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The Effect of Implementation of Attention Relevance Confidence Satisfaction Learning Model on Interests and Learning Outcomes of Students on Quadrilateral Materials

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ABSTRACT

This research is motivated by several factors including the lack of interest in learning of students as evidenced by the lack of participation of students in learning activities, the delay of students in submitting assignments and the lack of attention of students during learning activities takes place. The purpose of this study was to determine the effect of applying the Attention Relevance Confidence Satisfaction (ARCS) learning model on students' learning interest. This study uses a quantitative approach with a quasi-experimental design. The population of this study were all class VII students of SMPN 2 Ngantru Tulungagung for the 2021/2022 academic year. Sampling was done by purposive sampling. The results of this study indicate that there is an effect of the application of ARCS learning model on the learning interest of class VII students at SMPN 2 Ngantru Tulungagung on the Quadrilateral Materials.

Keyword : Attention Relevance Confidence Satisfaction Learning Model, Learning Interest, Learning Outcomes.

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1. INTRODUCTION

Learning is a process of interaction between students and their environment, which results in changes in themselves. These changes are in the form of improving the quality of behavior, such as increasing knowledge, understanding, skills, thinking, attitudes and others. Learning activities are influenced by a condition, both internal and external. A very strong and very influential internal influence is interest in learning (Jamil, 2019). Interest in learning is the driving force that comes from within the individual to carry out learning activities in order to increase knowledge and skills and experience in order to achieve learning goals (Achru, 2019). Interest has a very big influence in the learning process. Students who have a high interest in learning will find it easier to accept and understand each learning material because there is an interest in learning material that encourages them to study diligently. Conversely students who have low learning interest will not study the learning material because it does not match the interests of these students. This will affect student learning outcomes. Learning outcomes are student self-assessments in the form of changes that can be observed, proven, measured, in the abilities or achievements experienced by students as a result of learning experiences (Nurhasanah & Sobandi, 2016).

There are several factors that can affect individual interest and learning outcomes, one of which is educators (Nurhasanah & Sobandi, 2016). Educators play an important role in creating an innovative learning atmosphere to attract students' interest so that the learning process goes according to purpose. In addition to having good teaching competence, an educator must also pay attention and love for students and know the condition of their students in capturing and paying attention to the ongoing learning process. It is very important for every educator to understand the learning process of students so that they can provide guidance and create a harmonious learning environment to increase students' learning interest. The ARCS learning model is a learning model with an instructional design that aims to increase learning motivation (Keller, 1987; Sundari & Siahaan, 2023).

There are four components in the ARCS learning model. One of them is Attention which relates to students' interest/attention to learning and Satisfaction which relates to learning outcomes (Jamil, 2019;

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Putri et al., 2023). Based on the preliminary study in the form of direct observation during 6 meetings in class VII B of SMPN 2 Ngantru Tulungagung, it was found that there were still obstacles in the learning process, namely the lack of interest in learning of students. This is evidenced by the lack of student participation in learning, including the habits of students who never record subject matter in class, most students still prefer to play alone rather than listen, are late in collecting assignments and don't even do assignments at all.

From the results of consultations with mathematics teachers. Researchers also received information that student learning outcomes were still relatively low with the Minimum Completeness Criteria of 65, there were still many students who scored far below the Minimum Completeness Criteria. This study aims to determine the effect of the application of the ARCS learning model on the interests and learning outcomes of Class VII students at SMPN 2 Ngantru Tulungagung on quadrilateral material.

2. RESEARCH METHOD

2.1. Quadrilateral

A quadrilateral is a flat shape formed and bounded by four straight lines as side (Shalihah et al., 2022). Flat shapes which include quadrilaterals include squares, rectangles, rhombuses, parallelograms, kites and trapezoids. The perimeter of a plane shape is the total distance around the shape. The area of a plane shape is the size of the area covered by a flat surface (Ayuningtyas et al., 2018; Fidyawati et al., 2022).

a. Square

A square is a quadrilateral that can occupy its frame in exactly eight ways and each corner can occupy any other corner exactly. A square has several properties as follows:

1. All sides are the same length
2. The diagonals are the same length and bisect each other
3. The diagonals intersect to form a right angle
4. All angles are equal and are right angles
5. The diagonal is the bisector that divides the two equally.

The perimeter of the square is $K = 4s$

The Area of a Square is $L = s \times s$ or $L = s2$

b. Rectangle

A rectangle is a quadrilateral that can occupy its frame in exactly four ways and each corner can occupy any other angle in exactly four ways. Rectangle also has some properties as follows:

1. Opposite sides are equal and parallel.
2. Every corner of a rectangle is a right angle
3. The diagonals are the same length
4. The diagonals intersect and bisect each other

The perimeter of the rectangle is defined as follows:

$K = 2p + 2l$ or $K = 2(p +\ )$

The area of the rectangle is $L = p \times l$

c. Rhombus

A rhombus is a quadrilateral that has two pairs of parallel lines and all four segments of the same length. The properties of rhombus include:

1. Has four equal sides (AB = BC = CD = DA)
2. Has two pairs of parallel sides (AB is parallel to CD and AD is parallel to BC)
3. It has two diagonal lines which are perpendicular to each other AC ⊥ BD, but of different lengths. The diagonals bisect each other AO = OC, and OB = OD
4. It has four corners with opposite angles equal. (∠A = ∠C and ∠B = ∠D)
5. The sum of two adjacent angles is 180°. That is ∠A + ∠B = ∠B +∠C = ∠C + ∠D = ∠A +∠D = 180°
6. Has two axes of symmetry

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The perimeter of a rhombus is K = 4 × $\boldsymbol{s}$
The area of a rhombus is L = $\boldsymbol{1/2} \times \boldsymbol{d_1} \times \boldsymbol{d_2}$

d. Parallelogram

A parallelogram is a quadrilateral that has two pairs of parallel line segments. The properties of the parallelogram are:
1. Has four sides with opposite sides of the same length AB = CD and AD = BC
2. Has two pairs of parallel sides (AB is parallel to CD and AD is parallel to BC)
3. It has two diagonal lines that intersect at point O which are not the same length. The diagonals bisect each other (OA = OC and OB = OD)
4. It has four corners with opposite angles equal. (∠A = ∠C and ∠B = ∠D)
5. The sum of two adjacent angles is 180°
6. Does not have an axis of symmetry
7. Has two rotational symmetries
The perimeter of the parallelogram is K = $\boldsymbol{2a} + \boldsymbol{2b}$
The area of the parallelogram is L = $\boldsymbol{a} \times \boldsymbol{t}$

e. Kite

A kite is a quadrilateral that has at least two adjacent sides that are the same length. The properties of the kite is as follows:
1. Has two pairs of sides that are the same length (AB = AD and CB = CD)
2. Formed by two isosceles triangles, namely triangle ABD and triangle CDB
3. It has two diagonal lines that are perpendicular to each other AC ⊥ BD, but of different lengths. Diagonal AC divides BD equally (OB = OD)
4. It has four angles with a pair of equal angles, namely angle B = angle D and the other pair is not
5. Has one sunbu of symmetry
6. Has one rotational symmetry
The circumference of the kite is K = $\boldsymbol{2a} + \boldsymbol{2b}$
The area of the kite is L = $\boldsymbol{1/2} \times \boldsymbol{d_1} \times \boldsymbol{d_2}$

f. Trapezoid

A trapezoid is a quadrilateral that has at least one set of parallel line segments. Trapezoid properties include:
1. Has a pair of parallel sides
2. It has two diagonals that intersect
3. It has four angles which add up to 360°
4. The sum of two angles between two parallel sides is 180°
The perimeter of the Trapezoid is K = $\boldsymbol{a} + \boldsymbol{b} + \boldsymbol{c} + \boldsymbol{d}$
The area of the trapezoid is L = $\boldsymbol{1/2} \times (\boldsymbol{a} + \boldsymbol{b}) \times \boldsymbol{t}$

2.2. Method and Data

In the research conducted, the type of research that used was experimental research. Experimental research is quantitative research conducted by giving treatment or special treatment to existing variables (Rukminingsih et al., 2020). In this study there were two groups, namely the experimental group and the control group. The experimental group is the group that will be given ARCS Learning Model, namely class VII B. Meanwhile, the control group is the group that is given the conventional learning model, namely class VII A.

The experiment used in this study was a quasi-experimental design with a non-evaluable control group design. where all research subjects who were given treatment came from one class or study group not from subjects taken randomly. The class that gets the treatment is expected to produce something different or better than the control class. In this experimental study the researcher wanted to test the hypothesis, the

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influence on student learning outcomes in the experimental class after being treated with the ARCS Learning Model compared to student learning outcomes in the control class.

A research variable is something that is used as a research object and becomes a point of concern in a study to be studied and information obtained (Rahma & Nurhalimah, 2022). Variables are divided into independent variables and dependent variables. In this study the variables used include independent variables and dependent variables. The aspect to be tested is the causal relationship between the independent variables found in the experimental object and the dependent variable found in the characteristics of the subject who has been given the treatment. The instrument has an important role in research, because the instrument is a tool that will be used to collect data taken from sample analysis by taking into account the variables to be tested in research. In this study, researchers used two types of research instruments, namely:

1. Questionnaire, is a data collection technique that is carried out by giving a set of written questions to the respondent to answer (Sugiyono, 2013, 2011). The questionnaire in this study consisted of 20 positive and negative questions. The theory of motivation used to create this questionnaire is the ARCS theory of motivation. The ARCS motivational model refers to Attention, Relevance, Confidence, and Satisfaction. This learning interest questionnaire was given to students in the experimental class and control class after each class carried out learning quadrilateral shapes with different treatments.
2. Test, which is a series of questions or exercises used to measure knowledge, intelligence, abilities, or talents possessed by individuals or group (Sofian, 2014). The test used in this study was a posttest in the form of 4 descriptive questions. These questions contain material for quadrilaterals that have been studied. This test is used to determine the effect of applying the ARCS learning model on student learning outcomes.

The data analysis technique used in this study is as follows:

1. Test instrument
The instrument test will go through two stages, namely validity test and reliability test.
2. Research Prerequisites Test
The research prerequisite test used is the normality test and homogeneity test.
3. Test the hypothesis
After carrying out the normality test and homogeneity test, then to find out whether the Attention Relevance Confidence Satisfaction learning model has an effect on students' interest and learning outcomes. In testing this hypothesis, the researcher used the t test and the MANOVA test. The t test was used to test hypotheses 1 and 2, while the MANOVA test was used to test hypothesis 3. In calculating the data analysis, the researcher used the SPSS 25.0 application.

4. RESULTS AND DISCUSSION

4.1. Description of Research Implementation Data

Research implementation data are data obtained from the results of research conducted. The research implementation data are as follows:

a. Research in the experimental class

The first research in class VII B as an experimental class was carried out on April 11 2022 by providing the ARCS learning model in learning mathematics. This research was conducted in the first hour with a time allocation of two hours of lessons. In this study the teacher opened the lesson by greeting and praying. Then provide ice breaking in the form of multiplication guesswork with a quick point system. This ice breaking aims to focus the attention and concentration of students as well as test their memory in guessing the multiplication that is thrown in a short time. Then the teacher gives an overview and introduction of what will be learned, namely getting to know the properties of quadrilaterals. Furthermore, the teacher distributes worksheets as learning media that will be used to facilitate the learning process. The LKPD contains cases that are in accordance with the ARCS model.

The first stage is Attention. At this stage students are asked to observe the entire contents of the classroom and pay attention to rectangular objects. After knowing the objects that are rectangular in shape, students are again asked to pay attention to the characteristics or properties of these objects. Then the

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students were asked to mention the results of their observations by raising their hands first then conveying the results of their observations. In this stage one of the ARCS components also occurs, namely Confidence or spurring student confidence.

The second stage is Relevance, students are directed to read a case on LKPD that is relevant to everyday life about quadrilaterals. Students are also directed to dig up information about the shape and properties of quadrilaterals from the accompanying book. Then do the LKPD at that stage according to the existing instructions.

The third stage is Confidence. At this stage students are trained to develop their own confidence and knowledge through group discussions. The teacher divides students into 5 groups, each group consists of 6-7 people. Students gather with their respective groups to discuss working on the tasks contained in the LKPD. In this discussion, each group must work together to complete all group tasks. After the discussion is over the teacher gives the opportunity for each group to present the results of their discussion in front of the class, while other groups are allowed to respond and express their opinions if there are differences in answers. As an appreciation, the teacher gives rewards to students active in discussion.

The last stage is satisfaction, in this stage the teacher gives appreciation in the form of applause and praise for the enthusiasm for learning of students in learning in class. The teacher also gives rewards to active participants and provides motivation for students to continue to maintain the enthusiasm for learning to get even better results. At the end of this stage the teacher invites students to jointly conclude what material has been learned and understood. The teacher and students clap together to appreciate the learning activities that have been carried out. After the lesson is finished the teacher closes the lesson by praying and closing greetings.

The second meeting was held on April 14 2022, the teacher directed students to pay attention to the topic of learning about the circumference and area of a quadrilateral. Learning begins with reflecting and discussing previously learned material as a prerequisite for studying today's material. Then the teacher asks students to open the LKPD that has been given.

The first stage is Attention, at this stage students are directed to pay attention to a case contained in the LKPD regarding rectangular shapes as an introduction to the concept of Area and Circumference of a quadrilateral. The second stage is Relevance, in this stage real-world cases regarding area and circumference are presented. From this case, students were asked to infer a concept or understanding of the area and perimeter of a quadrilateral in their own language. The teacher then gives further explanation about the area and perimeter of a quadrilateral according to its shape and properties. The third stage is Confidence. After knowing the concept of the area and perimeter of a quadrilateral, each student is asked to match the shape and the correct formula. Then the teacher directs students to return to the study groups that have been formed. Each group sends one representative to take the lottery number on the teacher's table. The number is the number of questions contained in the LKPD that must be done by each group. Before the discussion begins, the teacher provides an explanation of the provisions that they must carry out in the discussion. During the discussion process, the teacher monitors each group. After the discussion is over, each group must send one representative to present the results of the discussion. Students are also given the opportunity to give feedback and express their opinions.

The fourth stage is satisfaction, in this stage the teacher and students clap together as an appreciation for the enthusiasm for learning that has been shown. Teachers also provide rewards and added value to students who are active in learning. The teacher also provides motivations to continue to maintain and remember the enthusiasm for learning of students. As a bonus, the teacher gives one more opportunity for students to get a reward, namely by coming to the front of the class to conclude the learning material they have understood. After the lesson is finished the teacher returns to provide reinforcement about the relevance of quadrilateral material and its importance in everyday life. The lesson ends with a prayer and greeting.

The third meeting was held on April 21 2022 with an allotment of 3 hours of study. At this last meeting, students were directed to do a post test on the quadrilateral material that had been studied previously. This aims to measure student learning outcomes after carrying out learning activities using the ARCS model. After completing the post-test students are given a questionnaire to be filled out as honestly as possible in

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accordance with the daily lives of students in learning mathematics, especially learning activities on quadrilateral material that has been carried out. This questionnaire aims to measure the learning interest of class VII B students. The lesson ends with words of appreciation to class VII B students and a group photo.

b. Research in the control class

The first meeting in class VII A as the control class was held on April 11 2022 in the second hour after the experimental class. The time allocation at this first meeting is 3 hours of lessons. In class VII A, the learning model used is a conventional learning model using student companion books. The second meeting in the control class was held on April 12 2022 with an allotted time of 2 hours of study. At this meeting, the teacher delivered material about the area and perimeter of quadrilaterals. The third meeting in the control class was held on April 18 2022 with an allotted time of 3 hours of lessons. The learning activity in this third meeting was working on test questions with the quadrilateral material that had been studied previously.

3.2. Test Results

The number of students in the control class was 31 students. The number of students in the experimental class was 32 students.

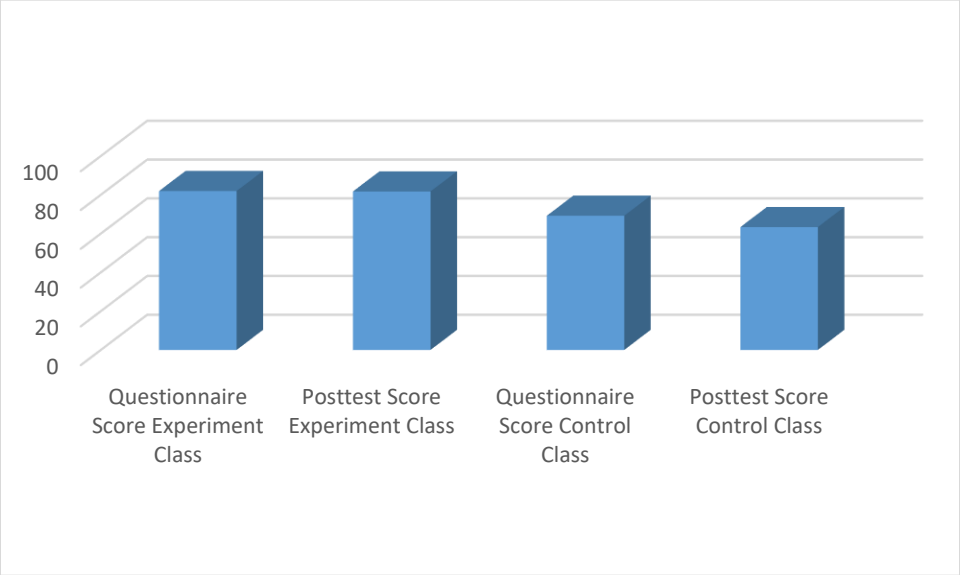


Fig 1. Mean of questionnaire and posttest score

3.3. Statistical Test

a. Validity test

Instrument validity test is a test to measure the validity of questions or statement items before being tested on research samples. The validity test carried out in this study is as follows:

Table 1. Validity test of the learning outcomes test instrument

Correlations						
		Q_1	Q_2	Q_3	Q_4	Total Score
Q_1	Pearson Correlation	1	.345	.233	.432	.777**
	Sig. (2-tailed)		.207	.403	.108	.001
	N	15	15	15	15	15
Q_2	Pearson Correlation	.345	1	.316	.134	.547*
	Sig. (2-tailed)	.207		.251	.634	.035

	N	15	15	15	15	15
Q_3	Pearson Correlation	.233	.316	1	.367	.613*
	Sig. (2-tailed)	.403	.251		.179	.015
	N	15	15	15	15	15
Q_4	Pearson Correlation	.432	.134	.367	1	.785**
	Sig. (2-tailed)	.108	.634	.179		.001
	N	15	15	15	15	15
Total Score	Pearson Correlation	.777**	.547*	.613*	.785**	1
	Sig. (2-tailed)	.001	.035	.015	.001	
	N	15	15	15	15	15
**. Correlation is significant at the 0.01 level (2-tailed).						
*. Correlation is significant at the 0.05 level (2-tailed).						

Table 2. Reliability test of learning outcomes test instruments

Reliability Statistics	
Cronbach's Alpha	N of Items
.618	4

Table 3. Normality test of the post test scores of learning outcomes

One-Sample Kolmogorov-Smirnov Test			
		Control Class	Experiment Class
N		31	32
Normal Parameters[a,b]	Mean	69.19	81.94
	Std. Deviation	8.735	7.313
Most Extreme Differences	Absolute	.117	.152
	Positive	.117	.089
	Negative	-.105	-.152
Test Statistic		.117	.152
Asymp. Sig. (2-tailed)		.200[c,d]	.060[c]
a. Test distribution is Normal.			
b. Calculated from data.			
c. Lilliefors Significance Correction.			
d. This is a lower bound of the true significan			

Based on the results of research on the effect of applying the ARCS learning model on students' interests, it obtained significant results. This can be seen from the results of data analysis using SPSS Statistics 25 on the independent t test. From this analysis, a significance value of 0.000 was obtained. Based on the basic criteria for decision making 0.00 <0.05. Thus H0 is rejected and H1 is accepted. From the results of these calculations, it can be concluded that there is a significant influence from the application of

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the ARCS learning model on the Learning Interests of Class VII Students at SMPN 2 Ngantru Tulungagung on the Quadrilateral Flat Shape material.

The results of this study were reinforced by the results of research conducted by Bunga Wahyu Nirwana Mayzhurra and Eko Haryono entitled "Analysis of interest and learning motivation of class XI students in wave material during the Covid-19 pandemic". Based on the analysis of the data in this study, it was concluded that using the ARCS learning model, interest and learning motivation were categorized as good and had an effect on students' learning motivation. With ARCS learning, students are able to associate the concepts of one wave material with another so that they will get positive changes, and can develop self-confidence in their abilities (Mayzhurra & Hariyono, 2021).

Table 4. Multivariate significant test

Multivariate Tests[a]							
Effect		Value	F	Hypothesis df	Error df	Sig.	Partial Eta Squared
Intercept	Pillai's Trace	.993	4029.602[b]	2.000	60.000	.000	.993
	Wilks' Lambda	.007	4029.602[b]	2.000	60.000	.000	.993
	Hotelling's Trace	134.320	4029.602[b]	2.000	60.000	.000	.993
	Roy's Largest Root	134.320	4029.602[b]	2.000	60.000	.000	.993
Class	Pillai's Trace	.619	48.790[b]	2.000	60.000	.000	.619
	Wilks' Lambda	.381	48.790[b]	2.000	60.000	.000	.619
	Hotelling's Trace	1.626	48.790[b]	2.000	60.000	.000	.619
	Roy's Largest Root	1.626	48.790[b]	2.000	60.000	.000	.619
a. Design: Intercept + Class							
b. Exact statistic							

Learning models that are fun and attract students' learning interest will also generate enthusiasm or motivation for learning students which will also have an impact on student learning outcomes. This can be seen from the student learning outcomes test after applying the ARCS learning model. In this research, the results of samples in class VII A and VII B at SMPN 2 Ngantru Tulungagung showed a significant influence between the application of the ARCS learning model on mathematics learning outcomes. This significant influence can be seen from the results of data analysis using an independent t test of 0.000. Based on the basic criteria for decision making 0.000 <0.05. Thus H0 is rejected and H1 is accepted. Based on the results of these calculations, it can be concluded that there is a significant influence between the group given the ARCS learning model and the group given the conventional learning model.

The results of this study are strengthened by the results of research conducted by Stefany Maya and Evy entitled Effects of the ARCS Strategy (Attention, Relevance, Confidence and Satisfaction) on the Motivation and Learning Outcomes of ICT Grade VIII Students at SMP Negeri 4 Negara. The results showed that there were differences in learning outcomes ICT between students who learn through the ARCS learning strategy ($\bar{x}$ = 51.03) and students who learn through the direct learning model ($\bar{x}$ = 45.18). Got

$Fhitung$ =111,040; $p < 0.05$. From this analysis it was concluded that the ARCS strategy can be used to increase students' motivation and ICT learning outcomes (Stefany, 2016; Stefany Maya, 2014).

Based on the data analysis that was carried out in this study, the researchers used the MANOVA test with the help of SPSS Statistics 25. The output results of the test showed that the fourth p value (sig.) for pillace trace, wilk's lambda, hotelling's trace, and Roy's lagest root was 0.000. Based on the basis of decision-making sig. 0.000 <0.05 which means H0 is rejected and H1 is accepted. It can be concluded that there is a significant influence between the group given the ARCS learning model and the group given the conventional learning model. The results of this study were also strengthened by research conducted by Lidia Susantri entitled "Implementation of Learning Motivation Model ARCS for class XI students at SMA Charis Malang, from her research it was found that the application of the ARCS learning model had an impact on attitudes (affective) students in following the learning in class. This can be seen from the increasing curiosity of students, the attitude of wanting to fight, and the feeling of comfort in learning. This learning also maintains the attitude of students while participating in learning activities so that there are no attitudes or things that the teacher does not want, for example feeling lazy, not respecting the teacher, not responding to learning and so on (Susanti, 2018).

5. CONCLUSION

Based on the formulation of the problem and research hypothesis proposed, the research results obtained are in accordance with data analysis and hypothesis testing, so it can be concluded that there is a significant influence from the application of the ARCS Learning Model on the interest and learning outcomes of class VII students in SMPN 2 Ngantru Tulungagung on Quadrilateral Flat Shapes material. This significant influence can be seen from the results of the data analysis that has been presented in the previous results. The significant results obtained were 0.000. Based on the basic criteria for decision making 0.000 <0.05 which means *H*0 is rejected. With the implementation of various learning models as variations in learning activities, one of which is the ARCS learning model is expected to stimulate students that learning is fun. Students are expected to be more active and confident in conveying their curiosity and maintaining their interest in learning and their attitude during the learning process so that there are no more problems that are not expected by the teacher or educator.

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