



The Effectiveness of Flash Card Media-Oriented Group Investigation Learning Models on Learning Outcomes of Elementary Students

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Abstract: The purpose of this study was to determine the effectiveness of the flash card media-oriented group investigation (GI) learning model on the learning outcomes of elementary students. The approach used in this study is a quantitative approach with pre-experimental methods and the type of One Group Pretest-Posttest design. With the overall population of SD Inpres Oeba 2 class V students 22 people. Sampling using nonprobability sampling saturated sampling where all members of the population are sampled. The data collection technique was obtained from a multiple choice written test. The data analysis technique used descriptive analysis and inferential statistics with the help of the SPSS version 22 application. The results showed that independent t-test data processing obtained a sig value of $0.000 < 0.05$, then H_a was accepted and H_0 was rejected or in other words there was a significant difference between pretest and posttest classes in improving student learning outcomes in the material for the digestive tract of food in humans. Thus, the Flash Card Oriented Group Investigation (GI) learning model can improve the Learning Outcomes of Class V Students of SD Inpres Oeba 2 Kupang City.

Keywords: Group Investigation; Media Flash Card

Introduction

Basic education is the initial education that underlies the next level for nine years (Sukmayadi & Yahya, 2020). The function of basic education is to develop the basic abilities of the personality of students as citizens of a society and a country that believes, fears God Almighty, and has basic skills for provisions in community life and further education (Nurhayati et al., 2022; Pratami et al., 2019). Therefore it is hoped that every lesson in elementary school leads to the formation of a strong basic conceptual foundation for students. Aiman et al. (2023) stated that one of the main subjects in elementary school is Natural Sciences.

Natural science is a subject that has a very important role because it can be a provision for dealing with problems in the global era (Agung et al., 2022). According to Akbari et al. (2021) stated that science

education is directed at helping students do something, so they can gain an understanding of nature in a structured way, this is because science is not just a collection of knowledge but in the form of mastery of concepts, facts or principles but also the process of discovery. In line with this, Motto & Aiman (2022) also states that science is a systematic theoretical study, which in practice discusses natural phenomena through scientific methods and demands a scientific attitude such as curiosity, openness and honesty (Hardiyanti, 2020). In elementary schools learning science is really needed because it can develop students' thinking skills, so they can improve learning outcomes (Meilani & Aiman, 2021).

Learning outcomes are abilities possessed by students after receiving learning experiences (Supena et al., 2021). Learning outcomes are also changes that occur after learning activities both regarding cognitive,

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affective and psychomotor aspects (Putera & Qalbi, 2020). With this it is concluded that changes in behaviour between educators and students will only occur if educators and students have their respective positions to improve the quality of learning. Learning outcomes have a very important role in the learning process. In the learning process, teachers are required to know the initial abilities of students, namely academic background, social economy and so on. Teacher must have readiness to recognize the characteristics of students, so that in the delivery of learning materials, indicators of learning success can be achieved (Astuti et al., 2019; Sagala, 2017). The success of learning is indicated by the level of mastery of the material in the form of an assessment.

Based on the results of a survey conducted, there is a difference between expectations and reality, in a school at V SD Inpres Oeba 2 Kota Kupang. The facts that happened at the school illustrate the learning of science. Some of the obstacles faced are; students' difficulties in answering the questions given, thus affecting science learning outcomes; participation in group activities is still quite low, because only certain students dare to express their opinions; the methods used in learning tend to use lecture methods, discussions, questions and answers, and assignments, as well as the lack of creativity of students in learning science.

The above phenomena, we need an appropriate alternative to minimize these problems by applying a learning model and equipped with media that is appropriate to the material to be taught. The learning model in question is the Group Investigation (GI) model, which is then combined with flash card media as an effort to improve student learning outcomes. The Group Investigation Model is a cooperative learning model that emphasizes the activity and participation of students to find information on the material to be studied on their own through available sources (Ananda, 2022; Hapsari, 2023), for example textbooks and internet sources and determines the topic of the material to be studied by themselves through investigation (Afrina et al., 2021). It is hoped that by applying the Group Investigation learning model it can change the teacher-oriented learning process to be more directed at students, so that they can obtain knowledge that has an impact on improving student learning outcomes (Artawan, 2023; Rahmatullah et al., 2017). In addition to the Group Investigation learning model, researchers use media that can increase enthusiasm and attract students' attention, namely flash card media.

Flash cards are picture cards that are used as media in the learning process (Damayanti et al., 2016; Faridah et al., 2022; Setiawati et al., 2015). In flash cards, each image contains a series of messages that describe the

image. The learning process using flash card media can attract the attention of students, so that it can improve students' thinking skills and learning outcomes (Pradana & Santosa, 2020). The advantages of the flash card media itself are easy to understand, remember, practical and attractive (Januar et al., 2018).

The purpose of this study was to determine the effectiveness of the flash card media-oriented group investigation (GI) learning model on the learning outcomes of elementary students.

Method

This research was carried out at SD Inpres Oeba 2, Kupang City. With a total population of 22 class V students. The research approach is a quantitative approach. The method used is the experimental method. The research design used was pre-experimental with the One Group Pretest-Posttest design as shown in Table 1.

Table 1. Research design

Experiment Class	Pretest	Treatment	Posttest
	O ₁	X ₁	O ₂

Source: (Dantes, 2017)

Note:

O₁ = Pretest before being taught the flash card-oriented Group Investigation learning model.

X = Treatment is given using the Group Investigation learning model orientated by flash cards.

O₂ = Final test (posttest) after using the flash card-oriented Group Investigation learning model.

Data collection uses non-probability sampling saturated sampling where all members of the population are sampled (Mweshi & Sakyi, 2020). The variables in this study are the independent variable Group Investigation and learning outcomes as the dependent variable (Rogers & Revesz, 2020). The data was measured by objective tests on the material of the digestive tract in humans. Using two data analysis techniques namely descriptive and inferential statistics. Where descriptive statistics describe the mean, median mode, standard deviation and variance. While the inferential test for normality, homogeneity and t-test. To analyze the SPSS assisted hypothesis 22.

Result and Discussion

The results of the descriptive analysis of the students' pretest and posttest data as a whole are presented in Table 2.

Table 2. Summary of Learning Outcome Score Calculations

Statistics	Pretest	Posttest
Number of students	30	30
Means	72.27	87.27
Median	73.33	90.16
mode	80.4	91.71
Variances	23.55	33.14
Standard deviation	4.85	5.76

The average student learning outcomes seen from table 3 shows that the posttest class applied using the group investigation (GI) learning model is oriented to media flash cards with the pretest class which is not taught the group investigation (GI) learning model oriented to media flash cards shows a difference. The following is presented in the form of a diagram in Figure 1 below. The pretest class that was not taught by the group investigation (GI) model was oriented to media flash cards.

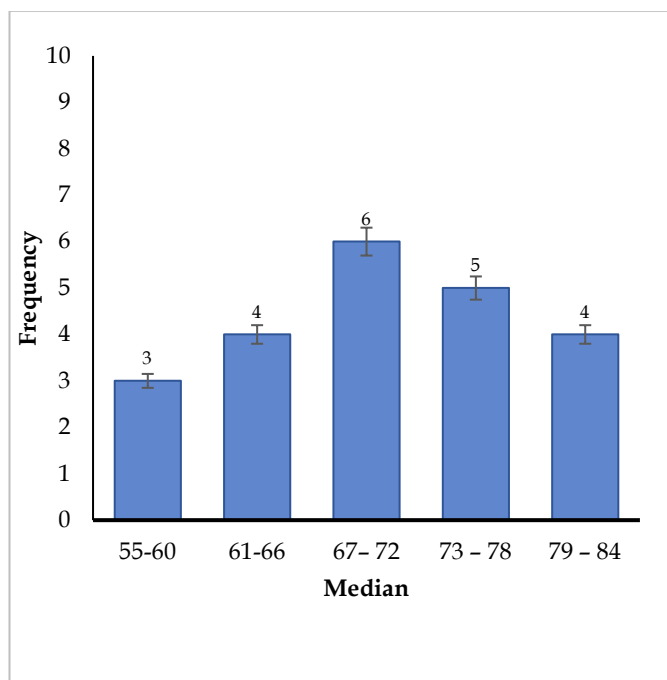


Figure 1. Histogram of Learning Outcomes of Pretest Class Students

Figure 1 shows that most of the pretest scores of students who have not been taught using the flash card media-oriented group investigation (GI) model tend to be low. With the acquisition of a mean score of 72.27, median 73.33, with a mode of 80.4, the average variance is 23.55 and 4.85 is the standard deviation. This means that the pretest class learning outcomes are in the medium category. Then the posttest class learning outcomes data is described with the treatment using the group investigation (GI) learning model oriented to flash card media in Figure 2.

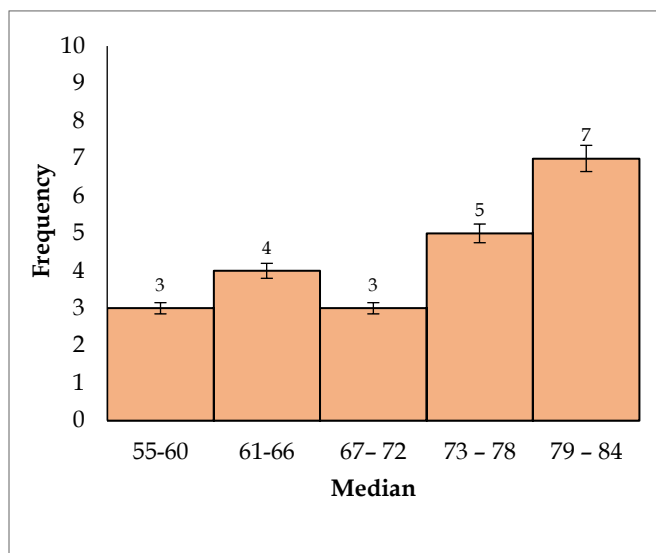


Figure 2. Histogram of Learning Outcomes of Posttest Class Students

Based on the histogram 2, it indicates that most of the scores of students' learning outcomes after following the group investigation (GI) learning model oriented to flash card media are in a high score. This can be seen from the average score of 87.27, the median is 90.16, the mode is 91.71, the variance value is 33.14 and the standard deviation is 5.76. This shows that the posttest results are in the very high category.

Next, the analysis prerequisite test is carried out by testing normality, homogeneity. The normality test aims to determine whether the data is normally distributed or not. This is shown in Table 3.

Table 3. Test of Normality *Kolmogorov-Smirnov*

Test	Statistic	Df	Sig
Pretest	150	22	0.200
Posttest	190	22	0.037

The results of the calculation of the normality test can be seen from table 3 between the pretest and posttest classes, the results show that the two classes obtained a significance level of > 0.05. Then the whole can be interpreted that the data is normally distributed. While the homogeneity test is with the aim of knowing whether or not the variance of the sample obtained is uniform or not. The results of the homogeneity test can be seen in table 4.

Table 4. Test of Homogeneity Test of Homogeneity of Variances

	Statistic	Df1	Df2	Sig
Pretest and Posttest	2.717	1	44	0.050

The results of the homogeneity test in table 4, the pretest and posttest classes are significant because the

significant value is > 0.05 . So it can be concluded that the data is homogeneous. Then a hypothesis test is carried out with the condition that if $Sig > \alpha (0.05)$, then H_0 is rejected, and if $Sig < \alpha (0.05)$, then H_1 is accepted. The results of the analysis can be seen in table 5.

Table 5. Hypothesis Testing

Class	Df	Sig	Conclusion
Pretest and Posttest	44	0.000	H_0 rejected

Table 5, shows that the hypothesis calculation obtained a significance value of $0.000 < 0.05$, then H_0 was rejected and H_1 was accepted. So it can be concluded that there is the effectiveness of the group investigation (GI) learning model oriented to flash card media on the learning outcomes of students in class V SD Inpres Oeba 2 Kota Kupang.

The results of the homogeneity test in table 4 above, the pretest and posttest classes are significant because the significant value is > 0.05 . So it can be concluded that the data is homogeneous. Then a hypothesis test is carried out with the condition that if $Sig > \alpha (0.05)$, then H_0 is rejected, and if $Sig < \alpha (0.05)$, then H_1 is accepted. The results of the analysis can be seen in table 5.

Table 5. Hypothesis Testing

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Pretest and Posttest	44	0.000	H_0 rejected

Table 5, shows that the hypothesis calculation obtained a significance value of $0.000 < 0.05$, then H_0 was rejected and H_1 was accepted. So it can be concluded that there is the effectiveness of the flash card media-oriented group investigation (GI) learning model on the learning outcomes of fifth grade students at SD Inpres Oeba 2 Kota Kupang.

The results of the data description of the group of students who took part in learning using the group investigation (GI) model oriented to flash card media had a higher average mean value than the class that was not taught using the flash card media oriented group investigation (GI) model. This review can be seen based on the pretest class mean score of 72.27, while the posttest was 87.27. The difference in scores seen from the two samples was due to the different treatments given. Proving the results of the hypothesis also shows the calculation of a significance value of $0.000 < 0.05$, then H_0 is rejected and H_1 is accepted. This means that the group investigation (GI) model oriented to flash card media has an effect on improving student learning outcomes. With this it can be described that the group investigation (GI) learning model is a model that requires students to actively interact between teachers and students by conducting investigations to solve existing problems

themselves (Shoimin, 2014). In line with this, Haryono (2020); Octaviantari et al. (2020) stated that the group investigation model has a positive impact on improving student learning outcomes. Besides being able to improve learning outcomes, this learning model can also foster the ability to think, cooperate and develop students' social attitudes during investigations. The 6 steps of the group investigation (GI) model according to Mustakimah (2022) are topic selection; cooperation planning; implementation; analysis and synthesis; presentation of final results; and evaluation. In the step of identifying topics and organizing students into groups the teacher instills the concept then assigns students to read source books to gain initial knowledge about the material. After that the students contributed in choosing the topics they would investigate and the teacher distributed flash card media. Then students sit in groups that have been divided by the teacher. In the step of planning assignments students make plans about what will be investigated in groups. In the step of carrying out the investigation the students collect information by contributing to each group member based on the flash card media they get. In the step of preparing the final report the group begins to determine the message from the results of the group's work and plans how the group will present the final report. In the step of presenting the final report, students present the results of their group work by involving all listeners. In the evaluation step, students provide feedback on the topics discussed and students collaborate in evaluating learning.

Unlike the conventional learning method which is only teacher-centered, students only listen, memorize and record what the teacher says, this causes students to become passive (Soi & Aiman 2020). Based on the results of research or data analysis, it can be concluded that the Group Investigation (Gi) learning model is oriented towards Flash Card Media towards Learning Outcomes of Class V students at SD Inpres Oeba 2, Kupang City. In line with research conducted by Mustakimah (2022). Application of Group Investigation with Flashcard Media to Improve Social Studies Learning. With the results of research on the application of the Group Investigation learning model with Flashcard media, it can improve.

Conclusion

From the results of the discussion, it can be concluded that the Flash Card Media Oriented Group Investigation (GI) learning model influences the Learning Outcomes of Class V Students of SD Inpres Oeba 2 Kupang City. This is evidenced in the hypothesis

testing which shows a significance value of 0.000 which means <0.05 then H_0 is rejected and H_1 is accepted.

Acknowledgments

Suggestions from this study should the teacher pay attention to the condition of students when the learning process takes place, because this is related to student learning success. Teachers can also determine the right learning model to improve student learning outcomes so that learning objectives are achieved. Teachers are expected to use the Flash Card Media Oriented Group Investigation (GI) learning model in the learning process to improve student learning outcomes.

Author Contributions

This paper was written by three authors, namely U.A, D.M, and U. All authors collaborated in carrying out each stage of the research.

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Conflicts of Interest

The authors declare no conflict of interest

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