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Development of Powtoon Animation Video Learning Media on Circle Materials at UPT SMP Negeri 06 Solok Selatan

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Abstract- This research is motivated by students who do not understand the material presented by the teacher because the teacher only conveys the material listed in the textbook so that make it difficult for students to understand the learning material. In addition, this study purpose to determine the validity and practicality of Powtoon animation video learning media on circle material. The development model used is the Plomp model. This learning media was created using the Powtoon application. The instruments used are validity sheets, practicality questionnaires, and interview guidelines to determine the validity and practicality of learning media. Based on the validation results on the development of Powtoon animation video learning media, the percentage is 86,31%. While the results of the practicality of teacher and students obtained a percentage of 93,2%. Thus, the Powtoon animation video learning media on the circle material is declared to be very valid dan very practical to use in learning.

1. Introduction

Learning mathematics is very important, because in everyday life mathematics is very useful ranging from simple problems to complex problems. According to Zulyadaini (2016) mathematics learning is a process of providing experience to students through a series of activities planned for students to gain the ability to learn mathematics. Circles are basic material that students must understand further to understand the following materials, including the curved side space, flat plane geometry, and space plane geometry. Therefore, if student's mastery of the material on the circle material is still lacking, students will have difficulty learning the next material.

In general, good learning actually requires students to be more active and motivated in learning a material. However, what has happened so far is not like that, most students only accept the explanation given by the teacher without providing other solutions from the knowledge that students find.

The results of observations showed that the teacher only explained the material listed in the book and the learning media used were only objects that were around the school. Students are less interested in the media used and get bored quickly because the media is less attractive, resulting in students having difficulty understanding the material and not using learning video media. Even though detailed explanations from the teacher, especially video explanations or tutorials, can provide a better understanding than just being given practice questions Batubara (2020). This is in line with the research conducted Gusmania and Wulandari (2018) stated that the use of learning videos in the learning process was effective in increasing students' understanding.

Currently, the development of teaching materials in Indonesia is still relatively small, including research by Zakirman and Hidayati (2017) developing teaching materials using Adobe Flash CS4 software applications, Cyberlink Power Director, Format Factory, Audacy, and Balabolka. Research by Setyoningtyas and Ghofur (2021) development of interactive instructor video learning media as an increase in student understanding. Furthermore, research by Nurwahidah, Zaharah and Sina (2021) concluded that the use of video media can increase students' learning motivation in following lessons.

The use of video learning media can certainly help students understand the material described, to develop it, one can use the Powtoon application. According to Anita Kardena (2021) Powtoon is a web-based application that is online in the form of animated videos that can facilitate understanding of the learning process so that students can receive and understand the material that has been designed by the teacher. Nuswantoro and Wicaksono (2019) argues that the Powtoon application is a provider of online animation content creators and functions as a maker of animated presentation videos and learning media. Opinion Julia and Saputra (2022) Powtoon application is an audiovisual-based media in the form of an online service to create a presentation that has very interesting animation features. This is in line with the opinion Fitriyani (2015) that the selection of Powtoon audiovisual learning media as a learning medium is very appropriate when used in the learning process because it has a variety of very interesting animation features in it.

Several relevant studies within the scope of Powtoon animation video learning media have been developed in the fields of mathematics, citizenship, and so on. Research by Awalia et al (2019) concluded that the Powtoon animation video learning media was effectively used in learning with an assessment percentage of 76.18% and was in the good category. Research by Febriani Putri (2021) shows that Powtoon learning media has a positive influence on student learning outcomes with the results of the percentage of student response questionnaires recapitulation of 97.7%. The research conducted (Fadhila et al., 2022) also shows that the Powtoon-based audio visual learning media deserves to be tested on students with a very valid category. The difference between the research that the researcher did with the previous research is that the researcher developed a Powtoon animation video learning media on circle material and used animations that were more interesting and in accordance with the material.

2. Methods

This research and development design uses the Plomp development model. According toRochmadThe Plomp model is considered more flexible and flexible than other development models and is considered suitable for use by undergraduate, postgraduate, and doctoral students who conduct research and development, because each phase of its activities is adjusted to the characteristics of the research. Plomp and Nieveen (2013) consists of 3 phases, namely preliminary research, prototyping phase, and assessment phase. In the preliminary research stage, needs analysis, syllabus analysis and textbook analysis were carried out. Then in the prototyping phase the product is designed and a formative evaluation is carried out on the product so that it becomes a good product. In the product design, self – evaluation, expert reviews, one to one evaluation and small group evaluation were carried out. This research was conducted in only two phases, namely preliminary research and prototyping phase. As for the assessment phase, it will be carried out in further research.

The research instruments used were validity sheets, practicality questionnaires, and interview guidelines to assess the validity and practicality of Powtoon animation video learning media on circle material.

The following are data analysis techniques in research. First, interviews were conducted to analyze the data in the form of criticisms and suggestions contained in the questionnaire that had been filled out by

the validator and respondent as a guide in developing the product. So, from the results of the analysis, it can be seen that there are deficiencies or improvements in the Powtoon animation video learning media. Second, analysis of the validity sheet and practicality questionnaire was carried out by calculating the level of validity and practicality of the product being developed. Calculations are carried out using statistical calculations and then described in accordance with the results obtained. Data from the questionnaire was calculated using a Likert scale.

Table 1. Learning Media Assessment Score

Symbol	Information	Weight
SS	Strongly agree	5
S	Agree	4
CS	Just Agree	3
TS	Don't agree	2
STS	Strongly Disagree	1

Source: Riduwan (2013:17)

The following is the formula for calculating the validation of the material, media and instrument Expert questionnaire:

$$N = \frac{S}{SM} \times 100\%$$

Where:

N = validity value
S = score obtained
SM = maximum score

Source: Riduwan(2013:18)

Table 2. Valid Categories of Powtoon Animation Video Learning Media

Intervals (%)	Category
$0 \leq N < 21$	Invalid
$21 \leq N < 41$	Not valid
$41 \leq N < 61$	Quite valid
$61 \leq N < 81$	Valid
$81 \leq N \leq 100$	Very valid

Source: Riduwan (2013:18)

While the product practicality calculation formula is calculated using the formula:

$$N = \frac{S}{SM} \times 100\%$$

Where:

N = practical value
S = score obtained
SM = maximum score

Source: Riduwan(2013:18)

Table 3. Practicality Categories of Powtoon Animation Video Learning Media

Intervals (%)	Category
$0 \leq N < 21$	Not practical
$21 \leq N < 41$	Less practical
$41 \leq N < 61$	Practical enough
$61 \leq N < 81$	Practical
$81 \leq N \leq 100$	Very practical

Source: Riduwan (2013:18)

3. Results and Discussion

(a) Preliminary Research Stage (Initial Investigation)

The initial investigation stage was carried out to identify the problems and needs of the developed Powtoon animated video learning media, the initial investigation stage was obtained through interviews with teachers and students (needs analysis), syllabus analysis, and textbook analysis.
Based on the results of the initial investigation, information was collected that students were less interested in the media used and quickly felt bored because the media was less attractive, resulting in students having difficulty understanding the material and not using instructional video media. So it takes an interesting learning media that contains materials, images, color designs and animations.

(b) Numbered Equations

The results of the observation of the Powtoon animation video learning media design were evaluated by the researchers themselves, then analyzed and revised before being given to the validator.

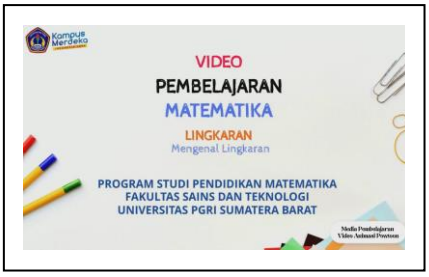

Figure 1. Initial view

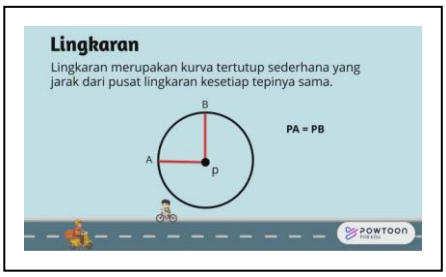

Figure 2. Content Display

Figure 1. This is an initial view of the developed learning media, designed as attractive as possible in order to attract the attention of students to watch the learning media and Figure 2. It is a display of the contents of the learning media, the content is made according to the material so that students understand the material with the right animations.
The results of the validation of the Powtoon animated video learning media were carried out by three validators, namely two lecturers of the Faculty of Science and Technology, and one mathematics teacher at SMP Negeri 7 Sijunjung to assess the validity of the Powtoon animation video learning media design. The validation results can be seen in the following table 4.

Table 4. Learning Media Validation Results

Validator	Validation Results (%)
Material Expert 1	81.67%
Material Expert 2	82.67%
Media Expert	90.22%
Average	84.85%

Table 4. shows that the average material expert and media expert is 84.85% with a very valid category, so the Powtoon animation video learning media has criteria that are suitable to be used and corrected according to the validator's suggestions. Then a one-on-one evaluation was carried out to clarify the results of the validation with three students who had heterogeneous abilities.
Students watch, understand and work on the problems given on the Powtoon animated video learning media, then interviews are carried out one by one with students. After the interviews, it can be concluded that (1) the Powtoon animation video learning media is very interesting, (2) the language used is clear and easy to understand, (3) the material is easy to understand, (4) the pictures and animations are precise and interesting, (5) the questions are easy to understand. the questions given are in accordance with the material, (6) the Powtoon animation video learning media is easily accessible anywhere.
The results of the practicality of the Powtoon animated video learning media were carried out by one mathematics teacher and six students who had heterogeneous abilities to test the practicality of the

Powtoon animated video learning media. Practical results were obtained from practicality questionnaires and interviews. Students differ by subject to one-on-one evaluation. Practical results can be seen in the following table 5 and table 6.

Table 5. Practical Results of Powtoon Animation Video Learning Media by Teacher

No	Aspect	Percentage
1	Attractiveness	100%
2	Ease of access	95%
3	Benefits obtained	100%
4	Learning time efficiency	95%
Average		97.5%

Table 6. Practical Results of Powtoon Animation Video Learning Media by Student

No	Aspect	Percentage
1	Attractiveness	86.67%
2	Ease of access	85.56%
3	Benefits obtained	93.33%
4	Learning time efficiency	90%
Average		88.89%

Based on the table above, the results of practicality by teachers have met the very practical category with an assessment percentage of 97.5% and the results of practicality by students have met the very practical category with an assessment percentage of 88.89%. This is in line with the research results Latifah and Maiyena (2021) with the practical results meet the very practical category with the percentages of 85.28% and 85.29% respectively, proving that the media can increase learning motivation both offline and online.

The results of the interview obtained information that the use of Powtoon animation video learning media in the learning process at school and at home became more interesting. Students said that the Powtoon animation video learning media could help them understand the material easily, as well as the display of images, writings, animations that were also clear and interesting. The interviews carried out included questions about students' opinions on the appearance of the media, the language used, the animations and images used, the questions given, the ease of access and the efficiency of learning time.

Based on the results of practical questionnaires and interviews, it can be concluded that the Powtoon animation video learning media on circle material can and is easily used by students as learning media at school and at home.

4. Conclusion

Based on the research and development of Powtoon animation video learning media on the circle material that has been implemented, it can be concluded that the developed Powtoon animated video learning media is very valid with a percentage rating of 86.16%. The content of the Powtoon animation video learning media is adapted to the needs of students, the language used is in accordance with Indonesian rules and is easy to understand, the design of the Powtoon animation video learning media is attractive in terms of illustrations, colors, and the selection of the right animated images. The Powtoon animation video learning media developed is also very practical with a 93.2% rating percentage. The characteristics of the Powtoon animation video learning media attract the attention of students because there are material in the form of writing, animation, and pictures.

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