



## Implementation of Team Assisted Individualization (TAI) Learning Model to Improve Student's Activeness and Learning Outcomes on Reaction Rate Materials

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**Abstract: Implementation of Team Assisted Individualization (TAI) Learning Model to Improve Student's Activeness and Learning Outcomes on Reaction Rate Materials.** The aims of this study to improve student's activeness in learning process and student's learning outcomes by applying the Team Assisted Individualized (TAI) type of Cooperative learning model. This research is classroom action research (CAR). It uses 2 learning cycles consisting of planning, implementation, observation, and reflection. The subjects of this study were students of class XI Science 1, MAN 1 Bengkulu City which consisted of 12 male students and 23 female students. The problem in this class is the lack of student participation in the learning process. This causes a decrease in learning outcomes in each material. Increased student's activeness from 43.80% in the first cycle to 77.14% in the second cycle. While the percentage of mastery learning outcomes increased from 22.85% in the first cycle to 80.0% in the second cycle. These results state that the TAI type of cooperative learning model can increase the percentage of learning activeness and mastery of learning outcomes.

**Keywords:** Activeness, CAR, learning outcomes, TAI learning model

**Abstrak: Implementasi Model Pembelajaran Team Assisted Individualization (TAI) untuk Meningkatkan Keaktifan Siswa dan Hasil Belajar pada Materi Laju Reaksi.** Penelitian ini memiliki tujuan untuk meningkatkan aktivitas dan hasil belajar siswa dengan penerapan model pembelajaran Kooperatif tipe Team Assisted Individualized (TAI). Penelitian ini adalah penelitian tindakan kelas (PTK) dengan menggunakan 2 siklus pembelajaran yang terdiri atas perencanaan, pelaksanaan, observasi dan refleksi. Subjek penelitian ini adalah siswa kelas XI MIPA 1, MAN 1 Kota Bengkulu yang terdiri atas 12 siswa laki-laki dan 23 siswa perempuan. Permasalahan dalam kelas ini adalah kurangnya partisipasi siswa dalam proses pembelajaran. Hal ini membuat penurunan hasil belajar di setiap materinya. Peningkatan persentase keaktifan siswa 43,80% pada siklus I menjadi 77,14% pada siklus II. Sedangkan persentase ketuntasan hasil belajar klasikal meningkat dari 22,85% pada siklus I menjadi 80,0% pada siklus II. Hasil tersebut menyatakan bahwa model pembelajaran kooperatif tipe TAI dapat meningkatkan persentase keaktifan siswa dan ketuntasan hasil belajar.

**Kata kunci:** Keaktifan, hasil belajar, model pembelajaran TAI, PTK

## ▪ INTRODUCTION

Indonesia is a country that always strives to improve the quality of education. One of the ways to improve it improves the education system in the country. The education system in Indonesia depends on the curriculum developed. Curriculum development in Indonesia has occurred several times. In the last 15 years alone, 3 curricula have been developed. Starting from the draft competency-based curriculum (KBK) which was later developed into an education unit level curriculum (KTSP), the 2013 curriculum was later developed into the national curriculum or the revised 2013 curriculum. The latest curriculum in Indonesia requires students to be actively involved in the learning process. This is different from a few years ago, which still required teachers to always explain and be the center of attention of students. Currently, on the other hand, at every meeting, teachers are required to provide learning innovations. It is intended that students can be more active in the learning process in the classroom. Innovations in learning strategies like this are used as an effort to improve the history of previous learning (Öztürk, 2011). The involvement of students to be more active will make the teacher's role in the classroom only as a learning facilitator (Westwood, 2008).

In the 2013 curriculum, several learning models can be used, including problem-based learning models, project-based learning, discovery learning, and cooperative learning. This cooperative learning model is a learning model that prioritizes group discussion or cooperation with each other. One type in this learning model is Team Assisted Individualization (TAI) model. According to Slavin (2005), the TAI model consists of a team, placement test, creative students, team study, team scores, group teaching, fact test, and whole class. From this theory, learning steps can be developed according to the existing components.

This type of learning model begins with students first studying individually before studying in groups (Dewi et al., 2018). This is where students' self-confidence is awakened (Wati et al., 2020). After grouping, students have the opportunity to work together and exchange opinions in solving existing problems (Rudi, 2017). In this exchange of opinions, students are taught to improve critical thinking skills (Sari et al., 2018). The learning process in groups will be directed because of the presence of peer assistants who make every student not hesitate to ask questions (Sitanggang et al., 2018). This TAI model can improve the quality of learning (Rudi, 2017).

On the other hand, chemistry is one of the branches of science that is studied in high school. Chemistry influences the development of science. In this case, learning chemistry in schools is important to be further developed. However, this is not following reality. In some schools, chemistry is a scourge for students. Chemistry is a difficult subject to understand. One of the schools experiencing these problems is MAN 1 Bengkulu City.

Based on the results of observations in class XI MIPA 1, in learning chemistry, students have low participation. They are not enthusiastic about participating in this chemistry lesson. The teacher always tries to activate the students by asking questions but only a few can answer the teacher's questions and most of the students do other activities such as talking to their friends and busy themselves. Based on information obtained from interviews with students, some of them did not want to ask the teacher because they were afraid and reluctant so they preferred to ask their friends who understood better because it was easy to understand. This learning atmosphere causes the learning activities in the classroom that they do to be passive. In addition, the

teacher has used the discussion method in chemistry subjects, but the discussion method used is still not effective. The division of groups is entrusted to students to choose their respective groups so that the groups formed are not heterogeneous. Groups that are not heterogeneous make students with low abilities feel unhelpful to learn because members of the group are equally capable of being low so that they cannot solve the problems given by the teacher. According to Aunurrahman (2014) if students participate actively in the learning process, then students will more easily understand the material that can improve student learning outcomes.

Inactivating these students, teachers need a learning model that can be applied to this class. For this reason, the researcher conducted classroom action research by applying the team-assisted individualized (TAI) type of cooperative learning model in increasing student's activeness and student's learning outcomes on the reaction rate material. The rate of reaction is one of the materials that students think is difficult to understand (Solikhin et al., 2019).

## ▪ METHOD

### Types of Research

This research is classroom action research (CAR). This research is used to solve typical problems in the classroom or improve the quality of existing learning. This research consists of at least 2 cycles with each cycle consisting of 4 stages, namely planning, action, observation, and reflection.

### Research Subject

The subjects in this study were students of class XI MIPA 1 MAN 1 Bengkulu City. The total number of students in this class is 35 students consisting of 12 male students and 23 female students.

### Research Instruments

The instruments used in this study were observation sheets and evaluation test sheets. Observation sheets are used in observing group and individual work in the learning process. This observation sheet consists of 3 main aspects, namely asking questions, expressing opinions/answering, and enthusiasm (Dewi et al., 2018). This observation sheet consists of a checklist. While the test sheet is used to evaluate learning in each cycle. This test sheet contains evaluation questions in the form of multiple-choice and essays.

### Data Analysis

The results of observations of student activity are calculated as percentages in each aspect using the equation below:

$$SA = \frac{\sum \text{students who are active in every aspect}}{\sum \text{all student}} \times 100\%$$

The results of student activity as a whole were obtained from the average results of the three aspects of observation. Meanwhile, the test is assessed in the range of 0-100 with the minimum completeness criteria is 75. The percentage of classical completeness is calculated using the following equation:

$$SLO = \frac{\sum \text{students who achieve mastery}}{\sum \text{all student}} \times 100\%$$

Details:

SA = Student's activeness

SO = Student's Learning Outcome

This research is said to be successful when the percentage of both can reach a minimum of 75%.

## ▪ RESULT AND DISCUSSION

Classroom action research in class XI IPA 1 MAN 1 Bengkulu City has been carried out. This research was conducted in 2 cycles with each cycle applying the TAI model. Each cycle has been carried out planning, action, observation, and reflection.

The learning step in this learning model begins with distributing student worksheets. This is used so that students can study individually first. This step is following the creative student component. After that, students are asked to take an initial test or placement test. This test is used as the basic value of individual students. The class is then divided into several groups with heterogeneous members. The division of this group is included in the team component. In group discussions, students are asked to discuss the material in the LKS and the tests given at the beginning. This step is a component of the study team. This group discussion directs students to make a summary of the material or can be called a teaching group. After that, each student is given a test again as a fact test and gets a score as a team score. The last step is the material is discussed classically or can be called a whole class.

The learning steps are carried out every cycle to get maximum results. Evaluation tests are carried out outside of learning activities with this TAI-type learning model.

### Cycle I

The implementation of learning in cycle I was 2 meetings with each meeting consisting of 90 minutes. The first meeting is used for learning, while the second meeting is used as an evaluation test. The material used in the first cycle of learning is material about the understanding of reaction rates, collision theory, and factors that affect reaction rates.

In the planning stage in cycle 1, researchers and teachers designed a lesson plan (RPP) consisting of initial activities, core activities, and closing activities. This lesson plan uses the TAI learning model. Researchers and teachers also compiled student worksheets (LKS) of cooperative model type TAI cycle 1 for students to use in group discussions containing material summaries, discussion questions. The final test is in the form of 10 multiple choice questions and 3 essay questions consisting of.

In the implementation of learning using this learning model, observations were made by the observer. Observers in this research consisted of three people, each of which observed two groups of observers. The implementation stage of learning with the TAI learning model. The percentage results of each aspect and the average can be seen in Table 1.

**Table 1.** Percentage of Student Activeness Aspects in Cycle I

Aspect	Percentage
Asking Question	17.14%
Issuing Opinions	48.57%
Enthusiasm	65.71%
Average	43.80%

Student activeness in terms of asking questions is still low. During the learning process, only 6 students asked questions. Asking these questions can be done in class or group discussions. These six students were scattered from several different groups. While the aspect of expressing opinions, as many as 17 students did it in group discussions and individual studies. These students try to argue in solving existing problems. The last aspect, namely the enthusiasm aspect, as many as 23 students were enthusiastic in participating in this learning. The enthusiasm of these students can be seen from their interest in participating in learning in the classroom. For student test results can be seen in Table 2.

**Table 2.** Student Learning Outcomes in Cycle I

Aspect	Total
Maximum Score	82
Minimum Score	35
Classical Completeness Percentage	22.85%

A total of 8 people were declared complete to meet the minimum score. This is far from the target set at the beginning. These eight students are included in the students who are active in observing the learning process.

From the percentage of student activeness and classical completeness, both have not met the expected target. For that, it is necessary to have a Cycle II learning process.

### Cycle II

The implementation of this second cycle for 2 meetings with each meeting 90 minutes. The first meeting is used as learning and the second meeting is used as an evaluation test. The material used in this second cycle is the determination of the order of the reaction, the rate equation for the reaction, and the application of the reaction rate. The steps carried out are still the same as the previous cycle.

Based on the results of observations in cycle I, as well as problems and reflections between researchers and teachers, a design was made for cycle II. In planning, the instrument is the final test and the learning tools are worksheets, lesson plans that use the TAI learning model, observation sheets to observe the learning process of the TAI model, and observation sheets to see student activeness during the learning process. At this stage, the discussion was carried out again to remind researchers about the stages of learning in cycle II using the TAI learning model.

In the implementation of learning, researchers still involve observers to observe the activities carried out by students in the classroom and groups. The results of the observations can be seen in Table 3.

**Table 3.** Percentage of Student Activeness Aspects in Cycle II

Aspect	Percentage
Asking Question	62.85%
Issuing Opinions	82.85%
Enthusiasm	85.71%

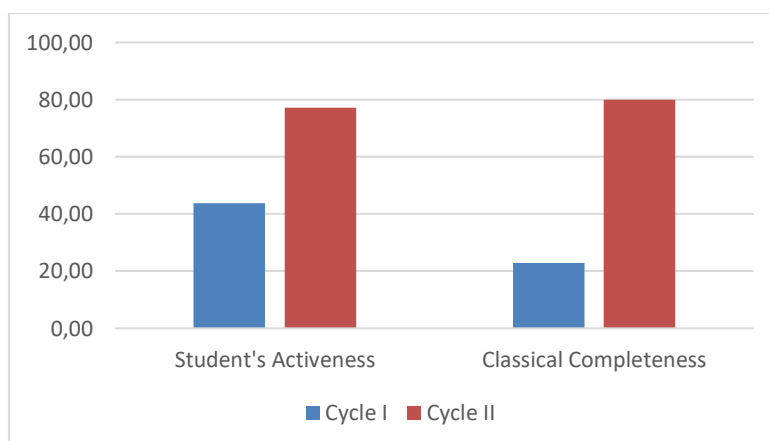
Average	77.14%
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From the observations, the aspect of asking questions is still low compared to the other 2 aspects. The aspect of expressing opinions and enthusiasm has reached the expected target, while the aspect of asking questions has not. However, after the three aspects were averaged, the result had already exceeded the target of 75%. Meanwhile, the learning outcomes in cycle II can be seen in Table 4.

**Table 4.** Student Learning Outcomes in Cycle II

Aspect	Total
Maximum Score	88
Minimum Score	43
Classical Completeness Percentage	80.00%

The test results in the second cycle stated that as many as 28 students had reached the minimum criteria, while the other 7 students had not. When viewed from the maximum score and minimum score, the second cycle has increased than the first cycle. The overall results of the second cycle increased compared to the first cycle. The increase in the percentage of student activeness and classical completeness can be seen in Figure 1.



**Figure 1.** Increasing the Percentage of Student Activeness and Classical Completeness in Cycle I and Cycle II

The use of the TAI learning model is one of the learning models that can be used to activate student activities in the classroom. The cooperative learning model is a learning model that emphasizes the cooperative process carried out by students, both cooperation in learning in class or cooperation in group discussions. Including this TAI type of learning model. This learning model consists of 8 main components that must be met in one learning process. These eight components assist teachers or researchers in implementing this learning model in the classroom.

The student creative stage helps students find their creativity in maximizing the potential that exists within them. This stage makes students more independent in doing anything. This is in line with previous research that the TAI type learning model makes students learn independently (Wati et al., 2020). The placement test stage helps students to think individually and not to use the help of others. At this stage, students are trained to do the task with their abilities. The team stage helps students to adapt to other students with heterogeneous conditions. This heterogeneous group division makes

students in the class work together with other students who are not familiar. The team study and group teaching stages teach students to express opinions in groups. At this stage, students are trained to think critically in completing assignments from the teacher. This supports previous research that this learning model can measure students' critical thinking skills (Sari et al., 2018). In addition, at this stage, it can also increase the contribution of group members in the discussion (Widyaningsih, 2017). Furthermore, the fact test stage has a role like the placement test stage. The difference is, at this stage students have done learning with other students in groups. The team score stage reflects the results obtained after they discuss in groups. The last stage or the whole class stage helps the group to equate perceptions with other groups.

A learning model that teaches students to cooperate can increase class activity. When the activity increases, the learning outcomes obtained can also increase. This supports previous research that this TAI model can improve learning outcomes (Gunawan et al., 2019; Rudi, 2017; Safitri et al., 2017; Sugiyarto et al., 2018). This increase is proven by the percentage of student's activeness and the percentage of classical completeness obtained from research in class XI MIPA 1 MAN 1 Bengkulu City. In addition, the use of a learning model like this is also able to improve the quality of learning in the classroom (Himawan et al., 2017).

## ▪ CONCLUSION

From the results of this study, it can be concluded that the cooperative learning model of the Team Assisted Individualization (TAI) type which is applied in class XI MIPA 1 MAN 1 Bengkulu City can increase student activity and student learning outcomes on the Reaction Rate material. This learning model is suitable to be used as one of the recommended learning models in the 2013 curriculum learning. Future classroom action research is expected to be able to re-optimize the learning model that has been developed so that it can be implemented properly in learning. The learning model chosen can be adapted to the circumstances of the students in the class.

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