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by Wahju Kusumajanti

Development of Spinner Educational Media with the Assistance of Interactive PowerPoint in Basic Mathematics Learning

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ABSTRACT

This study aims to develop and test product quality based on the validity, practicality, and effectiveness of Spinner Education media and Interactive PowerPoint. This research uses the R&D or Research and Development method and refers to the ADDIE development model which consists of the Analysis stage, the Design stage, the Development stage, the Implementation stage, and the Evaluation stage. The results of the material validation analysis carried out by the researcher obtained a percentage of 89%, and media validation obtained a percentage of 89%. The results of the practicality analysis of the media get a percentage of 90% of the teacher's response and get a percentage of 91% of the student's response. At the analysis stage of the effectiveness of the media to get a mastery learning presentation of 83%. So that it can be concluded, the development of Spinner Education media assisted by Interactive PowerPoint in elementary school mathematics learning is feasible, practical, and effective so that it is feasible to apply in mathematics learning for multiplication material.

Keywords: development, media spinner education, interactive PowerPoint

INTRODUCTION

Education is the main need carried out by the community, families, and the government through guidance, teaching and training activities that take place in schools throughout life to prepare students to receive education in the future and live well in the future. education is an indicator of a country's progress and what is able to support future development is education that is able to develop students so that the person concerned is able to face and solve the life problems they face (Lestari et al. , 2020).

The Ministry of National Education (2003) explained that the N education system regulated in Law No. 20 Year 2003 explained that the notion of education is a conscious and planned effort that is contained in the goal of national education and education in elementary schools, namely, to create a learning atmosphere and a process of learning activities with the aim of actively developing one's potential to have religious spiritual power, self-control, personality, intelligence, noble character, as well as having the necessary skills in himself and in the environment of society, nation and state. Teachers are educators who play an important role in the development of education, especially those held formally in schools, especially in terms of the learning process. Guru is the main factor in creating successful learning in schools. Education can be said to be successful, one of which is if the teaching and learning process can be carried out effectively and efficiently. In the opinion of Munawir et al. (2022)

guru is also not only a class teacher, but is also expected to educate training students. Teachers also have roles and functions that cannot be separated from one another, namely in the form of teaching, guiding, educating, and training skills. Integrative Ability has several skills, meaning that Among from one another cannot be separated oleh anything. Based on the above problems, it is necessary to have a medium so that learning continues to run effectively even in online learning. Active welding needs to be maintained, the use of learning media is a significant thing. This can arouse different enthusiasm, interests and desires, generate motivation and have a stimulus in carrying out learning activities (Nadia et al., 2022).

According to Afiani and Putra (2017) conveying information in learning is very important but keep in mind that not only conveying information, teachers are also required to be able to create an effective learning process in order to guide students to be able to communicate, develop creativity and of course be able to solve One of the problems faced in the learning process, especially mathematics learning, is by using learning media during the learning process. The media used aims to encourage the enthusiasm and motivation of learning students in order to get the desired results (Subakti, 2020). Therefore, it will be better for every learning to use learning media that is interesting and easy to understand by students.

The formation of creative and dynamic learning services is the choice

of educators in order to change the way students view mathematics and make the learning system more dynamic by including students in the learning process. One of the learning media that can include students in learning mathematics is by utilizing game media. This is in accordance with the opinion of Puteri and Mintohari (2022) stating that learning is needed to increase student enthusiasm and motivation in participating in learning that can support learning success. In this regard, the role of interesting learning media is needed in the delivery of learning materials.

Based on the results of the author's observations when conducting research at SD Muhammadiyah 13 Surabaya which lasted for 2 months from October-December 2022 which was carried out face-to-face at school, there was a problem that students lacked focus and seemed to pay less attention to the teacher when delivering the material. Students are also less eager to follow the learning process. There are some children who are busy playing alone with their deskmates, but there are also some students who pay attention to the teacher. Researchers will do one of the learning media that can be applied by teachers is to apply game media in order to create learning that is not monotonous so that students are not bored and fun.

The use of games can be used as a learning asset in the classroom that can develop the abilities of students. By playing, the student is stimulated to explore his imagination. Imagination is the ability of the individual to combine the experiences he has with certain situations that generate new behaviors

(Puteri & Mintohari, 2022). Researchers apply one medium that supports learning to be more practical and exciting, namely the game *Spinner Education* or commonly called *roulette*. The game is shaped like a circular wheel that can be rotated and has several color parts in its sides. This *Spinner Education* game can be modified according to the need for learning Fractional Material Mathematics. Mathematics requires complex and logical reasoning skills so it is important to train oneself to master concepts and premises gradually. This requires the cooperation of parties involved in the learning process, the implementation of appropriate learning models and strategies, as well as a conducive environment and support teaching and learning activities (Naila & Sadida, 2020).

There are several previous studies that are relevant, namely the first, research conducted by Huda (2020) in the study said that the use of Spinning Wheel media can improve Qawaid Nahwu learning outcomes in grade VII students at Darul Qur'an Wal Irsyad Islamic Boarding School. This is evidenced by the assessment results between *pretest* and *post-test*, there is a significant increase. In the *pretest*, students obtained an average score of 63.43, while after the trial, namely doing a post-test, students increased by getting an average score of 83.53. So with this, it can be concluded that the Spinning Wheel media can improve the learning and learning outcomes of Qawaid Nahwu Santriwati class VII students by 20.1%.

There are several previous studies that are relevant, namely the second, research conducted by Arum Syah Puteri and Mintohari (2022) The results of the material validation analysis that have been carried out by researchers get a percentage of 88%, and material validation gets a percentage of 90%. The results of the media practicality analysis get a percentage of 90% of the educator's response and get a percentage of 90% of the student response. At the analysis stage, the effectiveness of the media received a presentation of learning completion of 84.61% and the results of the N-Gain analysis with a moderate category with a value of 0.65. So that it can be concluded that the Spinning Wheel learning media is suitable for use in the learning process in elementary schools.

The educational media that grew up at this time were very diverse, ranging from those with general media, conventional and so on. Along with the development of the period, educational media based on Data and Communication Technology (ICT) began to be interestedin by teachers. One of the ICT type media that is commonly used is interactive PowerPoint media (Jazlina et al. , 2022). The presence of Interactive PowerPoint can help the world of education become more interesting and exciting. PowerPoint Interactive can also help students to learn actively so that students have a learning experience instead of hearing guru teach. Media P ower Point Interactive can also make it easier for educators to provide module descriptions so that education can be easily understood by students (Purwanti et al. , 2020).

Based on the description above, the objectives of this study: 1) tofind out the development process of *the Spinner Education* lesson program assisted by p ower point interactive in class IV material in sekolah dasar . 2) youto know the validity of media p learning *Spinner Education* assistedan p ower p oint interactive p there is material pecahan class IV in s ekolah dasar . 3) youneed to know the practicality of *Spinner Education* learning media assistedby powerpoint Interactive on the material pecahan class IV in sekolah dasar . 4) youto know the effectiveness of the media p learning *Spinner Education* assistedan p ower p oint interactive on the material pecahan class IV in sekolah dasar . Based on this goal, I conducted a development research entitled "Development of Media *Spinner Education* assisted by Interactive PowerPoints in Elementary School Mathematics Learning"

RESEARCH METHODS

This research and development (R&D) typeuses a type of research and development (R&D). Research and Development (RnD) is a research method used to produce certain products, and test the effectiveness of those products (Tusriyanto, 2020). Research and development is a process or steps by researchers to develop a new product or improve an existing product for which the results can be accounted for.

This research and development is used by researchers to develop learning media in the form of Spinner *Education*

assisted by PowerPoint Interactive in mathematics learning subjects fractional material grade IV elementary school. In this development research refers to the ADDIE development model by Dick and Carry, this development model has 5 stages, namely *Analysis*, *Design*, *Development*, *Implementation*, and *Evaluation*.

Figure 1. ADDIE Development Model (Sugiyono 2018)

The stages of the ADDIE development model by dick and carry, there are 5 stages of description below: (1) At the analysis stage, researchers analyze by making observations and interviews with students and teachers at SD Muhammadiyah 13 Surabaya when carrying out research at SD Muhammadiyah 13 Surabaya which lasts for 2 months from October-December 2022. The problem is that students lack focus and seem to pay less attention to the teacher when delivering material. Students are also less eager to follow the learning process. There are some children who are busy playing alone with their deskmates, but there are also some students who pay attention to the teacher. Therefore, one of the learning media that can be applied by teachers is to apply game media in order to create learning that is not monotonous

so that students are not bored and fun. The use of games can be used as a learning asset in the classroom that can develop the abilities of students. By playing, the student is stimulated to explore his imagination. Imagination is the ability of an individual to combine the experiences he has with certain situations that generate new behaviors and new experiences. (2) At the design stage, researchers design *Spinner Education* media and continue to make Interactive PowerPoint-assisted fractional materials at the product development stage using a series of components that have been prepared at the design stage. (3) At the development stage, the development steps in this research include activities to create and modify learning media and teaching materials. In the design stage, a conceptual framework for the development of teaching materials has been prepared, in the development stage the conceptual framework is realized in the form of teaching material media development products that are ready to be implemented in accordance with the objectives. In carrying out the steps of developing teaching materials, there are two important objectives that need to be achieved, including: 1) Producing or revising teaching materials that will be used to achieve the learning objectives that have been formulated, 2) Choosing the best teaching materials that will be used to achieve learning objectives (Cahyadi 2019) . The data collection technique carried out in this study used a questionnaire sheet, namely a questionnaire. The data collection instruments used are validation

instruments and student responses after the learning media trial. Expert validation consists of two material experts and two media experts, product validation that has been carried out by material experts and media experts to determine the validity or feasibility of the media that has been created. (4) At the implementasi stage, the researcher applies the product from the results of the media development stage. The trial was carried out by implementing *Spinner Education* learning media assisted byinteractive PowerPoints containing ecahan material. The implementation stage is the application of product designs that have been developed in real situations for limited development trials in schools selected as research sites (Sari and Harjono 2021). At this stage, the teacher carries out learning activities with the help of media that have been developed after which the researcher conducts an evaluation to give feedback on the next application of the media. (5) Furthermore, the last stage, namely the evaluation stage, evaluation is carried out to improve the learning media that has been tested based on the results of the observation of responses and questionnaires that have been given by students. The purpose of this evalution is to analyze media vadity, media feasibility and student learning interests after using the media developed at the implementation stage.

Research instruments used in data collection in *Spinner Education* media development research assisted byInteractive PowerPoints are as follows: (1) Expert Validation Sheet, consisting of two studies, namely material expert validation and media expert validation. Furthermore, validators are asked to provide a general assessment and advice on the Spinner Education media assisted by the Interactive PowerPoint that has been developed, whether the *Spinner Education* and Interactive PowerPoint media that have been created have been said to be valid or invalid. The analysis technique used Validity test aims to measure the accuracy of the media developed. Validation of *Spinner Education* and Interactive PowerPoint media is carried out by a team of media experts and materials developed using a Likert scale with 5 assessment scales according to (Sugiyono 2018) acategory that will be explained in the table as follows:

Table 1. Assessment Category on the Likert Scale (Sugiyono 2018)

No	Grading Scale	Information
1.	5	Highly Valid
2.	4	Valid
3.	3	Quite Valid
4.	2	Tidak Valid
5.	1	Highly Invalid

The next step after getting the validation score value results is to categorize the score values on a likert scale, then the data obtained will be processed using the following formula:

$$V_{ah} = \frac{\sum \text{Skor yang diperoleh}}{\sum \text{Skor maksimal}} \times 100\%$$

Information:
$V_{a}h$ = Expert Validity

Summing up the results of the percentage calculation is matched with the average validity:

Table 2. Media Eligibility Criteria (Sugiyono 2014)

Value Prone	Information
81% - 100%	Highly Valid
61% - 80%	Valid
45% - 60%	Quite Valid
21% - 44%	Tidak Valid
<20%	Highly Invalid

(2) Questionnaire/Questionnaire Sheetis a technique for collecting data or information through forms containing questions that can be addressed to respondents or a group of people in the organization to get responses or answers that will be analyzed by parties who have a specific purpose (K.Y.S. Putri 2020). This analytical instrument is used to measure the practicality of teacher and student responses to *Spinner Education* media assisted by Interactive PowerPoint using questionnaire sheets. The data on the questionnaire questions or statements in writing to respondents for this were filled out by students and teachers at the end of the trial (Sugiyono, 2018).

Table.3 Guidelines for Assessment Scales for Student and Teacher Response Questionnaires

No.	Shoes	Information
1.	5	Very Agree
2.	4	Agree
3.	3	Simply Agree
4.	2	Disagree
5.	1	Highly Invalid

(Sugiyono, 2018)

The formula used to calculate the average score on each criterion and developed by researchers is as follows:

$$x = \frac{\text{Jumlah Skor Yang diperoleh}}{\text{Total Skor Maksimal}} \times 100\%$$

(Sugiyono 2018)

Information:

x = Number of Teacher or Student Responses

The categories that will be explained in the table are as follows:

Table 4. Benchmark Guide Assessment Guidelines

No.	Presented	Criterion
1.	81%-100%	Very Practical
2.	61%-80%	Practical
3.	41%-60%	Quite Practical
4.	21%-40%	Less Practical
5.	0-20%	Impractical

(Akbar and Holid 2013)

(3) This test instrument is used to determine the effectiveness of Spinner Education media assisted by Interactive PowerPoint through student learning outcomes test questions after using *Spinner Education* and Interactive PowerPoint media. Effectiveness in *Spinner Education* and Interactive PowerPoint media can be said to be effective if the percentage of the value of the effectiveness aspect shows that learning after using the media students are completed with good categories. According to Afiani & Faradita (2022 in Anwar, 2019) defines that students must have the ability to understand concepts in order to be able to apply the understanding of fractional concept material and be able to operate a fractional calculation. Instrumen analysis of test sheets using analisis The effectiveness of learning media, untuk know the results of students from doing the questions that have been given. According to (Sudjana 2009) the formula for calculating the effectiveness of student learning outcomes classically is as follows:

$$DP = \frac{F}{N} \text{ x } 100\%$$

Information:
DP= Percentage value or result
F= Number of completed students
N= Total number of students

The learning outcomes test indicator is said to be effective if the learning outcomes of students with a KKM score of 80 reach 75% of the total number of students.

RESULTS AND DISCUSSION

The results in this study researchers produced an Interactive PowerPoint-assisted Spinner Education media product to improve students' mathematics learning ability.

Media Product Results

The main result of this study is Media *Spinner Education* and Interactive PowerPoint applying the ADDIE development model by Dick and Carry, this development model has 5 stages. The stages of product development are as follows: (1) Analysis, this stage consists of stages to find out the needs and availability of these media that focus on the development of student education. In the stages of analysis determine such things as; analysis of learning media needs, analysis of the availability of learning media, material analysis, and analysis of learning objective targets. Based on the condition of students, researchers think that the difficulties experienced by students in the subject matter are caused by students' lack of interest in mathematics, so solutions are needed in solving these problems. Therefore, researchers want to develop *Spinner Education* media assisted byInteractive PowerPoints that contain fractional material, to increase the interest of students to be more interested in mathematics lessons. (2) Design, The second stage is carried out design related to the development of this media. The media to be developed is *Spinner Education* media assisted byInteractive PowerPoint. In this design stage, there are several steps that will be prepared related to the development of *Spinner Education* media assisted by Interactive PowerPoints on fractional materials, namely the definition of fractional numbers and types of fractional numbers. The components of making *Spinner Education* are DVD dynamo (as a rotating machine), support wood and paperboard (as a spinning wheel round). The components of creating Interactive PowerPoints that contain fractional material that will be studied first by students are the intro (Opener), the Content section (material) and the closing part. (3) Development, At this stage, the creation of *Spinner Education* and Interactive PowerPoint media will be used based on the design in the previous stage, namely:

Table 5. *Spinner Education* Media Development Results
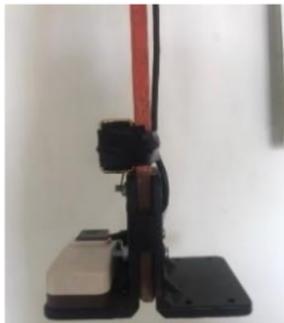
No.	Development Results
1.	(*Spinner Education* button body display and assembly)
2.	(*Spinner Education* rotary wheel view)

Table 6. Interactive PowerPoint Development Results

No.	Development Results
1.	(Interactive PowerPoint main display)

2.

(Menu View)

3.

(Display Instructions for Use)
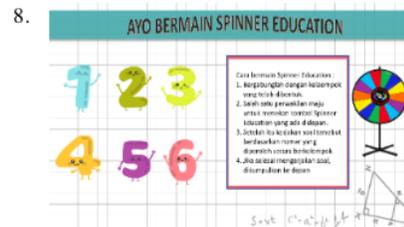
4.

(Learning Objectives View)

5.

(Material)

7.

(Individual Quiz Display)

8.

(Linkage display to play Media Spinner Education)

9.

(Profile View)

The results of the Research Instruments used in data collection in the research on the development of *Spinner Education* and Interactive PowerPoint media are as follows:

Validity Test Data

The results of the Research Instruments used in data collection in the Spinner Education media development research assisted by Interactive PowerPoints in Mathematics Learning are as follows, namely validity test data, this assessment test was obtained from the four validators on the *Spinner*

Education media and Interactive PowerPoint. Material expert validation consists of 2 material experts at the educational level who will assess the material at the Interactive PowerPoint, the first material expert from the 4th grade homeroom teacher at SD Muhammadiyah 13 Surabaya because they have the ability in the field of Mathematics. The second material expert is a permanent lecturer of the Elementary School Teacher Education Study Program, University of Muhammadiyah Surabaya. Media expert validation, this validation is intended to assess the appearance on the *Spinner Education* and Interactive PowerPoint media. Validation of media experts was carried out by lecturers at the University of Muhammadiyah Surabaya, namely Mr. Ade Firmannandya, S.I.Kom., M.I.Kom and a grade 6 teacher, Mrs. Dwi Lestari Suciwati, S.Pd.

Table.7 Expert Validator Data

No	Members	Presented	Average Percentage	Kartegori
1.	Material Expert I	94%	4,7	Very Decent
	Material Expert II	84%	4,2	Very Decent
2.	Expertwithhe I	88%	4,4	Very Decent
	Media Member II	90%	4,5	Very Decent

Based on the results of the analysis obtained by researchers for the development of *Spinner Education* media assisted by Interactive PowerPoints in Mathematics Learning fractional material for grade IV elementary school, reviewed from the results of the validity of material experts and media experts. The results of the validity of the material expert with aspects of the suitability of the material, and the accuracy of the language used. The validity results of the two validators developed by the researchers obtained validity and a percentage of 89% of these categories including "Very Feasible" in the level of media validity. The validity value obtained can be interpreted as Media *Spinner Education* assisted by Interactive PowerPoint in Mathematics learning in accordance with the criteria for preparing learning using Interactive PowerPoints that are good and suitable for use in fractional material for Grade IV Elementary School Students.

The first aspect is to determine the suitability of the material with six criteria that get a percentage of 90%, 100%, 90%, 90%, 90%, 80% of the two material validators. There are 6 criteria validated by material experts, namely The suitability of the material is the same as KD, the suitability of the material with the indicators made, the suitability of the material with learning activities, Fractional material on Interactive PowerPoints is easy to understand, Examples of questions given according to the material contained in Interactive PowerPoints, and Media Spinner Education assisted by Interactive PowerPoints fit the learning goals. The six criteria, each of which received a validation score of the "very decent" category. Because it has paid attention to the preparation of material in the Spinner *Education* media and interactive PowerPoints that are effective for

improving learning outcomes. The second aspect is the use of language with four criteria that get a validity percentage of 90%, 100%, 80%, 90%. There are four criteria validated by media experts, namely Examples of questions that are easy to understand by students, The use of language in *Spinner Education* media and Interactive PowerPoints is easy to understand, the language used is communicative, the use of language in fractional questions can be understood by students and clearly. The four criteria, each of which received a "very decent" category validation score. Because the language used follows the level of development of students, is written with Indonesian rules, and uses italics for words in foreign languages.

Based on the results of media expert validation consisting of 2 media experts who will assess 3 aspects, namely media display, audio suitability and language use as well as the resilience of the *Spinner Education* and Interactive PowerPoint media. The results of the media validation presented by the researchers obtained validity with a percentage of 89% each of these categories getting "very feasible" category validation. Based on *Spinner Education* and Interactive PowerPoint media, it is considered worthy of being a learning medium in the classroom. The first aspect to be assessed is the appearance of media with four criteria that get a percentage of 100%, 80%, 90%, 90%. Four criteria validated by media experts are the suitability of the type of material used in the media, the suitability of the *background* color selection, the size and selection of

typefaces in the media, and the accuracy in choosing animations. As a result of the four criteria, each of them received a validation score of the "very decent" category. This is because the display on *Spinner Education* and Interactive PowerPoint media is considered very attractive and the media already knows the category requirements that have been set on effective learning media during face-to-face learning.

The second aspect is the suitability of the audio with two criteria that get a percentage of 90%, 90%. The two criteria validated by media experts, namely the suitability of audio selection and sound volume on Interactive PowerPoints, can be heard properly. These two criteria, each of which gets a "very decent" category validation score. The results of the audio selection are in accordance with the proper learning arrangement with the use of Interactive PowerPoints and the volume of the voice that is considered to be clearly heard and understood by students so that the learning process takes place properly. The third aspect is the use of language and resilience with four criteria that get a percentage of 90%, 80%, 90%, 90%. The four criteria validated by media experts are the resilience of Spinner Education and Interactive PowerPoint media, the size of practical Spinner Education media, the language used is easy to understand, and the suitability of *Spinner Education* and Interactive PowerPoint media with the material. The four criteria, each of which received a "very decent" category validation score. This is explained because the language used in the media follows the level of

development of students, uses official language and is written according to Indonesian rules, as well as the use of slashes for foreign discussions. Amka (2018) suggests that the use of learning media in the learning process of students can generate motivation to stimulate learning activities, new desires and interests, and even bring psychological influences on students.

Practicality Analysis

Based on the results of the questionnaire sheet, it was given to the homeroom teacher and students in class IV of SD Muhammadiyah 13 Surabaya after going through the learning process using *Spinner Education* media assisted by Interactive PowerPoint that has been developed by researchers. The questionnaire sheet or educator questionnaire is given to the homeroom teacher of class IV, namely Nurina Fadillasari Based on the table of questionnaire data results carried out by educators, a percentage of practicality can be obtained using the following formula:

$$x = \frac{\sum Jumlah\ skor\ yang\ diperoleh}{\sum Skor\ maksimal} \times 100\%$$
$$x = \frac{45}{60} \times 100\% = 90\%$$

The results of the learning media practicality questionnaire by educators received a percentage of 90% which shows that Media *Spinner Education* assisted by Interactive PowerPoints is "very practical". It is shown that teachers respond positively to the *Spinner Education* media assisted byInteractive PowerPoints used in the teaching and

learning process. This Spinner *Education* and Interactive PowerPoint media has proven that later it will support effective interaction of students with teachers so that they can increase learning activities. Based on the results of the questionnaire data table carried out by students, a percentage of practicality can be obtained using the following formula:

$$x = \frac{\sum Jumlah\ Skor\ yang\ diperoleh}{\sum Skor\ maksimal} \times 100\%$$

$$x = \frac{820}{900} \times 100\% = 91\%$$

The results of the questionnaire on the practicality of learning media by students received a percentage of 91% which shows that *Spinner Education* media assisted by Interactive PowerPoints is "very practical". This shows that students respond enthusiastically to the *Spinner Education* and Interactive PowerPoint media used in the teaching and learning process.

Media Effectiveness Results

To measure the level of effectiveness of learning media that has been developed by using an effectiveness test. The results of the effectiveness test data are based on the learning outcomes of students who meet KKM as much as 83% of one class, then the *Spinner Education* media assisted by Interactive PowerPoints is said to be "Effective" because in accordance with the indicators of the learning outcomes test are said to be effective if the learning outcomes of students with a KKM score

of 80 reach 75% of the total number of students.

CONCLUSION

Based on the results of data analysis that has been carried out by researchers, it can be concluded that: (1) *Spinner Education* learning media products assisted by PowerPoint interactive that have been developed by researchers can be used in the learning process through the 5 stages of the ADDIE model development process. (2) The results of material and media validation get very feasible criteria with a percentage rate of 89% for material validation and 90% for media validation. (3) The results of the practicality of *Spinner Education* media with Interactive PowerPoint views from the response of the educator questionnaire to get a percentage of 90% and also from the response of the questionnaire students get 91%. (4) The results of the effectiveness of *Spinner Education* and Interactive PowerPoint media are seen from the results of student learning completion who get a percentage of 83%. The suggestion that researchers will convey to researchers is that there will be more research on the development of Spinner Education media in order to modify the model of the spinning wheel and assisted applications to run the media.

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