Powtoon Animation Video Based on Contextual Approach in Elementary School Mathematics Learning

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A R T I C L E   I N F O

A B S T R A K

Kurangnya penggunaan media atau alat pendukung dalam proses kegiatan belajar mengajar dan minimnya materi yang disajikan membuat proses pembelajaran kurang bermakna. Penelitian ini bertujuan untuk menciptakan media pembelajaran berupa video animasi powtoon berbasis pendekatan kontekstual pada pembelajaran keliling dan luas segitiga untuk siswa kelas IV SD. Penelitian ini merupakan penelitian pengembangan yang menggunakan model penelitian ADDIE. Metode yang digunakan adalah kuesioner dengan pemberian berupa instrumen lembar penilaian yang diberikan kepada 2 ahli materi, 2 ahli media, 2 orang praktisi, dan 5 orang siswa. Instrumen yang digunakan dalam penelitian adalah rating scale. Data yang telah didapatkan kemudian akan dianalisis dengan menggunakan rumus Mean untuk mendapatkan rata-rata skor validitas media. Hasil nilai rata-rata validitas media video animasi powtoon berbasis pendekatan kontekstual dari ahli materi sebesar 4,83 dengan kualifikasi sangat baik, ahli media sebesar 4,83 dengan kualifikasi sangat baik, praktisi sebesar 4,83 dengan kualifikasi sangat baik, dan respon siswa sebesar 4,75 dengan kualifikasi sangat baik. Maka dapat dikatakan bahwa media pembelajaran video animasi powtoon berbasis pendekatan kontekstual yang dikembangkan pada pembelajaran keliling dan luas segitiga dinyatakan valid dan dapat digunakan dalam pembelajaran siswa kelas IV SD. Implikasi dari penelitian ini yaitu siswa bisa belajar menggunakan media khususnya media video animasi powtoon.

A B S T R A C T

The lack of media or supporting tools in teaching and learning activities and the lack of material presented make the learning process less meaningful. It can cause the learning process to be less effective, and students will become less familiar with the material being taught. This study aims to develop learning media in animated Powtoon videos based on a contextual approach to learning the circumference and area of a triangle for fourth-grade elementary school students. This research is development research that uses the ADDIE research model. The method used in this study is a questionnaire with the provision of an assessment sheet instrument given to 2 lecturers as material experts, two lecturers as media experts, two teachers as practitioners, and five students. The instrument used in this study is a rating scale. The data that has been obtained will then be analyzed using the Mean formula to get an average media validity score. The results of the average value of the validity of the Powtoon animation video media based on the contextual approach from material experts was 4.83 with very good qualifications, from media experts 4.83 with very good qualifications, from practitioners 4.83 with very good qualifications, and student response of 4.75 with very good qualifications. So it can be said that the Powtoon animation video learning media based on the contextual approach developed in learning the circumference and area of a triangle is valid and can be used in learning for fourth-grade elementary school students.

1. INTRODUCTION

Mathematics is one of the most important and basic sciences because learning mathematics trains critical, logical, analytical, and systematic skills (Hardian, 2019; Winoto & Prasetyo, 2020; Wiryanto, 2020). Therefore, mathematics is taught from elementary school to the university level. However, we do not realize that there are simple problems in learning basic mathematics at the elementary school level but have a broad

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application (Aprilla, 2020; Suci et al., 2019; Sulistyaningrum et al., 2018). Mathematics learning is emphasized reasoning, developing critical, logical attitudes, and skills in applying mathematics, so students must have the ability to understand mathematical concepts as the main prerequisite (Arianti et al., 2019; Wulandari & Rakhmawati, 2019). Therefore, elementary school teachers play an important role in conveying mathematical concepts to students at a concrete level (Ponza., 2018). Teachers must also review aspects that affect learning objectives, especially in learning mathematics. Therefore, learning media tools are needed to attract students' interest in learning. Learning media as media used in activities or processes as well as the objectives of learning activities (Batubara & Ariani, 2016; Faidah et al., 2019; Pamungkas et al., 2018). Using learning media in the teaching and learning process is expected to generate interest and motivation in students. In addition, learning media is also expected to help improve student understanding and present material interestingly (F. F Dewi & Handayani, 2021; S. Novita & Pratama, 2019; Yusnia, 2019). Learning media is a tool, means, intermediary, and liaison to spread, carry, or convey messages and ideas, so that it can stimulate students' thoughts, feelings, actions, interests, and attention so that the learning process occurs well in students (Sukarini & Manuaba, 2021; Suseno et al., 2020). The current reality is that the learning media used by teachers in teaching are mostly obtained from the internet, where the presentation of the material is still dominated by the teacher and is fixated on textbooks (Sundari & Indrayani, 2019). In addition, teachers tend to have difficulty making learning media, especially on material that explains a concept (Sundari & Indrayani, 2019). Therefore, improving the quality of teaching and learning and learning achievement can be done by selecting learning media. The results of the initial interview with the fourth-grade teacher of SD Negeri 1 Tegalbadeng Barat for the 2021/2022 academic year on November 6, 2021, show that so far, the learning process in fourth-grade media has only been used to look for learning video media on the internet and do not make the learning video media themselves. The content of the video media is only in the form of the material presented without being accompanied by an explanation of the material. In the learning process, the teacher lacks activity in explaining the material presented to students. Teachers dominate conventional learning methods (lectures, exercises, assignments). The lack of media or supporting tools in teaching and learning activities and the lack of material presented make the learning process less meaningful. This, of course, can cause the learning process to be less effective, and students will become less familiar with the material being taught.

One alternative way of solving the problem is using learning video media. The media developed is the animation video Powtoon media. Animated Powtoon videos are cartoon animation videos that can be filled with the subject matter and can be used as learning media for elementary schools because of their interesting nature and suitable for elementary school children (Achmad et al., 2021; Fifit Fitria Dewi & Handayani, 2021; Hardiyanti et al., 2020). Powtoon is an online web program available on the internet and serves as a place for making videos for presentations and learning media (Pais et al., 2017; Pangestu & Wafa, 2018). Powtoon learning media has the characteristic that it contains materials in learning that are packaged in the form of animations so that they can attract students' desires to make it easier to understand learning materials (Anjarsari et al., 2020). Besides being interesting, this Powtoon learning media is very effective for use in elementary schools because many animation options are already in the Powtoon application, so we no longer need to create animations manually. Learning media in elementary schools must be interesting because of the nature of elementary school students who prefer to play rather than study (Wuryanti & Kartowagiran, 2016). Therefore, the media must be targeted and effective so elementary school students can receive the material delivered. A learning video is needed that can relate the material to the real life of students or use a contextual approach to convey a clearer message from abstract material (Sudiarta & Sadra, 2016; Sukarini & Manuaba, 2021). The contextual approach to learning aims to assist teachers in linking learning materials and integrating learning ideas into real-life contexts, hoping that students can understand what they are learning well and easily (Octavyanti & Wulandari, 2021). The contextual approach is a learning approach that emphasizes the process of full student involvement to be able to find the material being studied and relate it to real-life situations, thus encouraging students to be able to apply it in their lives (Nanda et al., 2017; Suastika & Rahmawati, 2019; Sutriyono & Adha, 2020)(Suarjana et al., 2017). The findings of previous research stated that mathematics learning using Powtoon on social arithmetic material was valid, practical, and effective (Kusumawati & Setyadi, 2022). Mathematics subjects on perimeter and area of flat shapes using PowToon animation learning media can provide understanding to fourth graders (Awalia et al., 2019). Learning videos can make it easier for students to understand learning materials to be suitable for use in learning (Achmad et al., 2021). Elementary school teachers play an important role in delivering mathematical concepts to students at a concrete level. Therefore, it is necessary to have learning media that supports the teaching and learning process. Seeing the importance of learning media as an intermediary in conveying information, the development of this Powtoon animation video media can be used as a solution to overcome problems in the learning process. Powtoon animation video media in learning can provide a new nuance by concretely visualizing the concept and displaying it for real. There is a need for animated Powtoon video media that relates the material to student's real life based on a contextual approach To convey a clearer message. This study aims to create a Powtoon animation video media based on a contextual approach to learning the circumference and area of a triangle for fourth-grade students. The existence of animated Powtoon video media

based on a contextual approach can improve students' understanding abilities because students can help teachers distribute the material to students, are independent in learning, and provide direct learning experiences.

2. METHOD

This type of research is developed using the ADDIE development research model. The ADDIE model is a systematic and structured learning model programmatically to solve learning problems related to learning resources (Tegeh & Kirna, 2013). The ADDIE model is suitable for various product development, such as models, learning strategies, learning methods, media, and teaching materials (Azka dkk, 2019). The ADDIE model was chosen in this study because it can provide an opportunity to evaluate each stage, thereby minimizing the shortage of products developed. The ADDIE model consists of five stages: the analysis stage, the design stage, the development stage, the implementation stage, and the evaluation stage.
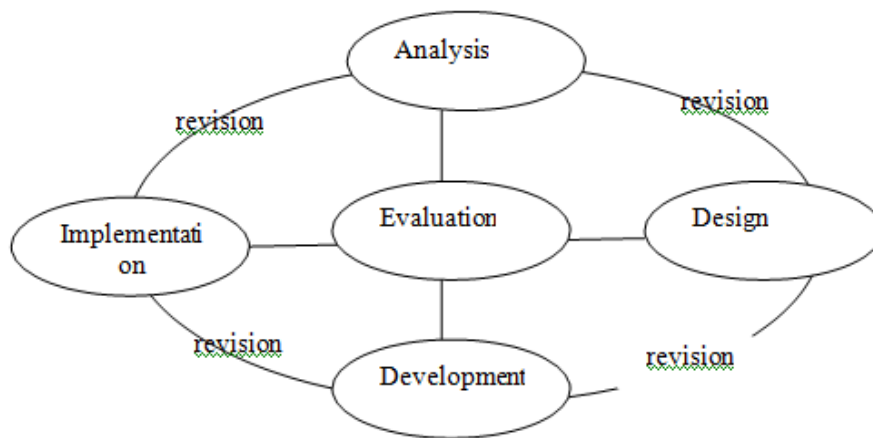

Figure 1. ADDIE Approach to Developing Products in the Form of Learning Designs
(Fauzi & Budi, 2015)

Powtoon animation video media that has been developed will then be tested by several experts, namely material experts, media experts, and practitioners. This was done to determine the feasibility of the Powtoon animation video media based on a contextual approach to the learning process. Two material expert lecturers carried out the validation, two media expert lecturers, and two practitioners as practitioners. This individual trial will involve 3-5 fourth-grade SD Negeri 1 Tegalbadeng Barat students. Collecting data in this study using interviews and questionnaires. This study uses a rating scale instrument. A rating Scale is a method that can be used to build a rating system. Rating Scale assessment is based on a certain scale from low to high. This study uses an instrument on a scale of 1-5, namely very good (5), good (4), sufficient (3), less (2), and very poor (1). Several stages must be completed by making an instrument grid and compiling instruments to find their validity. The validation sheet grids and the validation instruments for the Powtoon animation video media are presented in Tables 1, 2,3, and 4.

Table 1. Material Expert Validation Sheet

No.	Aspect	Indicator	Number of Items
1	Relevance to subjects	Suitability with Basic Competencies.	1
		Suitability with Indicator.	1
		Suitability with learning objectives.	1
		Suitability with learning materials.	1
2	Education value	Powtoon animation video media can get messages or information using more than one sense.	1
		The suitability of the topic/material.	1
		The accuracy of Powtoon animation video media to foster student interest and curiosity.	1
3	language	The suitability of the use of language rules.	1
		Ease of understanding the language is easy for students to understand.	1
4	Durability	The Powtoon animation video media durability is used for a long time.	1

No.	Aspect	Indicator	Number of Items
5	Efficiency	Ease of using Powtoon animation video media.	1
		Ease of accessing Powtoon animation video media.	1
6	Security	The security of animated Powtoon videos for students to watch.	1
7	Aesthetics	The attractiveness of animated elements in the media.	1
		Color combination compatibility	1
	Total		**15**

(Indriani et al., 2017; Zidny et al., 2017)

Table 2. Media Expert Validation Instrument Grid

No.	Aspect	Indicator	Number of Items
1	Relevance to subjects	Suitability with Basic Competencies.	1
		Suitability with Indicator.	1
		Suitability with learning objectives.	1
		Suitability with learning materials.	1
2	Education value	Powtoon animation video media can get messages or information using more than one sense.	1
		The suitability of the topic/material.	1
		The accuracy of Powtoon animation video media to foster student interest and curiosity.	1
3	Language	The suitability of the use of language rules.	1
		Ease of understanding the language is easy for students to understand.	1
4	Durability	The Powtoon animation video media durability is used for a long time.	1
5	Efficiency	Ease of using Powtoon animation video media.	1
		Ease of accessing Powtoon animation video media.	1
6	Security	The security of animated Powtoon videos for students to watch.	1
7	Aesthetics	The attractiveness of animated elements in the media.	1
		Color combination compatibility	1
	Total		**15**

(Indriani et al., 2017; Zidny et al., 2017)

Table 3. Practitioner Response Instrument

No	Aspect	Indicator	Number of Items
1	Relevance to subjects	Suitability with Basic Competencies.	1
		Suitability with Indicator.	1
		Suitability with learning objectives.	1
		Suitability with learning materials.	1
2	Education value	Powtoon animation video media can get messages or information using more than one sense.	1
		The suitability of the topic/material.	1
		The accuracy of Powtoon animation video media to foster student interest and curiosity.	1
3	Language	The suitability of the use of language rules.	1
		Ease of understanding the language is easy for students to understand.	1
4	Durability	The Powtoon animation video media durability is used for a long time.	1
5	Efficiency	Ease of using Powtoon animation video media.	1
		Ease of accessing Powtoon animation video media.	1

No	Aspect	Indicator	Number of Items
6	Security	The security of animated Powtoon videos for students to watch.	1
7	Aesthetics	The attractiveness of animated elements in the media.	1
		Color combination compatibility	1
	Total		**15**

(Indriani et al., 2017; Zidny et al., 2017)

Table 4. Student Response Instrument

No.	Aspect	Indicator	Number of Items
1	Education value	The suitability of the topic/material.	1
		The accuracy of Powtoon animation video media to foster student interest and curiosity.	1
2	language	The suitability of the use of language rules.	1
		Use of language that is easy for students to understand.	1
3	Durability	Media resistance is used for long periods.	1
4	Efficiency	Ease of use of Powtoon animation video media.	1
		Ease of accessing Powtoon animation video media.	1
5	Aesthetics	The attractiveness of animation elements on Powtoon animation video media.	1
		The compatibility of color combinations on the Powtoon animation video media	1
	Total		**9**

(Indriani et al., 2017; Zidny et al., 2017)

The content validity test was carried out using the Gregory formula. After calculating the content validity using the Gregory formula, the next step is to determine the category of the content validity coefficient. Qualitative descriptive analysis is a method of data processing carried out by systematically compiling numbers or percentages regarding an object under study to obtain general conclusions (Widiana, 2016). This study's qualitative descriptive analysis method was used to analyze the needs and input from suggestions/comments. The content validity coefficients based on the criteria are presented in Table 5.

Table 5. Content Validity Coefficient Criteria

Coefficient	Validity
0,80-1,00	Very high content validity
0,60-0,79	High content validity
0,40-0,59	Medium content validity
0,20-0,39	Low content validity
0,00-0,19	Very low content validity

(Sutama dkk, 2014)

3. RESULT AND DISCUSSION

Result

The development of animated Powtoon video media based on a contextual approach for fourth-grade elementary school students is carried out in stages, namely through the analysis stage, the design stage, and the development stage. The implementation stage occurs when the developed media is declared suitable for use. But at this stage, it was not carried out because the research only reached the development stage. Due to limited costs, time, and resources, it was not carried out at the implementation and evaluation stages. In addition, the implementation and evaluation stages require further experimental research to measure the effect of animated video Powtoon media on student learning outcomes in elementary school. First is the analysis stage (analyze). The analysis stage, which is analyzed in this section, namely, needs analysis, curriculum analysis, student characteristics analysis, and media analysis. The needs analysis phase aims to identify the needs of students and teachers (availability of learning materials and media needed) and collect information about what kind of animation video media is and how students and teachers need it as users. At the stage of curriculum analysis, a search was conducted on the curriculum used by the school. At this stage, learning objectives are selected to

harmonize the objectives of developing learning media and learning objectives. Elementary school students tend to get bored faster with monotonous learning, especially learning that is difficult for students. Most students have bright ideas. Sometimes, students find it difficult to express their thoughts. If this is not handled properly, then learning becomes less than optimal. Therefore, teachers must provide learning media to stimulate students' desire to learn. Optimizing learning must be supported by school facilities. Learning objectives are determined based on Basic Competencies and Indicators. The results of the curriculum analysis are presented in Table 6.

Table 6. Basic Competencies, Indicators, and Learning Objectives of Fourth Grade Mathematics

Basic Competencies	Indicator	Learning Objectives
3.7 Explain and determine the perimeter and area of a triangle.	3.7.2 Grouping various shapes of triangles.	1. After observing the Powtoon animation video media, students can group various triangle shapes.
4.7 Solve problems related to the perimeter and area of triangles.	3.7.3 Identify the formulas for the perimeter and area of a triangle.	2. After observing the animated Powtoon video media, students can identify the formula for the perimeter and area of a triangle.
	4.7.1 Calculate the perimeter and area of a triangle.	3. After observing the Powtoon animation video media, students can calculate the perimeter and area of a triangle.
	4.7.2 Analyze how to determine the perimeter and area of a triangle.	4. After observing the Powtoon animation video media, students can analyze how to determine the perimeter and area of a triangle.

Design stage: At this stage, Powtoon animation video media design is based on a contextual approach. This stage begins with compiling a storyboard and determining the material to be developed based on the results of the analysis that has been done previously. The material chosen is the circumference and area of a triangle for fourth-grade elementary school students. Next, the Powtoon animation video media design was compiled. The designs made were material design and media design. The design of the material is arranged according to the main objective, namely developing the material through the animated video portion media. In the media design, a Powtoon animation video is made using an online POWTOON web, lasting 14.50 minutes. In addition, techniques are designed in making Powtoon animation video media based on a contextual approach with the support of music, animation, or images following the material discussed, namely the circumference and area of a triangle. The storyboard of the Powtoon animation video media design based on a contextual approach is presented in Figure 2.

Figure 2. Storyboard of Powtoon Animation Video Media Design Based on A Contextual Approach

Third, in the development stage, the production of animated Powtoon video media is based on a contextual approach based on a design in the form of a storyboard that has been prepared previously. As for the parts of the animated Powtoon video media based on the contextual approach that has been made, namely opening, core material, and closing. After the animated Powtoon video was made, product trials were conducted to determine the developed media's validity. The product trial carried out was an expert test through a review stage by two lecturers as material experts, two lecturers as media experts, two teachers/practitioners, and five students. The results of the assessment from material experts got an average score of 4.83, which was very good, and the assessment from media experts got an average score of 4.83, which was very good. So the animated Powtoon video media based on a contextual approach to learning the circumference and area of a triangle for fourth-grade elementary school students does not need to be revised. The assessment results from practitioners

got an average score of 4.83, which was in very good qualification, and the results of the assessment from students got an average score of 4.75, which was very good. So the animated Powtoon video media based on a contextual approach to learning the circumference and area of a triangle for fourth-grade elementary school students does not need to be revised. Inputs, suggestions, and comments from expert lecturers and practitioners can be seen in Table 7.

Table 7. Feedback, Suggestions, and Some Comments from Experts and Practitioners

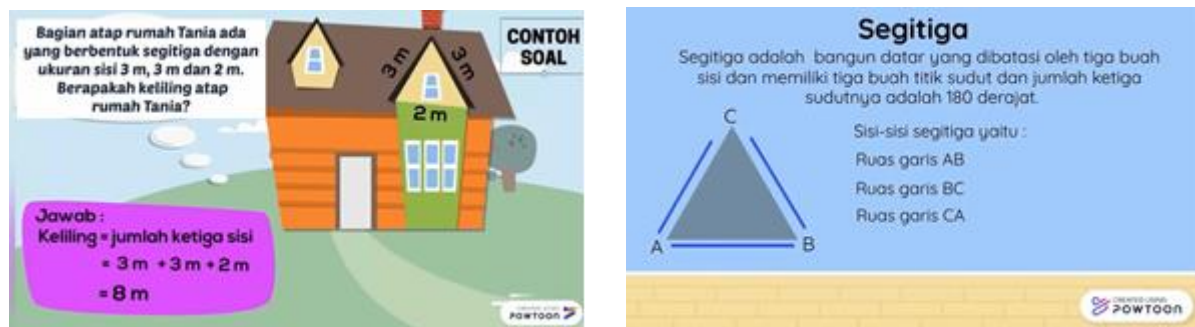| No.	Feedback, Criticism, and Suggestions
1	In the definition of a triangle, a line segment is added.
2	In the first example of the problem around the triangle, the problem is replaced with the roof of Tania's house.
3	Added the identity of the supervisor at the end of the video.

Figure 3. Powtoon Animation Video Media Products Are Based on A Contextual Approach

Discussion

This study uses the ADDIE development model. The ADDIE development model was chosen because it is systematic and can be used in various conditions, making it possible to use this model until now (Cahyadi, 2019). Powtoon animation video media based on a contextual approach to learning the circumference and area of a triangle has been validated with a very good predicate so that Powtoon animation video media based on a contextual approach is feasible to use in the learning process. It can be seen from several aspects. The first is the material aspect. The material/content is interesting and easy to understand, the learning objectives are conveyed, and the material level is delivered according to the characteristics of the students in the animated Powtoon video media based on a contextual approach. Learning material with a simple appearance and according to student characteristics will make it easier for students to understand the material (Nanda et al., 2017; Rasvani & Wulandari, 2021). Learning media is a tool used to help channel messages from senders and recipients so that they can stimulate students' thoughts, concerns, feelings, and interests (Ar et al., 2021; L. N. P. K. Dewi et al., 2021; Pranata & Jayanta, 2021). Learning media greatly affects student learning outcomes (Tegeh et al., 2019a). Learning media can attract interest in learning, student learning motivation, and good learning outcomes. Learning media can attract interest in learning, student learning motivation, and good learning outcomes (Tegeh et al., 2019b; Utama et al., 2021). Both design aspects, clarity of text and sound, visual quality, animated characters, and overall appearance, are good. The selection of easy-to-read text, clear voice and musical accompaniment, the use of interesting background, and the suitability of the various animated characters are good. The clarity of voice and text is important in learning media because it can focus and attract students' attention (Prabawa & Restami, 2020). In addition, the use of media through image media in audio-visual/video can improve student learning outcomes because students easily understand the material (L. Novita et al., 2019; Syahroni et al., 2020). Students will be more interested in participating in learning if learning activities use interesting learning media such as pictures or sounds (Fitria, 2018; L. Novita et al., 2019). The contextual approach to learning aims to assist teachers in linking learning materials and integrating learning ideas into real-life contexts, hoping that students can understand what they are learning well and easily (Sulastri, 2016; Sutriyono & Adha, 2020). Through this contextual approach, the teacher will link learning materials to real-world situations so that learning is more meaningful by integrating contextual-based learning media into solutions faced by teachers in improving student learning. This finding is reinforced by previous findings, which state that learning mathematics using Powtoon on social arithmetic material is valid, practical, and effective (Kusumawati & Setyadi, 2022). Mathematics subjects on perimeter and area of flat shapes using PowToon animation learning media can provide understanding to fourth-grade students (Awalia et al., 2019). Learning videos can make it easier for students to understand learning materials, so they are suitable for use in learning (Achmad et al., 2021). The Powtoon animation video developed differs from the previous Powtoon animation video because no one has developed a Powtoon animation video based on a contextual approach and the perimeter and area of a triangle. In addition, the media is developed using a web Powtoon with a complete

background, music, and animation to attract students' interest. This media was developed based on the results of a needs analysis by distributing questionnaires to fourth-grade students of SD Negeri 1 Tegalbadeng Barat so that this contextual approach-based animation video media can be a solution to overcoming existing problems. This research implies that students can learn to use the media, especially the animated video Powtoon. In addition, the teacher is helped in conveying the material about the circumference and area of a triangle. Not only that, but teachers must also develop their creativity in utilizing media for the learning process. The principal must also guide teachers to utilize media in learning through direct coaching and seminars or workshops to increase teacher creativity. However, this research has limitations; namely, the research stage is carried out only until the development stage. Due to limited costs, time, and resources, the implementation and evaluation stages were not carried out. In addition, the implementation and evaluation stages require further experimental research to measure the effect of animated video Powtoon media on student learning outcomes in elementary school. Therefore, further research can develop similar media on different subjects. In addition, this research can be continued by testing the effectiveness of the Powtoon animation video media in experimental research.

4.   CONCLUSION

Powtoon animation video media based on a contextual approach to learning the circumference and area of a triangle has been validated with a very good predicate so that Powtoon animation video media based on a contextual approach is feasible to use in the learning process. In addition, in the learning process, teachers are expected to be able to use animated Powtoon video media. This Powtoon animation video media can make it easier for teachers to explain learning materials.

5.   REFERENCES

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