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Group Investigation Assisted by Media Flip Chart can Improve Science Learning Outcomes and Cooperative Attitudes

Ersi Nofita[1*], Rusnilawati[2]

[1,2] Program Studi Pendidikan Guru Sekolah Dasar, Universitas Muhammadiyah Surakarta, Indonesia

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ABSTRAK

Penggunaan model dan media yang inovatif dalam proses pembelajaran akan mempengaruhi hasil belajar siswa sekolah dasar. Penelitian ini bertujuan menganalisis penggunaan model pembelajaran group investigation dengan bantuan media flipchart terhadap hasil belajar dan sikap kooperatif pada materi IPA kelas IV SD. Desain penelitian ini adalah quasi eksperimen design dengan non-equivalent control group design. Subyek penelitian ini adalah kelas IV yang terdiri dari 42 siswa. Sampel diambil dengan teknik random sampling. Data dalam penelitian ini diperoleh melalui observasi, wawancara, dokumentasi, dan tes. Data yang diperoleh dianalisis dengan menggunakan uji-t. Berdasarkan analisis data kuesioner diketahui bahwa Sig 0,033 lebih kecil dari 0,05. Ho ditolak artinya ada perbedaan sikap yang signifikan antara kelompok kontrol dan eksperimen. Berdasarkan analisis data tes hasil belajar Sig 0,00 lebih kecil dari 0,05. Ho ditolak yang berarti terdapat perbedaan hasil belajar sebelum dan sesudah diberikan media dan perlakuan model. Jadi, terdapat pengaruh model group investigation berbantuan media flipchart terhadap peningkatan hasil belajar dan sikap kooperatif siswa sekolah dasar. Penelitian ini mengandung makna bahwa guru diharapkan mampu menciptakan suasana yang nyaman sehingga pemahaman siswa terhadap pengalaman akan lebih terasah.

ABSTRACT

Using innovative models and media in the learning process will affect the learning outcomes of elementary school students. This study aims to analyze the use of the group investigation learning model with the help of flipchart media on learning outcomes and cooperative attitudes in fourth-grade elementary school science material. The design of this study was a quasi-experimental design with a non-equivalent control group design. The subject of this research is class IV which consists of 42 students. Samples were taken by random sampling technique. The data in this study were obtained through observation, interviews, documentation, and tests. The data obtained were analyzed using the t-test. Based on the analysis of the questionnaire data, it was found that Sig 0.033 was less than 0.05. Ho was rejected, meaning there was a significant difference in attitude between the control and experimental groups. Based on the learning outcomes test data analysis, Sig 0.00 is less than 0.05. Ho is rejected, which means there are differences in learning outcomes before and after being given the media and model treatment. So, there is an influence of the group investigation model assisted by flipchart media on improving elementary school students' learning outcomes and cooperative attitudes. This research implies that teachers are expected to be able to create a comfortable atmosphere so that students' understanding of experiences will be more honed.

1. INTRODUCTION

Education is an important part of the development of a nation. The position of education is to produce and create qualified and broad-minded human resources. One indicator of a country's progress is the quality of its education. Therefore, various efforts continue to be made to control educational problems. Efforts to improve the quality of education must align with educators' roles. Teachers must be

*Corresponding author.
E-mail addresses: ersifita26@gmail.com (Ersi Nofita)

able to guide, direct, and create comfortable learning conditions for students to understand the knowledge being taught easily. To realize active learning, teachers as educators must determine an effective learning model to attract students' interest in learning (Awe et al., 2017; Wiradarma et al., 2021). Natural Science is the study of nature and its contents. Natural Science is also one of someone's efforts to have a logical and scientific mindset (F. A. B. Putri et al., 2019; Sukarini et al., 2021; Wahyu et al., 2020). Science education is expected to be a way for students to understand and learn about themselves and the environment to be applied in everyday life (Feri et al., 2021; Mahmoud et al., 2022). Therefore, science education in elementary schools is expected to train students to understand themselves and their surroundings. In the science learning process, students do not just memorize and know but also must be able to understand, observe, analyze, and solve problems found in everyday life. Science is a process used to study an object and discover and construct scientific products (Kristyowati et al., 2019; Widiana, 2016). As an application, the scientific theory will produce technology that will provide convenience in life. Science learning is important to apply in elementary school children's learning because, through science learning, students will learn to be scientific and solve the problems they face. According to Pamungkas et al. (2017), science has special characteristics in learning, including learning about factual natural phenomena, either in the form of reality or events and causal relationships. In addition, learning science can introduce students to learning about themselves and their environment. With science, students will be more sensitive to the surrounding environment. Science education at the elementary school level is expected to help students play an active role and think critically.

The fundamental problem facing Indonesian education is the low quality of education, as seen in the low achievement of elementary school students (Lase et al., 2022). Based on the results of observations made by researchers at SDN 1 Nangsri, it can be concluded that some students needed help understanding science when they needed help understanding the main points. According to students, students find it difficult to understand when the teacher explains the material because they have yet to use interesting media. The learning process that still uses the lecture method makes students feel bored in the classroom. Science learning in class needs to be more comprehensive and is still dominated by students who are usually active. When learning about plants, some students tend to be silent because they cannot express their opinions. However, the fact found in these schools is that student learning outcomes still need to be as expected. It is known from the research results conducted on the science learning process at SD Negeri 01 Nangsri. Cooperative attitudes have not been formed in class to support maximum learning outcomes. During science learning, students tend to be individual, and only certain students are active in giving opinions or conducting questions and answers to the teacher. These problems can impact students' cognitive and cooperative attitudes, which could be better. The average value of student learning outcomes is not following the Minimum Completeness Criteria standard. Therefore, it is necessary to find solutions for student learning outcomes that are still in the low category.

One solution is a more innovative learning model that can create an active learning environment. Thus, innovative learning is expected to stimulate students' interest in learning science and encourage them to play a more active role in learning. There is innovation in applying models and learning media that are effective and creative and can bring out students' cooperative attitudes (Awalia et al., 2019; Suryana et al., 2021). One of the learning models that can be applied is the group investigation model. Group investigation is a learning model that provides opportunities for students to actively learn with friends, assisted by the teacher as a facilitator and motivator (Asyari et al., 2016; Tembang et al., 2019). This learning media can encourage students to increase their interest in learning by actively participating in learning and can improve learning outcomes (Dewi et al., 2018; Eka Lengari et al., 2020). In the group investigation model, students learn actively, seek important information, and naturally develop critical thinking (Astuti, 2017; Hanifah et al., 2020). The steps used in group investigation learning are determining appropriate topics, implementing predetermined topic plans, synthesizing and analyzing data, and conducting evaluations. The group investigation learning model can lead to a scientific attitude in students (Christina et al., 2016). The advantage of group investigation is that it is a direct and effective way of teaching science academically and can develop social aspects (Muftiyanto et al., 2021; Subudi, 2021).

The successful use of the group investigation model in learning includes increased achievement and results that lead to a scientific attitude in students when learning to use this model (Sumertha, 2019). The learning model is a pattern used to develop a curriculum, material arrangement, and a set of instructions given to teachers to carry out classroom learning. The learning model is a conceptual framework to guide learning activities. Media is anything that can be used to channel messages from senders and recipients so that they can stimulate students' thoughts, feelings, concerns, and interests in such a way that the learning process takes place (Fitriani et al., 2021; Putra et al., 2021; Supriyani et al., 2021). Learning media are very diverse forms and how to use them. Flipchart media is one of the

interesting learning media for elementary school students and is applied to the group investigation model. Flipchart media can help improve student learning outcomes and increase the effectiveness of student learning because it has pictures that attract students to be more enthusiastic in exploring information and solving specified problems (Mediatati et al., 2017; Pramita et al., 2019). Flipchart media also tends to contain pictures, the main learning points, so students can enjoy reading long passages in books (Pandaleke et al., 2020; P. N. A. K. Putri et al., 2019). Previous research findings state that this media can improve students' cognitive abilities and collaboration during learning (Mediatati et al., 2017; Pramita et al., 2019). Increasing student motivation and learning outcomes through the group investigation model (Astuti, 2017; Tembang et al., 2019). Based on this, the group investigation learning model assisted by flipchart media affects student learning outcomes. However, the influence of the Group Investigation learning model with flipcharts cannot be known. This study aims to analyze group investigation assisted by flipchart media to improve science learning outcomes and students' cooperative attitudes. The existence of this research can contribute to students and teachers improving learning outcomes.

2. METHOD

The approach used in this research is quantitative. A quantitative approach is a form of numbers and tables (Sutarto, 2017). At the same time, the analysis phase is carried out if the data has been collected in a data tabulation and is ready to be processed in statistics. This type of approach is included in a quasi-experimental design. Quantifiable pseudo-experimentation is a research method that tests hypotheses with causation by manipulating independent variables and the changes that occur in these manipulations (Tegeh et al., 2010). The selection of the sample in the quasi-experimental type of non-equivalent control group design was not carried out randomly by the researchers. The sample selection in the quasi-experimental non-equivalent control group design was made randomly. The sample of this research uses the control class and the experimental class. The experimental class and control class were chosen randomly. Previous research prepared a paper on which the control and experimental classes were written. Randomly give the pieces of paper to the class leader. For those who get pieces of experimental written papers, the class is used as a researcher as an experimental class and vice versa. The experimental and control groups were given pre-test questions. The pre-test was carried out before the treatment of the research subjects and aimed at knowing the students' initial abilities. Each class was given treatment. The experimental class in this study was given treatment in the form of a group investigation model using flipchart media. In contrast, the control class was not given a model or continued to use the usual learning model, namely the direct instruction model. After being given treatment, both classes were given post-test questions. Finally, posing is done to determine students' final ability after treatment. Differences in student scores before and after treatment can be determined using the pre-test and post-test results.

This research was conducted at SDN 1 Nangsri, located in Nangsri Kidul Rt 09 Rw 01 Nangsri Village, Kebakkramat District. The population is the place or area where the object or subject is used as the research objective (Sugiyono, 2019). The population in this study were all fourth-grade students at SD Negeri 01 Nangsri. The sample is the number and characteristics contained in the population (Sugiyono, 2019). The sample in this study was class IV A as the control class and IV B as the experimental class, totaling 42 students. The variables in this study consisted of the dependent variable and the independent group investigation variable, with flipchart media as the dependent variable and cooperative attitudes and learning outcomes as independent variables. Learning outcomes are abilities that children acquire after learning activities (Abdurahman, 2018). Cooperation is one of the abilities in patterns of social behavior (Fauziddin, 2016; Ramdhani et al., 2019). This study uses primary data because it obtains data directly by treating the experimental class and comparing it to the control class. Data collection methods in this study include tests, questionnaires, observation, and documentation. At the same time, the instrument in this study is a matter of test. This study uses the independent sample t-test (uncorrelated) to test the research hypothesis. Before testing the hypothesis with the inferential statistical method, we performed an assumption analysis test, which included the normality test and uniformity test with the Shapiro-Wilk normality test, to ensure the distribution of the data. In addition, validity and reliability tests were also carried out to test whether the data used was valid.

3. RESULT AND DISCUSSION

Result

Data collection on student learning outcomes was carried out in fourth grade at SD Negeri 01 Nangsri. The class consists of two classes with 42 students. Data on learning outcomes were obtained

from the pre-test and post-test results to determine students' abilities in the subject. The pre-test is the initial data collected before students are processed using a group survey learning model supported by flipchart media. Post-test is the final data obtained after processing with the group investigation learning model supported by flipchart media. Students' pre-test and post-test scores were processed to produce the values listed in Table 1.

Table 1. Data on the Percentage of Students' Cooperative Attitudes

Class	Criteria	Total	Percentage
IV A	Very high	5	23 %
	High	4	19 %
	Medium	6	29 %
	Low	6	29 %
IV B	Very high	5	23 %
	High	3	14 %
	Medium	6	29 %
	Low	7	33 %

Based on Table 1, the science learning process at SD Negeri 01 Nangsri does not show a cooperative attitude in class. During science learning, students tend to be individual, only certain students actively giving opinions or conducting questions and answers to the teacher. These problems can impact students' cognitive and cooperative attitudes, which could be better. Minimum completeness criteria in science material and students' cooperative attitude could be more optimal. Based on the normality test obtained, if sig> α, the data is normally distributed. Attitude data and learning outcomes of the experimental group and the control group are normally distributed in Table 2.

Table 2. Normality Test (Shapiro Wilk)

Variable	Sig	Description
Attitude (Experiment)	0,875 > 0,05	Normally Distributed
Attitude (Control)	0,264 > 0,05	Normally Distributed
Pre-test (Experiment)	0,120 > 0,05	Normally Distributed
Posttest (Experiment)	0,123 > 0,05	Normally Distributed
Pre-test (Control)	0,075 > 0,05	Normally Distributed
Post-test (Control)	0,102 > 0,05	Normally Distributed

Table 3. Hypothesis Testing (t-test)

Variable	Sig.	Description
Attitude (Experiment * Control)	0,033 < 0,05	Ho Rejected
Experimental Group Learning Outcomes (Pretest*Posttest)	0,00 < 0,05	Ho Rejected
Control Group Learning Outcomes (Pretest*Posttest)	0,329 > 0,05	Ho Accepted / Ha Rejected

Based on Table 3, if sig < α, Ho is rejected, and if sig > α, then Ho is accepted. The results of the t-test analysis are presented H0: sig < α: There are differences in attitudes between the control and experimental groups. H0: sig < α: There are differences in learning outcomes before and after being given the media and model treatment. H0: sig > α: There is no difference in learning outcomes without being given media and model treatment.

Discussion

The results showed differences in student learning outcomes after using the media support group flipchart survey model in teaching and learning activities. These differences indicate that the flipchart-assisted group inquiry learning model affects fourth-grade science learning outcomes. Several influencing factors cause differences in learning outcomes. First, learning the group investigation model can increase learning activities and focus students' attention because it offers the flexibility to develop thinking and improve skills by exploring learning resources through group study activities. This media can enhance learning activities and focus students' attention because flipcharts contain colorful pictures that are more interesting according to the topics discussed. This is evidenced by the number of students who raised

their hands when they were allowed to ask and answer questions from the teacher based on the material listed on the flipchart. Flipchart media can help improve student learning outcomes and activities because it has an image display that stimulates students to do more and shows enthusiasm to explore information and solve problems (Mediatati et al., 2017; Wulandari et al., 2020). Flipcharts are sheets of study material that are neatly arranged in flat-sized packages and tied at the top so that they can be seen by turning them over one by one (Pandaleke et al., 2020; Susanti et al., 2021). Flipchart is one of the print media which is very simple in the manufacturing process and is relatively easy to use using paper materials that we can easily find in our surroundings. It is very effective because flipcharts can be used as print media. Second, the effectiveness of using flipchart media in the learning process. Flipchart media helps and can improve student learning outcomes and increase student learning effectiveness because it has stimulating pictures (Pramita et al., 2019). Students learn more enthusiastically, seek information, and solve certain problems. Flipcharts are also usually equipped with pictures representing the main points of learning so students stay energized, like reading a long article in a book. These media can improve learning activities and attract students' attention. The flipchart contains attractive colorful pictures according to each topic. It was proven by the number of students who raised their hands when they were allowed to ask and answer questions posed by the teacher based on the material posted on the flipchart stands. Flipchart media can improve student learning outcomes and activities by displaying pictures that students are interested in and want to explore.

Furthermore, Susilana et al. explain that practical learning messages can be presented. It is not the case for students who are taught through traditional learning characterized by teacher-centered learning. In this learning, the teacher controls more learning activities; teachers are very active in planning, carrying out, and completing assessments; students listen to the teacher's explanation and observe the activities. Teacher-centered learning makes students passive. Students only act as listeners and recipients of teacher information (Faraniza, 2021; Liu et al., 2016). The difference in treatment between the experimental group that was given the flipchart-assisted experimental learning model and the control group that was not treated with the flipchart-assisted experimental learning model resulted in less than optimal scientific literacy. Also lower than the experimental group.

This finding is reinforced by the findings of previous research, which stated that the project-based group investigation learning model on fourth-grade students' science learning outcomes (Dewi et al., 2018). The group investigation learning model assisted by flashcard media influences the competence of science knowledge (Eka Lengari et al., 2020). Flipchart media can improve students' cognitive abilities and collaboration during learning (Mediatati et al., 2017; Pramita et al., 2019). Increasing student motivation and learning outcomes through the group investigation model (Astuti, 2017; Tembang et al., 2019). The advantages and disadvantages of the flipchart media group research model are that learning becomes very interesting, and students follow the developing experience more enthusiastically. In addition, students become more curious (interested) with the data contained in the flipchart, so students are more dynamic in clarifying pressing issues. It can increase student learning inspiration, so they feel energized with the material. However, this has drawbacks. In ordinary conversations, only a few students are dynamic. Disputes between students are difficult to implement because meetings often create different feelings. Students find it difficult to find new things because they need to be used to realizing them. Materials available to supplement materials need to be increased. Even so, the group investigation learning model assisted by flipchart media can improve student learning outcomes. Group research learning models can also enhance students' creativity in constructing words in their mother tongue, and educated concentration keeps students focused on learning. The success of this research was supported by group research using flipcharts to improve science learning outcomes and students' collaborative attitudes. Based on this, this learning model can be used for various learning activities so that students stay energized, learning is more fun, students become more active, and learning success can be optimized at school.

4. CONCLUSION

The flipchart-assisted group investigation learning model can improve student learning outcomes and collaborative attitudes in classroom learning. The group investigation learning model assisted by flipchart media improves students' science learning outcomes because learning practices shift from teacher-centered to student-centered. The teacher only acts as a supervisor of the learning process. At the same time, students have every opportunity to play an active role and be directly involved in the learning process. The implications of this research are expected that through the group investigation learning model assisted by flipchart media, the teacher can create a comfortable atmosphere so students' understanding of experiences will be more honed.

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