Improving the Capability of Writing Scientific Papers through the Group Investigation Model with Field Trip in High School

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ABSTRACT

This research was conducted as an effort to improve students' abilities in writing scientific papers by utilizing the group investigation learning model with field trips. The subjects in this research were class XI 3 students of SMAN 1 Karanggede, Boyolali district, Central Java, Indonesia, consisting of 36 students. This research is categorized as Classroom Action Research. The procedure in classroom action research is to go through four stages: planning, implementation, observation, and follow-up action. Data collection was carried out using several instruments such as observation sheets, student learning outcomes, and student work. The data analysis technique uses comparative descriptive techniques to compare developments from cycle I to cycle II. The results of the PTK show that the best score before the research or pre-cycle was carried out was an average score of 69.45 with the criteria being incomplete. In cycle I, the best score was 82 and the lowest score was 62, with an average score in class of 70.09 with a completion percentage of 55.56% which could be categorized as a sufficient score. Next, cycle II was continued, and the best score was 95 and the lowest score was 52, with an average score of 78.22 with a completion percentage of 80.55 which could be categorized as complete. This increase includes increases in learning and learning outcomes. The conclusion shows that the application of the group investigation model with a field trip is able to resolve students' lack of understanding in writing scientific papers properly and correctly.

Keywords— writing scientific papers, learning models, group investigations with field trips

INTRODUCTION

Language is used as a means of communication between one individual and other individuals or groups. The importance of language means that a person must be willing to learn and be able to use Indonesian well and correctly, both orally and in writing. Language skills require a mastery stage process. Efforts must be taught to achieve this through four aspects of language skills, namely listening, speaking, reading and writing skills. These four aspects are interrelated and each other (Saddhono, 2015). This is in line with the development of education in Indonesia which has included these four language skills in Indonesian language learning materials from phases A to E. The success of these four skills must of course be balanced with the role of professional teachers in student teaching and learning activities. Teachers have an important role in developing strategies, creative innovations in language learning that provide students with opportunities to develop further in mastering language skills (Widodo, 2019:35-48).

One of the language skills that is quite important in school, especially at the high school level, is writing skills. Writing skills are active, productive and expressive skills (Sardila, 2015:110-117). Writing skills are classified as complicated and complex language skills compared to other language skills (Hatmo, 2021:3). Writing skills are developed, one way, through material on writing scientific papers in class XI. Scientific work is one of the writing skills where students do not just demonstrate knowledge, but also express the

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results of observations and reviews of research that has been carried out (Geyte, 2013: 9). Writing scientific papers must follow certain guidelines that are in accordance with scientific ethics, editorial practices and other procedures (Gastel & Day, 2016: 18). The activity of writing scientific papers is taught in lessons to provide training to students so that they are able to write good and correct scientific works according to the rules. Of course, by using learning activities that are fun and interactive for students.

Teaching and learning activities in the era of the independent curriculum give teachers and students freedom to determine the learning style or model to be used (Widodo, 2019:35-48). The use of conventional learning models does not provide students with opportunities to think critically in following the learning flow, as a result the learning is less accepted by students (Sianturi, 2014:229-236). This happens because the learning process is still focused on "teacher centered", that is, the teacher still focuses on his role as a transmitter of learning material, not as a facilitator or educator. Sudjana (2011) stated that to find out the quality of the learning process that has been achieved, an assessment action needs to be made. Assessment of learning outcomes activities is an activity to provide value to teaching and learning activities carried out by teachers and students to achieve learning achievements (Adinda et al., 2021:1-10).

Learning at SMAN 1 Karanggede in Indonesian language subjects, especially in writing scientific papers, still uses conventional models which provide little opportunity for students to develop their writing skills. The impact is a decrease in the completeness of learning outcomes for class.

Table 1. Scores and Assessment Criteria

Achievement Score	**Assessment Criteria**
85-100	Having reached completion, it needs enrichment or more challenges.
70-84	It has reached completion, no need for remediation
55-69	If you haven't reached completeness, remedial work is needed.
<54	Not finished yet, remedial work in all parts

These achievement criteria function as a reflection of the learning process and a diagnosis of the level of mastery of students' abilities so that teachers can improve the learning process and provide appropriate learning interventions for students.

In this research, researchers determine objects based on initial abilities in writing scientific papers. The specified object is class XI 3. The initial value is obtained from teachers who use conventional methods in learning. The efforts made by researchers to respond to the conventional learning process which has not provided students with understanding and completeness is by implementing a group investigation learning model with field trips.

A learning model is a conceptual framework that describes systematic steps in organizing learning experiences to achieve certain learning goals and as a guide for learning designers and teachers in planning and implementing learning activities which are usually characterized by syntax or learning steps (Joyce & Weil, 2003:11). Joyce and Weil (2003:65) group the group investigation model into a cooperative learning model, where the model is designed to direct students to define problems, explore various points of view on problems, and learn together to master ideas, information and thinking. A field trip can be interpreted as a visit to the field (Fleer & Oers, 2018). Adisendjaja, Abdi, Amprasto, Fardhani (2019:339-346) explained that field trips are a learning method that allows students to interact directly with real objects in nature. In general, the field trip method involves students in activities outside the classroom, such as gardens, institutions, nature reserves, or parks, to learn things that cannot be brought into the classroom (Adams & Onwadi, 2020:22-35). Field trips can be implemented in the school environment by utilizing the ecological resources around the school. Apart from that, the combination with the group investigation learning model can also increase the effectiveness of students' learning time and activities.

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Based on the background above, this research was conducted to see the improvement in the ability to write scientific papers using the group investigation learning model with field trips in class XI 3 of SMAN 1 Karanggede, Boyolali Regency, Central Java, Indonesia.

METHOD

This research was conducted in class XI 3 of SMAN 1 Karanggede, Boyolali Regency, Central Java, Indonesia. The subjects in this research were students in class XI 3 for the 2023/2024 academic year, totaling 36 students. This research was carried out using two cycles in a gradual and continuous manner. Each cycle includes planning, implementation, observation by researchers and reflection to obtain results of the effectiveness of the action process that occurs (Saputra et al., 2021).

Data collection in this research was carried out using direct observation techniques in the classroom, tests were carried out, and document analysis in the form of student work was carried out. The steps taken to obtain results in increasing students' abilities in writing scientific papers are by providing formative assessments in the form of descriptions.

Data analysis used in classroom action research is a comparative descriptive technique (comparative descriptive statistics). This technique is carried out on quantitative data, namely by comparing results between cycles (Herman, Saddhono, & Waluyo, 2016). This technique is used to find various strengths and weaknesses in teacher and student activities during the learning process and compare the results achieved from each cycle. Then, the results of the analysis are used as a basis for action planning strategies in the next stage (Mundziroh, Andayani, & Saddhono, 2013). Meanwhile, to obtain an increase in student ability results, researchers and teachers assess the results of student work on the basis of the assessment rubric that has been created in the teaching module. To find out that the tests used in the research were valid, a series of tests were carried out in a grid manner and also in consultation with the Indonesian language teacher at the school where the research was conducted (Dwitha Evayanti & Sumantri, 2017). Furthermore, if the student's learning completeness has reached 80% mastery of writing scientific papers, then the research will be stopped.

RESULTS AND DISCUSSION

Pre-Cycle

Researchers carried out observation activities during Indonesian language learning activities on writing scientific papers in class XI 3 for 2 x 45 minutes in full. Test scores based on the evaluation carried out at the end of the pre-cycle obtained the following values.

Table 2. Recapitulation of Student Learning Results in Pre-Cycle

No	Category	Amount
1	Complete	8
2	Not finished	28
3	Total score	2265
4	Average score	69,45
5	The highest score	80
6	Lowest score	60
7	Completion percentage	22,22%

Source: Research Results, processed (2024)

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Based on the evaluation conclusions at the end of the pre-cycle activities as well as analysis of data managed with statistical calculations obtained from 36 students who completed the assignment, an average score of 69.45 was obtained; mode 65; median 70; lowest value 60; and the highest score is 80.

It can be concluded based on the table that the learning outcomes in the pre-cycle were obtained by 7 students who had completeness of 22.22%, and this percentage was categorized as insufficient. This means that the learning activities that have been carried out have not been completed. Completeness is based on 85% of students being able to master the material received with a minimum completeness criterion of 70. Incomplete learning outcomes of students in the pre-cycle need to be followed up in order to maximize learning outcomes that can be carried out in the next cycle.

Reflection

The learning process carried out in the pre-cycle resulted in the conclusion that learning did not involve full student activity in participating in the learning process. Based on this, teachers are expected to be able to create learning strategies by searching and exploring themselves. The classical learning model is less able to improve student learning outcomes. This is supported by research by Situmorang (2013:1-11) that the classical learning model that is still used by teachers at SMA Negeri 4 Tebing Tinggi causes students to tend to get bored when studying scientific work material. Apart from that, the results of Sianturi's research (2014: 229-236) also stated that the learning model that is often used by teachers in class. One effort that can be made is using a group investigation learning model with field trips which can increase the effectiveness and independence of student learning by forming investigation groups and observing objects directly in the field.

Cycle 1

Researchers carry out observation activities on student learning processes. This activity was carried out for 2 x 45 minutes. Based on the evaluation carried out at the end of the first cycle of activities and data analysis which was managed through descriptive statistical calculations, the following data were obtained.

Table 3. Recapitulation of Student Learning Results in Cycle I

No	Category	Amount
1	Complete	20
2	Not finished	16
3	Total score	2523
4	Average score	70,09
5	The highest score	82
6	Lowest score	62
7	Completion percentage	55,56%

Source: Research Results, processed (2024)

Based on the evaluation at the end of cycle I and analysis of data managed with statistical calculations, it was found that 36 students took the test according to the questions and obtained an average score of 70.09; mode 70; median 70; lowest score 82; and the highest score is 62. Based on the table above, it is known that 20 students completed the learning cycle results, or equal to 55.56%, which can be categorized as sufficient.

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The results show that learning is not complete. Therefore, improving student learning outcomes can be done in the second cycle.

Reflection

Learning activities in cycle 1 can be used as reflection, the aim is to analyze the learning process that has been carried out during learning. The activity carried out by students is field trip learning by observing the objects being studied directly in learning to write scientific papers. Then, each student is given the opportunity to create scientific work independently. Learning is also carried out consistently according to what has been planned in the teaching module, but the steps can change according to the situation and conditions of the students. The following are several deficiencies that need to be followed up in the next cycle. Some students are still passive in learning participation. Teachers still do not pay attention to the students' field trip learning process.

The results of this identification will be used as a basis for carrying out the learning process in cycle II by applying the group investigation model in collaboration with the field trip method.

Cycle II

Researchers carry out observation activities during the student learning process. Observation activities were carried out for 2 x 45 minutes. From the results of observations carried out in the first cycle, and based on the evaluation carried out at the final meeting of the second cycle as well as analysis of the results which were managed using statistical calculations, the following data results were obtained.

Table 4. Recapitulation of Student Learning Results in Cycle II

No	Category	Amount
1	Complete	29
2	Not finished	7
3	Total score	2816
4	Average score	78,22
5	The highest score	95
6	Lowest score	52
7	Completion percentage	80,55%

Source: Research Results, processed (2024)

Based on the evaluation activities carried out at the end of the second cycle meeting and analysis of data managed through statistical calculations, the following results were obtained. There were 36 students who completed the problem assignments and obtained data, average value 78.22, mode 60, median 80.5, minimum value 52, maximum value 95. The results in the table can be concluded that the learning outcomes process in the second cycle obtained 29 students have completed and there are 7 students who have not completed with a percentage of 80.55 and can be categorized as complete.

Reflection

The results of evaluations carried out in subsequent cycles have resulted in improvements. One of these improvements is obtaining a significant increase in student scores which reached the target. Learning carried out using the group investigation model with field trips has sparked student activity in participating in

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learning and is able to make students think critically to be able to produce original scientific work and be reviewed from direct observations in the field using various supporting sources. However, there are still 7 students who have not yet finished. Therefore, special treatment is needed from teachers for students who do not have complete grades by controlling their learning independently. This was done to provide complete learning for the 3 students through enrichment. These results show that the learning carried out has increased in the number of students who have completed grades. This is supported by the research results of Singkali and Azis (2022: 89-95) that the group learning model carried out on a field trip has an influence on students' writing learning outcomes as seen from the increase in the average posttest student learning outcomes which is greater than the pretest. Research results (Fadilah, 2020:1-7) also show that the field trip method can increase the effectiveness of learning to write descriptions in each cycle.

CONCLUSIONS

The increase in the average score for Indonesian language subjects on the ability to write scientific papers shows an increase in the percentage from cycle I to cycle II. Based on the data on the increase in scores, it shows that learning using the group investigation model with field trips can provide effectiveness and ease for students in achieving good learning outcomes, especially in the ability to write scientific papers.

Table 5. Comparison of Percentage Values in Cycle I and Cycle II

No	Category	Cycle I	Cycle II
1	Complete	20	29
2	Not finished	16	7
3	Total score	2523	2816
4	Average score	70,09	78,22
5	The highest score	82	95
6	Lowest score	62	52
7	Completion percentage	55,56%	80,55%
8	Percentage of Incompletion	44,44%	2,52 %

Source: Research Results, processed (2024)

The table shows that there was an increase from cycle I to cycle II. The results of this increase show that the learning process carried out by teachers using the group investigation model with field trips on the material for writing scientific papers in class XI 3 at SMAN 1 Karanggede has achieved a significant increase in results or can be categorized as complete.

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