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Development of Interactive Learning Media Using Graphic Design Software in Mathematics Lessons on Flat Geometry in Elementary Schools

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Abstract

Mathematics learning in elementary schools, especially on plane geometry topics, still faces challenges such as low student interest, monotonous learning media, and unsatisfactory learning outcomes. Therefore, innovative and interactive learning media are needed to improve students' understanding and motivation. This study aimed to develop interactive learning media using graphic design software for mathematics learning on plane geometry topics in elementary school and to determine its validity, practicality, and effectiveness. The study used a Research and Development (R&D) method with the ADDIE model, consisting of analysis, design, development, implementation, and evaluation stages. The subjects were 50 fifth-grade students of SD Negeri 16 Lahat. Data were collected through interviews, observations, questionnaires, and tests. The results showed that the developed media was valid, practical, and effective in improving students' learning outcomes, as indicated by higher posttest scores compared to pretest scores. Thus, the interactive learning media is feasible to support mathematics learning in elementary schools.

Keywords: interactive learning media, graphic design software, mathematics, plane geometry, elementary school, ADDIE model.

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INTRODUCTION

The development of digital technology in the Industrial Revolution 4.0 era has brought significant changes to the world of education, particularly in the learning process in elementary schools. The use of technology in learning not only functions as a means of conveying information but also as a medium capable of increasing interactivity, motivation, and student engagement during the learning process. The use of interactive digital media can also create more flexible and student-centered learning, thereby improving the quality of elementary school students' learning experiences (Anggraini & Suryani, 2021). Furthermore, the integration of technology in mathematics learning can help students understand concepts more visually and contextually, in line with the demands of 21st-century learning (Irwanto & Mulyadi, 2025). The use of interactive digital media can also create more flexible and student-centered learning, thus improving the quality of elementary school students' learning experiences (Anggraini & Suryani, 2021). Furthermore, the integration of technology in mathematics learning can help students understand concepts more visually and contextually, in line with the demands of 21st-century learning (Irwanto & Mulyadi, 2025). The integration of technology into learning also supports the transformation of conventional classrooms into more interactive and student-centered learning (Susanti & Mulyono, 2021). 21st-century learning demands that students have critical, creative, communicative, and collaborative thinking skills, requiring teachers to create innovative and adaptive learning processes to technological developments. One form of innovation currently developing is the use of interactive learning media based on graphic design software that can integrate text, images, animation, audio, and video into a single, engaging and easily understood learning medium. In the context of elementary education, the use of interactive learning media is crucial because elementary school students tend to prefer visual and concrete learning over abstract learning. Technology-based interactive learning media is an effective innovation in improving the quality of mathematics learning in elementary schools because it can create more engaging and participatory learning (Ariani et al., 2023). Interactive digital-based learning media has been shown to increase student motivation, attention, and active participation during the mathematics learning process (Fadillah & Rahman, 2023). The use of interactive graphic design applications is also considered effective in helping teachers deliver geometry material in a more interesting and easier way for students to understand (Putra & Amelia, 2024).

Mathematics is a crucial subject taught at every level of education because it plays a role in developing students' logical, systematic, analytical, and creative thinking skills. Mathematics learning is closely related to thinking and reasoning activities, requiring students to systematically

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understand abstract concepts. However, mathematics is often considered a difficult and boring subject by elementary school students. Geometry is one of the subjects that is quite difficult for students to understand because it requires the ability to visualize shapes and understand concepts concretely. The use of visual media in mathematics learning helps students understand abstract concepts more concretely (Nugraheni & Prasetyo, 2021). Visual and audiovisual media can help students develop mathematical reasoning skills through the presentation of geometric objects in a more realistic and interactive way (Hasanah & Lestari, 2020). The development of digital-based geometry media has also been shown to improve elementary school students' conceptual understanding and learning outcomes (Dewi & Hartati, 2022). This condition leads to low student interest in learning and low learning outcomes in mathematics. Students' difficulties in understanding geometric concepts are generally caused by the abstract characteristics of the material, which requires concrete visualization in the learning process (Ma'arip et al., 2026).

Based on the results of initial observations in this study at SD Negeri 16 Lahat, it was found that many students had difficulty understanding the material on plane figures and had not yet achieved the Minimum Completion Criteria (KKM). The learning process that was still centered on the teacher and the use of monotonous learning media were the main factors in low student learning outcomes. Students tended to feel bored when teachers only used lecture methods and textbooks without the support of interesting visual media. The results of these observations showed that students were more enthusiastic and motivated when teachers presented learning media based on graphic design applications that contained images, animations, colors, and interactive videos. This condition indicates that the use of interactive learning media has a significant influence on increasing student motivation and understanding in learning mathematics.

Theoretically, this research is based on behaviorist, cognitive, and constructivist learning theories. Behaviorist theory emphasizes that changes in student behavior are influenced by stimuli provided through the learning environment and the learning media used by teachers. According to Hapudin (2021), student learning outcomes can be observed through behavioral changes that emerge after being given certain stimuli during the learning process. In this context, interactive learning media can be a stimulus that can increase students' attention and response to mathematics material. Meanwhile, cognitive learning theory explains that elementary school students are at the concrete operational stage, so the learning process must be adapted to their cognitive development. Students will more easily understand mathematical concepts when presented through concrete, visual, and interactive media. Furthermore, constructivist theory emphasizes that knowledge is constructed by students themselves through experience and direct

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interaction with the learning environment. Therefore, the use of technology-based interactive learning media can help students build a more meaningful understanding of mathematical concepts.

Learning media is an important component in the learning process, helping to convey learning messages more effectively and efficiently. According to Nurfadhilah (2021), learning media is a tool used as an intermediary between teachers and students to facilitate understanding of learning materials. The use of appropriate learning media can increase attention, interest, and motivation. Interactive learning media based on Canva has been proven to improve elementary school students' understanding of mathematical concepts (Sari & Yunianta, 2023). This also affects student learning outcomes. Interactive digital learning media can also increase student engagement during learning, making the learning process more effective and meaningful (Wulandari et al., 2022). Furthermore, interactive learning media can create a more enjoyable learning atmosphere, making students more active during the learning process. In mathematics learning, visual and audio-visual learning media are considered effective because they can help students understand abstract concepts more concretely and easily.

The current development of graphic design software provides significant opportunities for teachers to develop innovative and engaging learning media. One widely used application is Canva. Canva is an online graphic design application that provides various templates, animations, images, audio, video, and other visual features that can be utilized in the learning process. Canva provides various visual features such as animated templates, learning videos, and interactive designs that support a more engaging and innovative mathematics learning process (Nuraini & Astuti, 2021). The implementation of Canva-based learning media in mathematics has also been shown to increase student engagement during the learning process (Apriliani & Safitri, 2024). The use of Canva in learning can facilitate teachers in designing creative learning media without requiring professional design skills. Furthermore, Canva-based learning media can increase students' focus and interest in the material being studied due to its attractive and interactive visual display. Previous research has shown that Canva is effective as a mathematics learning medium because it can improve elementary school students' mathematical representation skills and conceptual understanding (Fernanda et al., 2026).

Previous research conducted by Tri Umi Faridah Hayati (2022) showed that the use of Canva-based learning videos on plane geometry material can be a solution in developing innovative digital learning media in elementary schools. Furthermore, the results of a systematic literature review indicate that the use of Canva in elementary school mathematics learning has

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experienced a significant increase in recent years because it is considered effective in increasing student motivation and learning outcomes (Hariyadi et al., 2026). Another study by Zahra Kamila and Kowiyah (2022) showed that Canva-based interactive learning media received a very appropriate category based on validation by material experts and media experts and was able to increase students' positive responses to mathematics learning. Other research shows that the use of Canva-based learning media has a positive influence on the motivation and learning outcomes of elementary school students because it is able to create a more interactive and enjoyable learning atmosphere (Wijayanti & Purnomo, 2023). Furthermore, the development of interactive multimedia using Canva in mathematics learning is considered effective in improving elementary school students' understanding of geometric concepts (Aditya & Kurniasih, 2023). Furthermore, research conducted by Ani Rohma and Ummu Sholihah (2021) on the development of Canva-based audiovisual media for spatial geometry demonstrated that the developed media had excellent levels of validity, practicality, and effectiveness in supporting the mathematics learning process. These results demonstrate that Canva-based learning media can improve student motivation and learning outcomes in both face-to-face and online learning.

Although various studies have been conducted on the development of Canva-based learning media, most of the research still focuses on fractions, geometric shapes, and data processing. Research on the development of interactive learning media using graphic design software for geometric shapes in elementary schools is still limited. Most previous studies still focus on simple presentation media and have not integrated interactive evaluation and learning animation in an integrated manner (Musthofiah et al., 2026). Furthermore, some previous studies only emphasize the validity and practicality of the media without examining its effectiveness in improving student learning outcomes as a whole. Based on these conditions, there is a research gap in the limited development of interactive learning media that integrate visual elements, audio, animation, and integrated learning evaluation in geometric shapes in elementary schools.

This research has a novelty in the development of interactive learning media using graphic design software that is systematically designed using the ADDIE model to improve the mathematics learning outcomes of elementary school students. The developed media not only displays the material in an attractive visual form, but also integrates animation, audio, video, and interactive evaluations that are appropriate to the characteristics of elementary school students' cognitive development. The development of this media is expected to be able to create a more active, enjoyable, and meaningful learning atmosphere so that students can more easily understand the concept of flat geometry.

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This research was conducted at SD Negeri 16 Lahat, considering the current mathematics learning environment, which is still dominated by conventional methods and minimal use of interactive digital media. The characteristics of elementary school students who prefer visual and interactive learning are important considerations in the development of this learning media. Therefore, the purpose of this research is to develop interactive learning media using graphic design software in mathematics lessons on plane geometry in elementary schools and to determine the level of validity, practicality, and effectiveness of the developed media in improving student learning outcomes.

RESEARCH METHODS

This study used the Research and Development (R&D) method, which aims to develop interactive learning media using graphic design software for mathematics learning on plane geometry in elementary schools. The Research and Development method was chosen because the research not only focuses on testing theories but also produces valid, practical, and effective learning products for use in the learning process. According to Sugiyono (2022), research and development is a research method used to produce a specific product while simultaneously testing the product's feasibility and effectiveness. In this study, the development model used is the ADDIE model, which consists of five stages: analysis, design, development, implementation, and evaluation. The ADDIE model was chosen because it has systematic, flexible development stages, and is suitable for use in developing digital technology-based learning media (Cahyadi, 2020). The ADDIE model is considered effective for use in developing digital learning media because it is able to produce products that are appropriate to the needs of students and the characteristics of technology-based learning (Gunawan & Wahyuni, 2022).

The analysis stage was conducted to identify learning needs, student characteristics, and problems that occur in the mathematics learning process in elementary schools. At this stage, observations and interviews were conducted with teachers and students at SD Negeri 16 Lahat to obtain information regarding learning conditions, the use of learning media, and student difficulties in understanding the geometry material of plane figures. The analysis results showed that the learning process was still dominated by lecture methods and the use of learning media that were less interactive, resulting in low student motivation and learning outcomes. The design stage was carried out by designing interactive learning media using graphic design software that contained materials, images, animations, audio, videos, and interactive practice questions according to the basic competencies of elementary school mathematics learning. Next, in the

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development stage, the process of creating learning media was carried out as well as product validation by material experts, media experts, and design experts to determine the level of feasibility of the developed media. The implementation stage was carried out through a trial of the use of learning media on fifth-grade students at SD Negeri 16 Lahat. The final stage, namely evaluation, was carried out to determine the level of validity, practicality, and effectiveness of the developed learning media (Branch, 2020).

The subjects of this study consisted of 50 fifth-grade students at SD Negeri 16 Lahat in the even semester of the 2024/2025 academic year. The selection of research subjects was based on initial observations indicating that students had difficulty understanding the geometry material and had low mathematics learning outcomes. In addition to students, this study also involved validators consisting of material experts, media experts, and design experts to assess the quality of the developed learning media. The involvement of validators in development research is crucial to ensure that the resulting product meets the aspects of content, appearance, language, and learning suitability (Prasetyo et al., 2021).

The data sources in this study consisted of primary and secondary data. Primary data were obtained directly through interviews, observations, questionnaires, walkthroughs, and student learning achievement tests. Interviews were conducted with teachers and students to obtain information regarding mathematics learning needs and the use of learning media in schools. Observations were conducted to observe student activities during the learning process. Questionnaires were used to obtain data on the level of practicality of the learning media based on student and teacher responses after using interactive learning media. In addition, walkthroughs were used to obtain product validation data from experts focusing on aspects of materials, media, and learning design. Learning achievement tests were given to students to determine the effectiveness of the learning media in improving mathematics learning outcomes. Meanwhile, secondary data were obtained from various scientific references in the form of reputable national and international journals relevant to the development of technology-based interactive learning media (Ariani et al., 2023). The use of pretests and posttests in interactive media development research is crucial for objectively measuring improvements in students' understanding of mathematical concepts (Firmansyah & Utami, 2021).

The data collection technique in this study was carried out through several integrated stages. Observation and interviews were used in the needs analysis stage to identify problems in mathematics learning in elementary schools. Next, a validation questionnaire was administered to material experts, media experts, and design experts to determine the feasibility of the

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developed learning media. The material expert validation instrument covered aspects of learning objectives, material suitability, material presentation, and interactive quality of the media. The media expert validation instrument covered aspects of media suitability, illustration, media application, and the attractiveness of the learning media. Meanwhile, the design expert validation instrument covered aspects of text display, image display, general design, and the attractiveness of the learning media. In addition, a practicality questionnaire was administered to students and teachers to determine the ease of use of interactive learning media during the learning process. According to Wulandari et al. (2022), the use of questionnaires in learning media development research is very effective in measuring user responses to the quality and ease of use of digital learning products.

The data analysis in this study used quantitative and qualitative descriptive analysis techniques. Data from expert validation, practicality questionnaires, and learning outcome tests were analyzed quantitatively using percentages to determine the validity, practicality, and effectiveness categories of the learning media. Validity analysis was conducted based on validator assessment scores using a Likert scale. Practicality analysis was conducted based on the results of teacher and student response questionnaires regarding the use of interactive learning media. Meanwhile, effectiveness analysis was conducted by comparing student pretest and posttest scores to determine improvements in learning outcomes after using the developed learning media. According to Hidayat et al. (2021), pretest and posttest analysis were used to determine the effect of learning media use on improving students' conceptual understanding. In addition to quantitative analysis, this study also used qualitative analysis in the form of suggestions and comments from validators as a basis for improving the learning media before being implemented with students.

The use of the ADDIE model in this study was deemed appropriate because it was able to produce learning media that was systematic, effective, and suited to the needs of elementary school students. Furthermore, the development of interactive learning media based on graphic design software is expected to create a more engaging, interactive, and enjoyable mathematics learning environment, thereby improving student motivation and learning outcomes in elementary school geometry.

RESULTS AND DISCUSSION

Research result

This research resulted in a product in the form of interactive learning media using Canva

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graphic design software for mathematics subjects on plane geometry in elementary schools. The media development was carried out using the ADDIE model consisting of the stages of analysis, design, development, implementation, and evaluation. The results showed that the developed learning media met the aspects of validity, practicality, and effectiveness, making it suitable for use in the mathematics learning process in elementary schools. The research results are presented based on the development stages that have been carried out.

Needs Analysis Stage

The needs analysis stage was conducted through observation, interviews, and questionnaires distributed to teachers and fifth-grade students of SD Negeri 16 Lahat. The results of the analysis indicate that mathematics learning on the geometry of plane figures still faces various obstacles, especially in terms of students' understanding of concepts, limited learning media, and a lack of innovation in the learning process. Teachers still use conventional methods in the form of lectures and assignments with the main learning source being textbooks so that students have difficulty understanding the abstract concept of plane figures. In addition, student learning motivation is relatively low, indicated by a lack of attention and minimal student activity during the learning process. However, students show high interest when learning uses visual and interactive media such as images, animations, and videos. This condition indicates the need to develop interactive learning media that can visualize the concept of plane figures in a concrete and interesting way.

The analysis also revealed that schools have supporting facilities such as laptops and projectors, but these are not being utilized optimally in mathematics learning. Therefore, the development of Canva-based interactive learning media is considered appropriate for elementary school learning needs due to its ease of use, visual appeal, and ability to increase student engagement.

Additionally, during the analysis stage, learning indicators and objectives are established to form the basis for developing interactive learning media. These indicators include students' ability to recognize types of geometric shapes, explain their properties, calculate area and perimeter, solve contextual problems, and use interactive learning media independently.

Design Stage

The design phase involved creating flowcharts, storyboards, and prototypes for interactive learning media based on Canva. The media was designed with the characteristics of elementary

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school students who enjoy visual displays, color, animation, and interactive activities in mind. The media design included geometric materials, illustrative images, animations, instructional videos, interactive practice exercises, and user-friendly navigation.

At this stage, the researcher also designed research instruments, including validation sheets from material experts, design experts, and media experts, teacher and student response questionnaires, observation sheets, interview guidelines, and learning outcome tests in the form of pretests and posttests. The instruments were developed based on indicators aligned with the research objectives, thus measuring the validity, practicality, and effectiveness of the developed learning media.

Development Stage

The development phase involves creating interactive learning media using Canva according to the pre-designed design. Once the product is developed, it is validated by subject matter experts, design experts, and media experts to determine its suitability before implementation in learning.

Table 1. Results of the material validation assessment

No	Rated aspect	Mark			
		4	3	2	1
Learning objectives					
1	Learning objectives are conveyed clearly in the learning media		√		
2	Learning objectives are in accordance with basic competencies	√			
3	Learning objectives are in accordance with the material presented.	√			
Learning materials					
4	The material presented in video learning media is in accordance with basic competencies.	√			
5	The scope of material contained in this video learning media is sufficient and appropriate.	√			
6	The concept of the material discussed in this video learning media is correct		√		
7	All the material presented in this video learning media is complete.		√		
8	The practice questions given in the learning video are precise	√			
9	The example questions given are accurate and clear enough.		√		

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Presentation					
10	The material is delivered clearly	√			
11	The presentation time of the material in this video learning media is quite efficient.	√			
12	The material is delivered in a coherent manner	√			
13	Word selection is appropriate to the material being taught		√		
Motivating Quality					
14	The material provided can increase students' creativity	√			
15	The material provided can foster students' curiosity	√			
16	The media used supports students to learn independently	√			
17	The media used can increase students' interest in learning mathematics.	√			
Total Score		59			

Based on the validation results from the material experts in Table 1, the interactive learning media received a total score of 59, categorized as very suitable. The aspects that received the highest scores included the suitability of learning objectives, the accuracy of the material, the presentation of the material, and the media's ability to increase student interest in learning. These validation results indicate that the developed learning media aligns with the basic competencies and characteristics of elementary school students and is therefore suitable for use in mathematics learning.

Table 2. Results of design validation assessment

No	Rated aspect	Mark			
		4	3	2	1
Text Display					
1	Writing Clear Titles	√			
2	The font selection for each text is attractive and appropriate.	√			
3	The font size of the writing is according to its function	√			
4	Font color according to function		√		
Image View					
5	The images used attract students' attention.	√			

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6	The images used are appropriate to the material		√		
7	Image Animation according to function		√		
8	The images used vary	√			
General Design					
9	The number of slides displayed is efficient	√			
10	The color selection on the slides is interesting	√			
Attractiveness					
11	The use of this learning media optimizes students' interest in mathematics subjects.		√		
12	The media design used has many animations that can attract students' interest.	√			
Total Score		44			

Based on the design expert validation results in Table 2, the interactive learning media obtained a total score of 44, categorized as very suitable. The design expert assessment covered aspects of text display, image display, general design, and the attractiveness of the learning media. In terms of text display, the media was assessed as having clear title writing, attractive font selection, appropriate font size, and adequate use of color. In terms of image display, the media was assessed as being able to attract students' attention through the use of images appropriate to the material and animations that support the learning process. In addition, the general design aspect showed that the color selection and number of slides used were appropriate and efficient for elementary school learning. In terms of attractiveness, the learning media was assessed as being able to increase students' interest and attention in mathematics learning through interactive animation displays and visual design. The validation results indicate that the developed learning media has met the aspects of good learning design and is therefore suitable for use in the mathematics learning process in elementary schools.

Implementation Stage

The implementation phase was conducted in grades VA and VB of SD Negeri 16 Lahat, with a total of 50 students. Before the interactive media learning began, students were given a pretest to determine their initial abilities. Afterward, the learning process was conducted using Canva-based interactive learning media, followed by a posttest to determine improvements in student learning outcomes.

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Table 3. Students' pretest scores

No	Value Interval	Frequency
1	85 – 100	2
2	70 – 84	8
3	55 – 69	20
4	40 – 54	15
5	< 40	5
Amount		**50**

Based on the pretest results, the majority of students were in the 55–69 range (20 students) and 40–54 range (15 students). These results indicate that students' initial abilities are still relatively low and have not met the learning completion standard.

Table 4. Average pretest scores

Information	Mark
The highest score	90
Lowest Value	30
Average	**58.4**
Number of Students Completed (≥65)	10
Percentage of Completion	20%

The average pretest score of 58.4 is still below the set KKM of 65. Of the 50 students, only 10 students or 20% achieved learning completion.

Table 5. Students' posttest scores

No	Value Interval	Frequency
1	85 – 100	20
2	70 – 84	18
3	55 – 69	8
4	40 – 54	4
5	< 40	0
Amount		**50**

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Posttest results showed a significant improvement in the distribution of student scores. Most students fell within the high score range, with 20 students scoring 85–100 and 18 students scoring 70–84. There were no students scoring below 40.

Table 6. Mean posttest scores

Aspect	*Pretest*	*Posttest*
Average Value	58.4	80.2
The highest score	90	100
Lowest Value	30	50
umber of Students Completed	10	42
Percentage of Completion	20%	84%
N-Gain	-	0.52

The N-Gain analysis showed a value of 0.52, which is in the moderate (effective) category. This value indicates that Canva-based interactive learning media is effective in improving student learning outcomes in plane geometry.

DISCUSSION

The results of the study indicate that interactive learning media using Canva graphic design software was successfully developed with a high level of validity, practicality, and effectiveness. This success is inseparable from the systematic development process carried out using the ADDIE model so that the resulting media is in accordance with the needs of mathematics learning in elementary schools. According to Cahyadi (2020), the ADDIE model is one of the effective development models because it has systematic and flexible stages in producing learning products that suit user needs. The results of this study indicate that the use of interactive learning media can help students understand the concept of plane geometry that was previously considered abstract to be more concrete through visualization, animation, and interactive activities.

In terms of validity, the learning media received the "Very Appropriate" category based on validation results from material experts, design experts, and media experts. These results indicate

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that the developed media has met the appropriateness standards for content, appearance, and function of learning media. Material validity indicates that the media content is in accordance with the basic competencies and objectives of elementary school mathematics learning. Meanwhile, design validity indicates that the use of colors, fonts, animations, and images is in accordance with the developmental characteristics of elementary school students. These findings align with research by Wulandari et al. (2022) which states that interactive visual-based learning media can increase student attention and engagement in mathematics learning.

In terms of effectiveness, the results of the study showed a significant increase between students' pretest and posttest scores. The average score increased from 58.4 to 80.2, with an N-Gain value of 0.52, which is in the effective category. These results indicate that interactive learning media can significantly improve understanding of geometric concepts in plane shapes. The use of interactive digital media in mathematics learning can help students understand the material more concretely through visualizations and engaging learning activities (Maulidina & Prasetyo, 2023). Furthermore, technology-based interactive media has been proven effective in significantly improving elementary school students' geometry learning outcomes (Saputri & Yuliana, 2025). According to Hidayat et al. (2021), the use of interactive digital learning media can help students understand abstract concepts through more concrete visualizations, thereby improving student learning outcomes. The improvement in learning outcomes in this study also indicates that the use of interactive media can increase student motivation and engagement during the learning process.

In addition to improving learning outcomes, the use of Canva-based interactive learning media also has a positive impact on student learning activities. This research is also supported by research by Wijayanti and Purnomo (2023), which states that Canva-based learning media can improve the motivation and learning outcomes of elementary school students through more engaging and interactive presentation of material. Furthermore, Fadillah and Rahman (2023) explain that the use of Canva in mathematics learning can increase student engagement during the learning process, making learning more effective and enjoyable. Based on observations during learning, students become more active in asking questions, discussing, and engaging in learning activities. Active student engagement in learning shows that the use of interactive media can create a more participatory and enjoyable learning atmosphere for elementary school students (Kusuma & Hidayati, 2022). Attractive visual displays, animations, and interactive navigation make students more focused and enthusiastic in participating in mathematics learning. This finding aligns with research by Ariani et al. (2023), which states that technology-based interactive learning

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media can create a more enjoyable learning atmosphere and increase active student participation.

This research also shows that Canva, a graphic design software, has significant potential to support innovation in mathematics learning in elementary schools. Canva makes it easy for teachers to design engaging learning media without requiring professional design skills. Furthermore, its visual features help teachers present mathematics material in a more concrete and understandable way for students. This aligns with research by Prasetyo et al. (2021), which explains that the use of interactive digital media can improve the quality of learning by providing a more engaging and contextual learning experience.

However, this study still has several limitations. First, the study was conducted in only one school with a limited number of subjects, so the results cannot be broadly generalized. Second, the study focused solely on geometry, so the effectiveness of the media on other mathematics topics remains unknown. Third, the media development was still based on the use of Canva, so the interactivity features used are still limited compared to other multimedia-based learning applications.

Based on these limitations, further research is recommended to develop interactive learning media for other mathematics topics, involving a wider range of subjects. Furthermore, future research could integrate learning media with other technologies, such as augmented reality or educational games, to optimize learning interactivity. Further research could also test the long-term effectiveness of learning media on students' critical thinking skills and creativity.

CONCLUSION

Based on the research results, it can be concluded that interactive learning media using graphic design software on the geometry of plane figures in elementary schools was successfully developed using the ADDIE model through the stages of analysis, design, development, implementation, and evaluation. The developed learning media was declared valid based on the assessment of material experts, design experts, and media experts so that it is suitable for use in the mathematics learning process in elementary schools. In addition, the developed interactive learning media was also considered practical and able to create a more interesting, active, and enjoyable learning atmosphere for students. The use of Canva-based interactive learning media has proven effective in improving students' mathematics learning outcomes on the geometry of plane figures material and increasing student motivation and involvement during the learning process.

This research implies that the use of interactive learning media based on graphic design

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software can be an innovative alternative to support mathematics learning in elementary schools. Therefore, teachers are advised to utilize digital technology more optimally in developing learning media that are appropriate to student characteristics. Furthermore, further research is expected to develop interactive learning media for other mathematics materials with a broader subject coverage and integrate more innovative learning technologies to continuously improve the effectiveness of learning media.

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