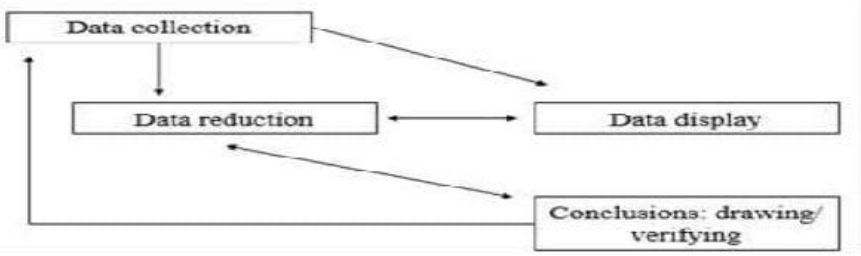

Figure 1. Interactive Model

To ensure ethical integrity, all participants provided informed consent, and confidentiality was maintained throughout the research process. The data analysis process adhered to the Interactive According to Miles et al. (2020), the qualitative data analysis model consists of three interrelated components: data condensation, data display, and conclusion drawing/verification. First, data reduction was conducted by organizing and coding the information according to the study's conceptual framework, particularly focusing on dimensions of creativity, namely fluency, flexibility, originality, and elaboration, as well as aspects of technology use, including engagement, interest, and satisfaction. Second, data display involved the systematic presentation of findings in both narrative and tabular formats to facilitate the identification of patterns and relationships within the data. Finally, conclusion drawing and verification were carried out through a process of triangulation across multiple data sources, ensuring that interpretations were grounded in evidence and aligned with established theoretical frameworks in creativity and educational technology.

Triangulation of methods (observation, interview, documentation) and sources (teachers and students) was applied to enhance data credibility. The analysis ensured that the findings reflected how technology integration supports various dimensions of student creativity in real classroom settings.

Table 1. Dimensions of Technology Integration and Student Creativity Based on Theoretical Frameworks

Category	Dimension	Source
Technological Aspects	1. Interest in Learning 2. Active Involvement 3. Learning Satisfaction	Munawaroh et al. (2023)
Creativity Aspect	1. Fluency (Fluency in Expressing Ideas) 2. Flexibility (Ability to See from Different Points of View) 3. Originality (Authenticity or Uniqueness of Ideas) 4. Elaboration (Ability to Develop Ideas in Detail)	Fitri (2022)

FINDING AND DISCUSSION

Findings

This section presents the study's findings across four key creativity indicators, fluency, flexibility, originality, and elaboration, as well as supporting technology-related learning outcomes. Data from student and teacher perspectives are synthesized to emphasize overall trends.

Technology-Supported Learning Environment

The integration of learning videos, Canva, Wordwall, and PowerPoint fostered a positive learning atmosphere. Students reported greater interest, active involvement, and satisfaction with lessons involving digital media. Teachers observed that digital tools helped maintain student attention, reduced boredom, and encouraged greater participation.

Table 2. Fluency (Ability to Express Ideas)

School	Students' Response	Teachers' Response
SDN Merapi	Students generate more ideas with technology.	Students find alternative solutions quickly with tech.
SDN Pegambiran 1	Imagination is stimulated through digital media.	Students convey ideas more easily using tech tools.
SDN Bima	Technology inspires idea generation.	Students think creatively and critically with tech assistance.
SDN Pulasaren 4	Students express creative ideas more freely.	Digital tools help students articulate multiple creative ideas.
SDN Kartini 2	Tools like Canva help students explore ideas better.	Students understand better and respond more creatively.

Students demonstrated significantly improved fluency in generating ideas when utilizing digital tools such as Canva, Wordwall, and PowerPoint. The visual, colorful, and interactive features of these platforms encouraged spontaneous idea expression and reduced students' hesitation in sharing their thoughts. By allowing them to organize and present ideas creatively, these tools supported divergent thinking and fostered a more engaging learning atmosphere. Teachers observed that students were not only able to generate a higher volume of ideas, but the ideas also became more diverse and original.

Moreover, many students who were previously passive became more confident in participating in classroom discussions and collaborative activities, showing enthusiasm and initiative during technology-assisted tasks.

Table 3. Flexibility (Ability to View Problems from Multiple Perspectives)

School	Students' Response	Teachers' Response
SDN Merapi	Students ask teachers when they face difficulties.	Students seek guidance when unclear about the material.
SDN Pegambiran 1	Students use video tutorials when they struggle.	Technology supports diverse learning styles and problem solving.
SDN Bima	Students independently search for solutions.	Students are not dependent on a single source when using tech.
SDN Pulasaren 4	Students consult teachers and peers when stuck.	Not all students ask friends; many consult teachers directly.
SDN Kartini 2	Students ask teachers when difficulties arise.	Teachers must continually innovate to meet students' curiosity.

Students showed notable adaptability in solving problems by utilizing various digital resources such as video tutorials and peer collaboration through classroom discussions or online platforms. This flexible approach allowed them to switch strategies when encountering challenges, especially when initial attempts were unsuccessful. Wordwall, in particular, played a significant role in encouraging flexible thinking through its interactive quizzes and game-based tasks that offered multiple solution paths and immediate feedback. Teachers emphasized that these technological tools enabled students to adjust their learning approaches according to personal preferences, cognitive styles, and the nature of the task. This adaptability not only improved problem-solving efficiency but also increased students' confidence in managing complex or unfamiliar learning situations, fostering a growth mindset in the process.

Table 4. Originality (Uniqueness of Ideas)

School	Students' Response	Teachers' Response
SDN Merapi	Students decorate posters creatively using their own ideas.	Most students express original ideas through digital work.
SDN Pegambiran 1	Students use their own concepts in digital projects.	Many students create unique designs using Canva.
SDN Bima	Students make videos that differ from others.	Students strive to be more creative in assignments.
SDN Pulasaren 4	Students avoid copying and use personal ideas.	Teachers confirm individual creativity in student output.
SDN Kartini 2	Technology helps students generate independent ideas.	Students can express creativity more freely using digital platforms.

Students exhibited a marked increase in originality when working on assignments involving digital media. Using platforms such as Canva and PowerPoint, they were encouraged to personalize their work by selecting unique layouts, color schemes, illustrations, and multimedia elements that reflected their individual preferences and ideas. Unlike traditional assignments, which often produced similar outputs across students, digital tasks empowered learners to think outside the box and move beyond standard

formats. Teachers observed that students were more willing to take creative risks and express themselves authentically when given control over the content and presentation. This autonomy fostered the generation of original products that varied significantly in theme, tone, and design, showcasing each student's distinctive voice. The freedom to create without rigid constraints promoted intrinsic motivation and led to deeper engagement with the material, making originality not only possible but natural in digitally enhanced learning environments.

Table 5. Elaboration (Developing Ideas in Detail)

School	Students' Response	Teachers' Response
SDN Merapi	Students revise work after receiving feedback.	Technology facilitates deeper understanding and better task completion.
SDN Pegambiran 1	Digital tools help students refine and expand ideas.	Many creative ideas emerge through media like Canva.
SDN Bima	Students correct irrelevant parts when prompted.	Tech-based tasks yield better student work.
SDN Pulasaren 4	Students quickly revise assignments if not up to standard.	Teachers find technology useful for content elaboration.
SDN Kartini 2	Canva helps students polish their tasks.	Students exceed expectations in elaborating digital assignments.

Elaboration was clearly enhanced as students used digital tools to expand, refine, and improve their work over time. Tools like Canva and PowerPoint allowed them to easily revisit their drafts, incorporate teacher feedback, and make meaningful revisions to both content and design. Students demonstrated the ability to elaborate their initial ideas by adding supporting details, improving the organization of information, and enhancing visual clarity through layout adjustments and multimedia integration. Teachers noted that digital media supported a process-oriented approach, encouraging students to develop their ideas more thoroughly rather than settling for surface-level responses. This iterative revision process nurtured deeper thinking and greater attention to structure, logic, and creativity. In contrast to paper-based tasks, digital formats offered flexibility and ease of editing, enabling students to focus more on quality and coherence. As a result, final outputs reflected a more sophisticated level of thought and effort.

Discussion

The findings of this study demonstrate a clear link between the integration of digital media and the enhancement of student creativity in elementary classrooms. In analyzing the outcomes of this research, it is evident that technology fosters creative thinking through multiple avenues, supporting fluency, flexibility, originality, and elaboration. These four aspects form the core of creativity as outlined by Sternberg & Lubart (1999), and their presence was evident in how students responded to technology-enhanced learning environments.

Fluency, or the ability to generate numerous ideas, was significantly supported by interactive digital platforms. For instance, tools like PowerPoint and Canva enabled students to visually brainstorm and display ideas in a structured yet creative format. This flexibility to manipulate content fostered spontaneous expression. These findings align with Runco & Jaeger (2022), who emphasize that creativity flourishes in environments

that allow open-ended exploration. Students in this study demonstrated fluency through their ability to propose diverse concepts during classroom discussions and assignments. Teachers corroborated this, stating that digital tools made it easier for students to articulate multiple viewpoints on a single topic.

Flexibility was also evident as students used varied strategies to approach problems. Rather than relying solely on direct instruction or textbooks, students explored multiple online sources, collaborated with peers, and even revisited learning videos when encountering challenges. This approach supports the theory of cognitive flexibility (Spiro et al., 1992), which posits that learning is enriched when students are encouraged to shift perspectives and try different methods. Wordwall and video-based learning tools were particularly effective in promoting this aspect, as students often adjusted their strategies based on the format or challenge presented in the media.

Originality was perhaps the most observable creative trait fostered by digital media. In tasks such as poster design or video creation, students were encouraged to express their individual ideas using multimedia components. Teachers reported a significant difference in students' ability to convey original content when using digital tools versus traditional paper-based assignments. This finding is consistent with Bajúzová & Hrmo (2024), who argue that the personalization and autonomy allowed by digital tools stimulate authentic creative expression. Students had the freedom to select themes, color schemes, layout designs, and content structures, all of which contributed to producing highly individualized work.

Elaboration, the ability to develop and refine ideas, was significantly supported through the iterative use of digital tools. Platforms such as Canva and PowerPoint allowed students to continuously revise their assignments based on teacher feedback or peer suggestions. It is in line with Reigeluth (1999) elaboration theory, where learners improve understanding by building upon existing knowledge in meaningful ways. Students showed clear progression from initial drafts to final products, with more attention to detail, clearer structure, and improved content. Teachers noted that students were more invested in refining their work, particularly when they could immediately apply revisions using digital features.

Beyond the cognitive aspects, digital media also played a motivational and affective role. Students expressed greater satisfaction and engagement when learning involved interactive tools. These emotional responses contributed positively to their willingness to participate, take risks, and explore new ideas, conditions necessary for creativity to emerge. This observation supports by Bandura (2001) of Social Cognitive Theory, which emphasizes that environmental factors, like engaging media, directly influence motivation and learning outcomes. Liu & Wang (2025), in their analysis of technology-mediated learning environments, highlight that well-designed digital interfaces can elevate both cognitive and emotional engagement.

Furthermore, the findings of this study contribute to existing literature by focusing on the often-overlooked context of elementary education in Indonesia. While many studies emphasize technology's impact in secondary or tertiary education, there is limited empirical evidence addressing how digital tools influence younger learners' creative development. The current study fills this gap by offering insight into how early exposure to structured digital environments can foster foundational creative habits. This aligns with Amanda et al. (2024), who emphasize the importance of scaffolding creativity from a young age using technology-based learning tasks.

It is also worth noting that the role of the teacher remains critical in mediating the use of digital tools. While technology offers a platform for innovation, it is ultimately the instructional design and pedagogical decision-making that determine how these tools foster creativity. Teachers who adopted flexible, student-centered approaches were significantly more successful in leveraging digital tools to enhance students' creative thinking. This finding is consistent with Kurniawan & Wu (2024), who emphasize that effective integration of AI and digital platforms necessitates thoughtful instructional strategies that are responsive to learners' individual needs. In this study, many educators demonstrated creative leadership by designing interactive lessons, customizing multimedia content, and offering timely feedback, practices that not only supported but modeled creativity for students.

The discussion also underscores the importance of digital infrastructure and competence. While most teachers and students benefited from the integration of digital media, challenges such as unequal access to devices and unstable internet connectivity led to inconsistencies in learning experiences. Schools with robust infrastructure reported more engaged students and more innovative digital practices. This highlights the structural barriers that must be addressed for equitable digital transformation. As Alamsyah et al. (2023) observe, educational technology in the era of Society 5.0 is not merely about tools but about reshaping learning cultures to be more engaging and adaptive to student needs.

From a policy perspective, it becomes clear that investment in digital infrastructure should be prioritized. Ensuring equitable access to technological resources is essential for fostering inclusive and creativity-enhancing learning environments. These conclusions align with Martati et al. (2025), who argue that integrating digital media into educational frameworks supports meaningful learning and higher-order thinking skills among elementary students. They stress the importance of shifting from traditional rote-based instruction to competency-driven education, a transformation that requires systemic support.

Furthermore, teacher professional development must go beyond technical literacy to include training in creativity-centered pedagogy. As Ananda et al. (2023) highlight, teachers' professional skills directly influence students' capacity to think creatively in digital contexts. Similarly, Amanda et al. (2024) demonstrated how the use of digital tools like Canva, when coupled with appropriate instruction, significantly improves student creativity in design-based tasks.

In summary, this study reaffirms that when digital media is integrated with intentional pedagogy, it can substantially improve creativity among elementary school students. The impacts observed span across cognitive, emotional, and motivational domains—positioning digital tools not merely as instructional aids but as catalysts for more personalized, exploratory learning. However, to achieve this at scale, it is essential to address infrastructure disparities and provide ongoing teacher support. These findings reinforce the necessity of coordinated investments in both technological capacity and pedagogical development to ensure digital creativity is equitably cultivated across diverse educational settings.

Findings from the present study carry important implications for classroom practice. Teachers are encouraged to design learning activities around dynamic, visual, and interactive platforms, such as multimedia presentations, creative design tools, and gamified quizzes, which can significantly enhance students' creative thinking skills. According to Rudyanto et al. (2023), educational models like Digital Enhanced Learning (DEL) that fully integrate digital media in elementary classrooms effectively improve

student creativity, particularly in fluency and elaboration. When educators employ digital tools intentionally, they create environments that promote idea generation, exploration, and self-expression, fundamental elements of creative learning.

From a policy perspective, investing in robust digital infrastructure is essential. Equitable access to devices, stable internet, and classroom technologies fosters inclusive learning environments in which all students can participate creatively. This is particularly relevant in the Indonesian context, where disparities in access can hinder educational innovation. The findings of Martati et al. (2025) reinforce this position, emphasizing that digital media integration not only supports meaningful learning but also enhances higher-order thinking skills among primary school students. Their research suggests that incorporating digital tools into national education policies marks a critical shift from rote learning models toward 21st-century competencies like creativity, problem-solving, and collaboration.

Moreover, teacher professional development plays a critical role in ensuring digital integration translates into authentic creative practices. Teacher training should extend beyond technical proficiency to include creativity-centered pedagogical strategies. As argued by Ananda et al. (2023), teachers' professional skills are a significant factor in promoting students' creative potential, particularly in digitally enriched environments. Instructional design and purposeful tool selection, such as project-based learning and multimedia integration, are essential for cultivating creativity. Similarly, Hasanah et al. (2022) show that using digital video projects as instructional media not only boosts creativity but also encourages student autonomy and motivation.

Research also demonstrates that creativity in digital classrooms is not incidental, but rather the result of intentional instructional strategies (Alamsyah et al., 2023). These include designing open-ended tasks, providing timely feedback, and creating opportunities for self-expression through digital means. This reinforces the idea that digital technology alone is insufficient; it must be guided by pedagogical intent and supported by infrastructure and training. Nevertheless, this study faced several limitations. Access to digital infrastructure varied significantly across participating schools, influencing the consistency of student experiences. Furthermore, the level of teacher digital competence was uneven, affecting the depth of creative integration. The research was also confined to urban public elementary schools in Cirebon, limiting the generalizability of findings to rural or under-resourced contexts. As noted by Amanda et al. (2024), even highly effective tools such as Canva depend on user proficiency and infrastructure availability for optimal results.

CONCLUSION

This study concludes that the integration of digital media in elementary classrooms serves as a transformative catalyst for enhancing student creativity. Through technology-supported learning environments, core components of creativity, fluency, flexibility, originality, and elaboration, were significantly improved. The findings underscore the importance of embedding digital tools into the curriculum to foster innovative thinking and creative problem-solving skills, which are essential in the context of the Industrial Revolution 4.0. Furthermore, the study highlights the critical need for teacher professional development focused on creative pedagogy and digital literacy, emphasizing that such integration not only modernizes instructional practices but also prepares students for the demands of a rapidly evolving digital world.

Despite its contributions, this study is limited by infrastructural disparities and differing levels of teacher digital readiness across participating schools, which may have influenced the consistency of implementation. Additionally, the study's short-term focus restricts insight into the sustained impact of digital media on student creativity. Future researchers are encouraged to conduct longitudinal studies that assess the long-term effects of digital integration on creativity development, particularly in rural or underserved educational contexts. It is also recommended that future investigations explore scalable models of teacher training that effectively combine creative pedagogy with practical digital skills to support equitable and inclusive innovation in education.

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