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Increasing Student Learning Activeness through Group Investigation

Muhammad Fadilurrahman[*], Ch Ismaniati, and Ali Mustadi
Yogyakarta State University, Indonesia

*Email: mfadilurrahman.2017@student.uny.ac.id

Abstract. To develop a good teaching material, students must play an active role during learning in identifying needs/problems, exploring information in depth, and reporting findings. This paper reports the results of the Class Action Research which was carried out in 2 cycles involving 48 students of PGSD at Muhammadiyah University of Magelang at the Science concentration class in the Science Teaching Material Development Elementary School. The application of the Group Investigation model is used to see whether the model can improve the learning aspect of student learning. Data collection uses student activeness observation sheets. Quantitative data were analyzed using descriptive statistics by looking for mean. The results of this study indicate that there is an increase in student learning activities classically which obtain the active category from cycle I which reached 56.25% and cycle II to 87.5%.

Keywords: Student learning activeness; Group investigation, Class action research

1. Introduction

Quality of Human Resources (HR) need to be well prepared to be able to compete in the era of globalization. One effort that can be done is through education. The teacher is one of the most influential roles in human resources in the world of education. At the elementary school level, the teacher gives a great influence on the development of human resources in the future because in basic education students get the knowledge and knowledge that is the foundation for developing themselves further.

Elementary School Teacher Education (PGSD) is one of the departments in several universities in Indonesia where prospective primary school teachers are formed. As a prospective educator in elementary school, a PGSD student must be able to develop the potential of his/her students to the fullest. The teacher is not a person who dominates, but the teacher is a mentor who directs students to develop their own understanding and knowledge through an active learning process that is student-centered [1–3]. Involving active students in learning can improve their learning achievement. In other words, active learning helps the process of improving learning outcomes and quality.

But the fact is, based on the results of observations and interviews in the subject matter of the Natural Science Teaching Development Program shows that the lack of student participation in the learning process. First, from the results of classroom observations, showed that most students tend to be passive during learning, only a few students showed active behavior. This can be seen from the students' behavior when given a question by the lecturer, where some of them were silent just waiting for their friends to answer, some looked around, some looked down, some were cool to talk about other things with friends nearby, and some were cool in playing mobile phones. In addition, passive

behavior was also seen when students were given the opportunity to ask questions by the lecturer, but none of them asked.

This fact was strengthened by the results of interviews with the team of lecturers of the Natural Science Teaching Materials Development Program i.e. Mr Ari Suryawan and Mdm. Astuti Mahardika, obtained the statement that students of the science concentration class came from different classes, ages, and educational backgrounds. Science concentration classes are a class of choice, so the class is a collection of several classes and ages. Class atmosphere looks like it is divided into several groups according to the class of origin. They tend to be friends only with classmates and their peers. This makes the lack of communication between them. The lecturer team also added data that out of 48 students, not all of them came from science majors when they took high school, so the ability to understand their concepts of science learning had different levels. This makes them tend to be reluctant to express their opinions in class. Therefore, this is a serious problem, especially in lectures on Elementary School Science Teaching Material Development, where students must design a product that is good and in accordance with the characteristics of elementary school students, especially in science materials.

Based on the data from the findings above, the researcher tried to apply the Group Investigation (GI) cooperative learning model that can stimulate group collaboration and actively involve students during learning by emphasizing intrinsic points of investigation, interaction, interpretation, and motivation [4]. There are six phase of GI' syntax [5].

Table 1. Syntax of Group Investigation Model

Phase One	Students encounter puzzling situation (planned or unplanned).
Phase Two	Students explore reactions to the situation.
Phase Three	Students formulate study task and organized for study (problem definition, role, assignment, etc.).
Phase Four	Independent and group study.
Phase Five	Students analyze progress and process.
Phase Six	Recycle activity.

The GI is a model that is suitable for learning Teaching and Learning Materials for Elementary School Science because GI is a model that attracts students to be able to search for information from various sources, where to exchange ideas, ideas, opinions, data, or solutions which are then evaluated and synthesized to produce a group work [5]. Thus, the GI model that has student-centered characteristics is expected to increase student learning activeness in the science concentration class.

The rest of this paper is organized as follow: Section 2 describes the proposed research method. Section 3 presents the obtained results and following by discussion. Finally Section 4 concludes this work.

2. Proposed Method

This study uses classroom action research (CAR). Borg & Gall explained that "action research in education is applied research whose primary purpose is to increase the quality, impact, and justice of education professionals' practice" [6]. The CAR model used is the Kemmis & McTaggart model [7]. The difference between this model and the other PTK models is that they combine the acting and observing stages with the reason that the two stages cannot be separated. This is consistent with the object of research conducted, namely student learning activeness, where student learning activity is

observed during learning. The core of this model consists of four components in each cycle, namely planning, action, observation, and reflection. In this study will be carried out in two cycles.

The study was conducted in February to May, academic year of 2017/2018. The subjects of this study were 48 students of the PGSD Science concentration class at Muhammadiyah University of Magelang, especially in the Natural Science Teaching Materials Development course.

Data collection techniques used are non-test techniques. The data was collected by observation using the student activity learning observation sheet that was based on the learning activeness rubric. Data were analyzed using descriptive statistics that refer to the Miles & Hubberman analysis model, namely by reducing data, presenting data, verifying data, and drawing conclusions [6–8].

Data on the application of GI models in learning with categories: very good (81% - 100%), good (61% - 80%), enough (41% - 60%), bad (21% - 40%), and very bad (0% - 20%). There are 5 aspects of assessment for student learning activity, namely 1) listening, 2), asking, 3) expressing opinions, 4) being responsible, and 5) helping each other [1,2]. Each aspect has a maximum score of 3. All data of student learning activeness observations will be added and the mean will be calculated. The score range for each aspect was calculated and obtained the limitations of student learning activeness categories, which are:

$$\text{very active } (X > 13)$$
$$\text{active, } (11 < X < 13)$$
$$\text{quite active } (9 < X < 11)$$
$$\text{less active } (7 < X < 9), \text{ and}$$
$$\text{inactive / passive } (X < 7)$$

The indicator of the success of this classroom action research is seen from two aspects: 1) the application of the Group Investigation model in learning has fulfilled the overall learning steps with a minimum percentage of 80% implemented in the category of 'Good', and 2) the activeness of student learning from the total reach Minimum percentage of 80% with the category 'Active'.

3. Result and Discussion
This section presents the obtained results and following by discussion.

3.1. *Cycle I*
The first cycle begins with preparing a college plan by preparing a *Rencana Pembelajaran* Semester (RPS). Learning activities in this study were developed in the *Satuan Acara Perkuliahan* (SAP) which refers to the RPS and is adapted to the Group Investigation learning syntax. SAP is arranged for two meetings with an allocation time of 2 × 30 minutes. This time is different from most campuses in Indonesia. This is due to the specific policies of the campus concerned. In addition, at this stage researchers compile research instruments and prepare media and learning support facilities.

The next stage is to carry out lecture activities that have been previously designed, then make observations on GI implementation and student learning activity. The results of the action in the first cycle show that the implementation of GI syntax in learning reaches an average of 79.18% with good categories. There are several aspects in the learning syntax that are still not implemented optimally, including 1) in the planning phase the investigation that will be carried out by students is too long in determining the chairman, so this takes quite a lot of time and only receives 66.7%, 2) The student investigation phase was also seen using only one source in the form of lecture modules and obtaining 75% implementation, 3) at the presentation stage of the report most of the other students who were not present tend to remain silent and not provide input, so that at this stage only 62.5 %, and 4) at the evaluation stage, students still seem reluctant and embarrassed in expressing their opinions, so that they only get 66.7% of implementation.

The observation results of student learning activities in the first cycle showed that 17 people (35.42%) students filled the active category, and 10 people (20.83%) got very active categories. So, the total number of students who meet the desired success criteria is 56.25%. The remaining 21 people

(43.75%) still did not meet the desired criteria. This of course is still far from what researchers expect. However, this is also a motivation to continue to correct all deficiencies and maintain that have been good in the first cycle in the next cycle.

Reflection on this cycle I outline, the implementation of learning using the GI model to increase student learning activeness has not met the indicators of success. There are several aspects in the syntax that are still not implemented optimally. Some of these aspects occur due to lack of management and direction from the instructor in directing students through syntax which must be carried out with limited time, resulting in confusion from them. Then, less familiar with one friend with another makes students inclined to be embarrassed, so they are reluctant to express their opinions or objections. This is a consideration to continue learning to cycle II. Although there are some shortcomings, on the other hand it has also begun to show the development of student learning activeness, especially in aspects of their responsibility for the task. Each individual looks very earnest in completing the task that has been entrusted to them. In addition, there were several students who helped their friends after completing their assignments. This certainly has a positive impact in the atmosphere of learning in the classroom and must be maintained in the next cycle.

3.2. Cycle II

The procedure in cycle II is almost the same as cycle I, only by adding what is lacking and maintaining what is already good in the planning and implementation stages. The results of the implementation of GI syntax in learning in the second cycle reached an average of 90.98% with very good categories. The thing that causes the implementation of GI is not fully maximized because at the stage of investigating, students tend to express their opinions to each other and there are difficulties in bringing together opinions. However, on the other hand this is also a positive thing because students are not ashamed anymore and do not hesitate to express their opinions, so this is where the role of group leader in mediating these differences of opinion. The increase in the percentage of the implementation of this GI model is in a straight line with the classical percentage of student learning activeness which in the second cycle reached a percentage of 87.5% in the very active category. So that it can be concluded, in the second cycle the indicator of the success of the research has been achieved, and this class action research is fulfilled until the end of the second cycle.

3.3. Discussion

Based on the results of this study, it is evident that the application of GI in learning can improve the quality of student learning activities that can be seen in cycle I and cycle II. The following recapitulation is presented in Table 2.

Table 2. Recapitulation of Research Results

Cycle	Implementation GI		Student Learning Activity	
	Percentage	Category	Percentage	Category
I	79.18%	Good	56.25%	Quite Active
II	90.98%	Very Good	87.5%	Very Active

Data from the results of the recapitulation of the research on the application of the GI model to improve the quality of student learning activeness can be presented in Figure 1 below.
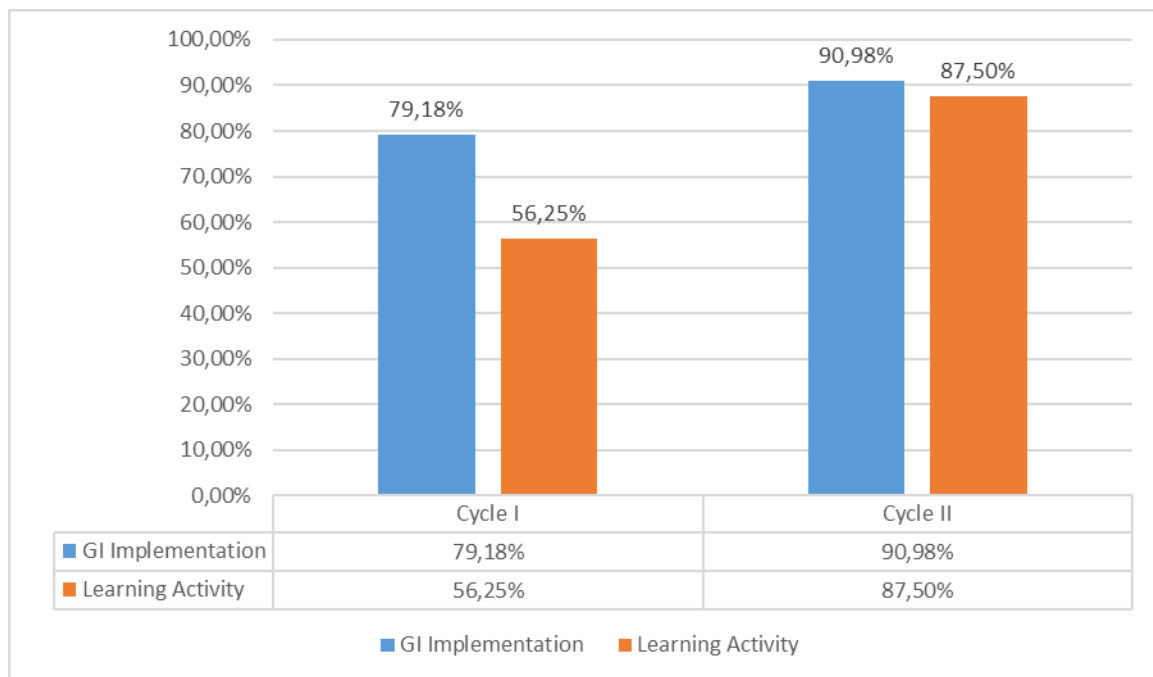
Figure 1. Improvement Results of GI through Student Learning Activeness

There are several factors that influence the success of increasing learning activeness by using the GI model during the course of the Natural Science Teaching Materials Development. This course has the final goal where students can later design and create a good science teaching material and of course in accordance with the characteristics of elementary school students. The success of this study is influenced by various factors.

The GI model is a cooperative learning model that requires students to be actively involved in the learning process [4,5,9,10]. Cooperative learning is an alternative to create an active, innovative, creative, effective and fun learning atmosphere. In addition, cooperative learning also allows students to be able to carry out various activities to develop their own attitudes, understanding, and skills. One of the characteristics of cooperative learning is student-centered in which students learn to actively build their own knowledge [5,11–13]. Therefore, GI is a model that emphasizes the role of students to be actively involved during learning.

The GI model is oriented towards investigations carried out in groups or teams. Investigation is an excellent strategy for building active learning. In the GI model there are steps to evaluate the results of reports submitted by other groups. Inviting students to evaluate each other / review and present real problems they know will make them active during lectures [5,10,14,15]. GI requires students to be able to dig and collect information / data as much as possible, after which they are presented in front of the class and then responded by other students, which is useful to be a reference for them to design and make products.

The essence of GI is inquiry. Inquiry comes when faced with problems. It is from inquiry that gives birth to new knowledge. Inquiry has an emotional aspect, where this emotion fosters and enhances self-awareness, seeks the intentions of what is conveyed by others, and ultimately becomes a reflection of personal personality. In addition, GI demands to use interpersonal skills and increase learning motivation, so that it becomes an effective model to increase student learning activeness [3,4,16,17]. By working together in carrying out investigations, planning how to integrate various opinions, and presenting the reports that have been made, and together with the teacher evaluating what has been found.

In addition to the GI model that supports student-centered learning, the role of educators or lecturers in learning is very influential. Various kinds of obstacles encountered during learning became

further improvements in the research being carried out. One of the serious obstacles is limited time. To streamline the time for a short lecture, facilitating students at the time of discussion can help them in completing the tasks given with good results. With the lecturer being a facilitator and mentor for students can provide motivation and open their minds to a variety of possibilities that are more diverse [4,5,14,18,19]. In addition, another step to maximize the existing lecture time, it is necessary to take effective steps during learning. Various methods are carried out, such as starting the lecture on time, giving clear instructions, preparing various supporting media lectures before starting the lecture, guiding the discussion so that it is not too long, and asking students for help in the distribution of worksheets.

4. Conclusion and Recommendation

Implementation of the GI model can improve student learning activeness in the Natural Science Teaching Materials Development course. Each cycle always has an increase, especially in student learning activities. The results of this study indicate that there is an increase in student learning activities classically which obtain the active category from cycle I which reached 56.25% and cycle II to 87.5%. However, the success of this research comes from various very complex aspects. As an educator must understand their students, both their abilities and intellectual level / understanding. Assessment does not only look at the success of achieving goals, but can also be seen from the sincerity of students in following the learning process. Educators must help students in achieving what they need in the future through various kinds of innovations in the learning process, so that the quality of education can continuously improve.

Acknowledgement

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