THE APPLICATION OF THE TEAM ASSISTED INDIVIDUALIZATION (TAI) TYPE OF COOPERATIVE MODEL IN THE STUDENTS' IPA LEARNING IN CLASS V SD NEGERI 49 LUBUKLINGGAU

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Abstract

This research by Nurhudha NPM 5018077 entitled the application of the Team Assisted Individualization (TAI) type cooperative learning model in science learning for fifth grade students of SD Negeri 49 Lubuklinggau with the main supervisor Yeni Asmara, M.pd and the assistant supervisor Eka Lokaria, M.pd, Si. The purpose of this study was to determine the completeness of science learning outcomes for fifth grade students of SD Negeri 49 Lubuklinggau after the cooperative model of Team Assisted Individualization (TAI) was applied. This type of research is a pre-experimental design research that was carried out without a comparison class with a pre-test and post-test group design. The population is the entire fifth grade of SD Negeri 49 Lubuklinggau for the academic year 2021/2022, which consists of 47 students consisting of two classes and as the sample is class V.A which is taken at random by 23 students. data collection was taken by test technique. The collected data were analyzed using t-test. based on the results of the t-test analysis at a significant level = 0.05, obtained t_count (20.11) > t_table (1.717), so it can be concluded that the learning outcomes of science learning for fifth graders at SD Negeri 49 Lubuklinggau after the implementation of the Team Assisted Individualization cooperative model (TAI) significantly completed

Keywords – Learning outcomes; Science; Team Assisted Individualization (TAI)

1. Introduction

Education is a planned system to create a learning atmosphere and learning or training process so that students can actively develop their potential to have spiritual, religious, emotional, self-control, personality, intelligence, noble character, and skills needed by themselves and society. Education has a close relationship with learning because in education the interaction between educators and students is part of every learning process (Sarbini, 2011: 23).

Learning is basically an educator's effort to help students carry out learning activities. The purpose of learning is the realization of the efficiency and effectiveness of learning activities carried out by students (Isjoni, 2009: 11). However, it is found that the implementation of learning has a tendency to certain methods (conventional) and does not pay attention to the level of understanding of students' information on the information conveyed, so that students do not understand the actual concept. One of the lessons that must be learned by students is science which has an important role in developing students' thinking skills. Students must learn science through understanding and actively build new knowledge from previous experiences and knowledge. Argue that science as a process is a human effort to understand various natural phenomena, as a product is a human effort to understand various natural phenomena in the form of principles, theories, laws, concepts -concepts and factors, all of which are intended to explain various natural phenomena as science factors can change human attitudes and views towards the universe.

Based on the results of interviews conducted by researchers with a teacher named Fitri Anjarsari, S.Pd as the homeroom teacher for class V A SD Negeri 49 Lubuklinggau, that in class V A there are 23 students from 15 male students and 8 female students. With the KKM set at school at 70. From 23 students there are 10 students who have reached the KKM (43.47%) and 13 students who have not reached the KKM (56.52%). Then the results of the interview with Mrs. Yunaria, S.pd as the homeroom teacher for class V B SD Negeri 49 Lubuklinggau, that in class V B there are 24 students from 12 male students and 12 female students.

With the KKM set at school at 70. Of the 24 students there are 7 students who have reached the KKM (29.16%) and 17 students who have not reached the KKM (70.83%). in student learning outcomes, especially in science lessons. Then it was also found that there are several factors that cause students' weaknesses and difficulties

in science learning, namely the lack of student activity in the learning process, students are less interested and motivated to know the science subject matter that will be delivered by the teacher, and pay less attention to the explanation from the teacher during the learning process.

One strategy in creating effective and fun learning is of course by involving students in class discussion activities, namely applying the Team Assisted Individualization (TAI) type of cooperative learning model. The role of science learning at SD Negeri 49 Lubuklinggau which is carried out by several teachers is still delivering subject matter using the lecture method, so that the learning process is monotonous and students become less active. but students often find it difficult to solve the problems given, they do not understand the material presented because the teacher only uses the lecture method, especially in science subjects. Learning techniques implemented like that resulted in a lack of student participation and resulted in low student learning outcomes. In elementary science learning, teachers are expected to be able to create an interesting learning atmosphere and improve student learning outcomes.

One of the efforts that can be done is to choose the Team Assisted Individualization (TAI) cooperative type learning model which can provide opportunities for students to improve students' abilities to be more active. One model that can be applied at SD Negeri 49 Lubuklinggau after seeing the existing conditions is to apply the TAI (Team Assisted Individualization) type of cooperative learning model to improve science learning outcomes in fifth grade elementary school. The TAI (Team Assisted Individualization) type of cooperative learning model allows each student to actively participate in groups. The TAI (Team Assisted Individualization) learning model consists of members whose

learning achievement levels are evenly distributed, namely those who have high, medium and low learning achievements who are in one group and understand the material they are learning. This is what spurs students to participate actively in the learning process.

The TAI type of cooperative model is included in cooperative learning and was developed by Slavin. One of the characteristics of cooperative learning is that there is a direct relationship between students (Isjoni, 2009: 20). This type of TAI combines cooperative learning with the type of TAI which provides opportunities for each student to help each other and encourage each other to achieve maximum effort. So that weak students will be helped in understanding the problems solved by the group, while smart students can develop and deepen their knowledge, abilities and skills.

Based on the description above, the authors are interested in making a proposal entitled Application of the Team Assisted Individualization (TAI) Cooperative Type Learning Model in Class V Science Learning at SD Negeri 49 Lubukinggau, to improve science learning outcomes for Class V SD and improve the quality of effective and efficient learning. and the use of this learning model is expected to overcome the problem of students' lack of understanding of learning in the classroom. States that the learning model is a plan or a pattern that is used as a guide in planning learning in class or learning in tutorials. The learning model refers to the learning approach that will be used, including teaching objectives, stages in learning activities, learning environment and classroom management. The learning model is a conceptual framework that describes a systematic procedure in organizing learning experiences to achieve learning goals (Trianto, 2010: 57), the learning model is a pattern that has been planned in such a way and is used to develop a curriculum, organize subject matter and provide instructions to teachers in the class. (Suyatno, 2009: 57), states that Team Assisted Individualization (TAI) is individual assistance in groups with the characteristic that the responsibility for learning is on the students. Therefore, students must build knowledge not to accept the finished form from

the teacher. (Ariani, 2017: 171) said that the Team Assisted Individualization (TAI) model is one of the cooperative learning models formed from small groups in heterogeneous classes in each group and followed by the provision of assistance from students who are smart group members individually. individually for students who need it.

(Robert, 2005, 187), stated that Team Assisted Individualization is the name of the program which is the origin of the development and research of the program so that it becomes TAI. TAI is currently known as Team Acclerated Instruction. (Trianto, 2010) state that learning outcomes are the results achieved in the form of numbers or scores after being given a test of learning outcomes to students within a certain time. Learning outcomes are changes that occur in students, both regarding cognitive, effective and psychomotor aspects as a result of learning activities (Susanto, 2013: 5). Learning outcomes are abilities that students have after they receive their learning experiences (Rusman, 2013: 123). Learning outcomes according to Bloom's Taxonomy learning outcomes are changes that occur in students both concerning the cognitive, affective and psychomotor domains as a result of learning activities. The cognitive domain contains behaviors and attitudes that emphasize intellectual aspects, such as knowledge and thinking skills. The affective domain includes behaviors related to emotions, such as feelings, values, interests, motivations and attitudes. The psychomotor domain contains behaviors that emphasize manipulative functions and motor skills.

Relevant Research

a. This research was conducted by (Patel, 2019) with the title "Application of Cooperative Learning Model Type TAI (Team Assisted Individualization) to improve Learning Outcomes of Science Subjects in fourth grade students of SD Negeri 3 Labuan Panimba". The results of the study are that there is an increase in the learning outcomes of fourth grade students in science subjects with a completeness level of 80% after the TAI learning model is applied.

b. This research was conducted by (Suparti, 2018) with the title "Application of the Team Assisted Individualization (TAI) Cooperative Type Learning Model to Improve Student Achievement in Class VI SD Negeri Kalisube". The result of this research is the acquisition of learning outcomes that the cooperative learning model type team assisted individualization (TAI) has a positive impact on the learning process. Learners are more motivated to learn, more active and complete learning.

c. This research was conducted by (Puspitasari, 2013) with the title "Application of the Team Assisted Individualization (TAI) Cooperative Model in Improving Learning. Science in class V SD Negeri Lebeng Banyumas". The results of this study are the learning outcomes obtained by students are increasing with the presentation of completeness that has met the criteria of research completeness of 85% and the results of observations and the learning process have also increased and reached 85%.

d. This research was also carried out by(Indriyani, n.d.) with the title "Use of the Team Assisted Individualization (TAI) Cooperative Model to Increase Activeness in Science Learning for Fourth Grade Students of SD Negeri 1 Surakarta". The result of this research is that the activeness of students reaches 86.96%, so the Team Assisted Individualization learning model in science learning can increase the activity of fourth grade elementary school students.

e. This research was conducted by (Ujiati Chayaningsih, 2018) with the title "Implementation of Cooperative Learning Model Type TAI (Team Assisted Individualization) to improve student learning outcomes in Mathematics Subjects for Class V Elementary School Sukarajakulon". The results of this study are that the application of the TAI learning model can improve student learning outcomes in mathematics lessons in class V SDN Sukarajakulon, with a complete learning achievement rate of 98%.

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2. Method

The type of research used in this research is pre experimental design or also known as quasi-experimental. Pre-experimental design is often seen as an unreal experiment. Therefore, it is often referred to as "quasi-experimental" or quasi-experimental (quasi-experimental), because it does not meet the requirements such as experimental methods that can be said to be scientific following certain rules (Arikunto, 2014: 123)

The variable is the object of research or what is the point of attention of a study In this study, the independent variable is the Team Assisted Individualization (TAI) method and the dependent variable is the learning outcomes of fifth grade students at SD Negeri 49 Lubuklinggau for the 2021/2022 academic year.

The experimental designs used in this study are pre-test and post-test group designs which can be described as follows:

Table 1. Experimental Design of Pre-Test and Post-Test Group

Pretest	*Treatment*	*Posttest*
O_1	X	O_2

Information:
O1   : Pre-test
X   : TAI type cooperative learning
O2   : post-tes

Data collection technique

The data used in this study is student learning outcomes data after completing learning using the TAI type cooperative learning model. The data collection technique used in this research is the test technique. According to (Arikunto, 2014, p. 193), the test is a series of questions or exercises and other tools used to measure skills, knowledge, intelligence, abilities or talents possessed by individuals or groups. The test was conducted twice, namely before (pre-test) and after (post-test). The pre-test is a written test that is carried out at the beginning before giving the material being taught, while the post-test is a test that is carried out at the end after giving the material being taught. The test used is a written test in the form of questions.Data analysis technique

Data on learning test results were obtained from examining the results of student answers on student test sheets, then analyzed to see the level of achievement of learning outcomes after learning using the TAI type cooperative model. Data analysis techniques carried out in this study on learning outcomes data are as follows:

1) Determine the average score and standard deviation

Determining the average value and standard deviation for quantitative data contained in a sample can be calculated using the following formula:

$$\frac{\sum x_i}{n}$$ (Sugiyono, 2011: 49)

Keterangan :

$\bar{X}$ = Average value
$\sum x_i$ = Sum of all values
n = Number of Data
the formula to find the standard deviation is as follows :

$$S = \sqrt{\frac{\sum(x_i - \bar{x})^2}{n-1}}$$ (Sugiyono, 2011: 57)

$\bar{x}$ = The average value of student learning outcomes
x_i = Overall average value
n = Number of data
S   = Standard deviation or standard deviation

2) Data Normality Test

This normality test is used to see whether the two groups of population data are normally distributed or not. The formula used in the normality test is the 2 (chi squared) fit test, namely:

$$\chi 2 = \sum_{i=1}^{k}\left(\frac{(f_o - f_h)^2}{f_h}\right)$$ (Sugiyono, 2011: 107)

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Information :

χ^2 = *Chi kuadrat*
f_o = Observed frequency
f_h = Expected frequency

3) Hypothesis testing

The statistical hypothesis in this study is to test the difference in the average data, in this case the initial and final data, to analyze the null hypothesis (H_O) and the alternative hypothesis (H_α). If the two data are normally distributed and the standard deviation is unknown, then the statistical test used is the t-test with the following formula:

$$t = \frac{\bar{x} - \mu_o}{\frac{S}{\sqrt{n}}}$$

(Sugiyono, 2015)

Information:

t   = the calculated t value, hereinafter referred to as t count
x   = the average value of xi
n   = number of sample members
μ_o = hypothesized value ($\mu_o = 75$)
S   = standard deviation

3. Result and Discussion

This cooperative model research of the Team Assisted Individualization (TAI) type has been carried out in class V of SD Negeri 49 Lubuklinggau in the Even Semester of the 2021/2022 Academic Year using single substance and mixed substances. This research started from April 09 2022 to May 09 2022, was conducted directly by the researcher and its implementation was adjusted to the schedule applicable at the school. Science learning using a Team Assisted Individualization (TAI) type cooperative model is taught to fifth graders at SD Negeri 49 Lubuklinggau with a description of single substances and mixed substances. Of all the students of class V, which amounted to 2 classes, only one class was taken to be used as a research sample, namely class V.A in the implementation of learning the researcher acted as a teacher (teacher). Before carrying out the research, the researcher first tested the test instrument whose

function was to determine the quality of the questions used. The instrument trial was carried out in class VI of SD Negeri 49 Lubuklinggau with the number of students participating in the instrument trial as many as 25 students.

Before the implementation of the research began, a trial of this test instrument was carried out with the aim of knowing the quality of the questions used. The instrument test was given in class VI followed by 25 students on 09 May 2022, the second meeting before the learning was implemented students were given a pre-test first, then carried out learning activities using the Team Assisted Individualization (TAI) type cooperative model, after carrying out the activities In learning the researcher held a final test (post-test) at the third meeting which was attended by 23 students of class V.A.

Students' Initial Ability (Pre-test)

The initial ability referred to in this study is the initial knowledge that students have before being given learning material for single substances and mixed substances, initial abilities are obtained through tests. The initial ability in question is the ability of students before being given learning with a cooperative model of team assisted individualization (TAI) type. For more details, the results of the students' pre-test calculations can be seen in the appendix (page 95). The number of students who completed, students who did not complete, the average (x) and standard deviation (s) of the initial test scores (pre-test) can be seen in table 2 below.

Table 2. Number of Students Completed, Not Completed, Average Score (x) and Standard Deviation (s) Pre-Test Results

Total Student (N)	Complete	Not Complete	Average ($\bar{x}$)	Standard Deviation (s)
23	0(0%)	23 (100%)	36,75	8,18

Based on the results of the calculation (Appendix C:95) to the initial test data, it can be seen that there are no students who get a score of 70 (completed) and students whose scores are <70 (unfinished) are 23 students (100%). The average value of the experimental class is 36.75. Thus, it can be stated that the average value of students' initial abilities before implementing learning using the

TAI type cooperative model is in the unfinished category, because the average value is <70.

Description of Final Test Data (post-test)

The final ability of the students referred to in this study is the final ability that students have after being given the material of single substances and mixed substances using the Team Assisted Individualization (TAI) tip cooperative model. The final ability was obtained through a post-test (final test) which was followed by 23 students of class V. The test questions used in the form of essays totaling 10 questions. From the results of the calculation of the final test data (attachment C: 97), it can be seen that 23 students (100%) who scored 70 (completed). The recapitulation of the average scores and standard deviation of the post-test results can be seen in table 3 below.

Table 3. Number of Students Completed, Not Completed, Average Score (x) and Standard Deviation (s) of post-test results.

Total Student (N)	Complete	Not Complete	Average ($\overline{x}$)	Standard Deviation (s)
23	23(100%)	0(0%)	88,10	4,31

The results of the final test (post-test) can be compared with the students' initial abilities (pre-test) (table), there is an increase in student learning outcomes after participating in the lesson. The average initial test score for the experimental class is 36.75, while the average final test score (table 3.2) is 88.10, with the number of students who complete the pre-test is 0% and the number of students who complete the post-test that is 100%.

Normality test

Based on the recapitulation of the post-test results (attachment C:96) the average ($\overline{x}$) is 88.10 and the standard deviation (s) is 4.31. To determine the normality of the data, a data fit test of x^2 (chi squared) was used. The calculation of the post-test data normality test can be seen in (attachment C:97). This study used a quasi-experimental research design so that the data that was tested for normality was only post-test data, while pre-test data were not used. The pre-test

data is only used to determine the students' initial abilities before the implementation of the learning model.

Based on the results of the post-test data normality test, it was obtained that $x^2{}_{hitung}$ = 0,3110. Furthermore, $x^2{}_{hitung}$ ount is compared with $x^2{}_{tabel}$ with degrees of freedom (dk) = n − 1 and confidence level α = 5%. Where n is the number of class intervals. If $x^2{}_{hitung} < x^2{}_{tabel}$ table, it can be stated that the data is normally distributed, in other cases the post-test data is not normally distributed.

Table 4. Post-test Data Normality Test Results

Data	$X^2{}_{hitung}$	Dk	$x^2{}_{tabel}$	Conclusion
Post-test	0,3110	4	1,717	Normal

Based on the table above, it is found that the post-test data is normally distributed because $x^2{}_{hitung}$ (0,3110) $< x^2{}_{tabel}$ (1,717). Because the data is normally distributed, the t-test formula is used to test the hypothesis.

Before the research process was carried out, an instrument test was first conducted. The instrument test was carried out in class VI to determine whether a question was valid or not and to determine questions that were categorized as good so that they could be used as research instruments. The experimental research of the instrument was conducted in class VI. A with 25 students, from the results of the research instrument trial which showed that the data from the test results were analyzed using the reliability formula, the reliability coefficient was 0.59. Thus, it can be concluded that the test items have high reliability, so they can be trusted to be used as pre-test and post-test measuring instruments in class V. Based on the recapitulation of the test results of the instrument, it can be concluded that of the 10 questions tested in class VI. All of them can be used as research instruments.

The first meeting was pre-tested before applying the Team Assisted Individualization (TAI) type cooperative model. The pre-test was held on May 13, 2022 in class V. A with 23 students. the average student learning outcomes are

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36.75 with a percentage of student completeness 0% (23 students did not complete) because students have not studied the material that will be given or used in research. This can be seen at the first meeting, the cooperation in the group has not been implemented properly because students are still working individually (there is no cooperation between group members). Students who have understood the material in the group have not played a major role in providing assistance to their friends who have not understood the material.

At the next meeting the researchers carried out the learning process, in this process students studied Theme 9 objects around us, Subtheme 1 single and mixed objects in learning 1, Science content and the material applied or studied were single substances and mixed substances, this learning process using a cooperative learning model of Team Assisted Individualization (TAI) type with the steps of the learning process, namely Preliminary activities The class opens with greetings, the class continues with a prayer led by one of the students, Asks news, and checks student attendance, Delivers the learning objectives to be studied, In advance to socialize to students about the implementation of the cooperative type model (TAI), the advantages of the Team Assisted Individualization (TAI) type cooperative learning model are that students will be motivated to learn because learning outcomes are assessed carefully and quickly. Remember to help weak students and at the same time improve overall student achievement, students will be able to check with each other. Furthermore, the core activity is that the teacher delivers brief material and gives assignments to students to study learning materials that have been prepared by the teacher. Students are grouped into teams of 4 to 5 people with different levels of ability, there are 5 groups formed, in the formation of chaos in the classroom because students are formed into small groups heterogeneously so that many students are not happy to work together with other students and only want to group with friends of their own choosing. To overcome this, at the end of the meeting the researcher gave motivation and explanation to students that in learning with the TAI type cooperative model there must be good cooperation between group members. Students who do not

understand the material must actively ask students who have understood the material. In addition, an explanation was given that the groups formed must be heterogeneous based on the results of the pre-test given at the beginning of the learning implementation.

At the next meeting, the learning process was better than the first meeting, students began to carry out their respectiv e roles. However, in carrying out cooperation with group members, commotion and dependence from students who are weak in ability still occur. However, there are also some groups who have understood the application of the TAI-type cooperative model that is carried out during learning, so that the implementation of the TAI-type cooperative model has started to run quite well. While at the last meeting the teaching and learning process had gone very well, the problems that occurred at the previous meeting did not recur, so that there was an increase in student motivation to learn using the TAI type cooperative model, as well as good cooperation between members in each group. respectively. Each member of the group is actively working on the assigned task. Students who do not understand the material actively ask questions, while students who understand the material give explanations to their friends who do not understand the material. Students who lack the courage to ask questions, become more daring to ask their group friends who have mastered the material, so that students exchange ideas, exchange information with students who are weak in knowledge, so that students with weak knowledge can solve their problems. Then based on the theory of Team Assisted Individualization (TAI) also has advantages such as Students will be motivated to learn because learning outcomes are assessed carefully and quickly, Students develop their communication skills, This program is very helpful for weak students and at the same time improves overall student achievement and students will be able to check each other. Then the final activity is that together the teacher and students conclude the learning outcomes that have been studied and the class is closed with a prayer led by one of the students. After the last learning process took place, the researcher gave a post-test with 23 students. In this post-test, the students'

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completeness was 100% (23 students completed), this means that there was an increase in students' science learning outcomes with a percentage of 88.10 (23 students). students complete), from the results of the analysis of hypothesis testing also obtained t_{hitung} (20,11) $>$ t_{tabel} (1,717) then the proposed hypothesis can be accepted as true, meaning that students' science learning outcomes after the application of the TAI type cooperative model are significantly completed. Thus, it can be concluded that the students' science learning outcomes after the application of learning with the TAI type cooperative model are significantly complete.

4. Conclusion

Based on the results of the research and discussion above, the student learning outcomes after participating in science learning using the TAI type cooperative model in class V SD Negeri 49 Lubuklinggau for the academic year 2021/2022 are significantly completed. Based on the results of the recapitulation of the student's post-test data, students' completeness was obtained by 100% (23 students), with the average post-test learning outcomes of students 88.10 and the average student learning outcomes in the pre-test 36.75. the average increase in student learning outcomes is 100%, and the increase in student completion is also 100%.

Patents

Based on the results of the study and the conclusions above, the authors suggest:

a. In order for the spirit of working together in groups, attractiveness and motivation to increase, the TAI type cooperative model needs to be implemented in order to obtain meaningful learning

b. So that it can be used as information and knowledge material for science teachers in the application of the TAI type cooperative model that is applied, so that it can assist teachers in improving planning

c. In order to increase creativity and quality of education in schools, in improving students' science learning outcomes

d. So that this research can be a knowledge, experience and insight about the TAI type cooperative model

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