Development Of Interactive Learning Media Assisted By Filmora On Algebraic Forms Material

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***Abstract**.*

The objective of this research is to develop interactive learning media assisted by Filmora for algebraic forms material. The research and development model used is model by ADDIE stages (Analysis, Design, Development, Implementation, Evaluation). This study was conducted at MTs Muhammadiyah 1 Ciputat with the research subjects consisting of seventh-grade students and a mathematics teacher. The results show that the learning media assisted by Filmora is valid for use based on expert validation results, with an average score of 90.71% from media experts, 93.06% from material experts, and 92.72% from language experts. The small-group trial indicated that the Filmora-assisted learning media is highly practical, with student responses averaging 85.81% and teacher responses averaging 86.11%. Meanwhile, in the large-group trial, the students' response score averaged 88.87%, categorized as very practical. The effectiveness level was 80% in both the small-group and large-group trials. Based on these findings, it can be concluded that the Filmora-assisted learning media is valid, practical, and effective for teaching algebraic forms in mathematics. The results of this research are expected to benefit teachers, students, future researchers, and other related parties.

Keywords: *Learning Media, Filmora and Algebraic Forms.*

I. INTRODUCTION

Mathematics is an exact science that deals with structure, quantity, space, and change, emphasizing reasoning. The outcome of reasoning-related thought is what forms mathematics. Mathematics is also known as a deductive science because it involves undefined elements, defined elements derived from the undefined elements, axioms constructed based on both undefined and defined elements, and theorems whose validity has been proven. Mathematics is also an abstract science, which causes many difficulties for students during the process of learning mathematics.Students are required to think logically, which enables them to produce analytical and critical thoughts and further develop these thoughts into more creative ones. Mathematics is rooted in and grows from the real world; it is not merely a collection of symbols, numbers, or formulas unrelated to daily life. Mathematics plays an essential role in various disciplines and serves as the foundation for the development of science and technology. However, many students still experience difficulties in the process of learning mathematics, according to Fathani [1].The initial study conducted by the researcher during observations held from August to October 2024 at MTs Muhammadiyah 1 Ciputat revealed that the implementation of learning media in the school was still ineffective. Additionally, students experienced difficulties in learning mathematics, especially algebraic forms. Teachers only provided material in the form of Microsoft Word documents or Portable Document Format (PDF), which caused many students to lose interest and motivation to learn, as the use of learning media did not meet the students' needs.Learning media serve as tools that can assist in the learning process, help clarify the meaning of the information being conveyed, and ensure that the learning objectives are achieved.

Student engagement and creativity can also increase when learning media are used as learning aids [2], [3]. Many students struggled with algebraic operations such as addition, subtraction, multiplication, division, and exponentiation. Moreover, algebraic forms are a unifying thread in learning mathematics, making a solid understanding of the concept essential. Learning media continues to develop, including media that utilizes technology. Therefore, the use of learning media is important for considered in learning [4], [5]. Therefore, there is a need for innovative learning media to attract students' interest and motivate them to learn, thus preventing misconceptions about the concepts [6], [7].Based on the issues described, a solution is

needed, one of which is the development of a learning media using the iSpring Suite 9 application with the assistance of Filmora, resulting in interactive media that can be used on Android devices. This media is needed to help students foster motivation and interest in learning mathematics, particularly algebraic forms. The media can be used on Android devices with system version 4.1 (Jelly Bean) and above [8], [9], [10].The researcher chose to use Android-based media assisted by Filmora because most seventh-grade students at MTs Muhammadiyah 1 Ciputat typically use Android devices. The content of this media includes learning materials, instructional videos, and practice exercises. In creating this media, the researcher used PowerPoint to design the main interface and applied hyperlink functions, while iSpring was utilized to create interactive exercises that students could answer directly.

The instructional videos were developed with the assistance of Filmora. Once the materials and exercises were organized, the researcher converted the PowerPoint into the base for an Android application using the Web 2 Apk application.Relevant research was about Android-based Mathematics Learning Media for Linear Program Material [11]. This relevant research was motivated by the lack of teacher creativity in developing learning media to support the learning process, and the developed media was found to be valid and practical for use. Another relevant study was about the Development of E-Modules using iSpring Suite 9 Software [12]. This research focused on developing and producing electronic module products with the assistance of the iSpring Suite 9 application, which received positive responses from students.Meanwhile, the current research is motivated by the lack of learning media utilized by teachers during online learning, particularly for algebraic forms material. Therefore, the objective of this study is to develop an interactive Android-based learning media with the assistance of Filmora to create instructional videos enhanced with engaging audio and animations. This media is intended to serve as interactive learning media designed to help students learn algebraic forms and to assess its validity as well as students' responses to it.Based on the aforementioned issues, the researcher will conduct a study titled **"Development of Interactive Learning Media Assisted by Filmora on Algebraic Forms Material."** The application of mathematics learning models with Filmora-assisted e-learning media is also expected to comprehensively develop various aspects of students' lives, including cognitive, affective, and psychomotor domains. This learning approach aims to bring students closer to real-life contexts around them.

II.   METHODS

The research method used in this research is the development method or Research & Development (R&D). This method is a way to research, design, produce and test the validity of products produced scientifically [13]. The product that the researchers will develop is in the form of interactive learning media based on the android on algebraic material. This product will be tested for validity, practicality and effectiveness so that the product can be used in the learning process. The research model used in this research is the ADDIE (Analysis, Design, Development, Implementation, Evaluation) development model. This model is easy to apply to a curriculum that prioritizes aspects of knowledge, skills and attitudes [14]. This is in accordance with the curriculum used at MTs Muhammadiyah 1 Ciputat, namely the Independent Curriculum.

Researchers chose the ADDIE development model because this model provides opportunities for evaluation and revision at each stage so that the resulting learning media becomes valid, practical and effective media used in the mathematics learning process, especially in algebra form material.Analysis activities consist of analysis of needs, curriculum and student characteristics. The design stage is the design consisting of the initial design to the final design. At this stage, media design will be explained in detail starting from the initial design, preparation of material to preparation of questionnaire instruments. At the development stage, the media will be made according to the initial design. The media that has been developed will then be validated by experts. At the implementation stage, media that has been valid after going through the validation process will be tested on users. The trial consisted of two stages, namely small class trials and large class trials. The final stage is evaluation which aims to improve the media that has been developed.

III.   RESULT AND DISCUSSION

Analysis Stage (Analysis)

The researcher conducted initial observations at MTs Muhammadiyah 1 Ciputat which is located at Jalan Dewi Sartika Gang Nangka No.4 Cimanggis Ciputat, South Tangerang City, Banten Province, 15411. The curriculum used at this school is the independent curriculum. The observations made were that the researcher observed the online learning process where the teacher only provided learning material via Microsoft Word or PDF, whereas offline the teacher only explained the material with the help of textbooks and a whiteboard. As a result of researchers observing the learning process, information was also obtained that students felt they still did not understand and were not interested in the learning process carried out by the teacher. Therefore, a solution is needed in the form of developing learning media.

Design Stage (Design)

This stage contains the design of the android-based interactive learning media BERPIJAR from start to finish. The design consists of the initial display design, menu display, material display, practice question display, user guide display, and developer display. The design design stage was created using Microsoft Word with the following example.
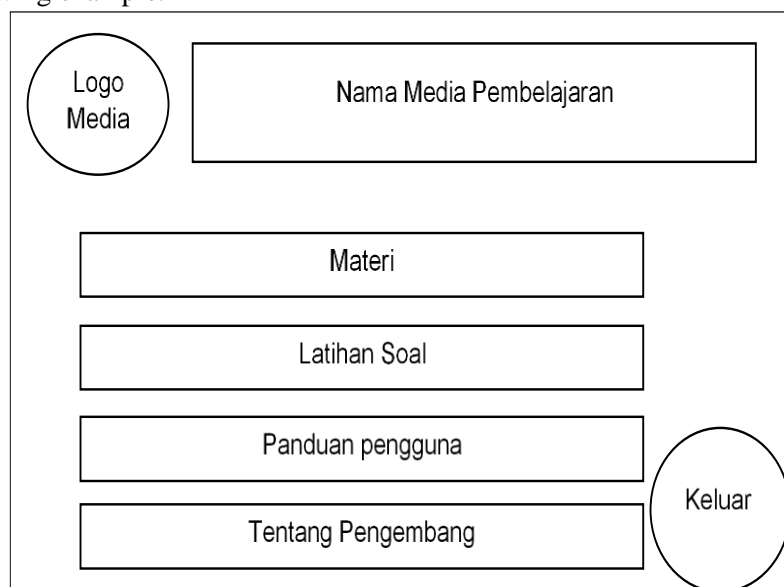

Fig 1. *Design* Product

Development Stage (Development)

In the process of developing interactive learning media based on glowing Android, the first step taken by researchers was to create a media display using Microsoft PowerPoint. Researchers also added a home icon and a back icon or next icon by using hyperlinks as a connection between slides so that they have a function like buttons on Android. Before activating the hyperlink, the ontouch option on the slide is disabled so that it has limited movement according to the buttons that the researchers have designed. Researchers collect basic overall design materials for media displays using www.canva.com. After the media display was completed, the researcher added a learning video created using Microsoft PowerPoint and an animation of the teacher teaching in GIF format using the web www.animaker.com. Researchers use the Ispring suite 10 application to create practice questions, where the practice questions can be filled in directly in the application and the results of working on the questions can be sent directly to the developer's e-mail. Ispring suite 10 can also help convert PowerPoint files into SWF format. Then, with the help of the Web 2 APK BUILDER application, the SWF format will be converted into HTML5 format, which is the basis for making Android applications.
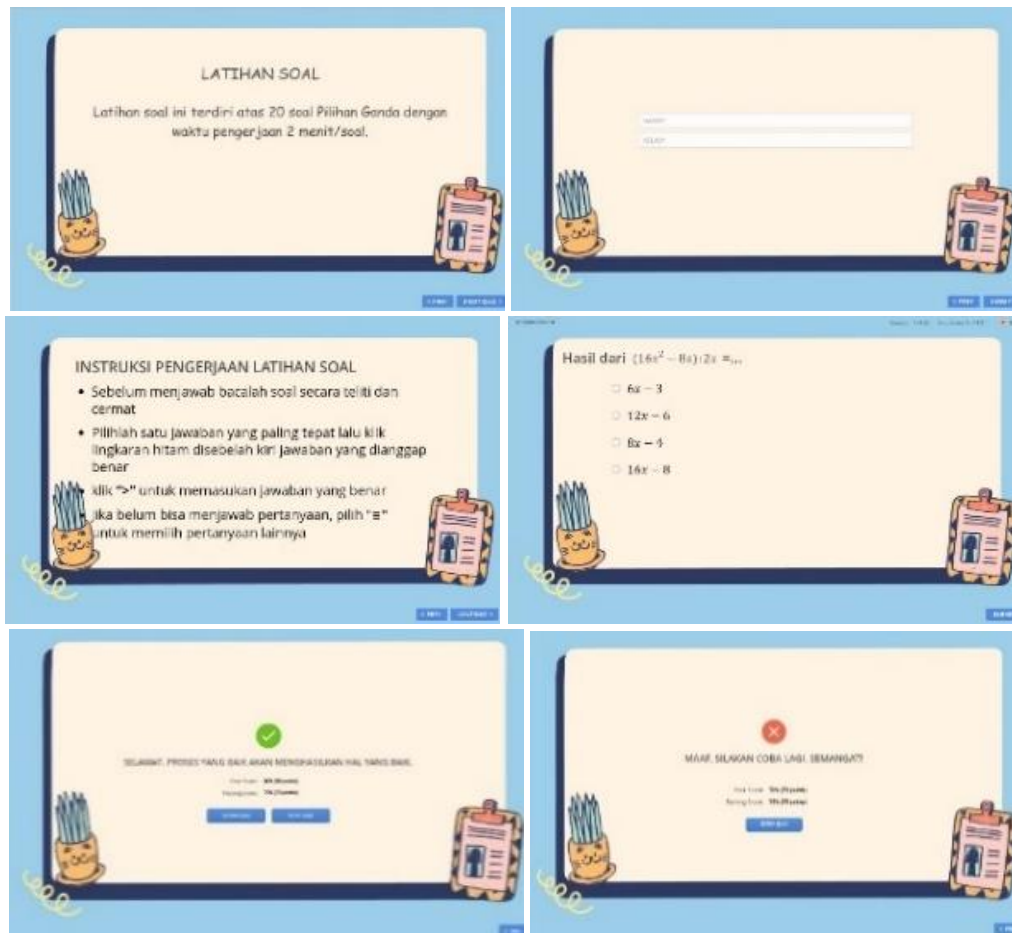
Fig 2. Display Practice Questions

The Android-based interactive learning media assisted by Filmora which has been developed by researchers will then go through a validation stage by several experts to determine the validity of the product that has been developed. Validation was carried out by 1 material expert, 2 media experts, and 1 language expert. The following are the results of the experts' assessments based on the questionnaire that was given.

Table 1. Media Expert Assessment Results

No	Aspect	Score (%)	Validity Category
1.	Graphic Feasibility Aspects	97,14	Very Valid
2.	Media Display Aspects	80	Valid
3.	Aspect of Media Use	95	Very Valid
Average Overall Score (%)		**90,71**	**Very Valid**

The media expert validator concluded that the glowing learning media is valid for use with reversal, namely changing the size of the letters that are too small but without revalidating. The percentage of scores resulting from media expert validation shows a range with $80 < P \leq 100$ an average score 90,71% in the very valid category.

Table 2. Material Expert Assessment Results

No	Aspect	Score (%)	Validity Category
1.	Content Feasibility Aspect	88,55	Very Valid
2.	Aspects of Presentation Component	88,88	Very Valid
Average Overall Score (%)		**88,72**	**Very Valid**

The material expert validator concluded that the material in the glowing learning media was valid to use without correction or revision. The percentage score from material expert validation results 2 shows a range $80 < P \leq 100$ with an average score of 88.72% in the very valid category.

Table 3. Linguist Expert Assessment Results

No	Aspect	Score (%)	Validity Category
1.	Aspects of Language Feasibility	92,72	Very Valid
Average Overall Score (%)		**92,72**	**Very Valid**

The language expert validator concluded that the language used in the incandescent learning media is valid for use with improvements, namely adding punctuation marks at the end of each sentence and correcting sentences according to suggestions but without revalidating. The percentage of scores resulting from media expert validation shows a range $80 < P \leq 100$ with an average score 92,72% in the very valid category. This means that the language used in Android-based interactive learning media is very valid.

Implementation

At the small class trial stage the researcher used 5 students to test student responses and the effectiveness of the media and 1 teacher to test teacher responses.

Table 4. Student Responses to Small Class Trials

No	Aspect	Score (%)	Practicality Category
1.	Material	78	Practical
2.	Language	94,60	Very Practical
3.	Interest	88,67	Very Practical
4.	Motivation	82	Very Practical
Average Overall Score (%)		**85,81**	**Very Practical**

Table 5, Teacher Response to Small Class Trial

No	Aspect	Score (%)	Practicality Category
1.	Material Coverage	80	Practical
2.	Suitability to Student Development	85	Very Practical
3.	Media Quality	93,33	Very Practical
Average Overall Score (%)		**86,11**	**Very Practical**

Based on the assessment results above, Android-based interactive learning media assisted by Filmora received an average score of 85.81% in the very practical category for student responses and 86.11% for teacher responses in the very practical category. There are no suggestions for improvement in this trial. This means that Android-based interactive learning media assisted by Filmora is practical and effective for large class trials.At the large class trial stage the researcher used research subjects of 20 class VIII students to test student responses.

Table 6. Student Response to Large Class Trial

No	Aspect	Score (%)	Practicality Category
1.	Material	83,50	Very Practical
2.	Language	92	Very Practical
3.	Interest	89	Very Practical
4.	Motivation	91	Very Practical
Average Overall Score (%)		**88,87**	**Very Practical**

Based on the results of the assessment above, Android-based interactive learning media assisted by Filmora received an average score of 88.87% in the very practical category. This means that learning media is practical to use.In this effectiveness test, researchers used the achievement scores of students' learning test results after using learning media. The effectiveness of the media is calculated based on the percentage of students who have a score that exceeds the KKM set by the school, namely 75. In the small class trial, there

were 4 students out of 5 students who had a score above the KKM with an average score of 80. This means the result of classical learning completion in small class trials, the effectiveness was 80% in the effective category. Meanwhile, in the large class trial, the number of students who scored more than the KKM was 16 students out of 20 students. So the students' classical learning completion results in the large class trial were 80% in the effective category. The average student score in the large class trial was 79. This means that Android-based interactive learning media is effective to use.

Evaluation

The evaluation stage is the final step in the process of developing Android-based interactive learning media assisted by Filmora. At this stage, researchers make improvements or revisions to perfect the media in accordance with suggestions given by expert validators and users so that the media can be used properly. The following are revisions made by researchers:

1. Replace the video explaining examples of questions that cannot be run.
2. Change the audio or sound in the discussion of the constant section of the learning video.
3. Changed the learning video on multiplication and division of algebraic fractions because the pronunciation was mixed up.
4. All navigation buttons have been increased in size.
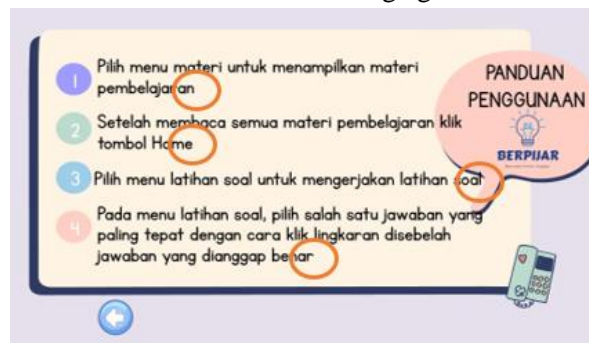5. Add punctuation marks at the end of each sentence in the usage guide section of learning media
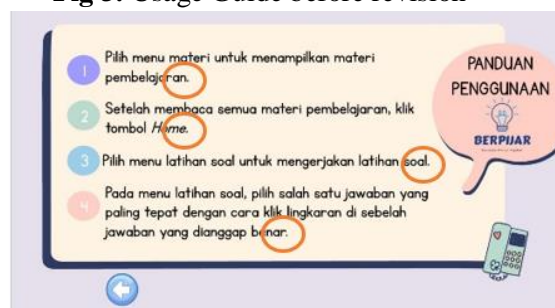

Fig 3. Usage Guide before revision

Fig 4. Usage Guide after revision

1. Change the instructions for working on practice questions and add punctuation marks at the end of each sentence in the instructions for working on practice questions in the learning media.
2. Add another form of the 7th property of the multiplication and division algebraic form.
3. Replace the opening sentence at the beginning of the definition of algebraic forms.
4. Replace the sentence in the steps to simplify compound fractions in algebraic form so that they are not ambiguous and are easier to understand.
5. Replace the sentence in the steps to simplify compound fractions in algebraic form so that they are not ambiguous and are easier to understand.
6. Replace the part of the example question that is still not quite correct in the multiplication form operation $(a + b)^2$.
7. Replace the part of the example question that is still not correct in the multiplication form operation $(a + b)(a - b)$.
8. Replacing the explanation section in algebraic form factoring $ax^2 + bx + c$ dengan $a \neq 1$.
9. Added instructions for filling in personal identification in the practice questions section.

IV.   CONCLUSION

Development of Android-based interactive learning media assisted by Filmora on algebraic material using the steps of the ADDIE research and development model. The results of the media validity assessment obtained an average score of 90.71% in the very valid category, the media practicality assessment obtained a score of 86.91% in the very practical category, and the media effectiveness obtained a score of 80%. This means that Android-based interactive learning media is said to be valid, practical and effective for use by class VII students in algebraic material.

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