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## Application of Cooperative Learning Model using Wordwall Application on Students' Learning Interest in Integer Material

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Abstract— Mathematics education is an education that is related to everyday life. In the learning process, teachers still use conventional learning models, such as the lecture learning model, which still tends to be monotonous due to the lack of LCD, projector and other facilities. This causes students to be less interested in learning mathematics and find it difficult to understand the material because the learning model is still monotonous. This research aims to apply a cooperative learning model using the wordwall application to students' learning interest in whole number material. The effect of implementing a cooperative learning model that utilizes the wordwall application is on student learning interest in whole number material. The research method used is descriptive quantitative. The population in this study were all MTsS YKHS Ten grade VII students, namely 30 people. students felt happy following the cooperative learning model assisted by the wordwall application media. The research showed that 25 students completed and 5 students did not complete with a percentage of 80%, this shows that it is effective in increasing students' interest in learning about mathematical integers.

*Keywords*— Cooperative Learning Model, Wordwall.

### I. INTRODUCTION

Mathematics is a subject that has various benefits in everyday life because various life problems cannot be separated from mathematical calculations (Nur, 2021). Therefore, mathematics is a compulsory subject that must be studied by students, both at elementary and secondary school levels. Through learning mathematics, students are expected to develop creative, logical, critical and systematic thinking skills in order to be able to solve problems effectively (Firmansyah, 2019). Thus, mathematics learning is very important to learn.

However, the reality is that many students consider mathematics as a difficult and abstract subject, full of confusing symbols and symbols. This view causes a decrease in students' attention and interest in learning mathematics (Rohmasar, 2019). Interest in learning plays an important role in the learning process because it can encourage students' perseverance and focus, making it easier to understand the material (Yulia, 2021).

Based on the results of observations conducted by researchers during the School Field Introduction (PLP) at SMAS Islam YKHS Sepuluh, it was found that students' interest in learning mathematics was still low. This was indicated by the lack of focus of students in learning, minimal recording of materials, minimal responses to teacher questions, and dependence on friends' answers during practice questions. The dominance of teachers in the learning process also made the atmosphere less interesting and reduced student involvement.

Therefore, innovation is needed in learning models so that the learning process becomes more interesting and interactive, so that student interest and activity increase (Hartin, 2019). One effective model is cooperative learning.

Cooperative learning is a model that focuses on cooperation in groups. In addition to helping students master the material, this model also trains the ability to cooperate between students (Himami, 2021). In general, cooperative learning consists of four stages, namely: 1) presentation of material by the teacher, 2) learning in groups, 3) individual and group assessments through tests or quizzes, and 4) awards for the best groups that receive awards to motivate the achievements of other groups. Thus, cooperative learning is expected to be able to increase the interest and activeness of students in the mathematics learning process.

One of the mathematical materials that must be mastered by students is integers. This material is very close to everyday life and is often used in various calculations (Irwan, 2017). However, students' interest in integers is still relatively low. Therefore, the application of



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cooperative learning is expected to increase interest in learning this material.

In addition, teachers can utilize quizzes at the end of learning to increase student learning activity and interest (Sadirman, 2006). The quizzes make students more active in learning because they are motivated to discuss with group members, pay attention to the teacher's explanation, and note important things in the material (Susanti, 2019). An active learning atmosphere with interactive quizzes can make it easier for students to understand the material.

One of the interactive quizzes that can be used is the Wordwall application. According to Arimbawa (2021), Wordwall is an interactive and fun learning media because it invites students to actively participate through quiz games. The use of Wordwall in learning can make the learning process more interesting and effective, so that students' interest in learning increases (Novida, 2021).

Based on this, researchers are interested to describe the application of cooperative learning models using wordwall applications on students' learning interest in integer material.

### **II. LITERATURE REVIEW**

The cooperative learning model is a learning approach that emphasizes cooperation in groups to achieve common learning goals. This model is implemented through group activities where learning success depends on the contribution and interaction of each member, both individually and collectively. Solihatin (2022) states that cooperative learning is a form of structured cooperative behavior, while Rusman (2022) emphasizes that the learning model is a teacher's plan in compiling interesting and effective learning. According to Nurhadi (2016), interactions in cooperative learning are carried out consciously with a spirit of mutual tolerance to prevent conflict.

Cooperative learning also has several important elements such as individual responsibility, positive interdependence, promotive interaction, communication between members, face-to-face, and evaluation of group processes (Agus, 2012). The implementation steps include conveying objectives, presenting information, forming learning teams, facilitating group work, evaluating, and giving awards. This model has various advantages, including improving thinking skills, allowing students to express their opinions, creating a pleasant learning atmosphere, and fostering an attitude of mutual respect for individual differences (Widarto, 2017). Thus, cooperative learning not only supports academic achievement but also forms students' social and emotional skills.

Wordwall is a web-based application that functions as an interactive learning media in the form of a game designed to make the learning process more fun and less boring (Agung, 2021; Sari, 2021). This application allows teachers to create interesting quizzes that can be accessed online without the need to be installed, making it a practical and effective learning tool. Wordwall provides various game templates such as mazes, game show quizzes, airplanes, burst balloons, and open chests. Each template offers a different learning experience and can be adjusted to learning objectives and student characteristics (Puri, 2021). In this study, the maze template was used because it was considered more challenging and able to increase student active engagement. To create a quiz with Wordwall, teachers simply go to the wordwall.net site, create an account, select a game template, and enter questions and answers (Ida, 2021). The advantages of Wordwall include being able to be used for all subjects, having a variety of games, and being easily accessible through various devices. However, there are also some limitations such as limited font choices and some game templates that are only available in the paid version (Andi, 2022).

Integers are a set of numbers consisting of positive integers, negative integers, and zero. This set is usually symbolized by the letter Z, so it is written as  $z = \{-3, -2, -1, 0, 1, 2, 3, \dots\}$ . Integers can be represented through a number line, which makes it easier to understand the concept of value and relative position between numbers. Integer operations include addition, subtraction, multiplication, and division, which are important parts of learning basic mathematics because they are the basis for solving various advanced mathematical problems.

### **III. RESEARCH METHODOLOGY**

The research method used in this study is quantitative descriptive research. This type of research was chosen because the data analysis technique used is very appropriate with the quantitative descriptive approach, thus facilitating the process of data collection and calculation. The research was conducted at MTsS YKHS Sepuluh, Sepuluh District, Bangkalan City. The population in this study were all students of class VII MTsS YKHS Sepuluh, with a sample of 30 students from one class VII.



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Data collection in this study was carried out through several techniques, namely observation, questionnaires, and tests. Observations were carried out to collect data on student activities during learning and teachers' abilities in managing learning. Observations of student activities were carried out by observer I (researcher), while observations of teacher abilities were carried out by observer II (grade VII mathematics teacher). The questionnaire was used to measure students' responses to the implementation of the cooperative learning model with the help of the Wordwall application media, where students filled out the questionnaire at the end of learning by checking the statements that were in accordance with their opinions. The test was given in the form of a pretest and posttest to assess students' learning completeness on the integer material after participating in learning using the cooperative model.

The research instruments consisted of teacher ability observation sheets, student activity observation sheets, student response questionnaire sheets, and student learning outcome test sheets. The teacher ability observation sheets aimed to obtain data on teacher effectiveness in managing learning with a cooperative model assisted by the Wordwall application. The student activity observation sheets functioned to observe the level of student participation and involvement during the learning process. The questionnaire sheets were used to determine students' perceptions and responses to the learning model applied, while the test sheets functioned to assess student learning outcomes after participating in learning.

The data obtained were analyzed using descriptive statistical analysis.

# Data Analysis of Teachers' Ability to Manage Learning

Descriptive statistical analysis applied according to (Lasmi, 2017) is using the average score.

Average score

### number of observation aspects

The average score categories are as follows:

 $1.00 \le _{TKG} < 1.50$  : very bad  $1.50 \le _{TKG} < 2.50$  : bad  $2.50 \le _{TKG} < 3.50$  : good  $3.50 \le _{TKG} < 4.50$  : very good

### Student Activity Data Analysis

Student activities were analyzed using averages. The categories of average student activity scores can be seen in Table 1.

	<b>Habit 1.</b> Sinder	in neuvry score calegories
Point Biserial Correlation		Information
$3,50 \leq SAS \leq 4,00$		SSN: Z Very Active 685Z
$2,50 \leq SAS \leq 3,50$		Active
$1,50 \le SAS \le 2,50$		Less Active
$1,00 \le SAS \le 1,50$		Not Active

### Table 1. Student Activity Score Categories

### Student Response Data Analysis

Student response data obtained from the questionnaire and Student responses are declared effective when positive student responses are included in the agree or strongly agree categories (Sari, 2019). Student Response Result Percentage Criteria Table 2.

Percentage	Descripsion
0% - 20%	Strongly disagree
21% - 40%	Disagree
41% - 60%	Undecided
61% - 80%	Agree
81% - 100%	Strongly agree

Table 2. Student Response Result Percentage



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### Analysis of Student Learning Outcome Test Data

Students are declared to have completed individually if they are able to achieve a score of 75.

Meanwhile, classically, they are declared to have completed if at least 70% of students have completed individually.

### **IV. FINDINGS AND DISCUSSIONS**

Preparation and Implementation Stage

### **Preparation Stage**

On the initial display of the website, which can be accessed from any device you use, we as teachers are asked to log in.



Figure 2. View After Login

We can choose the theme we use to use, there are also paid themes if you want to use a more varied theme. After we have chosen the theme we want, here is an example of entering questions into the gameshow quiz theme.



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Figure 4. Examples of Making Gameshow Quiz Questions

After entering the desired question, the media will immediately appear on our homepage and is immediately ready to be shared with the easiest link via WhatsApp chat.



Figure 5. Media View Ready to Share

### Implementation Stage

When learning begins, students are asked to chat with the teacher to get the wordwall media link.



Figure 6. Images of Media Links that Students Will Receive

After students get the link, students can immediately work on the questions on the wordwall without having to register their account.



Figure 7. View Inside the Application

After students have finished working on the questions on the word wall, students can write their name or group and it will be visible on the scoreboard.



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Figure 8. Final View of Wordwall Application

Final Stage

Students are asked to fill out a response questionnaire that they have followed learning using a cooperative learning model with a wordwall application.

As teachers, we can also check the results of students' work from your website, go to account settings and select my results.



Figure 9. Images of Student Work Results

Descriptive statistical analysis to answer the problem formulation (how to apply the cooperative learning model through the application of wordwall applications to students' learning interest in integer material).

Teacher observation data managing learning presented in Table 3.

No.	Observed Aspects							
I.	Implementation Aspects							
	The teacher reminds the students of the previous learning material.				4			
	Provides an overview of the benefits of studying integer material				4			
	The teacher conveys all the learning objectives that are to be achieved in the learning and			3				
	motivates students to learn.							

Table 3. Recapitulation of Teachers' Ability to Manage Learning Model



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	Teachers present information to students by means of demonstrations or through reading		3	3	
	materials.				
	The teacher organizes students into several study groups.		3	3	
	The teacher guides the study groups as they work on their assignments.		3	3	
	The teacher gives several groups the opportunity to present the results of their discussions.			4	ŧ
	The teacher gives awards to groups with good presentations.			4	ŧ
	The teacher gives practice questions to each group of students.		3	3	
	The teacher gives an award to the group with the highest score.			4	ŧ
	Together with students, the teacher reflects on the activities that have been carried out.		3	3	
II.	Learning Atmosphere				
	Interactive learning and lively classroom atmosphere		3	3	
III.	Time Management				
	Time according to the steps in the cooperative model		3	3	
Amo	unt	44			
Aver	age	3,384			

Based on the results of the data analysis, the average score of teachers' ability to manage learning using cooperative learning models assisted by wordwall application media was obtained at 3.384, so it is in the good category.

Thus, the teacher's ability to manage learning is said to be effective. Observation data on student activities presented in Table 4.

Table 4.	Recapitulation	of student	activities
	1	./	

			Ot	oser	ved	asp	ects		7							1	_								
No	Grou	Student Na	Α				В		1		C				D			_	E				Amou	Avera	
•	р	me	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	nt	ge	
1.	1	A				4				4			7	4				4		5		4	20	4,0	
2.		В			3				3				3	/			3					4	16	3,2	
3.	2	С				4				4				4				4			3		19	3,8	
4.		D			3					4				4				4				4	19	3,8	
5.	3	E			3				3					4			3					4	17	-3,4	
6.		F				4				4	~		3	N			Ζ,	-4)	Õ		3	6	18	3,6	
7.	4	G				4				4				4				4				4	20	4,0	
8.		Н				4			3					4			3					4	18	3,8	
									1													1	47	3,675	

Based on the analysis of student activity data during cooperative learning model activities assisted by wordwall application media, student activity was obtained in the active category with a score of 3.675. Student response questionnaire results data presented in Table 5.

No	o Statement						
		Yes	No				
1.	Do you think the learning model used today is fun?	100%	-				
2.	Is the way the teacher delivers the material today more enjoyable than before?	100%	-				
3.	With the learning model used today, does the learning atmosphere in your class become more enjoyable?	96%	4%				
4.	Do you feel you understand the concept better if you use learning as you have done today?	96%	4%				
5.	Do you think today's learning is more meaningful than previous learning?	100%	-				
Ave	rage percentage of student responses	98,4%	1,6%				

 Table 5. Recapitulation student response questionnaire results



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Data analysis of student responses to the cooperative learning model assisted by the wordwall application media shows that 98.4% of students feel happy following the cooperative learning model assisted by the wordwall application media, so students respond positively to cooperative learning assisted by the wordwall application media.

The results of data completeness in the posttest class can be seen in Table 6.

No	No   Research Criteria   Frequency   Percentage										
1	Complete	25	80%								
2	Incomplete	5	20%								
	Amount	30	100%								

Table 6. Recapitulation of students' learning out	tcomes as a class
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Based on Table 6 above, the data concludes that the completion of students' learning outcomes classically after being taught learning by implementing a cooperative learning model is stated to have been achieved, because the percentage of students who completed it reached 80%.

### **DISCUSSION OF RESULTS**

Based on the results of the research analysis, cooperative learning using the wordwall application is said to be effective when viewed from the following results, including, Teachers' ability to manage effective learning, because the observation results scores for each aspect observed at each meeting are included in the good and very good categories, Student activities are effective, because there are 13 aspects observed within the tolerance time limit, Student responses are positive, because the percentage of positive student responses from each statement exceeds 80% Student learning completion is achieved classically, because the number of students who have completed learning exceeds 80%

The results of this study are in line with previous research conducted by Rahayu (2023) entitled Analysis of the Use of Educational Games Wordwall on the Learning Interests of Class XI Students on Ruminant Material based on the method used in the study regarding the use of Wordwall on the interest in learning ruminants in the learning process by collecting data through questionnaires, direct interviews with teachers and students, observation and documentation. The results of the study proved that the use of WebWordwall media gave positive results on the learning interests of class XI MIPA 02 students on ruminant material which showed a result of 78% with a very high category. Biology learning with the Wordwall application is good and can support learning activities that are applied in the biology learning process of ruminant material in junior high schools.

### V. CONCLUSION AND RECOMMENDATIONS

Based on the research conducted, it can be concluded that The cooperative learning model using the wordwall application as a learning medium on integer material is declared effective because it meets 4 indicators, including: the teacher's ability to manage effective learning, effective student activities, and positive student responses as evidenced by the completion of the student's posttest results. A significant difference was found in the learning outcomes of students who applied the cooperative learning model to integer material.

This can be used as input for teachers to use interactive learning media, which can not only be used by teachers. Students' boredom will be reduced when students are involved in learning. Students should not be afraid or feel bored in following and solving algebraic function limit problems because there is always a good solution to eliminate boredom, one of which is through the application of a cooperative learning model assisted by wordwall application media.

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