

Development of Mathematics Learning Media Assisted by Sparkol Videoscribe Geometry Materials in Terms of Validity and Practicality

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ABSTRACT

This study aims to develop mathematics learning media assisted by Sparkol Videoscribe for mathematics students at STKIP PGRI Lubuklinggau on valid and practical geometry material. This research consists of several stages, namely define, design, develop and disseminate. This research is limited to the develop stage, this is due to the ongoing pandemic (Covid 19), so the disseminate stage is not possible to carry out. Validity analysis was carried out by displaying mathematics learning media assisted by Sparkol Videoscribe geometry material to the validator followed by the provision of a validation questionnaire. Practical analysis was carried out by giving questionnaires to students who were the subject of research and continued with giving questionnaires. Based on the results of the validity analysis conducted by the three validators, it is known that the sparkol videoscribe learning media that was developed meets the very valid criteria with an average score of 4.1. Based on the practicality questionnaire analysis conducted by the mathematical learning media assisted by Sparkol Videoscribe which was developed, it obtained an average score of 3.9 with very practical criteria.

Keywords: PMRI; Sparkol Videoscribe; Geometry.

1. INTRODUCTION

Geometry is one of the subjects taught from elementary school to college level, there are many things in everyday life that involve geometry. National Research Council (2009) [1] states that geometry is one of the basic methods used to understand and explain the surrounding environment, where people live and the movement of people in their environment. The objectives of learning geometry are to develop logical thinking skills, develop spatial intuition about the real world, impart knowledge needed for advanced mathematics, and teach how to read and interpret mathematical arguments [2]. If further reviewed, geometry occupies a very important order in the development of science and technology. The difficulties of students in learning Geometry include the following, namely students find it difficult to respond to the intent and purpose of the question, it is difficult to determine the beginning or the beginning of a proof, it is difficult to find ideas and ideas, it is difficult to apply definitions, properties, and theorems in constructing evidence, and students still find it difficult to think logically in

determining the correct steps of proof [2]. The dominant types of errors that occurred in the student's answer model were in the form of incorrect data errors, inappropriate procedures, response level conflicts, and skill hierarchical problems. One of the causes of student difficulties in learning geometry is due to the low intelligence aspect which is strongly influenced by the low mastery of three-dimensional geometry material for teacher candidates at the previous education level [3]. Based on the current facts, a solution that can be an alternative in geometry learning is needed, especially in the current pandemic era where face-to-face learning is very limited, where learning is generally carried out online. A multimedia-based teaching method with computer assistance or CAI (Computer Assisted Instruction) is one of the teaching methods used to help students learn and help teachers teach material interactively in a tutorial program using a computer application [4]. One application that can be used in learning mathematics is by using sparkol videoscribe which is one of the animated video learning media consisting of a series of images arranged into a complete video [5]. Sparkol Videoscribe is a learning application

that can be used in learning mathematics. The videoscribe application is an application that allows users to produce an animated video by inserting interesting pictures, either importing it from a computer or hard drive itself or using images in the library provided by this application [6]. Sparkol videoscribe is a learning media in the form of animated videos that are arranged from a series of images so that they become a complete video that has a distinctive animation in the form of hand animation that is writing [7]. Some of the features in this videoscribe sparkol can be accessed offline, but if they are online, the features that will be displayed are more and more varied. This Sparkol Videoscribe has also presented several instruments or backounds to be used in making videos, but if we don't want to use the backsound that has been presented by the Sparkol Videoscribe application, we can enter instruments that are already stored in our computer files as well as with images, we can include them. the image we want from a computer file or from an image that has been presented by the application So, it can be concluded that Sparkol videoscribe is an application for making videos whose characteristics are like a hand is writing a message or information to be conveyed. The results of the study by [8] resulted in a valid sparkol videoscribe-based learning media so that it was feasible to use. Likewise, research conducted by [9] produced valid and practical sparcoll videoscribe learning videos that could increase student interest and achievement. Similar research was also carried out by [10] resulting in a good and proper videoscribe-based learning media. Several previous studies underlie the development of learning media assisted by Sparkol Videoscribe. Furthermore, another thing behind the importance of developing learning media based on Sparkol Videoscribe is because we are currently in a condition hit by the COVID-19 pandemic which demands that learning can be done online, with the development of learning media based on Sparkol Videoscribe, it is hoped that it can help students master the subject matter. which will be studied.

2. RESEARCH METHOD

The research was conducted at the Teacher Training and Educational Sciences College (STKIP-PGRI) Lubuklinggau in the even semester of the 2020/2021 academic year in the Mathematics Education study program. Researchers used the Research and Development (R&D) method. According to Sugiyono [11] the research and development method is a scientific way to research, design, produce and test the validity of the products that have been produced. This research produces a product in the form of learning media Sparkol videoscribe. This research uses a modified 4-D model. In this study, it was limited to the develop stage, the disseminate stage was not carried out due to the

covid-19 pandemic. The research flow can be seen in the chart below.

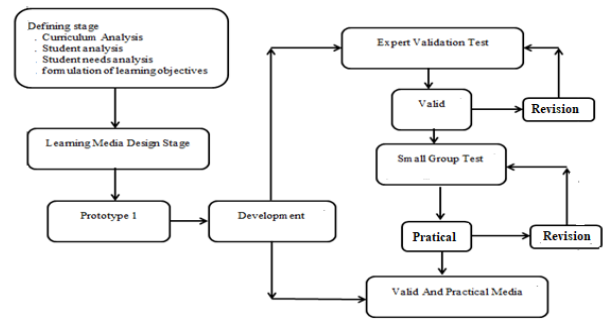


Figure 1 Sparcol Videoscribe learning media development model chart.

Data collection in this study used expert validation questionnaires and practicality questionnaires. Questionnaires were given to obtain data on the feasibility of the Sparkol videoscribe learning media for geometry material. Furthermore, the questionnaire was given to material experts, media experts, and grammar experts. In addition, a questionnaire was also given to determine the practicality of the developed media. Data analysis was carried out by analyzing the validation sheet/questionnaire for material experts, linguists, and media experts using a Likert scale. The same thing was also done to analyze student response questionnaires to find out the practicality of the media developed and continued by calculating the average score of all assessed aspects and changing the average score of all aspects into qualitative values according to the validity assessment criteria described in Table 1.

Table 1. Criteria level of validity [12]

Student Score	Modeling Ability Category
$X > 3,4$	Very valid
$2,8 \leq X \leq 3,4$	Valid
$2,2 \leq X \leq 2,8$	Quite valid
$1,6 \leq X \leq 2,2$	Not valid
$X \leq 1,6$	Very invalid

3. RESULTS AND DISCUSSION

This research resulted in a mathematical learning media assisted by sparkol videoscribe for STKIP-PGRI Lubuklinggau students that was valid and practical. The stages in this research are: (1) Define stage, in the define stage the researcher conducts an analysis consisting of curriculum analysis, student analysis, analysis of student needs and formulation of learning objectives. At the stage of curriculum analysis, researchers conducted a review of the curriculum for the mathematics education study program used at STKIP-PGRI Lubuklinggau, the results of the analysis revealed that the curriculum used in the mathematics education study program used the

KKNI curriculum. Furthermore, after the curriculum analysis was carried out, it was continued with student analysis, the aim was to find out the characteristics of students, including study habits in class, as well as learning styles carried out during the pandemic. (2) The design stage, at the design stage aims to prepare a prototype of learning media that will be developed. At the design stage, the researcher selects the learning media to be developed, in this case the learning media assisted by the Sparkol Videoscribe application which will be developed. The selection of learning media formats is also carried out at this stage by reviewing the formats of existing and developed devices. At this stage, the research instrument design was also carried out. The research instrument was arranged as a tool to take research data in the form of validation sheets by linguists, materials and media, user response questionnaires. This linguist instrument assessment sheet is prepared with 5 alternatives, namely Very Good (SB) with a score of 5, Good (B) with a value of 4, Enough with a score of 3, Poor (K) with a value of 2; and Very Poor (SK) with a score of 1. Furthermore, at the design stage an initial prototype of mathematics learning media assisted by Sparkol Videoscribe was produced. Here are some of the initial prototypes of the developed learning media.

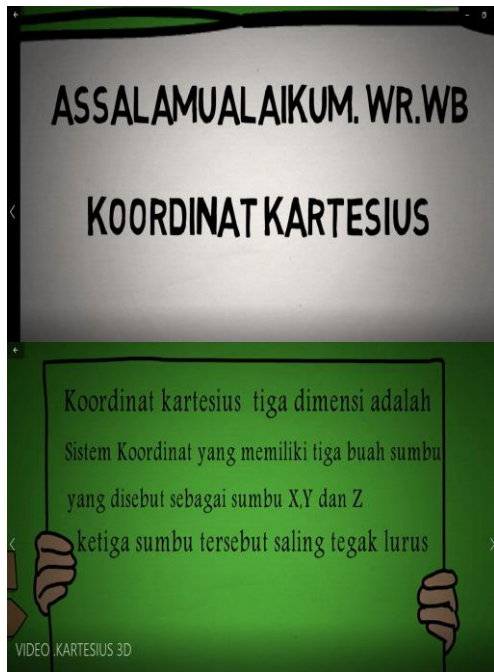


Figure 2 Early learning prototype developed.

The develop stage, at the develop or self-development stage, validation of learning media based on sparcol videoscribe by experts followed by revision, in this case validation was carried out by three experts consisting of material experts, media experts and linguists and tested in small groups (small groups). group) followed by a revision consisting of six students. There are several suggestions or inputs given by

linguists or language validators related to the learning media developed. Namely in the form of additional words and paragraphs in the developed learning media. The following are the suggestions of linguists regarding the developed learning media.

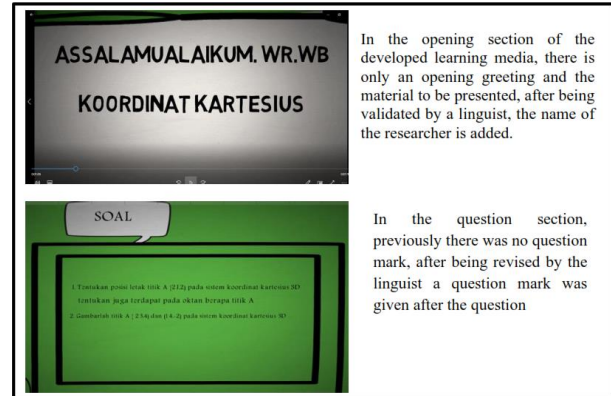


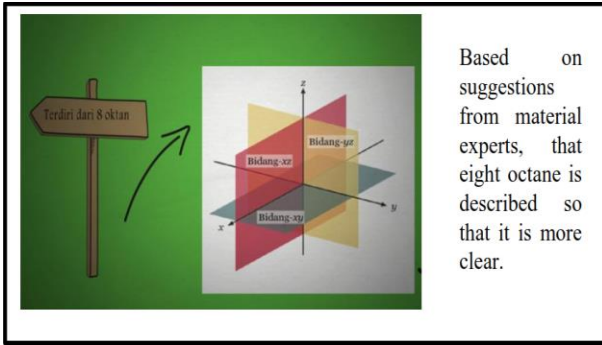
Figure 3 Suggestions of linguists regarding the developed learning media.

The results of the analysis of the validity of the sparkol video scribe-assisted mathematics learning media by linguists are presented in the Table 2.

Table 2. The result of the recapitulation of the Linguist Validation

No	Indicator	Maximum Value	Earned Value
1	straightforward	10	9
2	Communicative	5	4
3	Dialogic and interactive	5	4
4	Suitability with the development of students	15	12
5	Usage, term, symbol or icon	25	19
Total		60	48
Average Score		4	
Criteria		Very Valid	

The suggestions or inputs given by material experts or material validators are related to the developed learning media. That can be described as follows:.



Based on suggestions from material experts, that eight octane is described so that it is more clear.

Figure 4 The suggestions related to the developed learning media.

The results of the analysis of the validity of mathematics learning materials assisted by sparkol video scribe by material experts are presented in the Table 3.

Table 3. Material expert validation recapitulation results

No	Indicator	Maximum Value	Earned Value
1	Compatibility with basic competence	15	15
2	Material suitability	10	8
3	Clarity of the material presented	15	12
4	Ease of understanding the material	10	8
5	Ease of learning	10	8
Total		60	51
Average Score		4.25	
Criteria		Very Valid	

Based on the results of the validation carried out by media experts, researchers were asked to enter musical instruments when playing learning media, so that the learning atmosphere became more lively and fun. And this was followed by researchers by including musical instruments when the learning media was used during learning. The results of the analysis of the validity of the mathematics learning media assisted by sparkol video scribe by material experts are presented in the Table 4.

To determine the practicality of the developed mathematics learning media, a small group trial was conducted, then after the trial was completed, a practicality questionnaire was given to six students in the test group. Below is the documentation at the time of small groups. The following are the results of the student practicality response questionnaires presented in the Table 5.

Table 4. Media Expert Validation recapitulation results

No	Indicator	Maximum Value	Earned Value
1	Color combination	10	10
2	Ease of Navigation	10	8
3	Instructions Clarity	10	8
4	Button Placement	10	8
5	Font Compatibility	5	5
6	Font Size Compatibility	5	5
7	Readability of Text/Sentence	5	5
8	Background color match	5	4
9	Attractive Images and Animations	5	4
Total		65	57
Average Score		4.3	
Criteria		Very Valid	

Table 5. Practicality response questionnaire by students

No	Indicator	Maximum Value	Earned Value
1	Clarity of Instructions for Use	30	25
2	Clarity of Material Discussion	60	45
3	Clarity of Learning Flow	30	24
4	Practice Questions and Feedback	60	42
5	Ease of Use of the App	90	72
6	Giving Assistance in Learning	60	52
7	Independent Learning	90	79
8	Desire to Study Other Materials with Media video scribe	90	75
Total		510	414
Average Score		3.9	
Criteria		Very Practical	

Based on the results of the practicality response questionnaire, it shows that the learning media developed with the criteria for the media is very practical. Based on the results of the practicality response questionnaire, it shows that the learning media developed with the criteria for the media is very practical. The practicality of the product can be known through the student response questionnaire sheet [13]. The data obtained from the response questionnaire sheet is used as a reference to determine whether the product can be declared practical or not. Thus, it can be concluded that the learning media based on sparcol videoscribe that was developed is feasible to use.

4. CONCLUSIONS AND SUGGESTIONS

Based on the results of the validation of the three validators and the provision of response questionnaires, it can be concluded that the learning media developed is very valid and practical so that it can be used by students or lecturers in supporting learning activities in the classroom. Furthermore, the mathematics learning media developed in this study are still limited to one geometry material, namely three-dimensional Cartesian coordinates, so it is possible for other researchers to be able to develop learning media with other mathematics learning materials. In addition, in this study, the disseminate stage was not carried out due to the COVID-19 pandemic, therefore it is advisable for further researchers to carry out the disseminate stage on a wider scale.

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