

The Effect of Group Investigation (GI) Learning Model on Students' Biology Skill Competence at Grade XI MIPA of SMAN 5 Padang

Arini Orin¹, Syamsurizal² Yuni Ahda³, Ramadhan Sumarmin³

¹ Student of Master Degree Program of Biology Education, Faculty of Mathematics and Sciences,
Universitas Negeri Padang, Indonesia

² Department of Biology, Faculty of Mathematics and Sciences,
Universitas Negeri, Padang, Indonesia



Abstract - This research was aimed at finding out the effect of Group Investigation (GI) learning model on students' biology skill competence. The research design of this research was quasi experimental research with randomized control post-test only design. The population of this research was all of the students of grade XI MIPA of SMAN 5 Padang enrolled on 2018/2019 academic year. The samples of this research were selected by using purposive sampling technique and XI MIPA 5 was selected as experimental class and XI MIPA 6 as control class. Skill observation sheet was used as an instrument in this research. The data analysis was analyzed by using normality testing, homogeneity testing, and hypothesis testing with SPSS. The result shows that there is significance difference between experimental and control class. The skill score of the experimental class is higher than the control class. The mean score of the experimental class was 85,56 while the control class was 82,53. In conclusion, Group Investigation can improve students' Biology skill.

Keywords - *Group Investigation (GI), Skill.*

I. INTRODUCTION

Education is a process that has an important role in obtaining a good quality of human resources. Education continues to develop with growth rate and development of technology that increasingly more advanced. Biology is one of the sciences that plays an important role in the development of technology. Biology can also be applied in various fields of science such as medicine, agriculture, and animal husbandry. The government has made various efforts to improve the quality of education; these efforts include improving the curriculum, improving learning facilities and infrastructure and improving the quality of teachers through good education in the form of continuing seminars and workshops. The spearhead of all these changes is in the hands of the teacher.

Teachers play a role in the success of the learning process. A teacher must be able to plan and implement a

learning process. Teachers are required to have a number of abilities, such as mastering subject matter and using appropriate strategies in the learning process. Teacher as a professional educator has many tasks and roles, not only during the interaction in the learning process.

The learning process is an interaction or reciprocal relationship between teacher and students and between students and students in educational environment. The learning process largely determines the quality and the results of education. Effort that can be made in improving the quality of students' process and competence is by improving the learning system. The effort can be directed to the quality of learning as a process that can improve the quality of students' competencies. Permendikbud No. 36, 2018 discusses 2013 Curriculum and standard of competence for primary and secondary education explains that students' competencies include knowledge

competencies, attitude competencies, and skill competencies.

Based on the results of the author's observation and researcher interview with two biology teachers at SMAN 5 Padang; Ms. Yetri Yanofa, S.Pd, M.Sc and Ms. Sri Rahayu Andriyani, S.Pd, it was found that students' learning competencies were still low. It can be seen in the results of the students' biology midterm test for the first semester at grade XI 2018/2019 academic year.

Table 1. Students' score of the first semester in Biology at grade XI SMAN 5 Padang 2018/2019 academic year.

Class	The Member of the Students	Mean Score
XI MIPA ₁	31	71
XI MIPA ₂	31	69
XI MIPA ₃	30	72
XI MIPA ₄	32	73
XI MIPA ₅	30	74
XI MIPA ₆	30	74

Source: Biology teacher at grade XI of SMAN 5 Padang

From the table 1, the mean score of students' knowledge competence is still under the standard. Meanwhile, for knowledge competence that is got from the students' knowledge mean score is 72,16. One of the reasons for low learning competency of the students is the students are not really active in the learning process especially in the discussion. In the process of discussion, only a few of the students are being active, while other students are doing various kinds of activities, such as chatting with friends in the group, working on other subject assignments, and disturbing friends in different groups.

In addition, the researcher also found that the cause of low biology learning competence also influence by teacher-centered, where the teachers are still use conventional learning models, like delivering the material with the lecture method and discussion without reinforcement at the closing of the learning process, less interaction between teacher and students and interaction with students with students as well as a lack of variations in the learning model so that the students are passive and less participate in the learning process.

These problems require a solution in order to create an orderly and pleasant learning atmosphere. It is necessary to have interesting learning by improving the learning model

that applied in the learning process. One of the learning models that can be applied is the cooperative learning model. The cooperative learning model is a learning model that focuses on using small groups of students to work together in maximizing learning conditions to achieve learning goals (Aguanta, 2018: 303-313). One of the cooperative learning models is Group Investigation model.

Group Investigation (GI) is one of cooperative learning model that emphasizes the participation and activities of the students to search for their own lesson material (information) to be learned through available materials, for example from textbooks or students can search on the internet. Wahyu Ningsih (2017: 26- 33), states that the advantages of GI are the learning process is centered on students, there are mutual cooperation and interaction between students in groups regardless of the background.

Cooperative learning model GI type has a group learning pattern by means of collaboration between students that can increase the activeness of the students. One of the advantages of GI model is it can increase students' confidence to use the knowledge and skills that are useful for their groups (Eom, S.B., 2006: 37). The implementation of GI focuses on the freedom of the students in choosing topics and roles in doing observations in groups and their responsibilities. While in school, this learning model has never been implemented (Aprilia, 2016: 76).

The result of the research about Group Investigation conducted by Ketut Suartika (2013: 64), shows that the students who use group investigation learning, guide the students to develop all skills in conducting investigations, compiling reports, and class discussions, which ultimately can practice students' creative thinking skills about responsibilities in groups and learn to acquire scientific knowledge through various group actions in conducting investigations and discoveries. Wahyuningsih (2012: 31-32) also states that Group Investigation Learning able to increase students' sense of responsibility in the answers they choose, improve learning to work together, learn to communicate with friends and teachers and also can increase participation in decision making when discussing with friends so that the active participation of the students in the learning process can improve students' learning outcomes.

Based on the explanation above, the author was interested in conducting research under the title "The effect of Group Investigation (GI) learning model on students' biology skill competence at grade XI MIPA of SMAN 5 Padang."

II. METHOD

The design of this research is quasi experimental design with randomized control post-test only design. In this research, the students were divided into experimental class and control class. In experimental class, the students were given treatment with Group Investigation model, while in control class used the conventional learning model. This research was done in March in the second semester in 2018/2019 academic year at SMAN 5 Padang. The population of this research was all of the students in six classes of grade XI MIPA at SMAN 5 Padang enrolled on 2018/2019 academic year. The samples were selected by using purposive sampling technique and XI MIPA 5 selected as an experimental class and XI MIPA 6 as control class.

In this research, skill assessment sheet was the instrument of data collection about skill competency assessment, project, and product using an assessment scale instrument model developed in 2017 by Directorate General of Primary and Secondary Education. The type of data used in this research was primary data, which is obtained directly from the research subject. The data used is the data of the results of students' learning competencies. The data analysis technique used to assess competency skill in this research were normality test, homogeneity test, and hypothesis testing using the SPSS application.

III. FINDING AND DISCUSSION

Based on the research done from March until April 2019 at SMAN 5 Padang with XI MIPA as experimental class and XI MIPA 6 as control class. The result of the research about students' skill competence on human reproduction system and the importance of breast milk for infants topic on grade XI MIPA can be seen in Table 1.

Table 1. Accumulation data of students' competence in the sample class

Parameter	Class		Information
	Experimental	Control	
Mean score	86,56	82,53	$x_1 > x_2$
Normality testing	Sig = 0,12 $\alpha = 0,05$	Sig = 0,07 $\alpha = 0,05$	Normal distribution
Homogeneity testing	Sig = 0,07 $\alpha = 0,05$		Homogeneous variants
Hypothesis	Sig. = 0,00		Sig < α

testing	$\alpha = 0,05$	
---------	-----------------	--

Based on table 1, the accumulated mean score of students' skills in the experimental class is 86.56 and the control class is 82.53. The results of normality testing in skill competency for both classes have Sig > α , it means that the data were normal. Furthermore, the result of homogeneity testing shows that Sig > α , it means that the data in homogeneous variance. Based on the normality and homogeneity testing which is proven that the data were in normal distribution and homogeneous, then proceed with t-test and the result shows that Sig < α , it means that the hypothesis was accepted.

Statistically, differences in the mean score of students' skill competence on human reproduction system and the importance of breast milk for infants topic can be seen in figure 1.

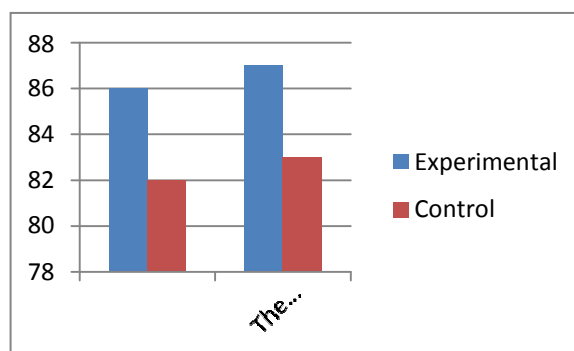


Figure 1. Mean score of students' skill competence on human reproduction system and the importance of breast milk for infants topic in sample classes.

Based on figure 1, skill competence score from the accumulation of skill competency assessment and product for experimental class, while the accumulation of performance and product skills for the experimental class on human reproductive system material and the importance of breast milk for infants in the sample class. Then the mean score of skills obtained on the human reproductive system in experimental class is 86 and sample class is 82. In the topic of the importance of breast milk for infants in experimental class is 87 and for control class is 83.

The score in experimental class that used Group Investigation Model is higher than the class who not used it. It can be seen from the result of the score. It is in line with the previous research finding conducted by Ketut Suartika (2013:64), she states that Group Investigation proved effective in improving skills competency in Biology.

Wahyuningsih (2012:31-32), also states that Group Investigation can improve students' responsibility for the answer they choose, improve learning to work together, learn to communicate with friends and teachers and also can increase participation in decision making when discussing with friends so that the active participation of the students in the learning process can improve students' learning outcomes.

This Group Investigation model can help the students in increasing their ability in solving the problem, make them more active in complex problem solving and motivate them in the learning process.

The focus of the learning lies on the students' activity in solving the problem with implementing the skills of researching, analyzing, making, until presenting learning products based on real experience. This learning can be done in groups in constructing authentic products that come from real problems in everyday life.

Wahyu Ningsih (2017: 26-33) states that the advantages of GI include learning that is centered on the students, there are mutual cooperation and interaction between students in groups regardless of their background.

Cooperative learning model GI type has a group learning pattern by means of collaboration between students that can increase students activity. One of the advantages of the GI model is it can increase the confidence of the students to use knowledge and skills that are useful for their groups (Eom, S.B., 2006: 37). The process of implementing the GI model focuses on the freedom of the students in choosing topics and roles in making observations in groups and their responsibilities. While in school, this learning model has never been implemented (Aprilia, 2016: 76).

IV. CONCLUSION

The result of this research concludes that the implementation of Group Investigation learning model has a significant effect on students' biology skill competence

Acknowledgment

I would like to express my deepest appreciation and thanks to Dr. H. Syamsurizal, M. Biomed as an advisor, Dr. Yuni Ahda M.Si and Ramadhan Sumarmin M.Si as contributors, Sri Rahayu Andriyani, S.Pd as validator and a SMAN 5 Padang as a place for conducting the research.

REFERENCES

- [1] Aguanta Jr, E. R., dan Tan, D. A. (2018). Effects of Dyad Cooperative Learning Strategy on Students' Academic Performance and Attitude towards Mathematics. *International Journal of English and Education*, 7(3), 303-313.
- [2] Aprilia, I.(2016). Pengaruh Model Pembelajaran Kooperatif Tipe *Group Investigation* (GI) Terhadap Hasil Belajar Siswa Dalam Pembelajaran Biologi Pada Materi Ekosistem Di Kelas VII Semester II Mtsn 1 Palangka Raya Tahun Pelajaran 2014/2015. *Edu Sains: Jurnal Pendidikan Sains & Matematika*, 3(2). 76-79.
- [3] Chen, T. H., Ho, R. J., dan Liu, Y.
- [4] W. (2018). Investor personality predicts investment performance? A statistics and machine learning model investigation. *Computers in Human Behavior*.
- [5] Eom, S. B., Wen, H. J., dan Ashill,
- [6] N. (2006). The determinants of students' perceived learning outcomes and satisfaction in university online education: An empirical investigation. *Decision Sciences Journal of Innovative Education*, 4(2), 215-235.
- [7] Kurnianto, F. A., Ikhsan, F. A., Nurdin, E. A., Apriyanto, B., dan Liou, Y. A. (2018). The Influence of Group Investigation Learning Model on College Students Learning Motivation Towards Environment Education. *Geosfera Indonesia, Journal of Geography*, 2(1), 1-10.
- [8] Suartika, K., Arnyana, I. B., dan Setiawan, G. A. (2013). Pengaruh Model Pembelajaran Kooperatif Tipe *Group Investigation* (GI) Terhadap Pemahaman Konsep Biologi Dan Keterampilan Berpikir Kreatif Siswa SMA. *Jurnal Pendidikan dan Pembelajaran IPA Indonesia*, 3(1). 112-118.
- [9] Wahyuningsih, I. (2017). Pengaruh Model Pembelajaran Kooperatif Tipe *Goup Investigation* Terhadap Hasil Belajar IPA. *Natural: Jurnal Ilmiah Pendidikan IPA*, 4(1), 26-3