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**APPLICATION OF THE TEAM ASSISTED  
INDIVIDUALIZATION MODEL OF LEARNING IN  
INCREASING HIGH SCHOOL STUDENTS' LEARNING  
MOTIVATION**

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**Abstract**

*This research was conducted to determine the increase in learning motivation and student responses to the application of the Team Assisted Individualisation learning model on elasticity material. This type of research is a pre-experiment research with One-group pretest-posttest design. The research sample was taken with random sampling technique. The results of the data analysis of the learning motivation questionnaire after the application of the TAI learning model resulted in a very high category and an N-gain value of 0.45 which is in the medium category. This is evidenced by the results of the data analysis test using the t-test: Two-Sample Assuming Equal Variances with  $\alpha = 0.05$  assisted by Ms.Excel produces good results ( $P(T <=t) 0.000$  for one-tail and two-tail less than the value of  $\alpha = 0.05$ . Based on the results of data analysis of student response questionnaires showed a percentage score of 87% in the very high category.*

**Keywords:** Learning Motivation, Team Assisted Individualization, Response.

**INTRODUCTION**

Education is one way to improve the quality of human resources (Primasari et al., 2021). Education is an essential part of life that can determine the quality of a nation. Learning is one aspect in determining the success of education (Maliasih et al., 2017).

The learning system in Indonesia has undergone several changes from offline learning, then online learning, and back again to offline

learning. Teachers and students need time to adapt to the offline learning process which is being held again. Teachers may be able to adapt quickly, but not all students can adapt quickly (Padli & Rudi, 2020). In the offline learning process after online learning, teachers and members of the school staff must carry out training to change the learning system which is again carried out offline in order to achieve educational goals (Hardiansyah et al.,



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2021). Education requires an approach to make the teaching and learning process able to utilize and gain knowledge (Wargadinata et al., 2020).

In the world of education, there are two interconnected activities, namely studying and learning activities. This study and learning activity is a form of effort to achieve educational goals through a series of interaction processes which are of course educational in nature (Pane & Dasopang, 2017).

The process of teaching and learning activities is the main activity in school education. Learning can be said to be a system, because learning contains several components. Components are interconnected with each other in order to achieve predetermined learning objectives (Nur'aini, 2013). Doing your best in the teaching and learning process so as to create positive behavioral changes and form encouragement so that you can be persistent in learning is part of learning motivation (Ricardo & Meilani, 2017).

In the context of physics learning, the importance of learning motivation cannot be ignored. Motivation has an important role in student learning activities in obtaining maximum learning results (Rahman, 2021). When someone does not have the motivation to learn, then that person will not achieve maximum learning results (Octavia, 2020). Therefore, the integration of motivation in learning becomes very important.

The physics learning process at SMA Negeri 9 Kota Bengkulu based on the results of observations and interviews obtained data from several class XI science students of SMA

Negeri 9 Kota Bengkulu argue that physics learning is difficult to understand, physics learning is less interesting, and the learning methods used are less varied. Learning is still carried out conventionally, where student involvement and response in the teaching and learning process is still relatively low so that students tend to feel bored in teaching and learning activities. Students in the teaching and learning process in physics subjects only listen and note down the teacher's explanations. Apart from that, when asked to come forward to work on the questions that have been given, students are still not sure about the answers they have.

A low level of learning motivation and a lack of response from students to physics learning can hinder the learning process. According to Dethan & Martha, (2023), the low learning motivation of students is caused by the application of learning models that tend to be monotonous and mediocre. Judging from Thorndike's connectionist learning theory, the main requirement for the relationship between stimulus or encouragement from the teacher and response in learning is not only closeness between the teacher and students, but the encouragement from the teacher and the response from students must be balanced so that it will influence student learning motivation and can achieve success in learning process.

To determine student responses to learning and increase student learning motivation at SMA Negeri 9 Bengkulu City, the author uses a Team Assisted Individualization (TAI) based learning model as a stimulus. The TAI type cooperative learning model is learning that provides individual

assistance in groups (Suyanto & Jihad, 2013). TAI learning uses the advantages of cooperative learning and individual learning (Syam et al., 2020). Cooperative learning is learning that places students in small groups to work together to find out what to do (Gillies, 2014). Individual learning is learning that is oriented towards the development and acquisition of new knowledge that can help in solving a problem (Mutonyi et al., 2020).

TAI-based learning involves each student in a group working independently with their own learning goals, but at the same time, more capable students act as assistants to help other less capable students in the group. In TAI learning, each student has their own duties and responsibilities for learning, but they also help each other in understanding the lesson material.

Each group member exchanges information, provides feedback, and helps each other in completing the tasks given. They can get support and help from their peers, while also getting the opportunity to improve their learning abilities independently. TAI-based learning can also help more capable students to develop leadership abilities and help other students understand the subject matter better (Sugianti et al., 2023).

The characteristic of TAI learning is that students are grouped into small groups led by a leader or group chairman who has more knowledge than the members (Rudi, 2017). TAI-based learning is carried out in groups in the learning process, students work together, take responsibility and provide input, thereby producing quality results. TAI-

based learning provides students with the opportunity to learn independently.

The problems experienced by students during initial observations were in the form of learning motivation which was in the sufficient category, an alternative was given in the form of implementing the TAI type cooperative learning model. The application of TAI learning can increase student motivation and learning outcomes. This learning model can train students to work together in groups to complete tasks, students are trained to be responsible in mastering the material (Kresnayadi et al., 2019).

There is an influence on the physics learning outcomes of students who are taught using the TAI learning model. Students who use the TAI learning model feel challenged to learn more actively (Ariani, 2017). The results of data analysis from the application of the TAI type cooperative learning model in each cycle, namely cycles I and II, are in the good and very good categories in improving Passing and Control learning (Sastrawan, 2021).

Several previous studies above used the TAI learning model. Therefore, this research tries to analyze the application of the TAI type cooperative learning model. From the description of the background above, the author carried out research with the title "Analysis of the Application of Team Assisted Individualization Learning to Increase High School Students' Learning Motivation" which aims to determine the increase in learning motivation in the implementation of the TAI learning model for high school students.

## **METHODS**

This research type is pre-experiment research. The pre-experimental design used is a one-group design before treatment and after treatment (One-group pretest-posttest design) involving only one group, namely getting the pretest (O1), treatment (X), and posttest (O2) (Nur et al., 2018). The group was given the Team Assisted Individualization (TAI) learning model treatment. This research was carried out at SMAN 9 Bengkulu City in August 2022. In this research the sample was taken using a random sampling technique, this technique allows each member of the population to have an equal opportunity to be selected as a sample, so that the sample taken can better represent the population. Class XI IPA 1 was the sample in this research, namely 29 students.

The instruments of this research are a learning motivation questionnaire sheet and a response questionnaire sheet. The use of questionnaires in this research makes it possible to collect comprehensive and representative data regarding learning motivation and student responses. The research was carried out with a total of 5 meetings, where at the 1st meeting students were given an initial motivation questionnaire, at the 2nd to 4th meetings students were given treatment, namely students learned by applying the TAI learning model, and at the 5th meeting students were given final motivation questionnaire and response questionnaire.

Analysis of the results of student learning motivation questionnaires regarding the TAI learning model was carried out by distributing questionnaires. The learning

motivation questionnaire contains positive statements and negative statements. The questionnaire used consisted of 4 Likert scales, namely SS (Strongly Agree), S (Agree), TS (Disagree), STS (Strongly Disagree). With the scoring criteria, namely for positive statements the response "SS (Strongly Agree)" gets score 4, the response "S (Agree)" gets score 3, the response "TS (Disagree)" gets score 2, and the response "STS (Strongly Disagree)" gets score 1. Meanwhile, for negative statements, the response "SS (Strongly Agree)" gets a score of 1, the response "S (Agree)" gets score 2, the response "TS (Disagree)" gets score 3, and the response "STS (Strongly Disagree)" gets score 4.

Analysis of the results of student response questionnaires to the TAI learning model was carried out by distributing questionnaires. The response questionnaire contains positive statements and negative statements. The questionnaire used consisted of 5 Likert scales, namely SS (Strongly Agree), S (Agree), R (Undecided), TS (Disagree), STS (Strongly Disagree). With the scoring criteria, namely for positive statements the response "SS (Strongly Agree)" gets a score of 5, the response "S (Agree)" gets score 4, the response "R (Doubtful)" gets score 3, the response "TS (Disagree)" gets score 2, and the response "STS (Strongly Disagree)" gets score 1. Meanwhile for negative statements the response "SS (Strongly Agree)" gets score 1, the response "S (Agree)" gets score 2, the response "R (Undecided)" gets score 3, the response "TS (Disagree)" gets score 4, and the response "STS (Strongly Disagree)" gets score 5.

The data that has been collected, before testing the analysis, the author has carried out analysis prerequisite tests, namely the normality test to ensure the data is normally distributed and the homogeneity test to ensure the data comes from a homogeneous population.

To know the level of student motivation to learn and to know the student's response to the application of the TAI learning model, a formula is used:

$$\text{Percentage (\%)} = \frac{A}{B} \times 100 \%$$

Annotation:

A = Number of respondent score

B = Maximum score

The percentage results are used to calculate score interpretations using the criteria in Table 1.

Table 1. Questionnaire score criteria

Score Percentage	Category
0-20	Very Low
21-40	Low
41-60	Sufficient
61-80	High
81-100	Very High

(Riduwan, 2003).

Analysis of increased learning motivation using the following formula:

$$N - \text{Gain} = \frac{\text{final score} - \text{initial score}}{\text{maximum score} - \text{initial score}}$$

Annotation:

N-Gain : Normalized gain

Initial score : Initial learning motivation questionnaire score

Final score : Final learning motivation questionnaire score

(Kurniawan et al., 2017).

The author uses the following criteria index for the N-Gain calculation results.

Table 2. Criteria for N-Gain score

N-Gain	Category
$0,71 \leq g \leq 0,80$	Very High
$0,61 \leq g \leq 0,70$	High
$0,41 \leq g \leq 0,60$	Medium
$0,21 \leq g \leq 0,40$	Low
$g \leq 0,20$	Very Low

(Putri et al., 2021).

Next, the data was analyzed using the t test which aims to find out whether there are differences in the level of student learning motivation before and after implementing the TAI type cooperative learning model using a significance level of 5%.

## RESULTS AND DISCUSSION

Study and learning activities are activities that involve the delivery of learning material from teaching staff to students (Arifin, 2020). Learning was carried out in class XI Science 1 of SMA Negeri 9 Bengkulu City for 5 meetings.

In this research, there are 6 stages in applying the TAI method, where stage 1 is carrying out a placement test, students are given a test to measure their initial abilities in the elasticity material to be studied. Stage 2 is forming groups, the teacher forms 4-5 groups with heterogeneous members.

The third stage is providing teaching materials, the teacher gives students worksheets (LKPD). Stage 4 is studying in groups, students read the material and work on the questions on the LKPD individually. In each group, students are tasked with checking their friends' work. If there are wrong answers, they must be corrected again

until they get the correct answer. Students who have higher understanding are expected to help other students who do not understand or have lower abilities. Stage 5 is the teaching group, the teacher gives lessons to students based on their level of ability. Stage 6 is group assessment and appreciation, giving assessment and awards to the group that gets the highest score (Sutirman, 2013).

Slavin introduced a learning model in 1985, which is a combination of individual learning models and cooperative learning models. This learning model is named the Team Assisted Individualization type cooperative learning model, which is learning that provides individual assistance in groups (Suyanto & Jihad, 2013). TAI-based learning is learning that uses the advantages of cooperative learning and individual learning (Syam et al., 2020). Cooperative learning is learning that places students in small groups to work together to find out what to do (Gillies, 2014).

### **Learning Motivation**

Independent learning can occur with motivation. Motivation is a complex thing that is used as a driver for a person to be active. Learning motivation is non-intellectual from psychological factors (Sardiman, 2016). Therefore, in learning activities students should carry out learning activities that can improve their understanding by fostering a sense of self-curiosity, focusing attention on the material being taught and being active in the learning process.

In terms of learning motivation, it can be divided into two, namely intrinsic motivation, namely motivation or motives that become

active and do not need to be stimulated from outside, and extrinsic motivation, namely motivation caused by external factors (Sulihin et al., 2020).

Motivation is one of the factors that is thought to have a large influence on learning outcomes. Students with high motivation are expected to obtain good learning results. Apart from that, teachers are expected to be able to help students not only in learning but also in increasing students' learning motivation and approaching parents to help increase students' learning motivation. The importance of student learning motivation is formed to change learning for the better (Alhadi & Saputra, 2017). Using the right learning model can influence the learning process.

In this research, the instrument for measuring students' levels of intrinsic motivation and extrinsic motivation was a learning motivation questionnaire, which was given to students twice, namely before treatment and after treatment (Susanti & Nuriyatin, 2015). Learning theory supports the view that statements regarding behavior can be controlled based on the results before or after treatment (Yarbrough, 2018). From the learning theory statement, the results of data taken before treatment and after treatment can help to determine the level of student learning motivation. Data obtained using a motivation questionnaire, to determine the effectiveness of the TAI learning model on student learning motivation, a comparative analysis of initial motivation questionnaire data and final motivation questionnaire data was carried out.

The student learning motivation questionnaire contains 18 statements

grouped based on indicators from Sardiman (2016) which have been modified, namely being diligent in facing tasks, tenacious in facing difficulties, showing interest, happy working independently, able to defend one's opinion, not easily giving up what one believes in, happy search for and solve physics problems.

The results of questionnaire data analysis of initial learning motivation and final learning motivation of students can be seen in Table 3.

Table 3. Results of student initial motivation questionnaire analysis

N	Mean	N Max	%	Category
29	26,03	36	36	Low

Table 3 shows the results of the analysis of student learning motivation questionnaires before treatment in implementing the Team Assisted Individualization learning model. The level of students' learning motivation before treatment had an average score of 26.03, a maximum score of 36, and a percentage score of 36% in the low category.

Table 6. Hypothesis test results student learning motivation data

	Before	After
<b>Mean</b>	26,02690	59,93103
<b>Variance</b>	5,66995	48,13793
<b>Observations</b>	29	29
<b>Pearson Correlation</b>	-0,02937	
<b>Hypothesized Mean Difference</b>	0,00000	
<b>df</b>	28,00000	
<b>t Stat</b>	-15,07895	
<b>P(T&lt;=t) one-tail</b>	0,00000	
<b>t Critical one-tail</b>	1,70113	
<b>P(T&lt;=t) two-tail</b>	0,00000	
<b>t Critical two-tail</b>	2,04841	

Table 4. Results of student final motivation questionnaire analysis

N	Mean	N Max	%	Category
29	59,93	72	83	Very High

Table 4 shows the results of the analysis of student learning motivation questionnaires after treatment in implementing the Team Assisted Individualization learning model. The level of students' learning motivation after treatment had an average score of 59.93, a maximum score of 72, and a percentage score of 83% in the very high category.

The results of the N-gain score for student learning motivation can be seen in Table 5.

Table 5. Result of *n-gain score* analysis

<b><i>N-gain score</i></b>	0,45
<b>Number of students</b>	29 people

Table 5 above shows the N-gain score for 29 students' learning motivation of 0.45, which is included in the medium category.

Data from the hypothesis results using the t-Test: Two-Sample Assuming Equal Variances with  $\alpha = 0.05$  with the help of Ms. Excel in this research can be seen in Table 6.

Based on table 6, it can be seen that the probability value ( $P(T < t)$ ) of 0.000 obtained for both one-tail and two-tail is less than the value  $\alpha = 0.05$ , so it can be concluded that H1 is accepted and H0 is rejected. This states that students' learning motivation in learning using the TAI type cooperative model has a good impact. This is in accordance with research by Kresnayadi et al. (2019) that the problems experienced by students are lack of motivation to learn before being given stimulus, if given an alternative in the form of implementing the TAI type cooperative learning model it can increase student motivation and learning outcomes.

### Students Responses

The process of teaching and learning activities to get good responses from students can be helped by creating activities that allow students to gain appreciation and facilitate student actions, in this case the teacher's role is to facilitate the development of student response literacy through the learning model that will be applied (Carless & Boud, 2018). Behavioristic learning theory discusses visible behavior and external causes that stimulate it, stimulus from teachers and responses from students are two things that are related to seeing changes in behavior (Nahar, 2016).

In physics learning, student responses to learning using the Team Assisted Individualization (TAI) learning model are collected through questionnaires. The questionnaire

contains statement items based on indicators from Nurlatifah et al. (2015) namely student assessment, student engagement, learning motivation, student interest, student satisfaction, student responses. However, in designing this questionnaire, modifications were made, namely using indicators of student responses and adding indicators of student reactions to Team Assisted Individualization type cooperative learning. Table 7 shows data on student responses to learning using the TAI learning model:

Table 7 Results of student response questionnaire analysis of the TAI learning model

N	Mean	N Max	%	Category
29	87,38	100	87	Very High

Table 7 above shows the results of respondents' analysis in implementing the TAI learning model, the percentage of student response questionnaire scores is 87% which is included in the very high category. The research results show an average response of more than 80% and it can be concluded that students responded well to the implementation of the Team Assisted Individualization (TAI) type cooperative learning model. According to Alfensianita et al. (2022) students who provide good responses indicate that students have succeeded in implementing the learning model effectively.

### CONCLUSION

Based on the results of data analysis and discussion, it can be concluded that students' learning



motivation compared to the questionnaire data before treatment, the percentage of learning motivation was 36%, after treatment the percentage of learning motivation was more than 80% and the N-gain score was 0.45, which is in the medium category. This is proven by the results of the data analysis test using the t-test using the t-Test: Two-Sample Assuming Equal Variances with  $\alpha = 0.05$  assisted by Ms.Excel, producing good results ( $P(T \leq t) = 0.000$  for one-tail and two-tail are less than the value  $\alpha = 0.05$ ). Apart from that, the TAI learning model can increase students' learning motivation which can be seen from the very good student responses to the application of the Team Assisted Individualization learning model, as evidenced by the percentage of students on indicators of student feelings and usefulness towards the TAI learning model of 87%.

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