

Innovative Digital Media for Elementary Education: Improving Critical Thinking and Learning Motivation

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Abstract

The rapid advancement of digital technology in the 21st century has significantly transformed educational systems worldwide, including elementary education in Indonesia. This study aims to improve students' critical thinking skills and learning motivation through the implementation of innovative digital media in elementary education at SDN Kertajaya Surabaya. The research employed Classroom Action Research (CAR) using the Kemmis and McTaggart model consisting of planning, action, observation, and reflection stages conducted in two cycles. The participants involved 30 elementary students. Data were collected through classroom observation, interviews, questionnaires, documentation, and critical thinking tests. The findings revealed that the implementation of innovative digital media such as educational videos, Canva-based materials, Quizizz, and interactive multimedia presentations significantly improved students' classroom participation, critical thinking skills, and learning motivation. Students became more active in discussions, more confident in expressing opinions, and more capable of analyzing and solving contextual problems. Learning motivation also increased as students demonstrated greater enthusiasm, attention, and engagement during classroom activities. The study concludes that innovative digital media create interactive and student-centered learning environments that effectively support critical thinking development and learning motivation in elementary education during the digital era.

Keywords

critical thinking, elementary education, innovative digital media, learning motivation.



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INTRODUCTION

The rapid advancement of digital technology in the 21st century has significantly transformed educational systems worldwide, including elementary education in Indonesia. Educational practices are no longer limited to conventional classroom instruction but have evolved into technology-enhanced learning environments that emphasize interactivity, creativity, and student engagement. Digital technology has reshaped how students access information, communicate, and construct knowledge (Elan et al., 2023). Elementary school students today belong to the digital generation who are highly familiar with smartphones, multimedia content, online platforms, and interactive applications. Such conditions require schools and teachers to design innovative learning experiences that align with the characteristics and learning preferences of modern learners (Tsai et al., 2022).

Elementary education plays a fundamental role in developing students' intellectual, emotional, and social competencies. Learning activities at the elementary level should not merely focus on content mastery but also foster higher-order thinking skills, particularly critical thinking and learning motivation. Critical thinking is considered one of the most essential competencies in 21st-century education because it enables students to analyze information, solve problems, make rational decisions, and respond to challenges in their daily lives. Students who possess strong critical thinking skills tend to become more independent, reflective, and active participants in the learning process (Intan & Mampouw, 2021).

Despite the growing importance of critical thinking, many educational institutions in Indonesia still face challenges in developing students' higher-order thinking skills. The results of the Programme for International Student Assessment (PISA) indicate that Indonesian students' literacy, reasoning, and problem-solving abilities remain below the international average (Nursakinah et al., 2023). Traditional teacher-centered learning approaches continue to dominate classroom practices, causing students to become passive recipients of information rather than active constructors of knowledge. Learning activities often emphasize memorization instead of exploration, inquiry, and analytical thinking. Consequently, students experience difficulties in developing critical thinking competencies and meaningful learning experiences.

Similar conditions were identified at SDN Kertajaya Surabaya based on preliminary classroom observations. Many students demonstrated limited participation during classroom discussions and showed low confidence in expressing opinions or solving contextual learning problems. Learning activities were still dominated by conventional instructional methods such as lecturing and textbook-centered teaching. Students tended to become less enthusiastic and easily bored during classroom instruction, particularly when learning activities lacked visual and interactive elements. Such conditions affected students' learning motivation and limited opportunities for developing critical thinking skills in classroom learning.

Learning motivation is a crucial factor influencing students' academic achievement and participation in educational activities. Students with high learning motivation tend to demonstrate curiosity, persistence, active engagement, and willingness to explore new

knowledge. Conversely, students with low learning motivation often experience boredom, lack of concentration, and reduced participation during learning activities. Therefore, teachers are expected to create engaging and innovative learning environments capable of stimulating students' interest and encouraging active classroom participation (Tressyalina et al., 2023).

The characteristics of elementary school students in the digital era reveal that they are more attracted to visual, interactive, and technology-based learning experiences. Digital-native students generally prefer animated videos, interactive games, digital storytelling, and multimedia learning content compared to traditional instructional methods. This phenomenon creates opportunities for teachers to integrate innovative digital media into classroom learning processes. Digital learning media can facilitate more concrete, engaging, and meaningful learning experiences while supporting students' cognitive and emotional development (Suja et al., 2024).

Innovative digital media have become one of the most effective strategies for improving learning quality in elementary education. Digital platforms such as interactive PowerPoint presentations, Canva-based learning materials, Quizizz, Wordwall, educational videos, and multimedia applications provide opportunities for students to engage actively in classroom learning. These technologies encourage collaboration, independent learning, and active exploration of knowledge. Previous studies have demonstrated that interactive digital learning media significantly improve students' engagement, participation, and academic achievement compared to conventional teaching methods (Umami, 2014).

The implementation of digital learning media also contributes to the development of students' critical thinking skills. Interactive media encourage students to analyze information, interpret visual content, identify problems, and make decisions through inquiry-based and collaborative learning activities. Technology-enhanced learning environments support active learning processes where students become more involved in exploration and problem-solving activities. Research conducted by Hapsari et al., (2018) found that digital interactive learning media effectively improved elementary students' critical thinking skills and creativity through student-centered learning approaches.

The implementation of the Merdeka Curriculum in Indonesia further supports the integration of innovative digital media in elementary education. The curriculum emphasizes flexible, student-centered, and competency-based learning approaches that encourage teachers to develop creative instructional strategies. Teachers are given opportunities to design contextual learning experiences that integrate technology, project-based learning, and collaborative classroom activities. Digital media integration becomes an important component in achieving the goals of 21st-century education and supporting students' holistic development (Mella et al., 2022).

Several previous studies have highlighted the positive impact of innovative digital learning media on elementary education (Saputri et al., (2023), revealed that multimedia-based learning significantly increased students' learning motivation and classroom participation. Amelia et al., (2022) explained that gamification platforms such as Quizizz and Wordwall

improved students' critical thinking abilities and collaborative learning experiences. Furthermore, Azimah & Febrina Dafit, (2022) found that interactive educational videos enhanced students' understanding of learning materials and created more engaging classroom environments.

Although innovative digital media offer substantial educational benefits, several challenges remain in their implementation within elementary schools. Some teachers still experience difficulties in utilizing technology effectively due to limited digital competencies and insufficient professional training. Technological infrastructure and access to digital devices also remain unequal across schools. In addition, some classroom practices continue to rely heavily on traditional instructional methods that provide limited opportunities for active and critical student engagement.

Previous studies have primarily focused on the effectiveness of digital media as instructional tools without comprehensively examining their influence on both critical thinking skills and learning motivation simultaneously. Research concerning the implementation of innovative digital media to improve critical thinking and learning motivation among elementary students at SDN Kertajaya Surabaya remains limited. This condition indicates the existence of a research gap requiring further investigation through classroom action research focusing on technology-enhanced elementary education.

This study is important because innovative digital media are not only intended to improve academic achievement but also to foster critical thinking, learning motivation, creativity, and active participation among elementary school students. The implementation of innovative digital learning media is expected to create meaningful, engaging, and student-centered learning experiences that align with the educational demands of the digital era.

METHODS

This study employed a Classroom Action Research (CAR) design to investigate the implementation of innovative digital media in improving students' critical thinking skills and learning motivation at SDN Kertajaya Surabaya. Classroom Action Research was selected because it enables teachers to identify classroom learning problems, implement instructional innovations, and evaluate improvements systematically through reflective cycles. The study adopted the CAR model proposed by Kemmis and McTaggart, consisting of four stages: planning, action, observation, and reflection.

The research was conducted in one elementary classroom at SDN Kertajaya Surabaya involving 30 students. The participants were selected based on preliminary observations indicating low learning motivation and limited critical thinking skills during classroom learning activities. The study was implemented in two action cycles, with each cycle consisting of two classroom meetings. During the planning stage, the researcher prepared lesson plans integrating innovative digital media such as interactive PowerPoint presentations, educational videos, Quizizz, Canva-based learning materials, and multimedia learning activities. Learning activities

were designed using student-centered and problem-based learning approaches to encourage active participation and critical thinking development.

The action stage involved implementing digital media-based learning activities in the classroom. Students participated in collaborative discussions, interactive quizzes, multimedia presentations, and problem-solving tasks supported by digital learning tools. The teacher acted as a facilitator guiding students throughout the learning process. Data collection techniques included classroom observation, interviews, learning motivation questionnaires, documentation, and critical thinking assessment tests. Observation sheets were used to analyze students' participation, interaction, and engagement during learning activities. Questionnaires measured students' learning motivation, while critical thinking tests evaluated students' abilities in analyzing, interpreting, and solving contextual problems.

The collected data were analyzed using descriptive qualitative and quantitative approaches. Quantitative data from tests and questionnaires were analyzed using percentage and average score calculations to determine students' improvement across cycles. Qualitative data obtained from observations and interviews were analyzed through data reduction, data display, and conclusion drawing. The indicators of research success were determined based on the improvement of students' critical thinking skills, learning motivation, and active classroom participation after the implementation of innovative digital media.

FINDINGS AND DISCUSSION

Findings

Preliminary Findings

The preliminary observation conducted at SDN Kertajaya Surabaya revealed several learning problems related to students' critical thinking skills and learning motivation during classroom instruction. The learning process was still dominated by teacher-centered methods, particularly lecturing and textbook-based instruction. Students tended to listen passively without actively participating in discussions or asking questions during learning activities. Classroom interactions were limited, and only a small number of students demonstrated confidence in expressing opinions or solving contextual learning problems.

The preliminary data also indicated that students experienced low enthusiasm during classroom learning activities. Many students became easily distracted and less focused when the teacher explained learning materials for extended periods without interactive media support. Several students showed limited curiosity toward the lesson content and lacked motivation to complete learning tasks independently. This condition affected students' academic engagement and reduced opportunities for developing critical thinking skills in the classroom.

Based on interviews with the classroom teacher, the limited use of innovative learning media became one of the major factors influencing students' low learning motivation. Learning activities rarely integrated digital media, interactive quizzes, or multimedia presentations due to limited classroom practices and insufficient integration of technology-

based learning approaches. Consequently, students perceived classroom learning as monotonous and less stimulating.

To address these issues, the researcher implemented innovative digital learning media through Classroom Action Research (CAR). The instructional media included interactive PowerPoint presentations, educational videos, Quizizz, Canva-based visual learning materials, and collaborative multimedia learning activities designed to encourage active learning and critical thinking development.

Table 1. Preliminary Observation Results

No	Observation Indicators	Findings
1	Students' classroom participation	Low participation during discussions
2	Critical thinking ability	Students struggled to analyze problems
3	Learning motivation	Students showed low enthusiasm
4	Teaching methods	Dominated by lecturing
5	Use of digital media	Limited implementation

Table 1 shows that students' critical thinking skills and learning motivation were relatively low before the implementation of innovative digital learning media. The findings indicate the need for more interactive and student-centered learning strategies capable of creating engaging classroom experiences.

Cycle I Findings

Planning Stage

During the planning stage of Cycle I, the researcher designed lesson plans integrating innovative digital media into classroom learning activities. The instructional design emphasized student-centered learning through interactive multimedia presentations, collaborative group discussions, and problem-solving activities. The researcher prepared several digital learning tools, including Canva-based learning materials, educational videos, interactive PowerPoint presentations, and Quizizz assessments.

Learning activities were designed to encourage students to analyze learning problems critically and actively participate in classroom discussions. The teacher prepared observation sheets, critical thinking assessment rubrics, and learning motivation questionnaires to evaluate students' learning progress during the implementation process.

Action Stage

The implementation of Cycle I was conducted in two classroom meetings. During the first meeting, the teacher introduced learning materials using interactive PowerPoint presentations combined with visual illustrations and animated learning content. Students appeared more interested in the lesson compared to previous classroom sessions. The use of colorful visuals and multimedia content attracted students' attention and encouraged them to participate more actively in classroom discussions.

The teacher also integrated educational videos related to the lesson topic. Students demonstrated increased curiosity and enthusiasm while watching the videos. Several students

actively responded to teacher questions and expressed their opinions regarding the learning content presented through multimedia.

During the second meeting, students participated in collaborative group activities using Canva-based learning worksheets and Quizizz interactive quizzes. Students worked together to solve contextual problems and present their ideas during classroom discussions. The implementation of digital quizzes created a more enjoyable learning atmosphere and encouraged students to compete positively with their classmates.

Despite these improvements, some students still experienced difficulties in expressing opinions confidently and analyzing problems critically. Several students relied heavily on assistance from peers during group discussions. Classroom observations indicated that students were beginning to adapt to the use of digital learning media, although classroom participation remained uneven among students.

Observation Results of Cycle I

The observation results showed moderate improvements in students' classroom participation and learning motivation after the implementation of innovative digital media in Cycle I. Students appeared more enthusiastic and actively engaged during learning activities involving multimedia presentations and interactive quizzes.

Table 2. Students' Learning Motivation in Cycle I

No	Motivation Indicators	Percentage
1	Active participation	68%
2	Attention during learning	72%
3	Enthusiasm in discussions	65%
4	Task completion	70%
5	Confidence in expressing opinions	60%

Table 2 indicates that students' learning motivation improved during Cycle I. Students demonstrated higher attention and participation during digital-media-based learning activities. However, confidence in expressing opinions remained relatively low compared to other indicators.

The implementation of innovative digital media also influenced students' critical thinking skills positively. Students became more active in identifying learning problems and discussing possible solutions during collaborative activities.

Table 3. Critical Thinking Skills in Cycle I

No	Critical Thinking Indicators	Average Score
1	Problem identification	72
2	Information analysis	68
3	Idea interpretation	70
4	Problem-solving ability	67
5	Drawing conclusions	69

Table 3 demonstrates moderate improvement in students' critical thinking skills during Cycle I. Students showed better performance in identifying learning problems and interpreting information, although analytical and problem-solving skills still required further improvement.

Reflection of Cycle I

The reflection stage of Cycle I identified several strengths and weaknesses in the implementation process. The use of innovative digital media successfully created a more engaging and interactive classroom atmosphere. Students demonstrated greater enthusiasm and participation during learning activities involving multimedia presentations and digital quizzes.

However, several challenges remained during Cycle I. Some students still lacked confidence in expressing ideas independently, while others required additional guidance in analyzing learning problems critically. Classroom management during collaborative activities also needed improvement to ensure equal participation among students.

Based on these reflections, the researcher planned several improvements for Cycle II, including providing clearer problem-solving instructions, increasing collaborative discussion opportunities, and integrating more interactive digital learning activities to enhance students' critical thinking and confidence.

Cycle II Findings

Planning Stage

The planning stage of Cycle II focused on improving the weaknesses identified during Cycle I. The researcher redesigned learning activities using more interactive and collaborative digital media. Additional multimedia elements, interactive problem-solving tasks, and student presentation activities were integrated into the lesson plans.

The teacher also prepared more structured discussion guidelines to encourage equal student participation during group activities. Digital learning tools such as Quizizz, Canva interactive presentations, and educational videos were optimized to create more engaging classroom experiences.

Action Stage

The implementation of Cycle II demonstrated significant improvements in classroom learning dynamics. Students appeared more confident and enthusiastic during classroom discussions. The integration of digital learning media successfully stimulated students' curiosity and encouraged active participation throughout the learning process.

Students became more active in analyzing learning problems presented through multimedia content. Group discussions were more interactive, and students demonstrated greater willingness to express opinions and answer teacher questions. The use of Quizizz interactive quizzes increased classroom excitement and encouraged students to participate competitively in learning activities.

Collaborative learning activities using Canva-based digital worksheets also improved students' creativity and teamwork skills. Students actively shared ideas and discussed

contextual learning problems within their groups. The teacher acted as a facilitator who guided students in developing analytical thinking and problem-solving strategies.

Observation Results of Cycle II

The observation results of Cycle II indicated substantial improvement in students’ learning motivation and critical thinking skills after the optimization of innovative digital media implementation.

Table 4. Students’ Learning Motivation in Cycle II

No	Motivation Indicators	Percentage
1	Active participation	88%
2	Attention during learning	90%
3	Enthusiasm in discussions	86%
4	Task completion	89%
5	Confidence in expressing opinions	84%

Table 4 demonstrates significant improvement in students’ learning motivation during Cycle II. Students became more enthusiastic, confident, and actively engaged during classroom learning activities.

The implementation of innovative digital media also improved students’ critical thinking skills considerably.

Table 5. Critical Thinking Skills in Cycle II

No	Critical Thinking Indicators	Average Score
1	Problem identification	88
2	Information analysis	85
3	Idea interpretation	87
4	Problem-solving ability	84
5	Drawing conclusions	86

Table 5 shows that students’ critical thinking skills improved significantly in Cycle II. Students demonstrated better analytical thinking, problem-solving abilities, and confidence in expressing conclusions during classroom learning activities.

Comparison of Cycle I and Cycle II Results

The comparison between Cycle I and Cycle II findings indicates that the implementation of innovative digital media effectively improved students’ critical thinking skills and learning motivation.

Table 6. Comparison of Learning Motivation Improvement

Indicators	Cycle I	Cycle II
Active participation	68%	88%
Attention during learning	72%	90%
Enthusiasm in discussions	65%	86%
Task completion	70%	89%
Confidence in expressing opinions	60%	84%

Table 6 indicates substantial improvement in all learning motivation indicators. Students became more actively involved and enthusiastic during classroom learning activities after the implementation of innovative digital media.

Table 7. Comparison of Critical Thinking Improvement

Indicators	Cycle I	Cycle II
Problem identification	72	88
Information analysis	68	85
Idea interpretation	70	87
Problem-solving ability	67	84
Drawing conclusions	69	86

Table 7 demonstrates significant improvement in students' critical thinking skills from Cycle I to Cycle II. Students became more capable of analyzing information, solving problems, and expressing conclusions critically during classroom learning.

discussion is the most important part of writing a journal article. At this stage, the author must present the thesis and research findings systematically, scientifically, and factually. Explain the impact of research findings and their impact. Then the writer must compare the results with previous studies relevant to the topic of discussion.

Discussion

The findings of this study demonstrate that the implementation of innovative digital media significantly improved students' critical thinking skills and learning motivation at SDN Kertajaya Surabaya. The integration of interactive digital learning tools such as Canva-based materials, educational videos, Quizizz, and multimedia presentations created a more engaging and student-centered learning environment. The results indicate that technology-enhanced learning contributes positively to elementary education by increasing classroom participation, strengthening analytical thinking, and encouraging active learning experiences among students. These findings support the view that digital transformation in education should not merely focus on technological integration but also on creating meaningful learning experiences that develop 21st-century competencies (Nurasyiah et al., 2023).

The implementation of innovative digital media successfully transformed the classroom atmosphere from passive learning into active and collaborative learning. Before the intervention, classroom instruction was dominated by teacher-centered approaches that limited students' opportunities to express opinions and engage critically with learning materials. Students tended to become passive recipients of information and demonstrated low participation during classroom discussions. Following the implementation of digital media, students became more actively involved in classroom activities, particularly during collaborative discussions and interactive problem-solving sessions. This finding aligns with constructivist learning theory, which emphasizes that students construct knowledge more effectively when actively engaged in learning processes and social interaction (Wahyudi et al., 2023).

The improvement in students' learning motivation became one of the most significant outcomes of this study. The findings revealed that students demonstrated higher enthusiasm, attention, and participation during learning activities involving multimedia presentations and interactive quizzes. The use of visual and interactive learning content attracted students' interest and reduced classroom boredom commonly experienced during conventional instruction. Students appeared more excited to participate in learning activities because digital media created enjoyable and stimulating classroom experiences. This finding supports Mayer's Cognitive Theory of Multimedia Learning, which explains that students learn more effectively when verbal information is combined with visual elements such as images, animations, and videos (Friedman, 1959).

The integration of educational videos in classroom instruction contributed positively to students' understanding of learning materials. Visual and animated explanations helped students comprehend abstract concepts more easily compared to traditional textbook-based instruction. Elementary school students generally possess strong visual learning preferences, making multimedia content particularly effective in supporting cognitive development. Students also demonstrated increased curiosity during video-based learning activities by asking questions, responding to teacher prompts, and sharing ideas with classmates. Previous research conducted by (Fahmi Romisa, 2023) similarly found that multimedia learning significantly improved students' classroom engagement and academic achievement in elementary education.

The implementation of Quizizz and gamified learning activities also played an important role in improving students' learning motivation and classroom participation. Gamification transformed learning into enjoyable and competitive experiences that encouraged students to participate more actively. Interactive quizzes stimulated students' curiosity and motivated them to complete learning tasks enthusiastically. The use of game-based learning elements such as scoring systems and immediate feedback created positive learning experiences that strengthened students' confidence and classroom interaction. These findings are consistent with research conducted by (Rofiyadi & Handayani, 2021), which revealed that gamification platforms improve students' engagement, collaboration, and critical thinking skills in elementary classrooms.

The study also found substantial improvement in students' critical thinking skills after the implementation of innovative digital media. Students became more capable of identifying problems, analyzing information, interpreting ideas, and drawing conclusions during classroom discussions. Digital learning activities encouraged students to think actively rather than memorize information passively. Collaborative problem-solving tasks supported students in developing analytical reasoning and decision-making abilities. This finding confirms (Febriyanto & Yanto, 2019) argument that critical thinking develops through active inquiry, reflective learning, and problem-based educational experiences.

The implementation of Canva-based collaborative learning activities further strengthened students' creativity and communication skills. Students worked collaboratively

to design learning products, share ideas, and discuss solutions to contextual learning problems. Collaborative digital learning created opportunities for peer interaction and knowledge sharing, which contributed to the development of social and cognitive competencies simultaneously. Such learning experiences align with 21st-century educational goals emphasizing communication, collaboration, creativity, and critical thinking as essential competencies for future learners (Setiyani et al., 2020).

Another important finding of this study relates to the changing role of teachers in technology-enhanced learning environments. The integration of innovative digital media shifted the teacher's role from a primary knowledge provider into a learning facilitator. Teachers guided students during collaborative activities, encouraged classroom interaction, and provided support for critical thinking development. This transformation reflects student-centered learning approaches promoted within the Merdeka Curriculum framework in Indonesia. Student-centered learning enables students to become more autonomous and actively involved in constructing knowledge through exploration and inquiry-based learning activities (Ramadhan et al., 2023).

Despite the positive outcomes, several challenges emerged during the implementation process. Some students initially experienced difficulties adapting to collaborative digital learning activities because they were accustomed to conventional teacher-centered instruction. A number of students lacked confidence in expressing opinions independently and required additional guidance during problem-solving tasks. Classroom management also became more complex during interactive group activities because students were highly enthusiastic and actively engaged in discussions. These challenges indicate that effective implementation of digital learning media requires structured classroom management strategies and continuous teacher facilitation.

The findings also revealed several technological challenges related to digital learning implementation. Limited technological infrastructure and unequal access to digital devices may become barriers to sustainable technology integration in elementary education. Some schools may experience difficulties in providing adequate internet access, multimedia equipment, and digital learning facilities. Teachers' digital competencies also remain an important factor influencing successful implementation of innovative digital media. Several teachers still require professional training to develop effective multimedia learning materials and integrate technology optimally into classroom instruction. Similar findings were reported by (Putro & Astuti, 2024), who emphasized that digital transformation in education requires continuous teacher professional development and institutional support.

The results of this study indicate that innovative digital media provide substantial educational benefits for elementary students. Technology-enhanced learning not only improves academic achievement but also supports the development of critical thinking, creativity, communication, and collaboration skills. Interactive learning experiences encourage students to become more motivated, independent, and actively involved in classroom learning processes. These findings confirm that innovative digital media can

become effective instructional tools for creating meaningful and engaging elementary education in the digital era.

This study demonstrates that the implementation of innovative digital media successfully improved students' critical thinking skills and learning motivation at SDN Kertajaya Surabaya. The integration of multimedia presentations, educational videos, Quizizz, and collaborative digital learning activities created more interactive and student-centered classroom environments. Technology-enhanced learning encouraged students to participate actively, analyze problems critically, and engage collaboratively during classroom activities. Therefore, innovative digital media can serve as an effective educational strategy for supporting elementary learning transformation and preparing students to face the challenges of 21st-century education.

CONCLUSION

The findings of this Classroom Action Research indicate that the implementation of innovative digital media successfully improved students' critical thinking skills and learning motivation at SDN Kertajaya Surabaya. The integration of interactive learning tools such as educational videos, Canva-based materials, Quizizz, and multimedia presentations created more engaging, interactive, and student-centered learning experiences in the classroom. The use of digital media encouraged students to participate actively in discussions, express opinions confidently, analyze problems critically, and collaborate effectively with peers. Students also demonstrated higher enthusiasm, attention, and motivation during learning activities compared to conventional classroom instruction. The improvement in critical thinking skills was reflected in students' abilities to identify problems, interpret information, solve contextual tasks, and draw conclusions independently. The study further reveals that innovative digital media can support the development of 21st-century learning competencies by combining technology integration with collaborative and inquiry-based learning approaches. Although several challenges such as limited digital adaptation and classroom management emerged during implementation, the overall findings confirm that technology-enhanced learning can become an effective strategy for improving the quality of elementary education in the digital era.

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