STUDENT LEARNING INTEREST IN THE USE OF AUGMENTED REALITY MEDIA ON TRIANGLES AND QUADRILATERALS

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Abstrak

Multimedia interaktif adalah model pembelajaran untuk membangkitkan pemikiran, motivasi, menyampaikan pesan, sehingga mendorong proses belajar mengajar dan dapat membangkitkan pengalaman belajar siswa menjadi lebih nyata. Tujuan peneliti melakukan penelitian adalah untuk mengetahui minat belajar siswa terhadap penggunaan media Augmented reality sebagai media pembelajaran pada materi segitiga dan segiempat untuk kelas VII MTs. Peneliti menggunakan metode penelitian deskriptif kuantitatif dengan 20 siswa kelas VII MTs sebagai sampel secara acak. Penelitian ini menggunakan instrumen non tes berupa angket minat belajar siswa. Analisis data deskriptif kuantitatif digunakan sebagai teknik analisis data dalam penelitian ini. Adapun hasil respon siswa terhadap penggunaan software Augmented reality sebagai media pembelajaran diperoleh persentase dengan rata-rata 79,25% yang tergolong tinggi. Hal ini menunjukkan bahwa respon siswa terhadap penggunaan Augmented Reality positif. media pembelajaran agar nantinya dapat digunakan untuk proses pembelajaran yang dapat menarik minat siswa dalam belajar.

Kata kunci: Augmented Reality; Segitiga dan Segiempat; Minat Belajar

Abstract

Interactive multimedia is a learning model to generate thoughts, motivate, convey messages, so as to encourage the teaching and learning process and can generate students' learning experiences to become more real. The purpose of the researchers conducting the research was to find out students' learning interest in the use of Augmented Reality media as a learning medium on triangle and quadrilateral material for class VII MTs. The researcher used a quantitative descriptive research method with 20 students of class VII MTs as a random sample. This study used a non-test instrument in the form of a student learning interest questionnaire. Quantitative descriptive data analysis was used as a data analysis technique in this study. The results of student responses to the use of Augmented reality software as learning media obtained a percentage with an average of 79.25% which is relatively high. This shows that the student's response to the use of Augmented Reality is positive. learning media so that later it can be used for the learning process that can attract students' interest in learning.

Keywords: Augmented Reality; Triangles and Quadrilaterals; Learning Interest

INTRODUCTION

Education is the most important part of advancing the quality of human resources or human resources and has a very important role in the era of the industrial revolution 4.0 (Marchy, Murni, Kartini, & Muhammad, 2022). Riyanti (2018) reveals that education is a direction in the life of the growth of children and directs all the nature that exists in these children so that these children become human beings and part or members of society can achieve maximum safety and prosperity. According to Sutisno (2019) education is an activity or effort to improve the quality of a human being which is carried out in various parts. To achieve the goals that have been determined it takes many factors that are interconnected so as to create a system that is interrelated then it is done through education (Angraini & Muhammad, 2023; Maryanto, Rachmawati, Muhammad, & Sugiyanto, 2023; Muhammad, Darmayanti, & Arif, 2023; Muhammad, Triansyah, Fahri, & Gunawan, 2023; Samosir, Muhammad, & Marchy, 2023). Education is also very much needed to build a creative, active, productive and quality generation (Purwanto, 2021; Ramadhaniyati, Dwi, Siregar, Muhammad, & Triansyah, 2023; Sanusi, Triansyah, Muhammad, & Susanti, 2023).

In the world of education there is one science in the field of education, namely the field of mathematics which is one of the most important aspects, both for students and for the development of other scientific fields and the position of mathematics in the field of education has great benefits. According to Mayani et al., (2022) mathematics is a basic science that has many benefits in everyday life, from the smallest events to the big events, all of which use mathematics. One of the compulsory subjects that must be received by students starting from elementary school to the tertiary level is mathematics (Mahsun, 2020; Muhammad, Himmawan, Mardliyah, & Dasari, 2023). Next according Nuraeni (2020) mathematics is a subject that trains students to think logically, carefully and rationally. This mindset needs to be owned as a provision in everyday life that can help humans to solve problems in various life needs.

Prihatini (2017) clarify that interested in learning is an attitude, ability, condition, process of finding efficient problem solving and changes in behavior to produce products or ideas in learning activities. Meanwhile, according to (Hudaya, 2018; Muhammad & Yolanda, 2022) interest in learning is the seriousness of students to focus on following the learning process properly, with this interest students will gain learning experiences like a magnet that can make students interested in learning. In learning mathematics students will learn and practice thinking critically, carefully, logically and creatively if students have a high interest in learning (Muhammad, Yolanda, Andrian, & Rezeki, 2022; Sirait, 2016). So this interest in learning is very important for every student to have in the learning process, with an interest in learning students will be serious in learning and will also change behavior to produce products or ideas.

According to Tafonao (2018) learning media make a very important contribution when carrying out learning process activities that are unified and cannot be solved from the field of education, learning mathematics at all levels of education will continue to adapt to the times and demands of life (Muhammad, Elmawati, Samosir, & Marchy, 2023; Muhammad, Samosir, Elmawati, & Marchy, 2023; Sennen, 2018). According to Khairani & Febrinal (2016) media is a useful factor in the success of the teaching and learning process which helps the process of providing information by the teacher to students, the use of media can also foster learning efficiency so that learning objectives are achieved. Septiawan & Abdurrahman (2018) revealed that in order to achieve learning objectives in the classroom, media is used. The media used functions as an intermediary, and can convey messages appropriately, and this media can solve student problems in the learning process inside the classroom or outside the classroom.

According to Ibda (2017) Multimedia is a media that can combine two or more media elements in an integrated manner. Interactive multimedia is a learning model to generate thoughts, motivation, deliver messages, and students' interests so as to encourage the teaching and learning process, media is used to evoke student learning experiences to become more real. Interactive multimedia becomes a reinforcement in learning, including so that the message given in a material looks

real, provokes most of the senses so that an interaction and visualization in the form of images, video forms and animation forms can make students remember more and the learning process will be more practical so that will save time, costs and energy (Muhammad, Mukhibin, Naser, & Dasari, 2022).

The use of augmented reality learning media has lots benefit to the learning process in class (Almenara & Vila, 2019; Patzer, Smith, & Keebler, 2014). The use of *Augmented* learning media *Reality* can increase students' interest in learning (Santos et al., 2016). This is in line with research conducted by (Sarkar, Kadam, & Pillai, 2020) which revealed that with *Augmented learning media reality* this can increase student learning interest and student cooperation . *augmented Reality* makes it easier for teachers in the learning process, augmented media reality which was validated by experts in a very valid category (Pujiastuti, Haryadi, & Arifin, 2020), further from research conducted by Dinayusadewi & Agustika (2020) was concluded that the validation results obtained a percentage of 93 % and practicality with a percentage of 8 9 , 33 %. This shows that the learning media meets the requirements for use in teaching and learning.

At this time the era of the industrial revolution *Four Point Zero* (4.0) the development and progress of technology has been increasing rapidly so that it will make it easier for humans to do their work, this is evidenced by the many applications that can help students or teachers in the learning process. According to Wahyuni & Yolanda (2020) learning that requires the same concept continuously and requires high accuracy which can complete graphs accurately and quickly is very appropriate when using learning media. One of them is the media *augmented reality* . Augmented reality is technology new integrate digital information with the real world (Castañeda, Guerra, & Ferro, 2018).

The use of augmented reality software in learning greatly facilitates students in mastering lessons and fosters the interest of students who think that mathematics is difficult to learn and makes students bored (Kartika, 2014). According to Aritonang (2008) an efficient learning situation is that there is interest and attention to students during learning. Interest is a characteristic that is more settled to an individual person. Interest contributes greatly to learning. When students already

have great interest, they will put a lot of attention and concentration on the subject. There have been many studies related to the use of augmented reality in increasing student interest in learning, in general in various fields of education (Endra, Cucus, & Ciomas, 2020; Monita, Sari, Randikai, & Ibrahim, 2019; Oktaviani, Lusa, & Noperman, 2020), and especially in learning mathematics (Sutresna, Yanti, & Safitri, 2020; Tiyasari & Sulisworo, 2021; Wirawan, Faizah, & Wahyuningsih, 2021), these studies discuss interest in learning mathematics after using augmented reality media at the elementary level but no one has seen interest in learning students with augmented reality media are at a higher level in learning mathematics, therefore researchers want to see how students' learning interest in MTs students after using Augmented reality learning media on triangle and rectangle.

Researchers chose triangular and quadrilateral material with *Augmented applications reality* because triangles and quadrilateral lessons sometimes the material is often overlooked when teaching and does not describe it directly on the blackboard so students will find it difficult to remember it, this material will be presented with complete material and explanations and animations and clear pictures. Through the development of learning media using *software augmented reality* is expected to assist teachers in conveying triangular and quadrilateral subject matter, and can increase motivation and interest in students in the learning process. Therefore, the researcher is interested in analyzing students' interest in using *the software augmented reality* as learning media. The purpose of this study is to describe students' interest in using *software augmented reality* as learning media on triangle and quadrilateral material.

METHOD

This study aims to describe students' interest in using *software augmented reality* as learning media on triangle and quadrilateral material. This research is a quantitative research conducted with quantitative descriptive methods.

This was conducted in the academic year 2022/202 3. The research subjects were 20 class VII MTs students who were taken randomly. The responses to students' learning interest were obtained from converting questionnaire data from

students' learning interest responses into quantitative data. The instrument used in this study was a non-test instrument in the form of a learning interest questionnaire with 18 statement items with 4 criteria.

Before distributing the student interest questionnaire, validation was carried out by 4 experts so that the learning media was in accordance with the suggestions given. After validation is complete, the next stage is distributing the questionnaire, the researcher uses *the Google Form* with 18 statements with 4 criteria that the researcher has modified from Syahputra (2020), namely (1) Feelings of Happiness; (2) Curious Students; (3) Student Attention; (4) Student Engagement. The following is the google link to the student interest questionnaire form https://bit.ly/3yjHklA

To calculate the reliability of the questionnaire, researchers used SPSS 24, as can be seen in table 1 below

Table 1. Reliability questionnaire interest Study student

Cronbach's Alpha	N of Items
.847	18

From table 1 above it can be seen that Crinbach's Alpha with N of items = 18 is 0.847. This means that the level of reliability of the questionnaire is included in the high category with $r_{count} = 0.847$ and $r_{table} = 0.4438$.

The scale that the researcher used is a Likert scale which has been modified by the researcher so that it can determine the parts of the scale contained in the questionnaire and there are 4 scales, namely the first is a scale that strongly disagrees, then the second is a scale that does not agree, the third is an agree scale, and the last is scale tohighy agree. Negative statements are the opposite of positive statements so that the score used is also the same. The scale of interest in students can be seen in the table below:

Table 2. Interest Scale Distribution

Scale	Positive Value	Negative Value
Strongly agree	4	1
Agree	3	2
Don't agree	2	3
Strongly Disagree	1	4

Source : (Rahmawati, Bungsu, Islamiah, & Setiawan, 2019)

The research used descriptive analysis techniques supported by *Microsoft excel.* The data processing technique is calculated by looking for the total percentage of each indicator. then the results of the data analysis are obtained, the next action is to distribute scores or ranges of student interest questionnaires with the following criteria:

Table 3. Distribution of Assessment Value in the Questionnaire

No	Range	Category
1	81%-100 %	Very high
2	68%-80 %	High
3	41%-60 %	High enough
4	21%-40 %	Not high enough
5	0% - 20 %	Very Less High

Source: Arikunto (2010).

RESULT AND DISCUSSION

At the time of carrying out the research, from the observations it was found that the teaching and learning process was still carried out conventionally. Arousing interest in students is very important in the learning process, one of which can be by using assisted learning media *Software augmented reality.* Initial view of *Augmented reality* starting from the media main page to the media evaluation page are as follows:
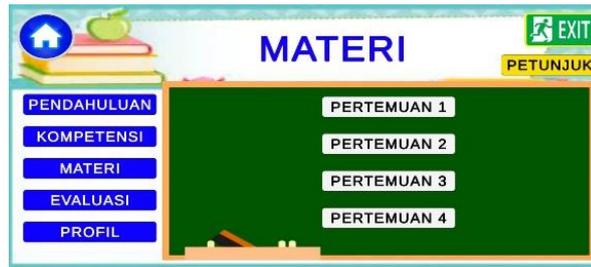

Figure 1. Main Media *Layout*

Figure 2. Media Material *Layout*

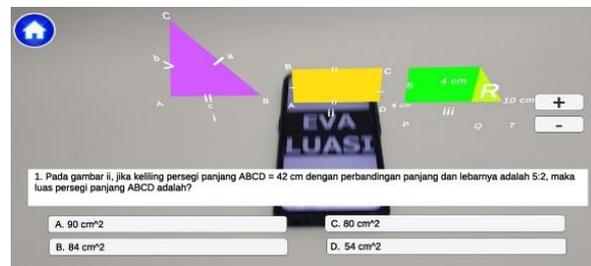**Figure 3. *Layouts* example question**

Figure 4. Media Evaluation *Layouts*

After the researcher did the learning with 20 students, then the students completed or filled out the questionnaire that had been given. The results of indicator research were obtained from feelings of pleasure to student involvement as follows:

Feelings of Happiness Indicator

In this indicator, the value with high criteria is 78 % , as shown in the following table:

Table 4. Response Analysis Results Student On Indicator Feeling Like

Feeling Like					
Total Score	61	62	64	63	62
Maximum Total Score	80	80	80	80	80
Percentage	76.25%	77.5%	80%	78.75%	77.5%
Average			78%		
Criteria			High		

This indicator contains five statements divided into three positive statements and two negative statements, while the positive statements are as follows: I enjoy learning mathematics using *Augmented media Reality* , then I became more masterful of mathematics when learning to use *Augmented media reality* and the third is learning to use *Augmented* media *reality* more fun, then the two negative statements are as follows: I don't like learning mathematics by using *Augmented media reality* and I don't understand the math lessons given in *Augmented* media *reality*

Curious Students Indicator

In this indicator, an average percentage of 8 1.5% is obtained which is classified as very high , as shown in the following table:

Table 5. Analysis Results Response Student On Indicator Curious Students

Curious Students					
Total Score	75	60	59	70	62
Maximum Total Score	80	80	80	80	80
Percentage	93.75%	75%	73.75%	87.5%	77.5%
Average	81.5%				
Criteria	Very high				

This indicator contains five statements and is divided into two positive statements and three negative statements. The positive statements are: I am enthusiastic about participating in mathematics lessons by utilizing *Augmented* media *reality* and learning mathematics by utilizing *Augmented media reality* made me more interested in participating in learning, then three negative statements, namely: Learning mathematics by utilizing *Augmented media reality* makes me bored of learning, learning mathematics by utilizing *Augmented media reality* makes me not take triangles and quadrilaterals seriously and I feel burdened with learning math material by using *Augmented media reality.*

Student Attention Indicator

In this indicator, an average percentage of 8.1.90 % is obtained which is classified as very high , as shown in the following table:

Table 6. Analysis Results Response Student On Indicator Attention Students

Attention Students				
Total Score	61	61	60	80
Maximum Total Score	80	80	80	80
Percentage	76.25%	76.25%	75%	100%
Average	81.90%			
Criteria	Very high			

This indicator contains four statements and is divided into three positive statements and one negative statement. The positive statements are: When I can't solve math practice questions, I re-read material on learning media, I try to solve complex math problems even though it takes a long time, and and I pay attention to tables and diagrams on *Augmented learning media reality.* Furthermore, the negative statement is: I am reluctant to do difficult math assignments.

Student Engagement Indicator

In this indicator, an average percentage of 75.6 3% is obtained which is classified as high , as shown in the following table:

Table 7. Analysis Results Response Student On Indicator Attention Students

Attention Students				
Total Score	60	61	61	60
Maximum Total Score	80	80	80	80
Percentage	75%	76.25%	76.25%	75%
Average	75,6 3 %			
Criteria	High			

This indicator contains four statements and is divided into two positive statements and two negative statements. As for the positive statements, namely: In learning mathematics I dare to express my opinion and I am enthusiastic about solving math problems by utilizing *Augmented media Reality ,* then two negative statements, namely: in learning mathematics I am very embarrassed to ask questions and I am not enthusiastic about making math notes when using *Augmented media reality.* The recapitulation of the results of the student interest questionnaire analysis from all indicators obtained an average percentage of 79.25% with height, as in the following table:

Table 8. Recapitulation of Student Interest Questionnaire Analysis Results

No	Indicator	Average	Criteria
1	Feeling happy	78 %	High
2	Curious Students	8 1.50 %	Very high
3	Attention Students	8 1.90 %	Very High
4	Student Engagement	75 , 6 3 %	High
	Average	79 , 25 %	High

In the table above , the indicator of feeling happy obtained a percentage of 78% with high criteria, then the Curious Students indicator obtained a percentage of 81.50% with very high criteria, on the student attention indicator of 81.90% with very high criteria which is an indicator of middle the highest percentage and student involvement indicator of 75.63% with high criteria. This is in accordance with what was said by (Santos et al., 2016)that augmented media Reality has benefits especially in increasing students' attention. This means that students' attention can be increased with this learning media because previously students have never used interactive learning media such as Augmented media reality. The average of the four indicators is 79.25% which indicates a very high category. For more details, see the bar chart in the following figure:
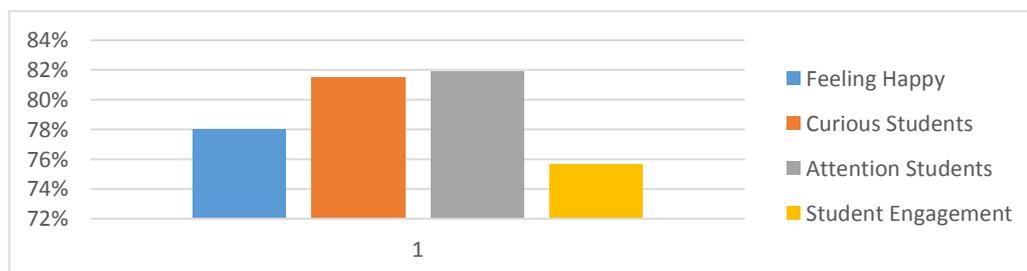

Figure 5. Diagram of Recapitulation of Student Interest

Based on the recapitulation of the results of the student interest questionnaire analysis for each indicator, response students of class VII MTs on the use of *software augmented reality* get a positive response. On the happy feeling indicator, an average of 78 percent is obtained in the high category, which means that students enjoy learning to use *software augmented reality* This. This can generate students' interest and motivation when learning about triangles and quadrilaterals. The statements on the feeling happy indicator contain five statements and are divided into three positive statements and two negative statements. This is

the section that gets the highest average of the other three sections. On the Curious Students indicator, an average of 8.1.50% is obtained with a very high category, which means that students are very interested in learning to use *the software. augmented reality* This. This can generate Curious Studentsand motivation when learning about triangles and quadrilaterals. The statements in the Curious Students section contain five statements which are divided into two positive statements and three negative statements. This is the section that gets the second highest average of the other three sections.

The student attention indicator obtained an average of 81.90% with a very high category, which means students are curious about learning to use *software augmented reality*. This can generate students' interest and motivation when learning about triangles and quadrilaterals. The statements in the Curious Students section contain four statements which are divided into three positive statements and one negative statement. This is the section that gets the lowest average of the other three sections. In the last indicator, namely the student involvement indicator, an average of 75.63% is obtained with the high category, which means that students are actively learning to use *the software augmented reality*. This can generate students' interest and motivation when learning about triangles and quadrilaterals. The statements in the Curious Students section contain four statements divided into two positive statements and two negative statements. This is the section that gets the second lowest average of the three other sections. Furthermore, the average result of the student interest questionnaire analysis obtained a value of 79.25% in the high category. This shows that there is a positive response to students' interest in using *the software augmented reality* as a learning medium.

Research results supported by research conducted (Sarkar et al., 2020) revealed that with the existence of *Augmented learning media reality* this can increase student learning interest and student cooperation. *Augmented Reality* makes it easier for teachers in the learning process, augmented media reality which was validated by experts in a very valid category (Pujiastuti et al., 2020), further from research conducted by (Dinayusadewi & Agustika, 2020) it was concluded that the validation results obtained a percentage of 93% and practicality with a

percentage of 89,33 %. This shows that the learning media meets the requirements for use in teaching and learning. Relevant previous research, namely research related to interest in learning by using augmented reality in learning mathematics as carried out by (Sutresna et al., 2020; Tiyasari & Sulisworo, 2021; Wirawan et al., 2021), from some of these studies looking at interest in ar at the elementary level shows that the use of augmented reality media in learning mathematics can increase students' interest in learning mathematics.

Research conducted by (Muhammad, Mukhibin, et al., 2022) regarding bibliometric analysis of the use of learning media in education, especially in mathematics education, places augmented relaity media as the focus of media research, this research also explains that augmented relaity media is used to attract student interest and motivation. meaning that the results of research conducted by (Muhammad, Mukhibin, et al., 2022) support this research. In addition to increasing interest in learning, augmented reality media is also able to improve students' critical thinking skills (Angraini, Alzaber, Sari, Yolanda, & Muhammad, 2022; Angraini, Sari, & Muhammad, 2023).

Based on the discussion that has been described, it can be concluded that the use of media by utilizing applications *augmented reality* this can generate interest in students and student motivation in online learning. The indicator that gets the highest average is the student's attention indicator, while the one that gets the lowest average is the student's engagement indicator. Two of them got an average in a very high category, namely Curious Students and student attention, two indicators got an average in a high category, namely indicators of feeling happy and student involvement. This shows that the use of *software augmented reality* This is in the learning process, namely in the lessons of triangles and quadrilaterals for class VII MTs can increase students' interest in learning

CONCLUSION

Based on the results and discussion above , it can be concluded that the students' responses in using *Augmented reality* This is included in the high category which can be shown by the value of the four indicators of 79.25%. With the

indicator of feelings of pleasure obtained an average percentage of 78.00 %. For indicators of Curious Students, an average percentage of 81.50 was obtained. Then the student attention indicator obtained 81.90%, the last indicator, namely the student involvement indicator obtained 75.63%. Two indicators are included in the very high category and the other two indicators are in the high category. This shows a positive response from student to user *augmented Reality* during the learning process. So that the use of *Augmented* learning media *This reality* can facilitate online lessons which can increase interest in students. meaning that the results of this study can be useful for teachers to be able to increase student interest in learning using learning media, especially using augmented reality software.

This research is limited to seeing students' interest in using *software augmented reality* as a learning medium. The suggestions for further research are in making *Augmented learning media reality* It is hoped that researchers will make instructional media with other materials with even more attractive displays so as to create varied learning media, and this research is expected to be a reference for similar studies.

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