



## Implementation of the Cooperative Learning Model of the Course Review Horay Type to Improve Student Learning Outcomes on the Material of Vibrations and Waves

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### ABSTRACT

The low student learning outcomes are caused by the lack of motivation and participation of students in the learning process. This study aims to describe the cognitive learning outcomes of students and determine the improvement in cognitive learning outcomes of students between classes that apply the cooperative learning model of the course review horay type and classes that apply the conventional learning model. The research method used is a quasi-experiment with a pretest-posttest control group design. The results of the descriptive analysis of the experimental class obtained an average value of cognitive learning outcomes of 74.14 in the good category, while the control class obtained an average value of 63.57 in the fairly good category. The results of the hypothesis test obtained 0.000 smaller than 0.05 which means there is a significant difference in cognitive learning outcomes of students between classes that apply the cooperative learning model of the course review horay type and classes that apply the conventional learning model on the material of vibrations and waves in class VIII SMPN 20 Pekanbaru. Thus, it is concluded that the cooperative learning model of the course review horay type is able to improve students cognitive learning outcomes.

## 1. Introduction

Education is a crucial factor in improving the quality of human resources. Through education, human life can progress toward a better future. Therefore, the government has implemented a national education system focused on educational quality, as stipulated in Law No. 20 of 2003, which states that education is a planned effort to create a learning environment that enables students to develop their potential. Through education, individuals can develop the personality, intelligence, and skills necessary to contribute to society, the nation, and the state (Tambun et al., 2020). Natural Sciences (IPA) is one of the subjects that plays a role in developing students' potential. Natural Sciences (IPA) is knowledge obtained through data collection through experiments, observations, and deductions to produce a reliable explanation of a phenomenon (Abdan, 2020).

Based on the results of discussions with science teachers at SMPN 20 Pekanbaru, the science learning process still uses a teacher-centered learning model with a lecture method, where the learning activities are only one-way controlled by the teacher and tend to make students passive because they only wait for the teacher's explanation then take notes and memorize them (Puspaningrum et al., 2015). Students' interest in learning will decrease so that their critical thinking skills and collaborative skills do not develop optimally. According to Gunawan et al., (2021) who explained that low learning outcomes in science subjects occur due to a lack of student learning motivation, in learning students do not pay attention to the teacher when explaining, the use of inappropriate learning methods or models and the use of media.

Lack of student engagement and interest in the learning process will result in suboptimal learning outcomes. Learning is considered optimal if student learning outcomes achieve the Minimum Completion Criteria (KKM) standard. At SMP Negeri 20 Pekanbaru, the KKM for science subjects for grade VIII is set at 75. However, interviews with teachers revealed that the average daily science test scores, particularly for vibrations and waves, in the 2023/2024 academic year were still below the KKM standard. Many students still have not achieved the KKM score. This is supported by data obtained that only 30% of students completed the vibrations and waves material out of the total number of students.

In light of these issues, alternative learning strategies are needed, utilizing more student-centered learning models that engage students' interest and improve their learning outcomes. The role of teachers is to facilitate student learning and provide engaging learning experiences, indirectly stimulating students to engage more actively in the learning process. Teachers' efforts to improve students' cognitive learning outcomes and motivation can be achieved by employing a variety of learning models that actively engage students in the classroom (Desi & Hani, 2020). One learning model that can be used to overcome problems in science learning is the cooperative learning model of the course review horay type. Course review horay is a learning model that will make students more active and enjoyable because it is interspersed with entertainment, so that the classroom atmosphere becomes lively.

The learning atmosphere and pleasant interactions make students enjoy the lesson more so that students do not feel tense in following physics learning. Students are also not easily bored because in addition to learning, they get entertainment by singing their favorite cheers if they can answer the questions correctly. This model emphasizes understanding the material being taught, in addition, it can also encourage students to compete and train cooperation between students in answering the questions given. The steps of the course review horay model learning are: the teacher conveys the competencies to be achieved, the teacher presents the material in the learning, the teacher provides opportunities for questions and answers, the teacher tests students understanding, the teacher presents questions, the teacher assesses the learning activities carried out, the teacher gives awards (Fadly, 2022). Giving awards at the end of the course review horay learning can provide positive

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encouragement for students to be more active in learning and actively participate in group discussions.

The course review horay learning model is considered capable of improving student cognitive learning outcomes. This is supported by research conducted by Pratiwi et al., (2023) which shows that the course review horay learning model can improve student learning outcomes on straight motion material in class X MIPA SMA Siti Aisyah Kadungora. Similar research was also conducted by Raisah et al., (2024) which stated that the application of the course review horay model is effective in improving student learning outcomes on simple machine material in class VIII MTsN 2 Aceh Besar.

Based on the description above, the researcher intends to conduct a study entitled "Implementation of the Cooperative Learning Model of the Course Review Horay Type to Improve Student Learning Outcomes on the topic of Vibrations and Waves". This study aims to describe the cognitive learning outcomes of students by applying the cooperative learning model of the course review horay type on the material of vibrations and waves in class VIII of SMPN 20 Pekanbaru, and to determine whether there is an increase in the cognitive learning outcomes of class VIII students of SMPN 20 Pekanbaru on the material of vibrations and waves between classes that apply the cooperative learning model of the course review horay type and classes that apply conventional learning.

## 2. Methodology

The research design used in this study is quantitative research. This research was conducted using the quasi experiment method, where the implementation used two classes, namely the experimental class (the class that received the treatment) and the control class (the class that did not receive the treatment). The design used in this study was the Pretest-Posttest Control Group Design, namely research by looking at the difference in pretest scores to determine students' initial abilities with their posttest scores after the application of the learning model in the experimental class and the control class. The pretest-posttest control group design research design is shown in Table 1.

Table 1. Research Design Pretest-Posttest Control Group Design

Class	Pretest	Treatment	Posttest
Experimental Class	O <sub>1</sub>	X	O <sub>2</sub>
Control Class	O <sub>3</sub>	-	O <sub>4</sub>

(Harahap et al., 2021)

The population in this study were 210 students from 6 classes in the eighth grade at SMPN 20 Pekanbaru in the 2024/2025 academic year. The sampling technique in this study was carried out randomly from the population using a random sampling technique. Sample determination was carried out through normality tests and homogeneity tests on the population using the SPSS 26 application based on students' PTS scores. The samples selected in this study were class VIII.1 as the

experimental class and class VIII.4 as the control class, with a total of 70 students from both classes.

The data collection technique in this study was conducted using a pretest and posttest. The data required in this study were primary and secondary data. The primary data referred to were pretest scores (students' scores before receiving treatment in learning activities) and posttest scores (students' scores after receiving treatment in learning activities). Secondary data were obtained from student tests, specifically simple machines, obtained from the science teacher at SMP Negeri 20 Pekanbaru. The instrument used in this study was a cognitive ability test in the form of multiple choices on the material of vibrations and waves.

The data were then analyzed using descriptive and inferential analysis techniques. Descriptive analysis was used to describe the learning outcomes of SMPN 20 Pekanbaru students in the group implementing science learning with the cooperative model of the course review horay type and the group of students implementing conventional learning. Descriptive data analysis was conducted after obtaining the students' cognitive learning outcome scores from the pretest and posttest results that had been conducted. The students' scores were then categorized based on the cognitive learning outcome categories to determine the students' cognitive ability levels. The categories of students' cognitive learning outcomes are shown in Table 2.

Table 2. Criteria for Interpretation of Cognitive Learning Outcomes

Interval (%)	Category
$80 < x \leq 100$	Very High
$65 < x \leq 80$	High
$55 < x \leq 65$	Medium
$40 < x \leq 55$	Low
$0 < x \leq 40$	Very Low

Inferential analysis was conducted to determine differences in student learning outcomes after the implementation of the cooperative learning model (course review horay) in the experimental class and conventional learning in the control class through hypothesis testing. Before conducting the hypothesis testing, normality and homogeneity tests were first conducted. Normality testing is done to determine whether a data distribution is normal or not. Homogeneity test is a statistical test procedure that aims to show two or more groups of sample data that have been taken from a population that has the same variance.

After the prerequisite test was conducted and it was proven that the processed data was normally distributed and homogeneous, the next step was to test the hypothesis to be accepted or rejected. Hypothesis testing in this study used the Independent T-Test. The Independent T-Test was used to determine significant differences between the experimental class and the control class. After the analysis was carried out, conclusions would be drawn from the results of the research conducted. If the average post-test score in the class that implemented the cooperative learning model of the course review horay type was higher than the average posttest score in the

class that implemented the conventional learning model, then it can be concluded that there was an increase in students' cognitive learning outcomes after the implementation of the cooperative learning model of the course review horay type.

### **3. Results and Conclusion**

This study aims to observe the cognitive learning outcomes of eighth grade students at SMPN 20 Pekanbaru by applying the cooperative learning model of the course review horay type compared to students who learn conventionally on the material of vibrations and waves. The variables in this study consist of the independent variable, namely the use of the cooperative learning model of the course review horay type and the dependent variable is the cognitive learning outcomes of eighth grade students on the material of vibrations and waves. The sample in this study was class VIII.1 as an experimental class with a total of 35 students consisting of 18 male students and 17 female students and class VIII.4 as a control class consisting of 16 male students and 19 female students. Before the study was conducted, these two classes followed science learning with a conventional teacher-centered learning model where the teacher provided direct explanations through lectures, simple questions and answers, and individual assignments from textbooks. The delivery of material was carried out sequentially from definitions, formulas, and example questions, and rarely did practical activities or demonstrations. Only a few students actively asked or answered the teacher's questions, while most students listened without actively engaging in the thinking process. In addition, group discussions are rarely implemented so that interaction between students in the learning process is very lacking.

These conditions make the learning atmosphere in the classroom tend to be monotonous and do not encourage student enthusiasm for science materials, especially on the topic of vibrations and waves. Most students still have difficulty in connecting theoretical concepts with real phenomena in everyday life. Lecture methods and giving written assignments are the main strategies, so that students' cognitive learning outcomes are not optimal. Based on these conditions, the researcher implemented a cooperative learning model of the course review horay type in class VIII.1 as an experimental class. Meanwhile, in class VIII.4 as a control class, a conventional learning model was applied. The difference in the application of learning models in the two classes aims to see the effectiveness of the course review horay model in overcoming class conditions that tend to be passive. Through the application of the course review horay model, it is expected to be able to improve students' cognitive learning outcomes through more interactive, enjoyable learning activities and involving group cooperation.

The cooperative learning process of the course review horay type in class VIII.1 is carried out in four meetings. The learning stages include the phase of conveying the competencies to be achieved and motivating students by emphasizing the importance of the topic to be studied. Next is the material presentation phase, in this stage the teacher presents information or material being studied by students through demonstrations or through reading materials. The next phase is the teacher provides

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an opportunity for questions and answers to students, at this stage students who do not understand the learning material are invited to ask questions. After that, the teacher will divide students into several small heterogeneous groups, each consisting of 4-5 people. The teacher will provide student worksheets (LKPD) and guide each group to complete the tasks on the student worksheets (LKPD) that have been given. The next phase is testing student understanding, namely the stage of evaluating student understanding after learning which is packaged in the form of a game. The teacher instructs each group to create a cheer and explains the procedures for the game. Next is the question presentation phase by the teacher. The teacher asks a number of questions based on the material that has been studied. Each group discusses to determine the best answer, then the group that knows the answer is invited to present their answer. If the answer is correct, the group cheers "Horay" and sings a cheer as a form of appreciation and positive reinforcement. The final phase is where the teacher assesses the learning activities and awards. In this phase, students summarize the material from the meeting under the teacher's guidance. Then, the teacher awards the game winners and acknowledges students' understanding of the material learned. This activity creates a fun learning atmosphere, fosters a healthy competitive spirit, and fosters cooperation and responsibility within the group. Although it does not use specific learning media, the implementation of the CRH model successfully creates an active, communicative, and conducive learning environment for improving students' cognitive learning outcomes.

### *Descriptive Data Analysis*

The cognitive learning outcome data of students used in this study are the learning outcome data obtained from the pretest and posttest results obtained before and after the implementation of the course review horay type cooperative learning model in class VIII.1 as the experimental class and conventional learning in class VIII.4 as the control class at SMP Negeri 20 Pekanbaru. Based on the pretest and posttest scores of the experimental class and the control class, the learning outcome categories based on the cognitive learning outcome interpretation criteria can be seen in Table 3.

Table 3. Analysis of Students' Cognitive Learning Outcomes

Interval (%)	Category	Class							
		Experiment				Control			
		Pretest		Posttest		Pretest		Posttest	
$80 < x \leq 100$	Very High	-	-	8	23%	-	-	1	3%
$65 < x \leq 80$	High	-	-	19	55%	-	-	11	31%
$55 < x \leq 65$	Medium	-	-	4	11%	-	-	14	40%
$40 < x \leq 55$	Low	4	11%	4	11%	5	14%	9	26%
$0 < x \leq 40$	Very Low	31	89%	-	-	30	86%	-	-
	Average	28,85		74,14		29,00		63,57	
	Category	Very Low		High		Very Low		Medium	

Based on Table 3, the average pretest scores for the experimental and control classes were not significantly different. The average pretest score for the experimental class

was 28.85, categorized as very low, and the control class was 29.00, categorized as very low. This indicates that the experimental and control classes had relatively similar initial abilities on the topic of vibrations and waves. The average posttest score for the experimental class, which implemented the course review horay cooperative learning model, was higher, with 78% in the very high and high categories, compared to the control class, which implemented the conventional learning model, where only 34% were in the very high and high categories. This indicates that the average posttest score for the experimental class was higher than that of the control class. The comparison of the average pretest and posttest scores for each cognitive domain indicator from the experimental class can be seen in Figure 1.

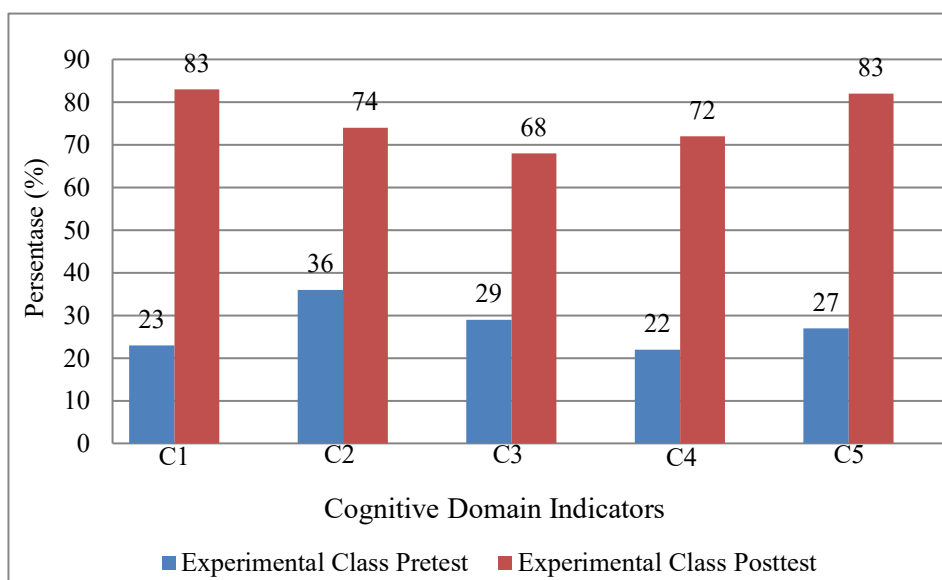


Figure 1. Comparison Diagram of Cognitive Learning Outcome Analysis

Based on Figure 1, it can be seen that there is an increase in student learning outcomes in the indicators of student cognitive abilities after the implementation of the cooperative learning model of the course review horay type in the experimental class. This can be seen based on the increase in student achievement in each learning outcome indicator. The application of the cooperative learning model of the course review horay type has the advantage of helping students achieve a deeper understanding and high absorption capacity so that it can improve student learning outcomes in the material of vibrations and waves.

The course review horay cooperative learning model creates a fun classroom atmosphere. The enjoyable learning atmosphere and interactions make students enjoy the lesson more, preventing boredom. This can be seen in the students' enthusiasm and active participation in answering questions posed by the teacher during the learning process. Active student learning fosters self-confidence, creativity, and a passion for learning. When students develop a desire to continue actively participating in learning, their motivation begins to emerge, which will improve their cognitive learning outcomes.

### ***Inferential Data Analysis***

This study conducted an inferential analysis using SPSS 26. The inferential analysis consisted of a normality test, a homogeneity test, and a hypothesis test. The Kolmogorov-Smirnov test was used for the normality test. The results of the normality test showed that the pretest and posttest scores between the experimental and control classes had a significance value greater than 0.05, indicating that the data were normally distributed. A homogeneity test was then conducted using the Levene's Test. The homogeneity test results showed a significance value greater than 0.05. Therefore, it can be concluded that both classes come from populations with homogeneous variances. After conducting the prerequisite tests, the hypothesis was tested using an independent sample t-test. This hypothesis test was conducted to determine whether there were significant differences in students' cognitive abilities between the experimental and control classes. The results of the independent sample t-test on the pretest scores of the experimental and control classes yielded a significance value of 0.957, which is greater than 0.05. Therefore, it can be concluded that there were no significant differences in cognitive learning outcomes between the experimental and control classes before the treatment was administered. The results of the Independent Sample T-test on the posttest scores of the experimental class and the control class obtained a significance value of 0.000, which is smaller than 0.05. Therefore, it can be concluded that there is a significant difference in students' cognitive learning outcomes between classes that apply the cooperative learning model of the course review horay type and classes that apply the conventional learning model on the material of vibrations and waves at SMPN 20 Pekanbaru.

### **4. Conclusion**

Based on the results of research conducted in eighth grade students at SMPN 20 Pekanbaru, using the course review horay cooperative learning model for vibrations and waves, the following conclusions can be drawn:

1. Eighth grade students' cognitive learning outcomes in the vibrations and waves material using the course review horay cooperative learning model showed improvement. This is evidenced by the average high level of students' cognitive learning outcomes.
2. There was a significant increase in students' cognitive learning outcomes in the vibrations and waves material between classes using the course review horay cooperative learning model and classes using the conventional learning model.

Therefore, the course review horay cooperative learning model has been proven to improve students' cognitive learning outcomes in the vibrations and waves material at SMPN 20 Pekanbaru.

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