



The Effectiveness of the Group Investigation Learning Model with Mind Mapping to Improve Students' Motivation and Learning Outcomes on Animalia Materials in SMA

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Article Info

Article history:

Received : August 2023

Approved : August 2023

Published : November 2023

Kata Kunci:

Animalia, Group Investigation, Mind Mapping

Abstract

Student learning outcomes on the material Kingdom Animalia are low. Students who are able to achieve the minimum completeness criteria are only 0,69% of the total population. It turns out that many students find it difficult to understand the concept of 41,67%. This means that the teacher must be able to attract students' interest and curiosity about the material. The Group Investigation (GI) Learning Model with Mind Mapping is able to generate low student motivation. The purpose of this research is to analyze the effectiveness of the Group Investigation (GI) learning model with Mind Mapping on increasing students' motivation and learning outcomes in the Animalia class X material at SMA Negeri 1 Blora in the 2021/2022 academic year compared to the conventional model. The research carried out is experimental research. The research experimental design used is a quasi-experimental design using a nonequivalent groups pretest-posttest control design design groups. The population of class X students in the even semester of SMA N 1 Blora was taken two classes as samples with the technique of simple random sampling. Class X Mipa 1 was selected as the experimental class and class X Mipa 2 was selected as the control class. Research data in the form of student motivation, student learning outcomes, and student responses to the learning process. Existing data were analyzed by t-test. The results showed that after treatment, students' learning motivation in the experimental class (3,21 or 80,28%) was better than the control class (3,00 or 74,97%). The results of the t-test calculation obtained indicate that there is a significant difference between increased motivation in the experimental class and the control class. The average N-Gain value for the experimental class is 0,56 or 56,02%, while in the control class the average N-Gain value is 0,33 or 32,96%. The results of the t-test analysis showed that the experimental class learning outcomes were significantly higher than the control class. The results of classical completeness in the experimental class were 83,33%, while the control class obtained 41,67% results. Students gave a good response to the implementation of learning using the Group Investigation (GI) learning model with Mind Mapping. The conclusion of this research is that the application of the Group Investigation (GI) learning model with Mind Mapping is effective in increasing students' motivation and learning outcomes in Animalia material compared to conventional models.

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p-ISSN 2252-6579

e-ISSN 2540-833X

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INTRODUCTION

Learning is an elaboration process that is carried out by everyone to find a meaning. The learning process is passed by everyone to develop certain skills (Utami, 2015). The increase in learning skills is driven by the existence of learning motivation. Motivation is a person's power to generate a desire to do an activity. Student learning motivation needs to be grown to obtain optimal learning outcomes (Suharni and Purwanti, 2018).

Kingdom Animalia material is the first material taught in high school. Results study student on Theory Kingdom Animalia is declared low. It turns out that many students find it difficult to understand the concepts in the material Kingdom Animalia by 41,67% based on the results of the interview. The concepts in this material are mostly memorized by students compared understand the concept. This is not in accordance with KD 3.9 (grouping animals into phyla based on body layers, body cavities, body symmetry, and reproduction) which must be achieved by students. This means that the teacher must be able to attract students' interest and curiosity about the material.

Group Investigation learning model (GI) applied is one of the learning models that can be used to overcome problems in top. The GI learning model includes a form of cooperative learning model that emphasizes the active participation of students in seeking knowledge about important topics by reading various materials. Through the application of this learning model, students are able to improve their performance at school (Medyasari et al., 2017). This learning model helps students in discussing activities, asking questions, and jointly expressing ideas to help students achieve better learning outcomes than before. (Aliman, 2016). The Group Investigation (GI) Learning Model with Mind Mapping is able to generate low student motivation. With the help of Mind Mapping, students do not need to completely record the main points of the material presented. Important material can be created by students by making their own Mind Maps so that they train students to find existing problems (Ekawati & Kusumaningrum, 2020). The purpose of this research is to analyze the effectiveness of the Group Investigation (GI) learning model with Mind Mapping on increasing students' motivation and learning outcomes in the Animalia class X material at SMA Negeri 1 Blora in the 2021/2022 academic year compared to the conventional model.

RESEARCH METHOD

Type method the research carried out is experimental research. The experimental research design used is a quasi-experimental (quasi-experimental) using a nonequivalent groups pretest-posttest control design groups. The research was carried out at SMA Negeri 1 Blora by involving students of class X Mipa in the academic year 2021/2022 as the population in the study. The population of class X students in the even semester of SMA Negeri 1 Blora was taken two classes as samples with the technique of simple random sampling. Class X Mipa 1 was selected as the experimental class and class X Mipa 2 was selected as the control class. On class the experimenter is given a treatment or treatment by applying the model learning Group Investigation with Mind Mapping, while the control class uses a model conventional learning in the classroom. Tests and questionnaires are methods for collecting data. Research data in the form of student motivation, student learning outcomes, and student responses to the learning process. The instruments used in the study were learning outcomes test instruments, namely pretest and posttest sheets, student learning motivation questionnaires, and finally student response questionnaires. Data on increasing motivation and improving student learning outcomes were statistically analyzed using t-test.

RESULTS AND DISCUSSION

This research, which was conducted from February 21, 2022 to April 8, 2022, aims to analyze the effectiveness of the Group Investigation (GI) learning model with Mind Mapping on increasing students' motivation and learning outcomes in the Animalia material for class X SMA Negeri 1 Blora in the 2021/2022 academic year compared to conventional models. The results of the study can be seen through

the research data obtained, namely student learning motivation, student learning outcomes, and student responses to learning.

Student's motivation to study

Student learning motivation was measured using a learning motivation questionnaire given before and after treatment. The results of the learning motivation questionnaire can be seen in Figure 1.

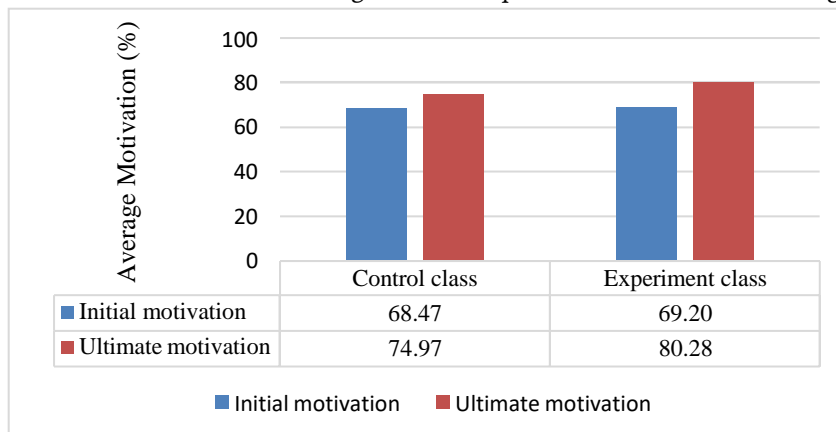


Figure 1 Recapitulation of Learning Motivation Questionnaire Results

The results of the student motivation questionnaire showed that there was an increase in the average percentage of motivation in the control class as well as in the experimental class. The average percentage of motivation in the experimental class is higher than the control class. The data shows that the average increase in motivation of the experimental class is higher than the control class. After the data on the increase in student motivation was declared normal and homogeneous through the normality test and homogeneity test, the calculation continued with the t-test. The results of the t-test calculation obtained the value of Sig. (2-tailed) equal variances assumed the output of the Independent sample test is $0,003 < 0,05$, then H_0 is rejected and H_1 is accepted. This means that there is a significant difference between increased motivation in the control class and the experimental class. This means that learning using the Group Investigation (GI) learning model with Mind Mapping can increase learning motivation on animalia material.

The results showed that the learning motivation of the experimental and control classes increased after the learning process took place. This can be seen by looking at the motivational questionnaire data before and after learning. The average total motivation questionnaire data increased to 3,21 or 80,28% after the learning was carried out. Based on the criteria for student learning motivation scores, a score of 3,21 is classified as a class that has high learning motivation. Meanwhile, based on the effectiveness assessment criteria, the percentage of 80,28 % is in the effective category. The average total motivational questionnaire data increased to 3,00 or 74,97 % after the learning was carried out. The score belongs to the class that has high motivation. Based on the effectiveness assessment criteria, the percentage of 74,97% is in the quite effective category.

The increase in learning motivation in the experimental class can occur because students study with other friends in the implementation of learning, so they have the opportunity to interact with each other and work together in study groups to complete assignments. Many students feel happy when discussing planning assignments with friends. They find it easy to identify topics and are more enthusiastic

about learning in groups. They also feel happy to prepare the final project in groups. Many students are also interested in making Mind Maps in learning because students do not need to record all the existing learning materials. Furthermore, there are presentation activities that make them more active and confident in asking questions and expressing opinions. The presentation of interesting facts, good interaction between students and between students and teachers, and a pleasant atmosphere in the classroom can stimulate students' curiosity so that they are motivated to learn (Table 3). The summary of the results of the student response questionnaires can be seen in Table 3.

Table 3 Recapitulation of Student Response Questionnaire Results

No	Student Response Aspect Indicators	Average Value (%)	Information
1	It is easy to identify topics and more enthusiastic about learning when working in groups.	70.83	Well
2	Feel happy when discussing planning assignments with friends.	84.03	Very good
3	Able to understand information and easily find information.	71.53	Well
4	Feel happy to prepare the final project in groups.	79.86	Well
5	Feel interested in making Mind Maps.	77.08	Well
6	Feel more active and confident when presenting.	76.39	Well
7	Able to complete tasks well.	76.39	Well
Average		76.59	Well

The statement that has been described in accordance with Dini's research (2016) states that the use of the Group Investigation (GI) model in learning activities involves the active role of students to work together with group friends in completing the given task. This is supported by research by Ekawati & Kusumaningrum (2020) which states that with Mind Mapping, students do not need to take complete notes on the material. Important material can be created by students by making their own Mind Maps so that they train students to find problems.

The GI learning model is a learning model that emphasizes the interaction of individuals in groups to work together in order to successfully achieve learning objectives. This is in accordance with Vygotsky's constructivism principle (Pramuningtyas et al., 2015) . Vygotsky's learning theory is a social learning theory that is in accordance with the cooperative learning model because social interactions occur, namely interactions between students and students and between students and teachers to find concepts and problem solving (Suardipa, 2020) .

The increase in learning motivation also occurred in the control class. This can happen because students have the will and interest in the material being taught. This can be seen when students focus on paying attention to the material presented from the beginning to the end of the lesson. During the learning process, the majority of students were less active in question and answer activities and only acted as listeners until the end of the lesson. This does not motivate students to learn.

The learning motivation of the experimental class increased after the learning process was implemented and the significant difference between the increase in motivation in the control class and the experimental class showed that the Group Investigation (GI) learning model with Mind Mapping was effective in increasing students' motivation in animalia. The higher the student's learning motivation, the higher the acquisition of learning outcomes and vice versa (Muhammad, 2016).

Student learning outcomes

The results of the comparative test on the pretest data of the two classes showed that there was no significant difference between the pretest of the experimental and control classes, which means that both classes were considered to have the same prior knowledge on Animalia material. This is shown in Figure

2.

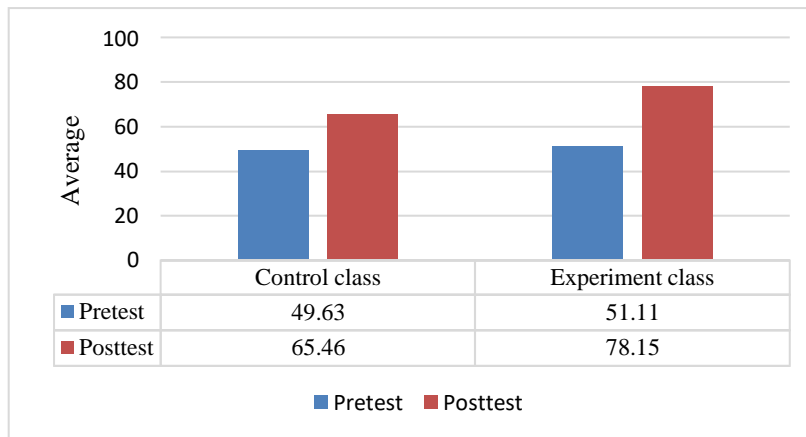


Figure 2 Recapitulation of Student Pretest and Posttest Results

Learning outcomes are described as the result of completing a series of learning activities. The success of a student in completing the learning process is determined by the value received by the student (Latipah & Adman, 2018). Gain score is the difference between the posttest and pretest scores. Student learning outcomes can be seen through the acquisition of N-Gain scores in Figure 3.

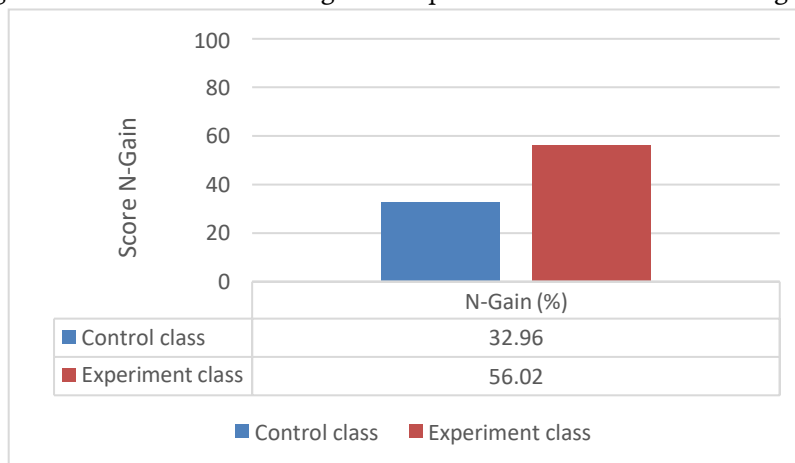


Figure 3 N-gain Score

The results of the analysis of the N-Gain value showed an increase in learning outcomes in the animalia material. The learning outcomes of the experimental class are higher than the control class which can be seen from the average N-Gain value of the experimental class, which is 0,56 or 56,02%. The average value of N-Gain is in the medium category. While in the control class the average value of N-Gain is 0,33 or 32,96 %. The average N-Gain is in the moderate or ineffective category. The results show that the experimental class learning outcomes are better than the control class based on the average N-Gain value obtained by both classes on Animalia KD 3.9 material which includes general characteristics of Animalia, Invertebrates, benefits and roles of Invertebrates, Vertebrates, the benefits and roles of vertebrate animals. This means that learning using the Group Investigation (GI) learning model with Mind Mapping can improve student learning outcomes on Animalia material. The difference in learning outcomes between the experimental and control classes is in accordance with the research of Primarinda (2012) where learning using the Group Investigation model has an effect on student learning outcomes in the cognitive and affective domains.

The N-Gain data from the two classes were declared normal and homogeneous after the normality test and homogeneity test were carried out so that the next analysis used the t-test to determine the difference in the average N-Gain of the two classes. The result of the t-test obtained is the value of Sig. (2-

tailed) equal variances assumed at the output of the Independent sample test is $0,000 < 0,05$ then H_0 is rejected and H_1 is accepted. This means that there is a significant difference between the N-Gain of the experimental class and the control class. The learning outcomes of the experimental class were higher than the control class based on the average N-Gain value obtained by the two classes on Animalia KD 3.9 material which included Invertebrates and Vertebrates. This means that learning using the Group Investigation (GI) learning model with Mind Mapping can improve student learning outcomes on animalia material.

The increase in student learning outcomes in the experimental class can occur because students play an active role in participating in learning from beginning to end. Students are active in discussing and seeking various information from various sources to complete assignments with their friends. This arouses students' curiosity about the material being studied. In addition to discussing activities, the active role of students is also seen during presentation activities. Students present the results of their group discussions. Students seem to focus on paying attention to the presentation group. The presentation activity ended with each group giving questions to the presentation group. All questions can be answered well by the presentation group with the help of other groups when the presentation group has difficulty answering questions. It was also seen that some students recorded important points conveyed in their notebooks. During the learning process they are able to understand and find information easily making it easier for students to identify topics. Finally, the students were able to complete the task well (Table 3).

The statement that has been described is in accordance with the research of Medyasari et al. (2017) stated that the GI learning model includes a form of cooperative learning model that emphasizes the active participation of students in seeking knowledge about important topics by reading various materials. This is also in accordance with Nasution et al. (2017) stated that discussion activities can increase learning activities, because there are problems that must be resolved. In addition, there is a strengthening of the presentation results resulting in sharper students' critical thinking skills so that they can improve their learning outcomes. This research is supported by Dini's research (2016) which states that in presentation activities students can pay attention to friends who are making presentations, give opinions, and respond to explanations given so that students are able to get maximum learning outcomes. The existence of Mind Mapping or mind maps can also have an impact on improving student learning outcomes and creativity because it makes it easier for students to understand the material (Ekawati & Kusumaningrum, 2020).

The increase in student learning outcomes also occurred in the control class. This can happen because students have a curiosity about the material being taught. Students try to focus on listening to what the teacher says from the beginning to the end of the lesson. Students also try to find answers to questions from the teacher by opening the textbook provided by the school. Differences in learning outcomes between the experimental and control classes can occur because only some students are active in question and answer activities. While most students only play a passive role as listeners. In addition, the information presented is limited and there are few learning resources resulting in limited information received by students. This is in accordance with Majid (2013) which states that the conventional model is implemented through classical approach where students only listen to what be delivered by teacher (lecture method), ask answer and read material. This condition limits students' abilities to memorization and memory without being followed by other cognitive abilities.

Student learning outcomes showed that the number of students who were declared complete in the experimental class was more than the control class. Classical completeness in the experimental class was higher than the control class. Classical completeness data obtained from the results of calculations in the experimental and control classes can be seen in Figure 4.

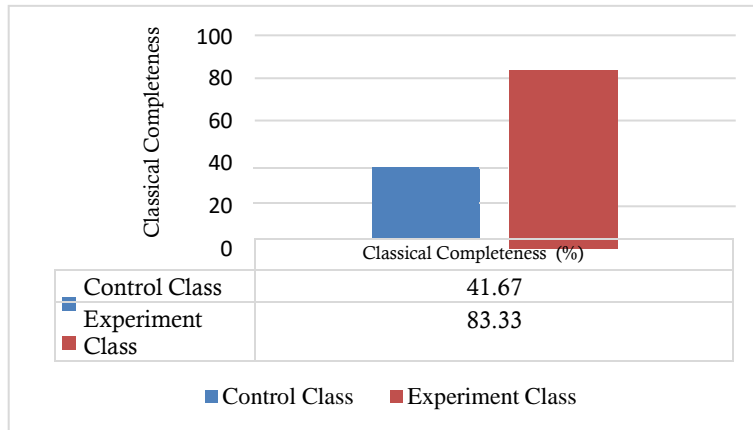


Figure 4 Classical Completeness Control Class and Experiment Class

Based on classical completeness in Figure 4, 30 students were declared complete because they obtained a score of more than or equal to 70 in the experimental class. While in the control class only 15 students were declared complete. The experimental class with a percentage of 83,33 % and the control class with a percentage of 41,67%. The value of 70 is the minimum completeness criteria value set at the school. The existence of a significant difference between the N-gain of the control class and the experimental class on Animalia material and 83,33% classical completeness in the experimental class shows that the Group Investigation (GI) learning model with Mind Mapping is effective for improving student learning outcomes on animalia material.

CONCLUSION

The conclusion of this research is that the application of the Group Investigation (GI) learning model with Mind Mapping is effective in increasing students' motivation and learning outcomes in Animalia material compared to conventional models. The use of the Group Investigation learning model with Mind Mapping in learning can be applied to Animalia material and can be used as an alternative for learning activities on other materials.

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