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# Application of the Group Investigation Learning Model to Increase Learning Outcomes of Junior High School Students in Science Lessons for Materials on Characteristics of Living Things

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**ABSTRACT**

The background of this research is the low learning outcomes of students in science subjects. The purpose of this study was to describe the application of thelearning model Group Investigation (GI) and improve science learning outcomes for seventh grade students of SMP Negeri 1 Umbu Ratu Nggay. The research method used is a group discussion method using an interactive strategy and analyzed using a quantitative approach. This research is a Classroom Action Research (CAR) which is carried out in pre-cycle activities, cycle I and cycle II consisting of planning, action implementation, observation, and reflection. The subjects of the research were 25th graders of class VII. The results showed that the application of the learning model GI could improve student learning outcomes in science subjects at SMP Negeri 1 Umbu Ratu Nggay. This increase can be seen during the pre-cycle, cycle I and cycle II through the learning carried out. The increase in student learning outcomes in the pre-cycle stage was worth 36%, the first cycle reached 64% and increased in the second cycle to 92%. In line with the increase in student learning outcomes by applying the GI learning model, this is similar to the observation of student learning activities at SMP N 1 Umbu Ratu Nggay class VII in science subjects material characteristics of living things through the GI learning model. Because it uses the GI learning model. Practical benefits are expected to add teacher references in implementing learning models that increase student participation.



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## INTRODUCTION

Education is a process of developing human resources to obtain optimal social skills and individual development in strengthening the relationship between individuals and the community and the surrounding cultural environment (Ibrahim, 2013). Education must be perfectly regulated in order to produce a positive impact on the changes experienced by every human being. Changes that occur in

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each individual greatly affect the quality of education.

The quality of education is a measure that shows the quality of the process of changing the behavior of a person or group (Jatirahayu, 2013). The quality of education provides space for educators and students to carry out their duties and responsibilities in the world of education. Therefore, one way to produce a critical personality from an early age is through the junior high school environment, where students are faced with various subjects that are able to hone critical thinking skills. One of the subjects that can hone students' thinking skills is the subject of Natural Sciences (IPA).

According to Sudjana (2013), science or science is a science that studies the universe and its contents, as well as the events that occur in it which were developed by experts based on the scientific process of science studying the universe, objects on the earth's surface, in in the bowels of the earth and in outer space, both those that can be observed by the senses and those that cannot be observed by the senses. Science learning in schools today tends to emphasize only science products, such as facts, laws, and theories (Muakhirin, 2014).

Based on the results of observations made at SMPN 1 Umbu Ratu Nggay in science class VII, out of 25 students only 8 (32%) achieved the KKM 70, while 17 (68%) students did not reach the KKM. The low student learning outcomes are due to the fact that teachers in the implementation of science learning give more lectures and materials that must be memorized by students. So that many students do not understand the science concepts explained by the teacher. In addition, the lecture method causes students to be less trained to develop their reasoning power in solving problems, because they only listen to the teacher's explanation without any desire to find their own concepts that must be mastered.

Based on these data, students experience difficulties in the science learning process. To be able to overcome these problems requires a learning model that can improve learning outcomes. One of the models that can be used is the Group Investigation (GI) learning model.

The Group Investigation learning model is an excellent learning model used to develop academic investigations, social integration, and social processes in learning (Suastra in Muliyantini & Parmiti, 2017). Through the application of the Group Investigation learning model, of course, students are required to think creatively so that the problems studied can be answered, and science learning is aimed at developing scientific skills, understanding concepts, cognitive abilities, creative thinking, and scientific attitudes (Muliyantini & Parmiti, 2017). Therefore, teachers are expected to use learning models that can improve student learning outcomes by applying this Group Investigation learning model in the classroom which provides direct benefits for students in exploring student learning experiences.

According to Slavin in Rusman (2013), the Group Investigation learning model is ideally applied in biology learning (IPA). Based on the research results of Nela, *et al.* (2012), the application of the Group Investigation (GI) type learning model resulted in an increase in learning outcomes, namely in cycle I, cycle II and cycle III, and it was seen that the average value of students' cognitive learning outcomes increased, from the initial data of 71 to 74 in the first cycle, 75 in the second cycle, and 82 in the third cycle. The research of Muliyantini & Parmiti (2017) stated that in the first cycle, 66.67% of student learning outcomes were in the medium category. In cycle II, 90.91% student learning

outcomes are in the very high category. There was an increase in student learning outcomes by 24.24% from cycle I to cycle II. Wasingah's research (2017) stated that the increase in student learning outcomes was evidenced by the percentage of group work results from the first cycle of 79.16 and increased to 86.67 in the second cycle. The result of learning mastery in the first cycle was 70.3% and increased in the second cycle to 82%.

Based on the explanation of the problems above, the purpose of this study is to improve student learning outcomes in science subjects material characteristics of living things class VII at SMP Negeri 1 Umbu Ratu Nggay using the Group Investigation (GI) learning model. Theoretically, this research can provide input or information in the development of science, especially in the field of learning models, while practically this model is expected to add teacher references in applying learning models that increase student participation.

## METHOD

### *Research Procedure*

The research model used in this study consists of four components according to Kurt Lewin, that is: 1) planning; 2) action; 3) observing; 4) reflecting.

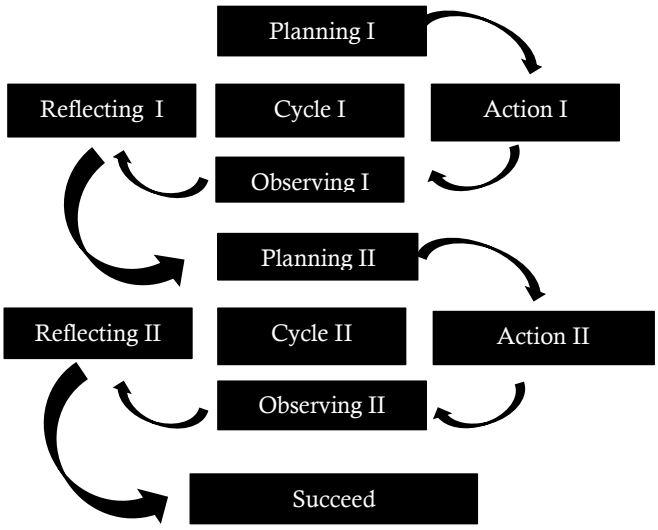


**Figure 1.** Kurt Lewin Model (Arikunto, 2012)

**Planning**

Planning is the process of determining an improvement program that starts from a researcher's ideas. Activities that must be carried out by teachers in the planning stage include: Consulting with teachers for teaching preparation in cycles I and II, reviewing the curriculum, syllabus, making scenarios/RPP, making media, making observation sheets and other preparations related to the learning process.

**Action**

Action is the core of PTK, as an effort to improve the performance of researchers to solve problems by applying the steps of the Group Investigation learning model:

1) The teacher divides the class into several heterogeneous groups.
2) The teacher explains the purpose of learning and group assignments.
3) The teacher calls the chairpersons to distribute one assignment material so that one group gets an assignment of one material/task that is different from other groups.
4) Each group discusses the existing material cooperatively containing the findings.
5) After finishing the discussion, the group leader or spokesperson conveys the results of the group discussion.
6) The teacher gives a brief explanation as well as gives a conclusion.
7) Evaluation.

**Observing**

At the observation stage, the activities carried out are observing the learning process carried out by the teacher and the activities carried out by the students. This data collection is carried out using an observation/assessment format that has been prepared, including careful observation of the implementation of action scenarios from time to time and their impact on the learning process and outcomes.

**Reflection**

At the reflection stage, what is done is to see the shortcomings or problems carried out

in the first cycle and design a follow-up plan for the next cycle.

***Data collection techniques and instruments***

Data collection techniques used in this study were observation, tests and documentation. Observation is an activity to collect data by direct observation. Observation activities were carried out based on observation sheets. The learning outcomes test contains a number of questions regarding the material that has been explained during the teaching and learning process in class. While the documentation in this study is in the form of a journal document of the teacher's daily assessment of students.

***Data analysis technique***

In this study, researchers used essay tests on pre-test and post-test, descriptions in Group Investigation (GI) learning, and multiple choice at the end of each cycle. Scores in this test use the following formula (Arikunto, 2009). Converting scores to scores by:

$$\text{Score} = \frac{\text{Obtained score}}{\text{Maximum score}} x\ 100$$

1. Calculating the class average

$$\text{Average value} = \frac{\text{Total value}}{\text{Many students}}$$

2. Calculating individual learning competene

$$\text{Individual learning competene} = \frac{\text{Total score obtained by student}}{\text{Maximum number of values}} x\ 100$$

3. Calculating classical learning competene

$$\text{Classical learning competene} = \frac{\text{Total students completed}}{\text{Total students}} x100\%$$

Then all the scores obtained are calculated using the formula and converted on a percentage scale (0% to 100%). The formula is as follows.

$$\text{Percentage} = \frac{\Sigma\ Obtained\ score}{\Sigma\ Maximum\ score} x\ 100\%$$

## RESULTS AND DISCUSSION

***Research Results***

**1. Pre-cycle Data**

Pre-cycle is an activity carried out by researchers to determine student learning outcomes before the implementation of Cycle I. Student learning outcomes in the pre-cycle are presented in Table 1.

**Table 1.** Pre-cycle Student Value Data

| NO | STUDENT'S NAME | KNOWLEDGE | |
|---|---|---|---|
| | | NUMBER | PREDICATE |
| 1 | AND | 70 | Complete |
| 2 | ALN | 40 | Not complete |
| 3 | APN | 70 | Complete |
| 4 | BKY | 30 | Not complete |
| 5 | COKA | 70 | Complete |
| 6 | EKD | 75 | Complete |
| 7 | FPN | 75 | Complete |
| 8 | FSTN | 70 | Complete |
| 9 | FRB | 55 | Not complete |
| 10 | GPH | 55 | Not complete |
| 11 | GDP | 35 | Not complete |
| 12 | GRNN | 55 | Not complete |
| 13 | GHL | 50 | Not complete |
| 14 | HAK | 50 | Not complete |
| 15 | IMN | 80 | Complete |
| 16 | IUN | 50 | Not complete |
| 17 | KTL | 75 | Complete |
| 18 | MTD | 55 | Not complete |
| 19 | PTI | 70 | Complete |
| 20 | RRLN | 50 | Not complete |
| 21 | SMUN | 50 | Not complete |
| 22 | VRD | 55 | Not complete |
| 23 | YTS | 55 | Not complete |
| 24 | YUTT | 35 | Not complete |
| 25 | ZERT | 40 | Not complete |

The purpose of this pre-cycle activity is to determine the initial conditions of students. It appears that some students are not so ready to follow the learning process. When the researcher explained the material in front of the class there were some students who did not listen to the explanation well. So that when the researcher gave the post test, most students got low scores, from Table 1 above, out of 25 students, 16 (64%) students scored below the KKM and only 9 (36%) students reached the KKM. So, it can be concluded that most students still do not understand the material

characteristics of living things, so that their learning outcomes are below the KKM value.

Based on the results of observations of the implementation of actions in the pre-cycle of the learning process has not been going well. This can be seen from some students who have not been actively involved in the learning process and there are still students who have not taken the learning process seriously in the pre-cycle. Therefore, the researcher continued to cycle 1 to get satisfactory results.

## 2. Cycle Data I

Cycle I is a learning activity carried out by researchers when applying the GI learning model. Student learning outcomes in cycle I are presented in Table 2.

**Table 2.** Student Value Cycle Data I

| NO | STUDENT'S NAME | KNOWLEDGE | |
|---|---|---|---|
| | | NUMBER | PREDICATE |
| 1 | AND | 100 | Complete |
| 2 | ALN | 90 | Complete |
| 3 | APN | 100 | Complete |
| 4 | BKY | 60 | Not complete |
| 5 | COKA | 80 | Complete |
| 6 | EKD | 80 | Complete |
| 7 | FPN | 85 | Complete |
| 8 | FSTN | 100 | Complete |
| 9 | FRB | 60 | Not complete |
| 10 | GPH | 85 | Complete |
| 11 | GDP | 90 | Complete |
| 12 | GRNN | 75 | Complete |
| 13 | GHL | 55 | Not complete |
| 14 | HAK | 65 | Not complete |
| 15 | IMN | 100 | Complete |
| 16 | IUN | 60 | Not complete |
| 17 | KTL | 50 | Not complete |
| 18 | MTD | 95 | Complete |
| 19 | PTI | 95 | Complete |
| 20 | RRLN | 90 | Complete |
| 21 | SMUN | 90 | Complete |
| 22 | VRD | 80 | Complete |
| 23 | YTS | 100 | Complete |
| 24 | YUTT | 95 | Complete |
| 25 | ZERT | 95 | Complete |

The results of the first cycle that has been done from 25 students only 6 (24%) students who did not reach while 19 (64%) students reached the KKM. Based on the results of the observation of the implementation of the action in the first cycle the learning process has not gone well. This can be seen from some students who have not been actively involved in the learning process, and there are still students who have not taken the learning process seriously in the cycle I. the affective aspect of students is good even though there are still some students who are still busy with their activities during the learning process.

## 3. Cycle Data II

Cycle II is a learning activity carried out by researchers if the increase in student learning outcomes in cycle I is not satisfactory. Student learning outcomes in cycle II are presented in Table 3.

**Tabel 3.** Student Value Cycle Data II

| NO | STUDENT'S NAME | KNOWLEDGE | |
|---|---|---|---|
| | | NUMBER | PREDICATE |
| 1 | AND | 96 | Complete |
| 2 | ALN | 95 | Complete |
| 3 | APN | 100 | Complete |
| 4 | BKY | 65 | Not complete |
| 5 | COKA | 100 | Complete |
| 6 | EKD | 90 | Complete |
| 7 | FPN | 95 | Complete |
| 8 | FSTN | 100 | Complete |
| 9 | FRB | 95 | Complete |
| 10 | GPH | 85 | Complete |
| 11 | GDP | 90 | Complete |
| 12 | GRNN | 75 | Complete |
| 13 | GHL | 95 | Complete |
| 14 | HAK | 65 | Not complete |
| 15 | IMN | 100 | Complete |
| 16 | IUN | 95 | Complete |
| 17 | KTL | 90 | Complete |
| 18 | MTD | 95 | Complete |
| 19 | PTI | 95 | Complete |
| 20 | RRLN | 90 | Complete |
| 21 | SMUN | 90 | Complete |
| 22 | VRD | 80 | Complete |
| 23 | YTS | 90 | Complete |
| 24 | YUTT | 95 | Complete |
| 25 | ZERT | 95 | Complete |

Based on the results of the second cycle conducted at SMP N I Umbu Ratu Nggay in science class VII A, out of 25 students only 2 (8%) students did not reach the KKM, while

23 (92%) students managed to reach the KKM. Therefore, the application of the GI learning model is stated to be able to improve student learning outcomes at SMP N 1 Umbu Ratu Nggay. Students are more enthusiastic to learn after using the GI model.

Based on the results of observations in cycle II, it can be seen that students are more initiative in carrying out discussion activities. This resulted in the learning outcomes of students' cognitive aspects which reached 92%. These results have reached the predetermined target, so it can be concluded that the use of the GI model can improve student learning outcomes.

***Improving Student Learning Outcomes***

The application of the GI learning model showed a significant increase in learning outcomes. The following is a comparison chart of learning outcomes in the pre-cycle, cycle I and cycle II.

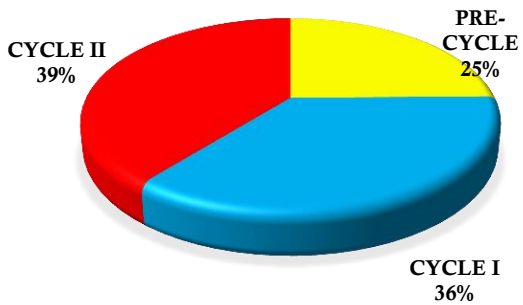


**Figure 2.** Comparison of graph percentages between cycles

Based on the comparison chart of the results of the actions contained above, it can be concluded that the actions given during the pre-cycle, cycle I and cycle II increased quite satisfactorily. This shows that the application of the GI learning model is proven to be able to improve student learning outcomes at SMP N 1 Umbu Ratu Nggay with a very good category. This can be seen from the increase in student learning outcomes who scored above the KKM and were declared complete, which initially 9 students in the pre-cycle to 19 students in the first cycle and 23 students in the second cycle, it increased, pre-cycle 36%, cycle I 64% and the cycle II 92%. The use of the GI learning model has proven that students already have a good understanding of the material characteristics of living things, so it can be concluded that the GI learning model can improve the learning outcomes of VII grade students at SMP N 1 Umbu Ratu Nggay.

***Discussion***

The benchmark for student learning outcomes can be seen from the scores obtained by students after completing the learning process (Giyarni, 2016). Improving student learning outcomes is one indicator of the success of the learning process. The results of this study indicate that the GI model can improve student learning outcomes. This can be seen from the increase in student activity after the application of the GI learning model. The GI learning model makes students get information about the material, students can express their opinions about learning to peers and teachers, students become more active and can better understand learning well, and students are not bored with the learning done in class.

This learning process emphasizes how a student can give and receive the material presented by the teacher in order to be proactive and courageous in the classroom and can improve learning outcomes. Seen from the results of observations during research conducted by researchers at SMP Negeri 1 Umbu Ratu Nggay, it is very clear how student learning outcomes before and after learning with the GI model are seen. As can be seen, student learning outcomes have changed and improved from pre-cycle, cycle I to cycle II. Student learning outcomes at the pre-cycle stage were worth 36%, the first cycle reached 64% and increased in the second cycle to 92%. In line with improving student learning outcomes through the application of the GI learning model, this is similar to observing student learning activities.

Pre-cycle activities have a percentage of 36% because SMP Negeri 1 Umbu Ratu Nggay has not used the GI learning model, so

the learning process at the school is still conventional. In pre-cycle activities, researchers have not used the learning model that has been made previously. According to Asyafah (2019), the learning model is an important component that can develop effective learning so as to help students in the learning process so that learning objectives can be achieved. It can be concluded that pre-cycle activities have a low percentage because they do not use a learning model.

Cycle I activities with a percentage of 64% experienced a significant increase from pre-cycle activities, so that student learning outcomes also increased. In the first cycle, the GI learning model was applied to improve student learning outcomes. In the learning process of cycle I the researcher explained the material characteristics of living things and non-living things, the groups made were discussion groups between fellow students. Students look more active than before because the learning model used succeeded in making students active, so that student learning outcomes increased after the application of this model.

The results of the research Dewi, *et al*. (2012) showed that the GI learning model with practicum made students interested in participating in the learning process because students felt happier. In addition, students are also easier to understand the material because students are directly involved and conduct group discussions about the material characteristics of living things and conduct questions and answers between fellow students and researchers control the ongoing discussion. Students also stated that they were happy if science learning was carried out using learning media in the form of two-dimensional posters, because students could understand the material clearly.

Through direct interaction, students better understand the material given. They not only imagine, but see it directly and the learning atmosphere becomes more fun. In line with the statement of Putri *et al*. (2017), involving students directly in learning can make students more interested, motivated, and easier to understand the concepts being studied. From some of the statements above, it can be concluded that the GI learning model can improve student learning outcomes through material characteristics of living things, so that from pre-cycle and first-cycle activities there is a very significant change in student learning outcomes.

Activities in cycle II with a percentage of 92% had a very significant increase in learning outcomes. In the second cycle the researcher reviewed the learning process that had been carried out in the first cycle where different test questions were given to re-test students' understanding of the material given. Based on the results of observations made by researchers during the learning process, this learning model can foster interest in learning because students exchange ideas and understanding, as seen from the question and answer group discussion between peers. This is also supported by the researcher's response which states that the GI learning model is very good because it can increase students' understanding of the material so that learning outcomes can increase.

The completeness of student learning outcomes before using the GI learning model was still below the average - only 9 students scored above 70 in the pre-cycle stage, while 16 students did not reach the criteria for completeness. It can be concluded that before the use of the GI model students had low completeness, while after the application of the GI learning model, 19 students experienced an increase in learning outcomes from a total of 25 students. Student learning outcomes have increased significantly. This is also influenced by the learning model used, which can train students to be responsible and students take direct action in group discussions and in the second cycle there is a more significant increase, namely the mastery of student learning outcomes from 19 people increased to 23 people and 2 students who scored below the completeness criteria.

Based on the results obtained, the GI learning model can improve student learning outcomes. This learning model trains students to be responsible and makes students understand the concept of the material directly because of group discussions that make students exchange ideas between fellow

students. In addition, the most influential thing is the learning media that researchers use in the learning process, namely learning media in the form of two-dimensional posters.

The use of learning models can produce effective learning and further optimize students' ability to acquire knowledge. Through the GI learning model, students will interact with each other and work together in groups to achieve learning objectives. So in accordance with the statement Wicaksono, *et al*. (2017), the GI learning model will make students learn to actively seek important information and develop critical thinking skills.

## CONCLUSION

The application of the GI learning model can improve student learning outcomes in science lessons at SMP N 1 Umbu Ratu Nggay. This increase can be seen during the pre-cycle, cycle I and cycle II learning that has been carried out. The increase in student learning outcomes at the pre-cycle stage was worth 36%, the first cycle reached 64% and increased in the second cycle to 92%. In line with the increase in student learning outcomes by applying the GI learning model, this is similar to the observation of student learning activities at SMP N 1 Umbu Ratu Nggay class VII in the science subject matter of the characteristics of living things through the GI learning model because it uses the GI learning model.

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