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Stad-Type Cooperative Learning Model with *Talking Stick* to Increase Learning Outcomes in *Object Composing* Particle Material

Hasmirah

Teacher of MTsN 2 Kendari, Southeast Sulawesi

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Representative e-mail: -

ABSTRACT

This study aims to improve product learning outcomes and social skills of class IX students on the material constituent particles through the application of a combination of STAD type cooperative learning model with talking stick MTsN 2 Kendari. This research was conducted in the even semester of the 2019/2020 school year, at SMP MTsN 2 Kendari in class IX students totaling 21 students consisting of 11 male students and 10 female students. Factors observed in this study were student factors and teacher factors. This research was carried out in 2 (two) cycles, including: a) planning; b) implementation of actions; c) observation and evaluation; d) reflection. The data obtained in this study were analyzed using descriptive statistics which are intended to provide an overview of improving student learning outcomes who are taught through the application of the STAD type cooperative learning model with talking stick. The results showed that through the application of a combination of STAD type cooperative learning model with talking stick can increase student and teacher activity where in the first cycle the average student activity was 3.4 (Slightly Good) then after learning was carried out in the second cycle the average student activity increased to 3 ,8 (good) and the average teacher activity in the first cycle is 3.2 (good enough) then after the second cycle is carried out it becomes 3.8 (good). Through the application of the STAD type cooperative learning model with talking stick it can improve student learning outcomes on the material constituent particles where the average student learning outcomes in the first cycle are 71.42 with the percentage of student learning completeness that is 71.42% and after the evaluation is carried out in the second cycle then the average student learning outcomes become 78.09 with a percentage of student learning completeness of 90.47% so that the Minimum Completeness Criteria for schools, namely at least 75% of students obtaining a score of 70 can be achieved.

Keywords: *STAD, Talking Stick, Learning Outcomes.*

I. INTRODUCTION

Improving the quality of education which is implemented in schools, teachers have a major role for the realization of a good learning process, so that teachers are required to have competence in learning at school. One of them, in order to increase student learning outcomes, the teacher is competent in choosing learning models and strategies.

The Education Unit Level Curriculum (KTSP) is implemented in full in every school in order to improve the quality of education (Suherman, 2008). But in reality, according to the results of a preliminary study conducted at one of the schools that is in MTsN 2 Kendari, the implementation of science teaching in general and science in particular less attention competence of students. This is evident in R Plan of Learning (RPP) are made of teachers and conditions disable in in class showed their non -compliance within deploy n her.

Observation data obtained that the learning outcomes of students of class IX MTsN 2 Kendari academic year 2019/2020 in the matter constituent bodies have not reached mastery learning which is a new 68 % of students who reach the value of 70.00 which is said to be complete when at least 75% of students gained grades ≥ 70 .00 as determined by the school. This is caused by the lack of active students in the learning process, where teachers are less skilled in applying cooperative learning models, cannot distinguish cooperative learning types and tend to conventional models so that the implementation is less effective and the delivery of material only takes place in one direction, namely between students and teachers. Such learning conditions result in low student learning outcomes. One of the efforts made to improve the learning process in the classroom with cooperative learning model type STAD with the *talking stick.* Through the STAD type cooperative learning model with *talking stick,* learning activities are more focused on students and teachers as facilitators with a pleasant learning atmosphere,

making it easier for students to acquire knowledge stored in memory for a long time and effective and efficient learning can be achieved. . Ibrahim (2002:12) states that the STAD (Student *Teams-Achievement Division)* type of cooperative learning model is a learning model that requires students to study in small groups to solve problems in the form of LKS (Student Worksheets) together with a total number of students. members of each group are 4-5 people who have high levels of ability, gender and ethnicity are Distinct a or heterogeneous then between students mutually help one each other to understand the material lessons through discussion. *Talking stick* is a learning strategy used by the teacher by using a tool in the form of a relay stick that contains questions about the learning material that will be thrown to the group of students and the group who gets the stick must be able to provide answers to the questions so that students can be responsible for material assignments to better understand learning appropriately (both level of truth and timeliness).

Referring to the description of that, the authors are interested in doing research with the title " Implementation of cooperative learning model type STAD with the *talking stick* to improve learning outcomes matter particles making up the object in the students of class IX MTsN 2 Kendari".

II.LITERATURE REVIEW

1. Cooperative Learning Model

A teacher must be able to teach students according to their learning style (style), so that learning objectives can be achieved optimally, there are various learning models that must be mastered by the teacher. In practice, the teacher must remember all the situations and conditions of the students, the nature of the teaching materials, facilities (media) and the condition of the teacher himself. Cooperative learning is a learning model that prioritizes cooperation among students to achieve learning objectives. Cooperative learning can create an attitude of interdependence between students. As a source of learning for students in learning, not only teachers and textbooks but also fellow students (Yamin and Ansari, 2008:74).

Cooperative learning is a learning model in which students learn in small groups with different abilities. In completing group assignments, each member works together and helps to understand a subject matter. This is in accordance with the opinion of Nurhadi (2004:109) that the cooperative learning model is a learning model that focuses on the use of small groups to work together in maximizing learning conditions to achieve learning objectives. The cooperative learning model is aimed at improving students' knowledge and social skills. This learning model is designed to provide opportunities for students to gain experience so that they can develop their behavior according to the learning objectives that have been formulated and most importantly, this learning model also has the goal of social skills (Corebima et al, 2002:1-2).

Cooperative learning does not only study the material, but students also have to learn special skills called cooperative skills. This cooperative skill serves to smoothen work relationships and tasks. The role of the working relationship can be built by dividing the tasks of group members during the activity.

2. STAD Type Cooperative Learning Model

STAD type cooperative learning was developed by Robert Slavin and his colleagues from Johns Hopkins University. This method is seen as the simplest and most direct method of cooperative learning approach. This type is used to teach new academic information. In the application of this model, the students in the class are divided into several groups or teams heterogeneously based on gender, race and ability (high, medium and low) where each group consists of 4 or 5 group members. Each team member uses academic worksheets and then helps each other to master the teaching materials (Nurhadi, 2004:116-117).

There are 6 (six) main steps or stages in learning using cooperative learning. Learning begins with the teacher conveying the learning objectives and students' motivation to learn. This phase is followed by the presentation of information, with verbal reading material then students are grouped into study teams. This stage is followed by teacher guidance for students to work together in completing their joint tasks. The final phase of cooperative learning involves presenting the final results of group work, or evaluating what they have learned and rewarding group and individual efforts. The six stages of cooperative learning are contained in the phases to be achieved in the steps of the cooperative learning model contained in the teaching and learning process, which are summarized in table 1 below:

Table.1 The steps of the cooperative learning model.

PHASE	TEACHER BEHAVIOR
Phase-1 Delivering goals and motivation to students.	The teacher conveys all the learning objectives to be achieved in the learning and motivates students to learn.
Phase-2 Presenting information	The teacher presents information to students by way of demonstrations / through reading materials
Phase-3 Organizing students into study groups	The teacher explains how to form study groups and helps each group make the transition efficiently
Phase-4 Guiding group work and study	The teacher guides the study groups as they do their assignments.
Phase-5 Evaluation	The teacher evaluates the learning outcomes about the material that has been studied or each group presents the results of their work.
Phase-6 Giving awards	Teachers look for ways to reward both individual and group effort and learning outcomes

(Corebima et al, 2002:7-8)

3. *Talking Stick* Learning Strategy Procedure

Talking stick is a strategy used by teachers in bringing learning materials. According to Silberman (2006:222) that one of the most important goals of education today is the acquisition of skills. When students try to learn new skills and improve existing abilities, they need to practice them effectively and get useful feedback according to the discipline in their completion. Strategies which are different ways and give a pleasant impression in developing skills, one way is by using the *talking stick* strategy which is displayed in turns and each student gets the opportunity to respond quickly to the questions asked.

Furthermore, Slavin (1995) *in* Anonymous (2002:12) suggests that the procedure for implementing the *talking stick* strategy is as follows:

a) The teacher prepares a stick.
b) The teacher conveys the main material to be studied, then provides opportunities for students to read and study the material.
c) After the students finish reading the book and study it, the teacher invites the students to close the book.
d) The teacher takes the stick and gives it to the students, after that the teacher gives a question and the student holding the stick must answer it, and so on until most of the students get a share to answer each question from the teacher.
e) The teacher guides the students to conclude the learning material.
f) Evaluation.
g) Cover.

4. Application of the STAD Type Cooperative Learning Model with *Talking Stick* on the Particles that make up objects

Given the many learning models in the delivery of subject matter, a teacher must be very clever in choosing one or a combination of several learning models that are considered good and in accordance with the subject to be taught in order to help students improve their learning methods. This happens due to many factors, one of the factors that can determine the success or failure of teaching objectives in the science learning process is the model/strategy factor used in learning in addition to other factors. According to Henny (2002:39) that a combination of teaching methods is needed to generate and maintain student interest in learning the reasons are:

a) The ability of the teacher in mastering the teacher's teaching method is still low.
b) The habit of using methods that are monotonous and not in accordance with the guidance of the subject.

According to Silberman (2006:13) that one of the techniques used by teachers to make students active is through team formation. This can help students become more acquainted with each other so as to create work spirit; thus students gain knowledge, skills and attitudes actively through discussions about learning materials carried out in work groups.

The STAD type cooperative learning model is a learning model that requires students to study in small groups to solve problems in the form of worksheets together with the number of members in each group of 4-5 people heterogeneously (gender, ethnicity and level of ability), then each student helps each other to understand the subject matter through discussion (Ibrahim, 2002:12).

According to Suherman (2008) that in the *talking stick* learning strategy, what the teacher does is: the teacher prepares the stick, presents the main material, provides opportunities for students to read the material, the teacher takes the stick and gives the stick to students and students who get a stick answer questions from the teacher. and so on until most of the students get a stick.

Based on the previous study, the STAD type cooperative learning process with *talking stick* has the following procedures:

a. Form a heterogeneous group of 3-4 people.
b. The teacher presents the material concept of Particles that make up objects .
c. The teacher demonstrates the technique of using a tool in the form of a stick that contains questions that must be solved based on their respective worksheets according to the allotted time.
d. The teacher guides the students in doing the LKS.
e. Each student in the group works together in their respective groups to complete the LKS and share knowledge with each other.
f. Each group presented the results of their performance and the other groups gave their responses.
g. Teachers give awards.
h. The teacher guides the students to conclude the learning material.

The scope of this material contains knowledge that requires understanding and learning experience. According to Syaifuddin (2006: 54) that the scope of material Particles making up objects are built by: structures in plants starting from roots, stems and leaves, thus the efforts made by the teacher so that the material is easily understood and remembered by students for a long time, the model STAD cooperative learning with *talking stick is* applied so that there is interaction between students and students and between students and teachers to understand the material according to the available time.

B. Empirical Studies

Some research results that are relevant to this research are:

1. Research by M. Sirih, et al (2007:52) concluded that the application of the Jigsaw type cooperative learning model using the baton can improve the mastery of the basic material concepts of the food digestive system in class IX students of SMP Negeri 2 Kendari.
2. Erniyati's research (2006:48) concludes that by applying the NHT type of cooperative learning model with *talking sticks, it* can make effective use of time, student organization and delivery of learning information in class X SMA Negeri 3 Kendari on the wave concept material.
3. Wahyuni's research (2009:42) concludes that through the application of the STAD type cooperative learning model with a reflex stick can improve student learning outcomes on reflex motion material, the average student learning outcomes are 85.05 and the percentage of student learning completeness is 100%.

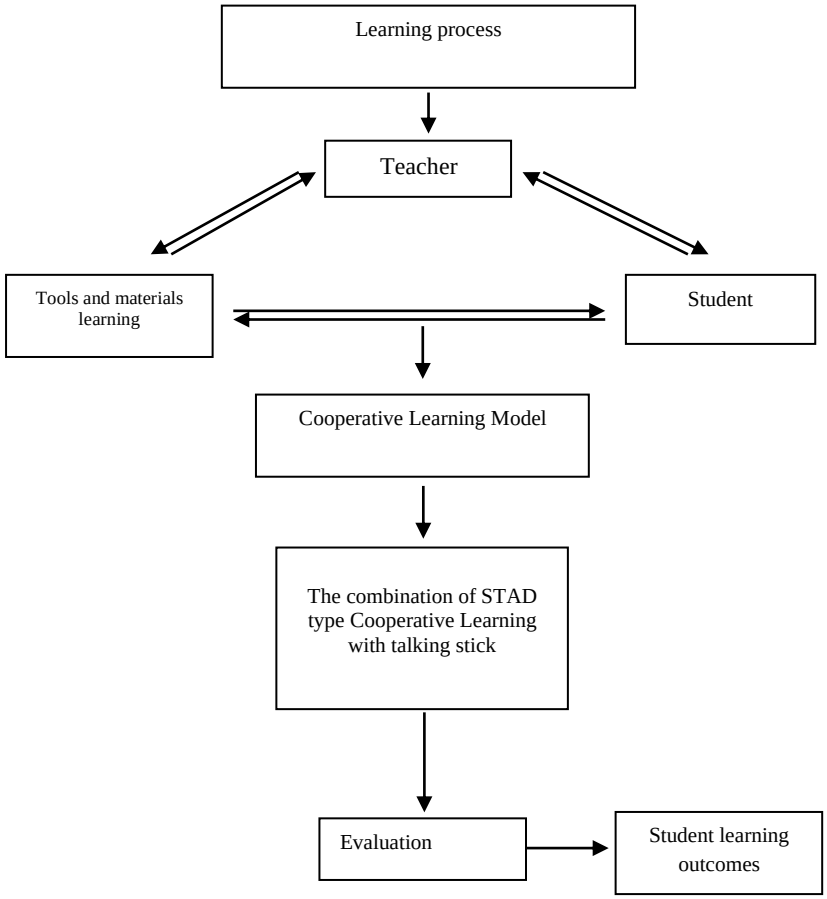
C. Conceptual Framework

One of the competencies that must be possessed by teachers is the ability to understand learning models in presenting learning materials so that the learning process in the classroom becomes optimal. In addition, the teacher must also be able to choose the right method and in accordance with the characteristics of the subject matter so that the expected learning objectives can be achieved.

A teacher is required to have multiple roles so as to create effective teaching and learning conditions. In order for the teaching and learning process to take place effectively and efficiently, teachers must be able to provide great learning opportunities to students by actively involving students so that they can motivate students to develop their knowledge through experiences gained during learning. Therefore, a teacher in carrying out learning is expected to be selective in choosing the learning models that will be used in order to create effective and efficient learning.

The combination of STAD type cooperative learning model with *talking stick*, activities are more focused on students. In the process of discussion and group work, the teacher only has a role as a facilitator who coordinates the learning process. A pleasant learning atmosphere and interaction between fellow students and between students and teachers can cause students' thinking processes to be more optimal and students construct their own knowledge that they learn into meaningful knowledge and be stored in memory for a long time.

Systematically, the conceptual framework in this study can be presented in Figure 2.1 below:



C. Research Hypothesis

The hypothesis in this study is that through the application of a combination of the STAD type cooperative learning model with *talking stick it* can improve the learning outcomes of class IX students at MTsN 2 Kendari on the subject matter of Particles making up objects with the Minimum Completeness Criteria (KKM) used by schools. that is at least 75% of students get a score of nilai 70.00.

III.RESEARCH METHODS

This research was conducted in the even semester of the academic year 201 9/2020 which took place at MTsN 2 Kendari class IX, which consisted of 21 students, including 11 male students and 10 female students.

The factors observed in this study are as follows:

a. Student Factors:

1) Seeing student learning outcomes through cooperative learning type STAD with *talking stick.*

2) Seeing student activities through STAD type cooperative learning with *talking sticks.*

b. Teacher Factors: Seeing the readiness and skills of teachers in applying the STAD type cooperative learning model with *talking stick.* The success indicator in this study is in accordance with the Minimum Completeness Criteria for schools, namely 75% of students have obtained a score of 70.00.

This type of research is in the form of classroom action research (Class-*Room Action Research).* Meanwhile, this research was carried out in 2 cycles based on the nature of Classroom Action Research (CAR). Each cycle consists of the following stages: a) planning stage, b) action stage, c) observation and d) reflection. In detail, this research design can be described through the flow scheme as follows:

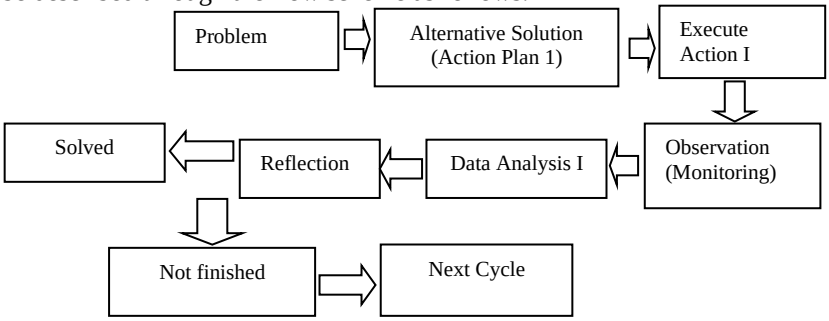


Figure 3.1. Classroom Action Research (CAR) Design and Model (Arikunto et al, 2006:74).

The details for each cycle are as follows:

Cycle I

1. Planning

Activities carried out in this stage include:

a. Creating learning scenarios in the form of lesson plans using the STAD type cooperative learning model with *talking stick* covering RPP 01 Basic Competence 1.6: Particles that make up the material: Molecules and inanimate objects
b. Providing media and learning materials, making worksheets and evaluation tools in the form of multiple-choice learning outcomes tests.
c. Prepare student and teacher activity observation sheets in applying the STAD type cooperative learning model with *talking stick* on the material constituent particles.

2. Action

The activities carried out at this stage are carrying out learning scenarios using the STAD type cooperative learning model with *talking sticks* based on RPP 01 Basic Competence 1.6: Particles making up objects and their relationship with the material: Components making up Particles making up objects.

3. Observation and Evaluation

The observation activity in the first cycle was carried out to obtain information about the teacher's ability to guide and facilitate students in the learning process activities. Observations were made by observers using an observation sheet in the form of observing teacher and student activities during learning activities. Evaluation activities are carried out at the end of each cycle with the aim of seeing the extent to which student learning outcomes in learning the material constituent particles using the STAD type cooperative learning model with *talking stick.*

4. Reflection

Researchers carry out discussions with observers to reflect the results of the observations made. Reflection is done to examine the things that have been and have not been achieved. The results of the reflection are used to determine further steps in the next cycle.

Cycle II

1. Planning

Activities carried out in this stage include:

a. Create a learning scenario in the form of lesson plans using the STAD type cooperative learning model with *talking stick* covering RPP 02. Basic Competence 1.6: The particles that make up objects in the material: the place where the particles make up things and the factors that affect the particles that make up things.
b. Providing learning media and materials, making worksheets and evaluation tools in the form of multiple-choice learning outcomes tests on the material: Particles that make up objects in the material: where the Particles that make up objects occur and factors that affect the Particles that make up objects.
c. Prepare student and teacher activity observation sheets in applying the STAD type cooperative learning model with *talking stick* on the material: Particles making up objects in the material: the place where Particles make up objects and factors that affect Particles make up objects.

2. Action

The activities carried out at this stage are implementing learning scenarios using the STAD type cooperative learning model with *talking stick* based on RPP 02 meeting II: Particles making up objects in the material: where the Particles make up objects and factors that affect Particles making up objects occur.

3. Observation and Evaluation

Observation activities in cycle II were carried out to obtain information about the teacher's ability to guide and facilitate students in the learning process activities. Observations were made by observers using an observation sheet in the form of observing teacher and student activities during learning activities. For evaluation activities carried out at the end of the cycle with the aim of seeing the extent to which student learning outcomes in learning the material constituent particles using the STAD type cooperative learning model with *talking stick* .

4. Reflection

Researchers carry out discussions with observers to reflect the results of the observations made. Reflection is done to examine the things that have been and have not been achieved in the learning activities.

D. Instruments and Data Collection

1. Research Instruments

The instruments used in this study were written tests in the form of multiple choice and observation sheets for assessing student and teacher activities in implementing the STAD type cooperative learning model with *talking stick.*

2. Data Collection Procedure

The steps of data collection in this study are as follows:

a. Observation that aims to obtain data about the average value of student learning outcomes to determine the class to be taught with the STAD type cooperative learning model with *talking stick.*
b. Determine the class that is used as a class whose learning uses the STAD type cooperative model with *talking stick.*

c. The application of the STAD type cooperative learning model with *talking stick* on the material constituent particles of objects is accompanied by determining the skills of students and teachers in applying the learning model through student and teacher activity observation sheets.
d. Provide an evaluation of student learning outcomes regarding the material at the end of the learning cycle.
e. Analyze data.

F. Data Analysis Techniques

The data in this study were analyzed using descriptive statistical analysis, intended to provide an overview of the improvement in science learning outcomes of students who were taught using the STAD type cooperative learning model with *talking stick* through the learning outcomes test cycle I and cycle II.

The steps in analyzing student learning activities are as follows:

1. Make tabulation of student activity data.
2. Calculating the average value of student activity for each aspect of learning is as follows:

$$\bar{X} = \frac{\Sigma x}{n}$$

Information:

n = Total number of students

Σ **x** = The value obtained by each student

$\bar{X}$ = The average value obtained by students (Sudjana, 2002: 67).

3. Calculating the level of achievement of student learning completeness:

$$\text{Individually \% TB} = \frac{\text{Value achieved}}{\text{Ideal value}} \text{ X 100 \%}$$

4. Determine the percentage of students' learning completeness classically:

$$\% \text{ TB} = \frac{\sum TB}{N} \text{ x } 100\%$$

Information:

N = Number of students

$\sum TB$ = Number of students who finished studying

(Usman and Setiawati, 2001: 139).

IV. RESULTS AND DISCUSSION

A. Results

The data obtained from the results of this study are in the form of student activities during learning activities, teacher activities in learning activities and the achievement of student learning mastery. These data were analyzed using descriptive statistics, in the form of activity averages and the percentage of students' learning completeness which was intended to provide an overview of the distribution of students' science learning outcomes on the material constituent particles by using a combination *of STAD type* cooperative learning model with *talking stick.*

1. Implementation of Cycle I

a. Planning

The results of research planning in this cycle are in the form of learning scenarios, namely Learning Implementation Plans (RPP) using a combination of STAD type cooperative learning models with *talking sticks* on the material constituent particles of objects, which include basic competencies 1.6: Describing the meaning of particles making up objects. In addition, an observation sheet on student activities during learning activities and an observation sheet on the teacher's ability to apply the STAD type cooperative learning model with *talking sticks* and an instrument for assessing student learning outcomes in the form of a written test in the form of multiple choices were prepared.

b. Action Execution

From the action plan, the teacher carries out a scenario of learning activities based on RPP 01 by using the STAD type cooperative learning model with *talking stick* on the material: Particles making up objects: the place where the Particles make up objects and the factors that affect the Particles make up objects.

The learning activity begins with apperception, motivates students by showing the Particle Flows that make up objects and sunlight charts, then conveys the learning objectives to be achieved so that students have an overview of the knowledge that will be obtained after the learning process. After carrying out preliminary activities, then carry out core activities according to the scenario steps in learning and end with closing activities.

c. Observation and Evaluation

1) Observation of student activities

Student activities during learning activities were observed by observers using student activity observation sheets which included listening and paying attention to teacher explanations, reading student textbooks and doing worksheets, paying attention and analyzing pictures on plants (learning media), writing
relevant to learning activities, discussing and asking questions between students and teachers as well as working actively in using tools and answering teacher questions in the *talking stick.* The results of observations of students during learning activities in cycle I can be shown in table 1 below: Table 1. The average activity score of each student during the learning cycle I

No	Observed aspects	Score	information
1.	Listen and pay attention to the teacher's explanation.	3.2	Slightly Good
2.	Reading student textbooks and doing worksheets.	3.5	Slightly Good
3.	Paying attention to and analyzing the image in the process of making object particles (learning media) carefully.	3.2	Slightly Good
4.	Writing that is relevant to learning activities.	3.3	Slightly Good
5.	Discuss and ask questions between students and teachers.	3.5	Slightly Good
6.	Work actively using a tool (relay stick) and answer the teacher's questions in the *talking stick.*	3.5	Slightly Good
amount		20.2	
Average		3.4	Slightly Good

Source: Processed from research data (Appendix 13:80)

Based on table 1, the average student activity in cycle I shows scores that are not much different for each aspect observed and by looking at the overall average shows that student activity is Slightly Good.

The data obtained regarding student learning activities that occur during learning activities with details as follows:

a) There are still students who do not pay attention to the teacher's explanation because the teacher's way of delivering explanations is too fast, causing students who do not understand to be bored.
b) Students are still less active in the division of group assignments.
c) Students are less active in solving the questions contained in the LKS.
d) Students are still less active in discussing / asking questions between fellow students and between students and teachers.
e) There are some students who do not write that is relevant to the learning activities.

2. Teacher Activity Observation

The teacher's activities during learning were observed by observers using the teacher's activity observation sheet. The activities observed by the teacher involve opening lessons, core activities and closing activities.

The score of teacher activity observed in the implementation of learning can be seen in Table 2 below:

Table 2. Scores of each teacher's activities during learning in cycle I.

No	Observed aspects	Score	Information
1.	Preparing students for learning	4	Good
2.	Observing students to take lessons	3	Slightly Good
3.	Delivering learning objectives	4	Good
4.	Presents initial information about the concept of Particles making up objects	3	Slightly Good
5.	Coordinate students into heterogeneous groups	3	Slightly Good
6.	Preparing learning media	4	Good
7.	Guiding students working on worksheets	3	Slightly Good
8.	Reward the group for its performance	3	Slightly Good
9.	Guiding students in *talking stick* activities	3	Slightly Good
10.	Provide reinforcement from the results of the discussion	3	Slightly Good
11.	Concluding lessons based on learning activities Time according to allocation	3	Slightly Good
12.	KBM according to the scenario in the RPP	3	Slightly Good
13		3	Slightly Good
amount		42	
Average		3.2	Slightly Good

Source: Processed from research data

Based on Table 2, teacher activity in the learning process achieved an average score of 3.2. It can be said that the teacher's activities are quite well implemented based on the implementation criteria, although there are still many teacher activities that are carried out but are not systematic, except for the teacher's activities in preparing students to learn and preparing learning media that can be carried out appropriately and systematically.

3. Assessment of Learning Outcomes

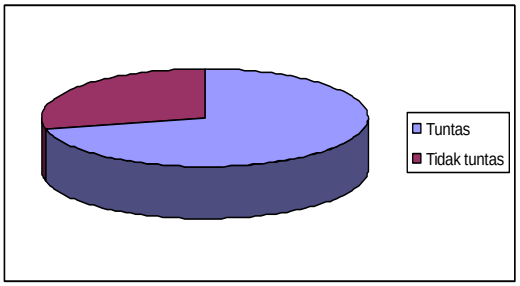
To find out the extent of student learning outcomes during learning activities, an evaluation was carried out to determine student learning outcomes which was carried out at the end of the cycle using a written test in the form of multiple choice. The results of the analysis of student learning mastery individually on the assessment of learning outcomes in the first cycle. The results of the classical student learning mastery analysis on the assessment of student learning outcomes in the first cycle can be seen in Table 4 below:

Table 4. Analysis of student learning mastery classically in cycle I

No	Completeness	Total students	Percentage (%)
1.	Complete	15	71.42
2.	Not finished	6	28.58

Source: Processed from research data.

Figure 4.1. Percentage of student learning completeness in cycle I.



Based on table 4 and figure 4.1, it shows that 15 students have completed their studies or 71.42% and 6 (six) students have not completed their studies or 28.58%. This shows the indicator of student learning success of 71.42% has not been achieved in accordance with the KKM set by the school.

d. Reflection

In this reflection activity, researchers conducted discussions with observers to reflect on the learning activities carried out by teachers and students based on the results of observations made. Implementation of actions on the material: Particles making up objects, where they occur. Particles making up objects and factors that affect Particles making up objects by using a combination of STAD type cooperative learning model with *talking stick in* accordance with the RPP scenario. There were obstacles, including: (1) There were still some students who did not record important material from the discussion, (2) There are still some students who lack the ability to ask and answer questions posed by fellow students and teachers, and (3) there are still students who are less skilled in using a tool in the form of a relay stick.

The success obtained during the learning activities in the first cycle that must be maintained or needs to be improved by the teacher is that the students are already active in working on the questions contained in the LKS material: Particles making up objects, the place where Particles make up objects and factors that affect Particles making up objects so that learning activities can be carried out. carried out based on a previously prepared lesson plan.

Based on observation data on students and teachers, several things that need to be improved for the implementation of cycle II are as follows:

1) The way the teacher explains the subject matter must be slowed down and more clarified so that students are not bored and are more serious in paying attention to the teacher's explanation so that students can understand the concept of the material being explained.
2) Teachers must further improve their questioning skills so that students can understand them and are motivated to develop their knowledge.
3) Teachers must be more skilled in guiding students in group work to complete group assignments in an orderly manner.
4) The teacher's way of rewarding the group for their performance and providing reinforcement to the results of the discussion should be further improved so that students become more motivated to learn.
5) Teachers must be smarter in coordinating classes and allocating time properly so that all syntax in learning can be carried out correctly and systematically.

2. Implementation of Cycle II

a. Planning

Based on the results of the reflection on the actions of the first cycle, a re-planning was carried out in order to improve teacher performance in carrying out learning activities with the hope that the implementation of the actions in the second cycle would be better and provide results that meet the established success indicators. Some things that need to be improved from the results of the reflection to be a guide for teachers in the implementation of cycle II include:

1) The way the teacher explains the subject matter must be slowed down and clarified.
2) Teachers must further improve their questioning skills and guide students in group work in an orderly manner.
3) Teachers must be more skilled in giving rewards and reinforcement to students so that they motivate students to learn more
4) Teachers must be more skilled in coordinating classes and allocating time according to the learning syntax.

b. Action Execution

The implementation of the actions taken by the teacher can be carried out properly according to the learning scenario (RPP 02) and its implementation is based on the guidance from the results of the reflection of learning activities in cycle I. The availability of student learning resources in the form of student books and students' ability to work in an orderly group and the teacher's ability to managing the class in learning activities is very supportive of the implementation of learning.

The activity of opening the lesson begins with apperception, then motivates students by showing the learning media in the form of a picture of the sun and asking something related to the material: Particles making up objects, where the Particles make up objects and factors that affect Particles making up objects, then conveying the learning objectives that must be achieved after carrying out the activity.

learning. In the core activity, the teacher conveys the concept of the material with a brief and clearer explanation then guides students to study in groups to solve questions in the form of worksheets that have been prepared on each stick. This is done so that students are able to understand the explanation given by the teacher and can work together to complete their respective group assignments in an appropriate and orderly manner and can discuss well. In the closing activity, the teacher guides students in concluding the lesson so as to help students better understand the material that has been studied.

c. Observation and Evaluation Results

1) Observation of Student Activities in Cycle II

Student activities during learning activities were observed by observers using an instrument for observing student activities during learning activities. The score of each student activity observed in the implementation of the second cycle of learning can be seen in table 5 below:

Table 5. The average activity score of each student during learning cycle II.

No	Observed aspects	Score	Information
1.	Listen and pay attention to the teacher's explanation	3.7	Good
2.	Reading student textbooks and doing worksheets	4	Good
3.	Pay attention and analyze the image on the plot of the particles making up objects (learning media) carefully.	3.5	Slightly Good
4.	Writing that is relevant to teaching and learning activities.	3.8	Good
5.	Discuss and ask questions between students and teachers.	3.7	Good
6.	Work actively using a tool (relay stick). and answer the teacher's questions in the *talking stick.*	4	Good
amount		22.7	
Average		3.8	Good

Source: Processed from research data.

From the data in table 5, it appears that the average score of student activities during KBM in cycle II is 3.8, which means that student learning activities are carried out well. This also indicates that student learning activities have increased because students are able to work in groups in an orderly manner, write more that are relevant to the subject matter, are active in asking or responding to questions and are able to conclude subject matter based on learning objectives.

2) Observation of Teacher Activities in Cycle II

The teacher's activity during the learning activity was observed by the observer using the teacher's activity observation sheet. In cycle II, the activities observed by the teacher involved opening lessons, core activities and closing lessons.

The score of each teacher activity observed in the implementation of the second cycle of learning can be seen in table 6 below:

Table 6. Teacher activity scores during learning cycle II

No	Observed aspects	Score	Information
1.	Preparing students for learning	4	Good
2.	Observing students to take lessons	4	Good
3.	Delivering learning objectives	4	Good
4.	Presents initial information about the concept of Particles making up objects Coordinate students into heterogeneous groups	4	Good
5.	Preparing learning media	4	Good
6.	Guiding students working on worksheets	4	Good
7.	Reward the group for its performance	4	Good
8.	Guiding students in *talking stick* activities	3	Slightly Good
9.	Provide reinforcement from the results of the question and answer	4	Good
10.	Concluding lessons based on learning activities	3	Slightly Good
11.	Time according to allocation	4	Good
12.	KBM according to the scenario in the RPP	4	Good
13		4	Good
amount		50	
Average		3.8	Good

Sourcer: Processed from research data.

Based on Table 6, it shows that the activities of teachers in the teaching and learning process obtained an average score of 3.8. It can be said that the teacher's activities in learning activities are carried out well based on the implementation criteria, although there are still some that are implemented but are less systematic, such as giving awards to groups for their performance and providing reinforcement from the results of questions and answers.

3) Assessment of Learning Outcomes Cycle II

To find out student learning outcomes after making improvements from the shortcomings of the first cycle, an evaluation was carried out in the form of a written test in the form of multiple choice in the second cycle. The results of the analysis of student learning mastery individually in the second cycle of action.

The results of classical student learning mastery analysis in the assessment of student learning outcomes in cycle II can be seen in Table 7 below:

Table 7. Analysis of classical student learning mastery in cycle II

No	Completeness	Total students	Percentage (%)
1.	Complete	19	90.47
2.	Not finished	2	9.53

Source: Processed from research data.

Data from table 8.2 showed that the percentage of student learning completeness in cycle II classically reaches 90.47% which reaches the KKM. This shows the success of researchers in carrying out teaching and learning activities using the STAD type cooperative learning model with *talking stick,* from the target percentage of 75% of students achieving KKM.

B. Discussion

This research was conducted to determine the improvement of student learning outcomes in general after the implementation of the STAD type cooperative learning model with *talking stick* on the material constituent particles, the place where the particles make up objects and the factors that affect the particles making up objects. This research consists of 2 (two) cycles. Each cycle studied is adjusted to the changes achieved and its implementation is adjusted to the research procedures.

Based on the results of observations of student activities in cycle I, the scores of student activities varied. It was found that the activity scores of students listening and paying attention to the teacher's explanation, paying attention and analyzing the flowchart of the particles making up objects (learning media) and writing that were relevant to teaching and learning activities were still lacking. This is due to the fact that there are still many students who do not have reading materials (packaged books) and student books, the lack of courage for students to ask and respond to questions for fear of making mistakes and there are still many students who are not skilled in concluding learning materials.

In addition, this can also happen because the average score of teacher activity in learning is still lacking in the application of the STAD type of cooperative learning model with *talking stick*, where there are still many low teacher activities such as the lack of teachers motivating students to learn, providing reinforcement, giving awards. to students who are active in learning activities and guide students in concluding subject matter based on learning objectives, thus it can be said that in the learning activities in the first cycle there are still many shortcomings that must be corrected.

Based on the results of the evaluation carried out in the first cycle, students who scored 70 were 15 people or 71.42% with an average score of 71.42 while students who scored < 70 were 6 (six) people or 28. ,58%. This shows that the indicator of success in the first cycle of 75% has not been achieved. The incompleteness of some students is caused by the lack of student attention in participating in learning activities and the lack of teacher skills in managing the class to apply a combination of the STAD type cooperative learning model with *talking stick*, where to obtain good student learning outcomes it is not only influenced by the student's own activities but also determined by the activity of the teacher in applying the learning model used. This opinion is in accordance with that expressed by

Wahyudin et al (2007: 3.5-3.6) that success in the learning process is focused on students and teachers, where students must be able to increase readiness and seriousness in the learning process to achieve the expected learning

Achievements and teachers as educators can deliver their students to the goals that have been set.

The evaluation results obtained in the first cycle of learning have not reached the expected indicators but in accordance with the results of observations made on student activities and teacher activities in the learning process carried out quite well. This can happen because the Minimum Completeness Criteria set by the school for science lessons in particular are too high if it is adjusted to the students' abilities and the learning facilities available at the school. According to Kunandar (2007:127) that each educational unit must determine the minimum completeness criteria by considering the average level of ability of students and the ability of supporting resources in carrying out learning.

Based on the results of the reflections carried out, the weaknesses / deficiencies found in the first cycle were improved in the second cycle, especially the skills in using sticks in *talking sticks* and the teacher had improved the way of conveying the concept of learning material so as to stimulate students' reasoning power and motivation to learn better. According to Sanjaya (2005:176) that providing good comments/explanations on the subject matter to be studied can arouse students' attention so that they can build an optimal learning atmosphere. This opinion is also similar to that expressed by Slameto (2003) *in* Abubakar (2006:23) that to motivate students, teachers must be able to attract attention/maintain students' attention and make sure that students want to learn the materials that are expected to be studied.

Based on the results of observations in cycle II, teachers and students have carried out learning activities as expected by improving deficiencies that occur in cycle I. The teacher is able to organize time well so that the use of time is in accordance with what is set. The teacher has been able to improve the way of delivering the right material. In addition, students have been seen to be active and orderly in participating in learning activities.

An increase in student activity from cycle I to cycle II occurs because students are able to socialize well, even most students have the courage to express opinions and questions given by the teacher and their friends. There were 2 (two) students who until the end of the second cycle test had learning outcomes <70 even though they had given a positive attitude when the combination of the STAD type cooperative learning model with *talking stick was* applied.

Based on the results of the evaluation conducted in the second cycle, 19 students scored 70 or 90.47% with an average score of 78.09. This shows that there is an increase from the results of the first cycle of action tests to the results of the second cycle of action tests, which is 19.05% and students who get a score of ≥ 70 increase by 19.05% or an increase of 4 people from the test results.

The first cycle of action, so it can be said that the application of the STAD type cooperative learning model with *talking stick is* appropriate to use in improving student learning outcomes in the material i Particles making up objects. This happens because students are very motivated and actively learn in groups by using sticks and working on worksheets in *talking sticks.* The application of this learning model, students are taught and guided to study in groups, work together, help each other which is supported by the steps that exist in the STAD type cooperative learning model.

According to Slavin, Abrani and Chamberr (1996) *in* Sanjaya (2005:107) argues that through cooperative learning each student will help each other and interact in developing their achievements so that they can think and try to understand and add information to increase their cognitive knowledge. Then Vygotsky *in* Ibrahim (2003:8) believes that social interaction with other friends can help the formation of new ideas that enrich the intellectual development of students.

The STAD type cooperative learning model used by the teacher in the learning process can raise students' confidence in learning activities, because students in groups try to increase activity in learning activities so that each group always shows good activity in learning activities. The progress/increase in the learning activities of each group can cause students who are less active in the group to try to adapt themselves to better students.

According to Winataputra (2000:72), that learning outcomes cannot be separated from what happens in learning activities both in class, at school and outside school. What is experienced by students in the knowledge process, their abilities are what they get. The opinion is also the same

with that stated by Dewei (1990) *in* Dimyati and Mudjiono (1994:12) that good learning is carried out by active students both individually and in groups. Then Kunandar (2007:291) also suggests that good learning outcomes are obtained from *sharing* between friends, between groups and between those who already know and those who don't know. Students who are good at teaching the week, who are quick to know encourage their friends who are slow and who have ideas immediately give suggestions.

Because the indicators of success in this study have been achieved, in this case student learning outcomes during the learning process reach a good category and at least 75 % of students have achieved a score of 70, the purpose of this research has been achieved by using a combination of STAD type cooperative learning model with *talking stick* in the science learning process on the material of Particles that make up objects, the learning outcomes of students in class IX can be improved.

V. CONCLUSIONS AND SUGGESTIONS

A. Conclusion

Based on the results of the analysis and reflection, it can be concluded that:

1. The application of the combination of the STAD type cooperative learning model with the *talking stick* can improve student learning outcomes in the matter of Particles making up objects: the place where Particles make up objects and factors that affect Particles making up objects, the average student learning outcomes are 78.09 and the percentage of student learning completeness is 78.09. 90.47%.
2. The application of a combination of STAD type cooperative learning model with *talking stick* can make effective use of time and presentation of information on the material. Particles making up objects: the place where the Particles make up objects and the factors that affect the Particles make up objects.
3. The application of the combination of the STAD type cooperative learning model with the *talking stick* is a learning that conditions students to study in groups to complete tasks in the form of worksheets contained in the sticks in turns until all students in their respective groups understand the material being studied.
4. Student and teacher learning activities by applying the STAD type cooperative learning model with *talking stick* on the material: Particles making up objects: the place where the Particles make up objects and the factors that affect the Particles making up objects get an average of 3.8 activities for students and teachers with good implementation criteria.
5. The success of implementing the STAD type of cooperative learning model with *talking stick is* influenced by the teacher's guidance in organizing students and organizing group discussions in learning activities.

B. Suggestion

Based on the results of the study, the researchers suggest:

1. Teachers should be able to apply the STAD type cooperative learning model with *talking stick* on the material: Particles making up objects: the place where Particles make up objects and the factors that affect Particles making up objects in different classes, because empirically it has been proven to improve student learning outcomes.
2. For researchers who are interested in studying this, they should be able to apply the STAD type cooperative learning model with *talking sticks* on different materials.

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