

THE EFFECTIVENESS OF INTERACTIVE MEDIA TO OPTIMIZE CRITICAL AND CREATIVE THINKING IN ELEMENTARY SCHOOL STUDENTS

Nurul Kasmi¹, Yulia Santi², Afkar³

Universitas Almuslim

nurulkasmi550@gmail.com¹, yuliasanti@umuslim.ac.id², afkar@umuslim.ac.id³

Abstract

The urgency of this research lies in the urgent need for the use of interactive media in elementary school learning that is able to optimize students' critical and creative thinking skills as a provision to face the challenges of 21st century learning. The purpose of this study is to analyze the implementation and impact of the effectiveness of interactive media to optimize the critical and creative thinking of elementary school students. This study uses a qualitative method with a case study approach. The sample used was determined by purposive sampling consisting of school principals and teachers as respondents as many as 8 respondents. Data collection techniques with interview and observation guidelines. Qualitative data validity tests include credibility, transferability, dependability and confirmability tests. Data analysis was carried out using qualitative descriptive, namely data reduction, data presentation and conclusions. . The results of this study show that the results of the study reveal that interactive learning media runs effectively in the learning process, the interactive media used by teachers, such as learning videos, animations, digital quizzes, and educational applications, are proven to be able to increase student attention, focus, and involvement during the learning process. This media makes the learning atmosphere more interesting, fun, and not monotonous, thus helping students understand the material more quickly and deeply. There are obstacles that affect the optimization of interactive media, such as limited technological facilities, electricity and internet constraints, uneven teachers' technological abilities, and limited learning time. In addition, the difference in students' ability to understand technology-based learning is also a challenge for teachers.

Keywords: Learning, Interactive Media, Critical Thinking, Creative, Elementary School, Elementary School



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INTRODUCTION

Education has an important role in building the progress of a nation. A developed nation can be seen from a superior, creative and competitive generation in a country. A superior generation is created from a quality education and learning process. Teachers are the main key in carrying out the quality learning process. The implementation of the quality learning process involves intensive participation and appreciation of students.¹ The involvement and participation of students in learning makes learning more meaningful.

21st century education requires a transformation in the learning process that is not only oriented towards mastering basic knowledge, but also on the development of higher *order thinking skills (HOTS)*.² The two aspects of thinking skills that are the main focus are critical and creative thinking skills. According to Facione, critical thinking is an active and skilled intellectual process in conceptualizing, analyzing, evaluating, and synthesizing information obtained from experience, reflection, and communication.³ Meanwhile, Rosa and Pujiati stated that creative thinking is the ability to generate new, original ideas, and be able to solve problems through innovative approaches.⁴

Critical and creative thinking skills are very important to be developed since primary education, because this stage is the foundation for the formation of students' mindset in facing life's challenges. The Merdeka Curriculum that is currently implemented in Indonesia also emphasizes the importance of competency-based learning that fosters students' character, creativity, and critical reasoning skills.⁵ Thus, teachers are required to design learning that not only conveys knowledge, but also stimulates students' critical and creative thinking skills.

However, the reality on the ground still shows various problems. The learning process in elementary schools is still predominantly *teacher-centered* and tends to emphasize memorization of materials. Teachers often use conventional media such as whiteboards, textbooks, and

¹ Akhmad Labib An Naufal, "Pengembangan E-Book Matematika Untuk Meningkatkan Keterampilan Berpikir Kritis Siswa Pada Materi Persamaan Garis Lurus," *MATHEdunesa* 11, no. 2 (2022), <https://doi.org/10.26740/mathedunesa.v11n2.p378-389>.

² Febrina Dafit and Dea Mustika, "Pengembangan Bahan Ajar Membaca Berbasis Higher Order Thinking Skills Pada Siswa Sekolah Dasar," *EDUKATIF: JURNAL ILMU PENDIDIKAN* 3, no. 6 (2021), <https://doi.org/10.31004/edukatif.v3i6.1565>; Woro Sri Hastuti et al., "Pelatihan Pengembangan Pembelajaran Berorientasi Higher-Order Thinking Skills (HOTS) Bagi Guru Sekolah Dasar," *FOUNDASIA* 12, no. 1 (2021), <https://doi.org/10.21831/foundasia.v12i1.36360>.

³ Peter A. Facione, *Critical Thinking: What It Is and Why It Counts* (California Academic Press, 2015).

⁴ Novrita Mulya Rosa and Anik Pujiati, "Pengaruh Model Pembelajaran Berbasis Masalah Terhadap Kemampuan Berpikir Kritis Dan Kemampuan Berpikir Kreatif," *Formatif: Jurnal Ilmiah Pendidikan MIPA* 6, no. 3 (2017), <https://doi.org/10.30998/formatif.v6i3.990>.

⁵ Pat Kurniati et al., "Model Proses Inovasi Kurikulum Merdeka Implikasinya Bagi Siswa Dan Guru Abad 21," *Jurnal Citizenship Virtues* 2, no. 2 (2022), <https://doi.org/10.37640/jcv.v2i2.1516>.

worksheets, so that students are less given the opportunity to explore ideas, discuss, and find solutions independently.⁶ As a result, students become passive, used to receiving information directly, and are less trained to think critically or creatively.

The development of information and communication technology has actually presented a great opportunity for the world of education to present more innovative learning. One of them is by utilizing interactive media, namely media that combines elements of text, images, audio, video, animation, and simulation so that it allows two-way communication between students and learning materials.⁷ Interactive media not only functions as a tool for delivering material, but also as a means of exploration that can foster curiosity, facilitate problem-solving, and encourage active student involvement.⁸

Previous research has shown that the use of interactive media can increase learning motivation, concept comprehension, and high-level thinking skills. For example, research conducted by Nada and Wahyudi proves that the use of interactive multimedia in science learning in elementary schools is able to improve students' critical thinking skills through exploratory activities and problem-solving.⁹ Meanwhile, research by Diah shows that the use of interactive media based on educational games is able to increase students' creativity in generating new ideas.¹⁰ Nonetheless, the implementation of interactive media in elementary schools still faces challenges. Some teachers are not used to designing and using interactive media optimally. In addition, limited technology facilities and lack of training for teachers are also inhibiting factors.¹¹ Therefore, a more in-depth study is needed on how interactive media is used in the learning process, the extent of its effectiveness in optimizing students' critical and creative thinking skills, as well as the supporting and inhibiting factors in its application.

Based on this description, this study focuses on the analysis of the use of interactive media in optimizing the critical and creative thinking skills of students of State Elementary

⁶ Saiful Anwar and Jasiah Jasiah, "Pengembangan Media Pembelajaran Berbasis Game Educaplay Untuk Meningkatkan Keaktifan Siswa Pada Mata Pelajaran SKI," *Jurnal Budi Pekerti Agama Islam* 3, no. 1 (2024), <https://doi.org/10.61132/jbpai.v3i1.913>; Desyandri Desyandri et al., "Development of Integrated Thematic Teaching Material Used Discovery Learning Model in Grade V Elementary School," *Jurnal Konseling Dan Pendidikan* 7, no. 1 (2019), <https://doi.org/10.29210/129400>.

⁷ Baharuddin Abbas et al., "Pengembangan Media Pembelajaran Interaktif Berbasis Multimedia," *Al Asma : Journal of Islamic Education* 2, no. 1 (2020), <https://doi.org/10.24252/asma.v2i1.13380>.

⁸ Richard E. Mayer, *Multimedia Learning*, 2nd ed. (Cambridge University Press, 2009).

⁹ Hanifah Chairryn Nada and Wahyudi Wahyudi, "Penerapan Model Pembelajaran Children Learning in Science Dengan Multimedia Interaktif Untuk Meningkatkan Kemampuan Berpikir Kritis Dan Hasil Belajar IPAS Pada Siswa Kelas VI SD," *Kalam Cendekia: Jurnal Ilmiah Kependidikan* 13, no. 3 (2025), <https://doi.org/10.20961/jkc.v13i3.100129>.

¹⁰ Diah Atmarini et al., "Media Pembelajaran Interaktif: Pemantik Kreativitas Dan Perkembangan Kognitif Anak SD," *Jurnal Pengabdian Masyarakat Dan Riset Pendidikan* 4, no. 3 (2026), <https://doi.org/10.31004/jerkin.v4i3.4807>.

¹¹ Zachro Soleha and Kasori Mujahid, "Analisis Hambatan Dan Tantangan: Implementasi Kurikulum Merdeka Dalam Kehidupan Sehari-Hari Guru," *TSAQOFAH* 4, no. 1 (2024), <https://doi.org/10.58578/tsaqofah.v4i1.2531>.

School 4 Tanah Pasir. The results of this research are expected to contribute to teachers, schools, and learning media developers in designing more effective learning strategies. So the question of this research is how to implement and impact interactive media to optimize critical and creative thinking of elementary school students.

RESEARCH METHODS

The purpose of this study is to analyze the implementation and impact of interactive media to optimize the critical and creative thinking of elementary school students. This research uses a qualitative method, which is a research approach aimed at describing and analyzing phenomena, events, social activities, attitudes, beliefs, perceptions, and thoughts of people individually and in groups.¹² This qualitative research is done with a case study approach.

The determination of data sources in qualitative research is carried out purposively, which is determined by adjusting to certain research objectives or conditions. Creswell suggests that in qualitative research, we identify participants and places with *purposive sampling* that is based on the places and people that best help us understand our central phenomenon.¹³ The sample used consisted of school principals and teachers as respondents. Data collection techniques with interview and observation guidelines. Interview guidelines are used as a guide when the interview is conducted, so that it is in accordance with the purpose and objectives to be achieved. Qualitative data validity tests include credibility, transferability, dependability and confirmability tests. Data analysis was carried out using qualitative descriptive, namely data reduction, data presentation and conclusions.

RESULTS AND DISCUSSION

Based on the results of the research, teachers at SD Negeri 4 Tanah Pasir have begun to use interactive learning media as part of modern learning strategies. The media used includes learning videos, interactive animations, Android-based applications, interactive slides, and digital quizzes such as Quizizz and Wordwall.

Teachers prepare the media by adjusting the subject matter and learning objectives. Interactive media is usually used at the stage of perception to attract students' attention, during the delivery of material to clarify concepts, and during evaluations to measure student understanding quickly and pleasantly. In general, all students show high enthusiasm when interactive media is

¹² Nana Syaodih Sukmadinata, *Metode Penelitian Pendidikan*, 9th ed. (PT Remaja Rosdakarya, 2013).

¹³ John W. Creswell, *Penelitian Kualitatif & Desain Riset: Memilih Di Antara Lima Pendekatan* (Pustaka Pelajar, 2015).

used. They look more focused, active, and encouraged to ask and answer questions that appear in the media displayed.

Based on the results of observations made during the learning process using interactive learning media at SD Negeri 4 Tanah Pasir, it was found that students' learning behavior showed positive and significant changes. Interactive learning media has been proven to make a real contribution to increasing student involvement, both from cognitive, affective, and psychomotor aspects. The following is the complete narrative of the observation results:

1. Students' Attention and Learning Focus Increase

At the beginning of learning, when the teacher began to display interactive media in the form of learning videos and visual animations, students were seen showing strong attention. They focus on the screen and follow the flow of the material presented. No student seemed to speak for himself or pay attention to the teacher, as is often the case in conventional learning.

Dynamic visual media is able to attract students' interest so that they are better prepared to follow the lessons. Some students even look forward to making sure they don't miss an important part of the show being shown.

2. Students are More Active in Asking and Answering

Observations showed a significant increase in students' activeness during the learning process. Students who previously tended to be passive began to show courage in asking questions to teachers, especially when looking at pictures, animations, or situations displayed in the media.

The questions asked by students are not only factual, but also exploratory, which describes the existence of a critical thinking process. In addition, when the teacher gives questions, students seem more eager to answer. Many students raised their hands and actively participated in class discussions.

3. Increasing Students' Ability to Analyze Information

Interactive media provides visual stimulus that helps students understand abstract concepts more concretely. From the observation results, students are able to:

- a. Identify issues or important information in the impression.
- b. Compare multiple examples shown.
- c. Provide logical explanations according to what they see.

For example, when a teacher shows a video about the environment, students can mention the causes of pollution, impacts, and possible solutions. This shows that students' analytical skills are well developed.

4. Students Demonstrate Problem-Solving Skills

During learning, teachers give several problem-based tasks that are integrated with interactive media. Students seem to be able to provide various alternative solutions to the problems displayed. They not only follow a friend's answer, but give their own ideas. Students can also collaborate in small groups to solve simple cases. They discussed, complemented each other's opinions, and concluded answers together. This activity reflects the development of critical thinking and cooperation skills.

5. Students' Creativity Increases

In addition to critical thinking, the results of observations showed an increase in student creativity. This can be seen from:

- a. Their ability to create images or text based on video views.
- b. The emergence of new ideas that they convey spontaneously.
- c. The courage of students to create simple products such as short stories, small posters, or summaries of materials based on the media displayed.

Interactive media spark students' imagination through colors, shapes, sounds, and movements, so they are encouraged to express themselves creatively.

The results of the interview with the teacher stated that interactive learning media is very helpful in facilitating the delivery of material. According to teachers, digital media makes students more focused, not easily bored, and understands the material faster. The teacher also mentioned that interactive media is effective in attracting students' attention, especially at the beginning of learning. Teachers also admitted that the biggest challenge is the limited facilities, especially the lack of technological devices that can be used in each classroom.

While the interviews with students stated that they prefer to learn using interactive media because the video display and animation make the material more interesting. Students find learning to be more fun and less boring. They also said it was easier to understand the material when teachers used moving pictures or videos than when they used textbooks alone.

Interviews with the Principal provide full support for the use of interactive learning media. He assessed that technology is an important part of modern education so that schools need to improve the quality of facilities and infrastructure gradually. The principal hopes that teachers will be more creative in utilizing interactive media so that learning becomes more effective and innovative.

Discussion

The results of the study show that the use of interactive learning media has a significant influence on improving the quality of learning. Interactive media is able to provide a more interesting and fun learning atmosphere, so that students can more easily receive subject matter. Interactive media encourages students to generate new ideas as they engage in visual and audio activities that stimulate the imagination. With an attractive display, it is easier for students to develop creativity in answering, making works, and discussing. This research shows that the use of interactive learning media is very relevant to be applied more widely in elementary schools, especially to improve students' critical and creative thinking skills. Schools need to add facilities, while teachers need to continue to develop competence in managing interactive media.

Interactive media has proven to have a strategic role in improving the quality of learning in elementary schools, especially in optimizing students' critical and creative thinking skills. Interactive media allows two-way learning that actively engages students through visual, audio, animation, and contextual simulations, so that learning is no longer passive and teacher-centered.¹⁴ This condition encourages students to analyze information, ask questions, and evaluate various alternative problem-solving independently.

From a critical thinking perspective, the use of interactive media is able to stimulate high-level cognitive skills such as analyzing, evaluating, and inferring. This is in line with the findings of Facione who stated that critical thinking develops optimally when students are faced with authentic problems that demand reasoning and reflection.¹⁵ Interactive media provides a learning environment that allows students to explore concepts in depth through simulations and case studies that are relevant to everyday life.

In addition, interactive media also contributes significantly to developing the creative thinking of elementary school students. Through exploration-based activities, educational games, and digital projects, students are encouraged to generate new ideas and innovative solutions.¹⁶ A flexible and visually appealing learning environment helps students express ideas freely without fear of making mistakes, which is a key prerequisite for developing creativity. The effectiveness of interactive media is increasingly visible when integrated with active learning approaches such as Project-Based Learning or Problem-Based Learning. Durlak et al. emphasized that learning that involves social interaction and self-reflection is able to significantly improve higher-level thinking

¹⁴ Mayer, *Multimedia Learning*.

¹⁵ Facione, *Critical Thinking: What It Is and Why It Counts*.

¹⁶ Mark A. Runco, *Creativity: Theories and Themes: Research, Development, and Practice*, 2nd ed. (Academic Press, 2014), <https://doi.org/10.1016/C2012-0-06920-7>.

skills.¹⁷ Interactive media supports this approach by providing a means of collaboration and direct feedback.

Research by Hattie shows that the use of media that provides quick feedback and conceptual visualization has a high impact on student learning outcomes.¹⁸ Interactive media allows teachers to monitor students' thinking processes and provide timely interventions, so that the learning process becomes more effective and meaningful.

In the context of elementary school, interactive media also plays an important role in adapting learning to the characteristics of students' cognitive development. Piaget emphasized that elementary school-age students are at a concrete operational stage, so they need a medium that is able to connect abstract concepts with real experiences.¹⁹ Interactive media bridges this need through visual representations and digital manipulative activities. Furthermore, the use of interactive technology is in line with the demands of 21st century skills that emphasize the ability to think critically, creatively, collaboratively, and communicatively.²⁰

Thus, interactive media not only serves as a learning tool, but also as a means of developing essential competencies for students. However, the effectiveness of interactive media is highly dependent on instructional design and teachers' competence in managing it. Koehler and Mishra emphasized the importance of integrating technology, pedagogy, and content knowledge (TPACK) so that the use of interactive media really has an impact on improving students' thinking skills.²¹ Overall, interactive media has proven to be effective in optimizing the critical and creative thinking of elementary school students when used in a planned, contextual manner, and integrated with the right learning strategies. These findings reinforce the urgency of using interactive media as learning innovations to improve the quality of basic education.

CONCLUSION

The conclusion of this study is that the results of the study reveal that interactive learning media is effective in the learning process, interactive media used by teachers, such as learning videos, animations, digital quizzes, and educational applications, are proven to be able to increase student attention, focus, and involvement during the learning process. This media makes the learning atmosphere more interesting, fun, and not monotonous, thus helping students understand

¹⁷ Joseph A. Durlak et al., "The Impact of Enhancing Students' Social and Emotional Learning: A Meta-Analysis of School-Based Universal Interventions," *Child Development* 82, no. 1 (2011), <https://doi.org/10.1111/j.1467-8624.2010.01564.x>.

¹⁸ John Hattie, *Visible Learning: The Sequel: A Synthesis of Over 2,100 Meta-Analyses Relating to Achievement* (Routledge, 2023).

¹⁹ Jean Piaget and Bärbel Inhelder, *The Psychology of the Child* (Basic Books, 1972).

²⁰ Bernie Trilling and Charles Fadel, *21st Century Skills: Learning for Life in Our Times*, 1st ed. (Jossey-Bass, 2009).

²¹ Matthew J. Koehler and Punya Mishra, "What Is Technological Pedagogical Content Knowledge?," *Contemporary Issues in Technology and Teacher Education* 9, no. 1 (2009).

the material more quickly and deeply. Interactive Media Has a Positive Influence on Students' Critical Thinking Skills. The use of animation, moving images, educational games, and exploratory activities in interactive media provides space for students to imagine, create new ideas, and produce simple works. Students' creativity is seen through their ability to create unique answers, solve problems differently, and express ideas through discussions and visual activities. There are obstacles that affect the optimization of interactive media, such as limited technological facilities, electricity and internet constraints, uneven teachers' technological abilities, and limited learning time. In addition, the difference in students' ability to understand technology-based learning is also a challenge for teachers.

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