Development Of Canva-Assisted Interactive Learning Media To Improve The Critical Thinking Skills Of Elementary School Students In Science And Science Subjects

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ABSTRACT: This research aims to develop Canva-assisted interactive learning media designed to improve the critical thinking skills of elementary school students through a differentiated learning approach. This media was developed using a 4D model (Define, Design, Develop, Disseminate) and was piloted on grade V students in Cluster 3 Banyuresmi, Cigudeg District, Bogor Regency. The results of the study show that this media is very feasible to use with a feasibility score of 91.4% for the media aspect, 91.25% for the material aspect, and 97.22% for the language aspect. The level of practicality reached 96.77%, indicating that this media is easy to use by teachers and students. In terms of effectiveness, this media has been proven to improve students' critical thinking skills with an average N-Gain of 0.57 (quite effective category). With features such as visual presentations, interactive quizzes, and infographics, this medium motivates students to be actively engaged in learning and supports a variety of learning styles, such as visual, auditory, and kinesthetic. This study concludes that Canva-assisted learning media can be used as an innovative solution to improve the quality of learning in elementary schools.

Abstrak: Penelitian ini bertujuan untuk mengembangkan media pembelajaran interaktif berbantuan Canva yang dirancang untuk meningkatkan kemampuan berpikir kritis siswa sekolah dasar melalui pendekatan pembelajaran berdiferensiasi. Media ini dikembangkan menggunakan model 4D (Define, Design, Develop, Disseminate) dan diujicobakan pada siswa kelas V di Gugus 3 Banyuresmi, Kecamatan Cigudeg, Kabupaten Bogor. Hasil penelitian menunjukkan bahwa media ini sangat layak digunakan dengan skor kelayakan sebesar 91,4% untuk aspek media, 91,25% untuk aspek materi, dan 97,22% untuk aspek bahasa. Tingkat kepraktisan mencapai 96,77%, menunjukkan bahwa media ini mudah digunakan oleh guru dan siswa. Dari segi efektivitas, media ini terbukti meningkatkan kemampuan berpikir kritis siswa dengan rata-rata N-Gain sebesar 0,57 (kategori cukup efektif). Dengan fitur seperti presentasi visual, kuis interaktif, dan infografik, media ini memotivasi siswa untuk terlibat aktif dalam pembelajaran dan mendukung berbagai gaya belajar, seperti visual, auditori, dan kinestetik. Penelitian ini menyimpulkan bahwa media pembelajaran berbantuan Canva dapat digunakan sebagai solusi inovatif untuk meningkatkan kualitas pembelajaran di sekolah dasar.

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INTRODUCTION

Critical thinking skills are one of the most important competencies for 21st century students. This ability not only assists students in analyzing information, evaluating arguments, and making informed decisions, but also supports them in recognizing and resolving problems efficiently and effectively (Ariesta & Kevin, 2023; Salsa et al., 2023). In the context of education, critical thinking is considered the basis for creating individuals who are able to face various challenges, both in personal and professional life. This ability supports the development of a more systematic, logical, and innovative mindset, so that students can adapt to rapid changes in the era of globalization (Campo et al., 2023).

However, the results of the study show that the critical thinking ability of students in Indonesia is still at a worrying level. This is evidenced by the results of the PISA test which shows a score below the average of OECD countries (Sae & Radia, 2023). This problem is a big challenge in the world of Indonesian education, considering that critical thinking skills are one of the important pillars to achieve meaningful 21st century learning.

This low critical thinking ability is inseparable from various factors. One of the main factors is the lack of learning media that are engaging, interactive, and relevant to student needs (Maulita et al., 2023). Monotonous and non-interactive learning media often make students lose interest in actively participating in the learning process. This is also exacerbated by the gap between the ideal conditions of expected learning and the reality that occurs in the field (Kardiyem & Mansyur, 2023). In many cases, students simply become passive recipients of information without the opportunity to actively participate in analyzing, evaluating, or solving problems.

In the context of basic education, especially in Group 3 Banyuresmi, Cigudeg District, Bogor Regency, this problem has become more real. Based on the results of interviews with the principal and classroom teachers, only about 20% of grade V students have good critical thinking skills. This is reflected in the low level of student participation in learning activities, the lack of students' ability to analyze information, and their lack of ability to express arguments for a given problem, especially in science and science subjects.

Penelitian sebelumnya menunjukkan bahwa pembelajaran berbasis media interaktif dapat is one of the effective solutions to increase student engagement in the learning process (Campbell et al., 2023; Daryanes et al., 2023). Interactive media allows students to learn in a more fun and immersive way, as the media is designed to attract attention and motivate students in learning the material. One of the relevant approaches in this regard is differentiated learning. This approach considers individual differences in students' interests, abilities, and learning styles (Wahyuningsari et al., 2022). By implementing differentiated learning, teachers can accommodate diverse student learning needs, including visual, audio, and kinesthetic learning styles.

In the digital era, technological advances provide a great opportunity to develop more interactive and adaptive learning media. One platform that has great potential in this regard is Canva. Canva is an online graphic design platform that has proven effective in creating engaging and interactive learning media (Friendha & Larasati, 2023). The use of Canva allows teachers to design learning materials that can be adapted to students' learning styles, thus supporting a more meaningful and enjoyable learning process.

Previous research has shown that the use of Canva-assisted interactive modules can significantly improve students' critical thinking skills. For example, research by Yunita (2024) revealed that interactive modules developed using Canva succeeded in improving students' critical thinking skills with an average N-gain score of 0.71, which is categorized as high. In addition, research by Admelia et al. (2022) shows that the Canva application is very effective for teachers to use because it has many advantages, such as the ease of creating various types of learning media, including modules, posters, and interactive presentations.

However, while previous research has shown the effectiveness of Canva as a learning aid, research on the development of Canva-assisted interactive learning media specifically designed to meet the needs of differentiated learning is still limited. Therefore, this study aims to develop Canva-assisted interactive learning media that is able to accommodate students' learning styles and

improve their critical thinking skills. This approach is expected to provide a more comprehensive solution to overcome challenges in developing students' critical thinking skills.

By integrating differentiated learning and digital technologies such as Canva, this research is expected to make a significant contribution in the field of education. In addition to improving students' critical thinking skills, this research also aims to support teachers in creating learning that is more innovative, relevant, and in accordance with the needs of students in the digital era. Ultimately, this approach is expected to help reduce gaps in the quality of education and prepare students to become a competent, adaptive, and ready generation to face future global challenges.

RESEARCH METHOD

This study uses a research and development (R&D) approach with the aim of developing Canva-assisted interactive learning media products and testing their effectiveness in improving student learning outcomes. The development model used is the 4D model (Define, Design, Develop, Disseminate) proposed by Thiagarajan (1974), which consists of four stages: definition, design, development, and deployment. In the define stage, a needs analysis is carried out that involves the analysis of students, tasks, and concepts, as well as the determination of instructional goals. The design stage includes the preparation of criteria reference tests, the selection of appropriate learning media, and the design of learning presentation formats. In the development stage, assessments and trials are carried out by experts to ensure product feasibility, while the disseminate stage focuses on feasibility testing and product adoption by a wider target group.

(Up & Richard, 1999) (Hake & Richard, 1999):
$$N - gain = \frac{(Post\ test\ Value - Pre\ test\ Value)}{(Maximum\ Value - Pre\ test\ Value)}$$

Information

G = Normalized gain

Pre-test and post-test data were analyzed using the N-gain formula to evaluate the improvement of student learning outcomes. The average N-Gain grade score is then categorized based on the criteria put forward by (Hake & Richard 1999), which is low in the following table:

(Up & Richard, 1999) (Hake & Richard, 1999)

Normalized Gain Range	Criterion
g 0,3<	Low
g 0,7**0, 3** $\leq\leq$	Keep
g > 0.7	Tall

In addition, learning effectiveness is interpreted based on the average percentage of N-Gain Score, with categories such as: ineffective (<40%), less effective (40−55%), moderately effective (56−75%), and effective (>76%), which are further used to assess the effectiveness of learning media. The data processing process uses software such as Microsoft Excel to make statistical calculations and analysis easier. The results of the N-gain analysis provide an overview of the success of learning in improving student learning outcomes, as well as provide a basis for evaluating and optimizing the learning methods applied.

FINDINGS AND DISCUSSION

This research produced interactive learning media assisted by Canva which was developed using a 4D model (Define, Design, Develop, Disseminate). Based on field data obtained through interviews, observations, questionnaires, and tests, there are several main findings related to the feasibility, practicality, and effectiveness of this learning media.

The results of the feasibility test show that this learning media is very feasible to use. Media experts gave a score of 91.4%, material experts 91.25%, and linguists 97.22%, so that this media as a whole is included in the very feasible category. These findings are summarized in the following table:

Table 2. Results of the Interactive Learning Media Feasibility Test

Aspects	Total Score	Percentage	Category
Media Members	117	91,4%	Very worthy
Material Expert	73	91,25%	Very worthy
Linguist	35	97,22%	Very worthy

Practicality tests involving teachers and students show that this medium is very practical to use. With a practicality level of 96.77%, the majority of respondents considered that this media is easy to use, has intuitive navigation, and is in accordance with learning needs. The following are the results of the recapitulation of the practicality test:

Table 3. Recapitulation of Practicality Test

Categories of Research	Number of Respondents	Percentage
Very practical	27	87,10%
Practical	3	9,68%
Quite practical	1	3,23%

In terms of effectiveness, this learning media has been proven to improve students' critical thinking skills. The average pre-test score of 62.33% increased to 84.00% in the post-test, with an average N-Gain Score of 57.62%, which is included in the category of quite effective. These results show that the use of interactive learning media can help students understand the material better and improve their critical thinking skills. These findings are presented in the following table:

Table 4. Pre-Test Post-Test results, and practicality categories based on N-gain scores

Parameter	Average Score	Category
Pre-Test	62	-
Post-Test	84	-
N-Gain Score	0,58	Moderate/moderately effective

The discussion related to the findings of this study shows that Canva-assisted interactive learning media is not only relevant for technology-based learning, but also highly effective in accommodating various student learning styles, such as visual, auditory, and kinesthetic. This aligns with Gardner's Multiple Intelligences Theory (1983), which emphasizes that learning outcomes will be more optimal when the instructional process takes into account the diversity of students' learning preferences and strengths. The visual elements of Canva support learners who prefer imagery and graphics, while embedded narration and multimedia features address auditory learners, and interactive activities provide opportunities for kinesthetic learners to be more actively engaged (Kartika, et.al, 2025; Kocaarslan & Eriyaman, 2024).

In addition, the results of this study support Vygotsky's Zone of Proximal Development (ZPD, 1978), which highlights the importance of instructional scaffolding. Through Canva's structured templates and intuitive features, teachers are able to provide appropriate support that helps students progress from their actual developmental level toward their potential level of competence (Dmitrenko, et. Al, 2024; Handayani, et.al., 2025; Hafiz, et.al., 2024). This shows that Canva is not just a presentation tool but can act as a medium for scaffolding that enhances students' ability to bridge learning gaps.

The findings also demonstrate that Canva-assisted media encourages the application of Problem-Based Learning (PBL), as proposed by Barrows (1986). With its engaging design, Canva allows teachers to create contextual and problem-oriented learning scenarios, thereby stimulating inquiry, exploration, and critical thinking. This directly contributes to the development of students' higher-order thinking skills, a crucial aspect of 21st-century competencies (Almerich, et.al, 2020; Kwangmuang, et,al., 2021).

However, despite the positive outcomes, the study revealed some variations in student achievement. This indicates the necessity of differentiated instruction so that learning strategies can be adjusted according to students' readiness levels, interests, and individual learning profiles.

Differentiation in the use of Canva media could include varying the level of task difficulty, offering alternative project outputs, or allowing flexible pathways for demonstrating understanding (Rakhmawati, 2024; Kovtaniuk, et.al., 2025).

Overall, Canva-assisted learning media has great potential to be widely applied in elementary school learning. Its flexibility, accessibility, and ability to integrate multimedia content make it an innovative pedagogical tool that aligns with modern educational paradigms. More importantly, its implementation supports the vision of enhancing learning quality by fostering creativity, collaboration, and critical thinking among students, while also providing teachers with an efficient and practical medium to deliver engaging lessons.

CONCLUSION

This study concludes that the development of Canva-assisted interactive learning media has successfully met the needs of inclusive and student-centered learning aimed at improving students' critical thinking skills, as it is designed with a differentiated learning approach that accommodates various learning styles through features such as visual presentations, interactive quizzes, and infographics, making it engaging and supportive of active learning in line with Vygotsky's Zone of Proximal Development and Gardner's Multiple Intelligences theory; the validation results also show a high level of feasibility with scores of 91.4% for media, 91.25% for material, and 97.22% for language aspects, while the practicality level reached 96.77%, reflecting its ease of use for both teachers and students with intuitive navigation and a user-friendly interface, and its effectiveness is evidenced by a significant improvement in post-test results with an average N-Gain of 0.57 categorized as quite effective, particularly because of the integration of problem-based learning (PBL) and differentiation strategies that foster analysis, evaluation, and creation; therefore, Canva-assisted learning media can be considered feasible, practical, and effective for elementary school learning, with great potential to support innovative and relevant education, while further research is recommended to test its implementation across various subjects and education levels to ensure broader and sustainable impact.

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