

Developing Interactive Video Learning Media Using Sparkol Videoscribe on Plane Geometry for Grade III Elementary School Students

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ABSTRACT

Purpose – This study aims to develop interactive video learning media using Sparkol Videoscribe on plane geometry material for grade III elementary school students. This research is motivated by the need for learning media that can support the visualization of abstract mathematical concepts at the elementary school level.

Methods – This research uses a research and development (R&D) design with the ADDIE model, which includes the stages of analysis, design, development, implementation, and evaluation. The research subjects involved grade III students as well as expert validators consisting of material experts, media experts, and linguists. Data collection techniques use observation, interviews, questionnaires, and tests. The data was analyzed descriptively, quantitatively, and qualitatively to determine the level of validity and practicality of the developed media.

Findings – The results of the study showed that the media developed had a high level of validity, with a percentage of 96% of material experts, 93.85% of media experts, and 90% of linguists, with an average of 93.23% being in the very valid category. From the practical aspect, the teacher's response reached 96%, the small group test was 91.67%, and the limited group test was 93.33%, with an average of 93.67%, which was in the very practical category. These results show that the developed media are suitable for use in mathematics learning on plane geometry materials on a limited scale.

Research Implications – This study shows that interactive video learning media using Sparkol Videoscribe has the potential as a learning innovation that can support concept visualization, support student involvement, and can be used to assist teachers in delivering material.

 OPEN ACCESS

ARTICLE HISTORY

Received: 02-04-2026

Revised: 29-04-2026

Accepted: 30-04-2026

KEYWORDS

interactive video,
sparkol videoscribe,
learning media, plane
geometry, elementary
school

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Introduction

Mathematics learning in primary school has an important role in shaping students' logical and systematic thinking skills (Nurhaswinda et al., 2026). However, in practice, mathematics is still often considered a difficult subject by students (Rahmadani et al., 2026). This difficulty is especially seen in plane geometry materials that are abstract and require visualization skills (Putra et al., 2026). Grade III students who are at the concrete operational stage need media assistance to understand the concept more clearly (Sari & Out, 2026). Therefore, learning media that is able to concretize the concept of building flat is needed so that it has the potential to support students' understanding (Sinaga et al., 2024).

The use of interactive learning media is one of the alternatives that can support the mathematics learning process (Utami & Bektiningsih, 2023). Learning media not only helps the delivery of material, but also has the potential to may facilitate students' motivation and involvement in learning (Monalisa & Suntari, 2024). The use of appropriate media can support the creation of a more interesting and meaningful learning atmosphere (Li et al., 2024). However, in practice, the use of learning media in elementary schools is still limited and not optimal (Islam et al., 2026). This has the potential to cause learning to be less interesting for students (Islam et al., 2026).

Based on the results of observations and initial tests conducted in grade III, it was found that most students had difficulty in understanding plane geometry concepts. Of the 28 students, as many as 18 students (64%) were not able to distinguish the type of plane geometry materials correctly. In addition, the results of the initial test showed that only 9 students (32%) achieved scores above the KKM, while the other 19 students (68%) did not meet the minimum mastery criteria. The results of interviews with teachers also show that students often experience misconceptions in understanding the properties of plane geometry. This condition shows that students' understanding of plane geometry materials is still low.

These problems show the need for learning media innovations that are able to increase student understanding in a more concrete way. One of the media that can be used is interactive video that combines visual and audio elements in the presentation of the materia (Navarrete et al., 2025). Interactive video media can support the visualization of abstract concepts so that they have the potential to be easier for students to understand (Türel et al., 2023). In addition, this media also has the potential to support students' interest in learning and involvement in learning (Dahlan et al., 2023). Thus, the use of interactive videos is a relevant solution in learning mathematics (Sriyanti et al., 2024).

One of the applications that can be used to develop interactive video media is Sparkol Videoscribe (Nurusyifa & Wulandari, 2024). This application is able to present

material in the form of whiteboard animations that are attractive and easy for students to understand (Sitepu & Siregar, 2023). The use of Videoscribe can help teachers in delivering material in a more creative and innovative way (Triyani et al., 2024). In addition, the integration of animations, narratives, and concrete visuals in Videoscribe can increase students' attention during learning (Zolkwer et al., 2023). Therefore, the use of Videoscribe supports the mathematics learning process (Navarrete et al., 2025).

Previous research has shown that the use of interactive video media can improve students' motivation and learning outcomes (Shatri & Shala, 2022). However, research that specifically develops Sparkol Videoscribe-based media on plane geometry materials in grade III elementary school is still limited. In addition, previous research generally has not integrated the elements of interactive quizzes in learning media and has not been adjusted to the characteristics of elementary school students. Another gap is that there has not been much research that has developed contextual media according to real conditions in elementary schools. This indicates the existence of *Research gap* Further research (Sriyanti et al., 2024).

Based on the problems and gaps in the research, the *novelty* in this study lies in the development of interactive video media based on Sparkol Videoscribe which combines the animation of the concept of plane geometry materials, narrative, concrete visuals, and interactive quizzes designed specifically for grade III elementary school students. This media was developed by considering the characteristics of students as well as learning needs in the field. Thus, the media produced is expected to be more contextual and in accordance with the needs of students.

Based on this description, the purpose of this study is to develop interactive video learning media using Sparkol Videoscribe on plane geometry materials in grade III elementary schools that meet valid and practical criteria. The media developed is expected to have the potential to support students' understanding of the concept of building flat more easily. In addition, this media is also expected to may facilitate student involvement in learning. Thus, learning becomes more interesting and meaningful.

This research was carried out as an effort to overcome the problem of mathematics learning in elementary schools, especially in plane geometry materials. Low student understanding and limited use of learning media are the main reasons for conducting this research. In addition, the need for innovative technology-based learning media is also increasing. Therefore, the development of interactive video media based on Sparkol Videoscribe is expected to be the right solution in supporting the learning process.

Methods

This study uses a development research design (*Research and Development*) which aims to produce interactive video learning media using Sparkol Videoscribe on plane

geometry materials in grade III elementary school (Sugiyono, 2013). The development model used is ADDIE which includes five stages, namely *Analysis, Design, Development, implementation, and Evaluation* (Suratnu, 2023). This model was chosen because it has systematic steps and allows evaluation at each stage of development (Sugiyono, 2013). Thus, the media developed can be refined gradually according to learning needs.

The population in this study is all third grade students of SDN 111/1 Muara Bulian. The subjects of this study were tested in several groups. The group tested consisted of a small group of 3-4 people while the large group trial consisted of 7-8 people. In addition, this research also involves expert validators consisting of material experts and media experts to assess the feasibility of the product. The research was carried out on April 7-14, 2026 for 1 week. The selection of subjects is based on suitability with the plane geometry material taught in grade III (Sugiyono, 2013).

The data collection techniques in this study include observation, interviews, questionnaires, and tests (Sugiyono, 2013). Observations were carried out to find out the initial conditions of learning in the classroom. Interviews were conducted with teachers to identify the needs of learning media. The questionnaire was used to obtain data related to the feasibility and practicality of the developed media. The test is used to measure student learning outcomes after using learning media.

The research instruments used consisted of several types, namely material expert validation questionnaires, media expert validation questionnaires, language validation questionnaires, practicality questionnaires, and student response questionnaires. The material validation questionnaire was used to assess the suitability of the content with the curriculum and the correctness of the concept. Media validation questionnaires are used to assess the appearance, design, and presentation of media. Language validation questionnaires are used to assess language clarity, readability, and suitability. The practicality questionnaire is used to find out the ease of use of media by students. Meanwhile, the student response questionnaire was used to find out the level of interest and response of students to the developed learning media.

Table 1. Types of Research Instruments

No	Instrument Type	Description
1	Material validation questionnaire	Assesses content and conceptual suitability
2	Media validation questionnaire	Assesses appearance and design
3	Language validation questionnaire	Assesses clarity and readability
4	Practicality questionnaire	Assesses ease of use
5	Student response questionnaire	Assesses students' interest
6	Learning achievement test	Measures students' understanding

Data analysis techniques are carried out to determine the level of validity and practicality of the developed media. The analysis of product validity was obtained from

the results of the assessment of expert validators which included material experts, media experts, and linguists. The data is analyzed using the Likert scale and calculated in the form of percentages. The results of the analysis were used to determine the level of feasibility of learning media. The formula used to calculate the validity level of a product is as follows:

$$P = \frac{\sum X}{\sum X_{max}} \times 100\%$$

Information:

P = Score percentage

$\sum X$ = Total score obtained

$\sum X_{max}$ = Maximum score

The analysis of product practicality was obtained from the practicality questionnaire and student responses after using the learning media. The data was analyzed using percentage calculations to determine the level of ease of use of media. The results of the analysis were used to determine whether the developed media was practically used in learning.

Table 2. Validity and Practicality Criteria

Percentage (%)	Category
81-100	Very Valid/Practical
61-80	Valid/Practical
41-60	Fair
21-40	Poor
0-20	Very Poor

Source: Adapted from (Bannang et al., 2023)

The validity and practicality criteria in Table 2 are used to interpret the results of the assessment percentage from the validator and the student response. The data obtained in this study is in the form of quantitative data in the form of scores which are then processed into percentages. This percentage is then converted into a qualitative category to give meaning to the level of feasibility of the learning media developed.

Table 2 adapted from (Bannang et al., 2023) while maintaining the percentage range used in the original source. This range is used as a basis for determining the assessment category, where the higher the percentage obtained, the higher the level of validity and practicality of the learning media.

The conversion process from quantitative to qualitative data is carried out by grouping percentage values into certain categories, namely "very valid/practical", "valid/practical", "sufficient", "lack", and "very lacking". For example, a percentage in the

81–100% range is categorized as "very valid" or "very practical", indicating that the media has met most of the assessment indicators and is suitable for use without significant revisions.

Thus, the use of this criterion table helps researchers in interpreting the results of data analysis more systematically, so that it is not only presented in the form of numbers, but also in the form of qualitative descriptions that are easy to understand.

Result

This research produced a product in the form of interactive video learning media using Sparkol Videoscribe on plane geometry materials for grade III elementary school students. The media developed is in the form of animated videos with a duration of ± 8 –10 minutes that are systematically designed according to the learning flow.

The media structure consists of four main segments, namely (1) the opening section which contains the perception and learning objectives, (2) the presentation of the material which contains the concept of plane geometry materials, (3) the sample question section as an initial exercise, and (4) the interactive quiz section as an evaluation. The material presented includes the introduction of plane geometry shapes such as squares, rectangles, triangles, and circles, along with their properties.

Media presentation uses *whiteboard animation* combined with visual images, text, and audio narration. Concepts are presented in stages so that they can help facilitate the concretization of abstract material. In addition, student interaction is facilitated through interactive quizzes at the end of the video, so that students not only play the role of spectators, but also actively engage in the learning process. To clarify the form of the product produced, here are some of the main views of the learning media.



Figure 1. An Initial View of Interactive Video Learning Media

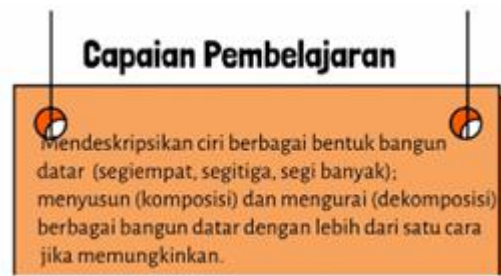


Figure 2. Learning Outcomes (CP) View

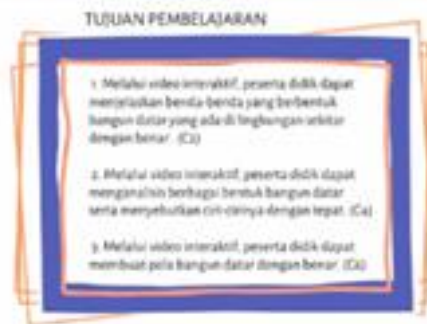


Figure 3. Learning Objectives (TP)



Figure 4. Initial Learning Questions View



Figure 5. Interactive activity display in videos



Figure 6. Plane Geometry Definition Question Display



Figure 7. Display of Plane Geometry Material



Figure 8. Plane Geometry Characteristics Explanation Display



Figure 9. Display of Triangle Plane Geometry Material



Figure 10. Square Plane Geometry Material Display



Figure 11. Display of Rectangular and Hexagonal Plane Geometry Materials



Figure 12. Display of Rectangular and Hexagonal Plane Geometry Materials



Figure 13. Plane Geometry Up Picture Guessing Practice Display



Figure 14. Practice View Matches Images Plane Geometry Names

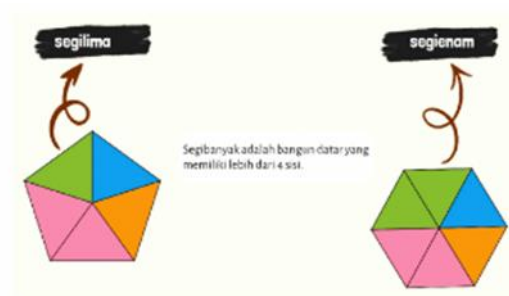


Figure 15. Plane Geometry Drawing Practice View



Figure 16. Media Development Profile View



Figure 17. Display of practice activities in learning media (guessing, matching, and drawing plane geometry)



Figure 18. Student Profile



Figure 19. Closing

Overall, the media display shows a systematic presentation that is in accordance with the characteristics of students and has the potential to attract students' attention. The development of learning media is carried out using the ADDIE model which includes *the stages of analysis, design, development, implementation, and evaluation*. At the *analysis stage*, information was obtained that mathematics learning is still dominated by the use of textbooks and conventional methods, so that students experience difficulties in understanding the concept of plan geometry material that are abstract.

Furthermore, at the *design stage*, the researcher compiles a storyboard, determines the material according to learning outcomes, and designs media components that include animation, narrative, and interactive quizzes. The *development stage* is carried out by developing media using Sparkol Videoscribe which is then validated by material experts, media experts, and linguists.

The validation process not only produces quantitative data in the form of assessment scores, but also provides a qualitative picture of the advantages and disadvantages of the developed media. In general, the validators assessed that the media already has good quality, but some improvements are still needed to make it more optimal for use in learning.

In the material aspect, the validator paid attention to the need to present more concrete and systematic concepts to make it easier for students to understand plane geometry material. In the media aspect, the input provided is related to improving the quality of visual displays, such as choosing more contrasting colors, audio clarity, and adding interactive elements to increase student involvement. Meanwhile, in the language aspect, the validator emphasized the importance of using simpler and communicative sentences to match the level of development of elementary school students.

Based on these various inputs, the researcher made revisions to the learning media, which included adding examples to each sub-material, improving visual appearance and audio quality, and simplifying the use of language. After going through the revision process, the media is revalidated and declared suitable for use in learning.

The *implementation* stage is carried out through a *limited trial* to determine the practicality of the media, while the *evaluation stage* is carried out as the final stage to improve the product based on the results of validation and trials that have been carried out.

1. Learning Media Validity Results

The assessment of media validity was carried out using a questionnaire instrument with a Likert scale (score range 1–5). The number of items consists of 10 items on the material aspect (maximum score of 50), 13 items on the media aspect (maximum score of 65), and 6 items on the language aspect (maximum score of 30). The score obtained is then processed into a percentage to determine the level of media validity.

Table 3. Learning Media Validation Results

Validation Aspect	Percentage (%)	Category
Material Expert	96,00	Very Valid
Media Expert	93,85	Very Valid
Languange Expert	90,00	Very Valid
Average	93,23	Very Valid

Based on Table 2, the validation results show that learning media has a very high level of validity. In detail, in the material aspect, a score of 48 out of a maximum score of 50 (96%), in the media aspect, a score of 61 out of a maximum score of 65 (93.85%), and in the language aspect, a score of 27 out of a maximum score of 30 (90%) was obtained.

The results show that the material presented is in accordance with learning outcomes, the media display is considered attractive and easy to use, and the use of language is communicative and in accordance with the level of student development.

2. Results of Practicality of Learning Media

The assessment of the practicality of the media was carried out through a questionnaire of teacher and student responses. The instruments used consisted of a Likert scale questionnaire for teachers (10 items, maximum score of 50) and a Guttman scale for students (8 items, maximum score of 8). The data obtained is then converted into the form of percentages.

Table 4. Results of the Practical Test of Learning Media

Respondets	Percentage (%)	Category
Teacher Response	96,00	Very Practical
Smal Group Trial	91,67	Very Practical
Large Group Trial	93,33	Very Practical
Average	93,67	Very Practical

Based on Table 4, the results of the practicality test show that learning media is very practical to use. The teacher's response obtained a percentage of 96.00%, which shows that the media is easy to use and helps in the delivery of material. The teacher stated that the media may make learning more engaging and makes it easier to explain the concept of plane geometry material.

In the small group trial, the percentage was obtained of 91.67%. Students show an interest in animation, color, and sound used in the media. Students show a positive response to the visual display used, which indicates that the medium has the potential to be helpful in understanding the material.

In the limited field trial, a percentage of 93.33% was obtained, which shows that the media is easy to use, attracts students' attention, and can assist in understanding the concept of building flat. Overall, the average practicality of 93.67% is included in the category of very practical, so the media is suitable for use in learning.

Discussion

The development of interactive video learning media using Sparkol Videoscribe in this study shows that the resulting product is not only technically feasible, but also in accordance with pedagogical learning needs. This can be understood through a systematic development process and the suitability of media characteristics with the needs of students.

The use of the ADDIE model provides a structured framework in developing learning media. Each stage, from needs analysis to evaluation, allows researchers to design and

refine products gradually. Thus, the media produced is not only design-based, but also departs from real problems in the classroom. These findings are in line with (Navarrete et al., 2025) which states that learning media can support the clarity of message delivery and has the potential to facilitate understanding of concepts.

At the design stage, the preparation of storyboards and the integration of visual, audio, animation, and interactive quizzes are important aspects in producing effective media. A planned design has the potential to produce more interactive learning and in accordance with the characteristics of students. It is supported by (Pratiwi & Rohmah, 2026) which states that good media design will result in more contextual and engaging learning.

Pedagogically, the use of Sparkol Videoscribe has the potential to contribute to facilitating students' understanding of the concept of building flat. Animations featuring geometric shapes allow students to observe the features of plan geometry such as the number of sides, angles, and shapes in a more concrete way. This visualization can help reduce the abstract nature of the material. In addition, the narration that accompanies the animation serves to clarify the information displayed. So that students not only see but also have the potential to understand the concepts conveyed. Interactive quizzes inserted in the media provide students with the opportunity to test their understanding firsthand. Thus, this media has the potential to support a more active and meaningful learning process. This is in line with (Saptono et al., 2023) which states that Videoscribe has the potential to create more visual learning and support learners' focus.

When viewed from the perspective of (Islam et al., 2026), these findings are supported by *Multimedia Learning Theory* which states that learning is more effective when information is presented through a combination of visual and verbal. In addition, *Dual Coding Theory* explains that information received through two channels (visual and verbal) tends to be easier to understand and remember (Taqiyya et al., 2026). In this context, Videoscribe media integrates both aspects through animation and narrative. On the other hand, the characteristics of grade III students who are in the concrete operational stage also support the use of visual media (Imani et al., 2025). At this stage, students are easier to understand concepts if they are presented in a concrete form and can be observed directly.

In terms of validity, the media developed shows the compatibility between the content, appearance, and use of language with learning needs. The suitability of the material with learning outcomes and the characteristics of students shows that the media has been designed in accordance with the assessment indicators used. This is in line with (Islam et al., 2026) who stated that content suitability is the main indicator in determining the quality of learning media. In addition, attractive visual appearance and communicative language also support the clarity of material delivery.

In terms of practicality, the positive response from teachers and students shows that it is still safe because it is based on practicality data. The teacher gave a positive response to the use of media in helping to convey the concept of building flat, which was previously difficult to convey concretely. Meanwhile, students showed an interest in the use of media, especially in the aspects of animation and interactivity. This shows that the media is not only easy to use, but also shows the potential in supporting student engagement. These findings are in line with (Johannsen et al., 2023) which states that practical media can support the effectiveness of learning. Although in this study, the effectiveness has not been directly tested.

However, the results of this study do not directly show an increase in student learning outcomes, but rather show that the media has the potential to support the visualization of concepts and obtain positive responses from users. Therefore, the use of this media is more appropriately seen as a means that can help the learning process, not as the only factor that determines the success of learning.

This research has several limitations. First, the number of research subjects is limited and only conducted in one school, so the results of the research cannot be generalized widely. Second, the trial was carried out on a *limited scale*, so it has not yet described the implementation in a broader context. Third, this study has not used an experimental design to test the effectiveness of media on student learning outcomes. In addition, the media developed is only limited to plane geometry materials.

Based on the overall discussion, interactive video learning media using Sparkol Videoscribe has the potential as a learning innovation that can support concept visualization, support student involvement, and can be used as a means to assist teachers in delivering material.

Conclusion

Based on the results of the research and discussion, it can be concluded that interactive video learning media using Sparkol Videoscribe on elementary school grade III plane geometry materials has been successfully developed through the ADDIE model which includes the analysis, design, development, implementation, and evaluation stages. The development process is carried out systematically from needs analysis to product evaluation, so that the media produced is designed according to the characteristics of students and learning needs. The validation results showed that the developed media was in the very valid category based on the assessment of material experts, media experts, and linguists. In addition, the results of the practicality test showed that the media obtained a very practical category based on the responses of teachers and students. Thus, the learning media developed is suitable for use in mathematics learning on plane geometry materials, especially on a *limited scale*. The implications of this study show that Sparkol Videoscribe-based interactive video media can be used as an alternative learning

media to support teachers in visualizing the concept of plane geometry materials. This media is relevant for elementary school students who are still in the concrete operational stage, so they need a clear and attractive visual representation to support visual understanding of concepts. The suggestion for further research is to test the effectiveness of the media in more depth through experimental design, such as the use of pretest and posttest or comparison between the experimental class and the control class. In addition, further research can also develop media on other materials or test the use of media on a wider scale to obtain more general results.

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