Improving Science Learning Outcomes in Fourth Grade Students Through Guided Inquiry Learning with Audio-Visual Media

Ni Kadek Mega Widiawati[1*], Ni Wayan Rati[2], Kadek Yudiana[3]

[123]Prodi Pendidikan Guru Sekolah Dasar, FIP Universitas Pendidikan Ganesha, Singaraja, Indonesia

ABSTRAK

Rendahnya hasil belajar IPA menjadi salah satu permasalah dalam penelitian ini. Tujuan penelitian ini adalah untuk menganalisis pengaruh model pembelajaran inkuiri terbimbing berbantuan media *audio-visual* terhadap hasil belajar IPA siswa kelas IV SD. Jenis penelitian ini adalah *quasi eksperimen* dengan rancangan penelitian *post-test only control group desain.* Populasi dari penelitian ini berjumlah 182 orang, sedangkan pengambilan sampel pada penelitian ini menggunakan teknik *random sampling.* Metode pengumpulan data pada penelitian ini menggunakan metode tes dan istrumen penelitian ini menggunakan tes objektif pilihan. Metode dan teknik analisis data melalui uji stastistik deskriftif, uji prasyarat dan uji-t. Hasil penelitian ini menunjukkan bahwa hasil uji-t dengan taraf signifikan 5% dan dengan dk = 42 diperoleh $t_{hitung} > t_{tabel}$ (4,212>2,018) yang berarti H0 ditolak sedangkan H1 diterima. Simpulan penelitian ini adalah model pembelajaran inkuiri terbimbing berbantuan media *audio-visual* berpengaruh terhadap hasil belajar IPA pada siswa kelas IV SD. Implikasi penelitian ini yaitu selain berpengaruh terhadap hasil belajar siswa, penelitian ini dapat memberikan peluang kepada guru agar mampu mengembangkan kemampuan mengajar dengan menggunakan model pembelajaran dan media pembelajaran yang inovatif.

ABSTRACT

Low science learning outcomes are one of the problems in this study. This study aimed to analyze the effect of a guided inquiry learning model assisted by audio-visual media on fourth-grade elementary school students' science learning outcomes. This type of research is a quasi-experimental research design with a post-test only control group design. This study's population amounted to 182 students, while the sampling in this study used a random sampling technique. In this study, the data collection method used the test method, and the research instrument used the selected objective test. Methods and data analysis techniques through descriptive statistical tests, prerequisite tests, and t-test. This study's results indicate that the results of the t-test with a 5% significant level and with dk = 42 obtained tcount> ttable (4.212> 2.018), which means that H0 is rejected while H1 is accepted. This study concludes that the guided inquiry learning model assisted by audio-visual media affects fourth-grade elementary school students' science learning outcomes. This research implies that this research can allow teachers to develop teaching skills using innovative learning models and learning media and affect student learning outcomes.

1. Introduction

Educational development is the most important priority to make students fully human. Therefore, education is the right concept to create human beings as real human beings. Education is a conscious and planned effort to create learning situations and learning activities that aim to make students actively develop their potential to have spiritual strength, self-control, personality, intelligence, noble character, and skills needed by themselves, society, the nation. (Murniyetti et al., 2016; Susanti et al., 2012).

Education is carried out to create learning situations that make students active and develop their potential with the abilities, hopes, and goals to create students as whole human beings useful for the nation and country with good attitudes. The purpose of education in SD is part of the goals of national

Corresponding author.
Email :megawidiawati27@gmail.com[1],niwayanrati@undiksha.ac.id[2], kadek.yudiana@undiksha.ac.id[3]

education, the objectives of education in SD are (1) to educate students to become human beings who are completely following Pancasila and can build themselves and have responsibility for the development of society, and nation, (2) provide provisions that are useful and needed for students to continue their education to a higher level and develop themselves according to their talents, interests, abilities, and environment (Mulyadin, 2016; Suyono et al., 2017).

To achieve education goals in elementary schools, education needs to be adjusted to the current curriculum. The current curriculum uses the Kurikulum 2013, which is student-centered. Kurikulum 2013 aims to create productive, innovative, and creative Indonesian people through three aspects, effective, positive and integrated psychomotor (Maulida et al., 2015; Veronika et al., 2013). With the 2013 curriculum, it is hoped that teachers can be more creative and innovative in designing learning activities to be actively involved in the learning process. Almost all elementary school levels have used the 2013 curriculum. At the primary school level, various subjects are designed to be studied by students, as for the subjects carried out in elementary schools, one of which is the science subject. Science learning is a subject that must be mastered by elementary school students.

Science is one of the compulsory subjects in elementary schools that aims to have concepts, ideas, and knowledge about natural environment events (Cahyaningsih et al., 2020; Wijanarko et al., 2017). Science is also one of the sciences that systematically find out about the natural surroundings to find out concepts, theories, knowledge, and the process of discovery. Students are also expected to have a scientific attitude. Natural science learning in elementary school is very important because it provides real experiences and can develop students' competencies such as critical thinking, creative thinking, and knowing how events and natural phenomena appear around them. (Hadiyati & Wijayanti, 2017; Rifai et al., 2019).

 From the above discussion, science learning requires a very high concentration. But in fact, many students think that science learning is a difficult learning activity. Therefore, students who participate in learning are less enthusiastic, unfocused, and even boring, resulting in low learning outcomes. This can be seen based on the results of observations made in the fourth grade of Gugus III Tembuku District, Bangli Regency on 19 October and 26 October 2019, the reality of science learning that was encountered was (1) some students still did not seem to be active in the learning process this happened because of low interaction students in the class in asking and answering questions, (2) the learning process is still centered on the lecture method so that in learning activities there is less variation in the use of learning models and media which causes less interest in learning science so that students feel bored, (3) lack of learning atmosphere which is conducive, which causes an uncomfortable learning situation so that there is a lack of student concentration while studying and students tend to chat with friends during the learning process, (4) Science learning outcomes have not been achieved optimally, this is due to the lack of student understanding of Science learning which causes results student learning to be low, and (5) the implementation of science learning teachers rarely give students the opportunity to carry out practicum which provides real experience so that here it will affect the level of student understanding that is lacking because students do not get direct learning.

To complement the above observations, it is followed by recording documents on the science learning outcomes. The average result of fourth-grade students' learning outcomes who reach KKM is 41%, and students who have not reached KKM is 59%. So in learning science in elementary schools, it is necessary to use models and media to improve student learning outcomes. Efforts in overcoming the problem of science learning outcomes are necessary to design conducive learning activities using innovative learning models and media to provide real experiences. Students are directly involved in learning activities.

The role of the teacher is very important to create a conducive learning atmosphere. The learning process is defined as individuals' interaction with their environment (Kristian & Prasetyo, 2016; Romelah, 2016). As a teacher, they must determine models and media following students' environment and characteristics. As a teacher, you must make variations in designing learning activities according to the material's characteristics, students' learning needs, the learning environment, and the learning objectives' target achievements. (Efendi et al., 2019; Puspa et al., 2019).

To overcome this problem, it is necessary to make efforts to improve student learning outcomes. Learning outcomes exist in students during learning activities, including three things: attitudes, skills, and knowledge (Eliyanti et al., 2013; Ragil & Sukiswo, 2011). Thus to overcome this, using innovative learning models and learning media, one of which is the guided inquiry learning model assisted by audio-visual media can create a varied, conducive learning atmosphere and improve student learning outcomes.

The guided inquiry learning model is a model that involves students as subjects in learning activities, which means that each student can be directly involved in the learning process (Rizkiana et al., 2016; Wati et al., 2018). This model has its advantages, the superiority of the guided inquiry learning

model. It can provide opportunities for students to learn in their way or learning style. However, it cannot be separated from teacher guidance. Therefore students can develop their imagination and abilities so that a strong understanding is obtained. (Wahyudin et al., 2016; Yulianti, 2016). Guided inquiry learning models will be combined with audio-visual media in videos that can ask for moving images and sounds.

Audio-visual media is a medium that can convey information that is distributed to recipients with audio and visual characteristics (Ernasari & Amboro, 2017; Sidi & Mukminan, 2016). According to (Ernawati, 2014; Pranowo & Prihastanti, 2020), audio-visual learning media is a learning system that overcomes the limitations of space and time, which can occur anytime, anywhere. One of the benefits of learning media is facilitating interaction and facilitating information delivery between teachers and students to make learning activities more enjoyable, effective, and efficient (Wicaksana, 2017; Wicaksono, 2016).

Guided inquiry learning model and audio-visual media involve students to discover concepts in learning activities actively. Therefore, this study uses guided inquiry learning models and audio-visual media. This research is supported by several previous studies such as (1) research conducted by (Yulianti, 2016), who get the result that there is an influence of environment-based guided inquiry learning model on understanding the concept and character; (2) research conducted by (Rizkiana et al., 2016), who get the results that there are differences in student motivation who are taught by practicum and demonstrations in guided inquiry learning; (3) research conducted by (Wati et al., 2018), who get the results that there is an effect of guided inquiry learning assisted by learning journals on students' mastery of science concepts.

This study aimed to analyze the effect of guided inquiry learning models assisted by audio-visual media on science learning outcomes in fourth-grade students at SD Gugus III Kecamatan Tembuku Kabupaten Bangli, 2019/2020 Academic Year.

2. Method

This research was conducted at SD Gugus III Kecamatan Tembuku during the second semester. The method in this study used an experimental method with a quasi-experiment. The design used was a non-equivalent post-test only control group design. The population used in this study were all four grades of SD Gugus III Kecamatan Tembuku, consist of 182 students. While the research sample was selected using random sampling techniques with a random selection so that each class could become a research sample. (Usman, 2015; Yulia et al., 2019) random sampling is the method used in taking a representative sample of the population. The sample selection was carried out randomly so that samples can be obtained to represent the population by describing the real situation.

The data collected in this study used the test method. According to (Deswita & Kusumah, 2018; Putri et al., 2020), the test method is a way of obtaining data in the form of assignments done by the tested student. Based on the test, it produces data in the form of a score. This method's application is by distributing tests that have been made to determine the results of learning science. The test takes measurements in which students must do various questions to collect data on science learning outcomes. The instrument used in this study was a multiple-choice test. The test developed adjusted to the level of students' cognitive abilities. Then a validity test is carried out by experts in the field of science. A trial was also carried out, which is continued with content validity, item validity, reliability, differentiation test, and difficulty rating test.

The data analysis method used is descriptive statistical analysis and inferential statistics. Descriptive statistical analysis was used to calculate the mean, median, mode, variance, and standard deviation, the average score (mean) of each variable is converted using the criteria of ideal average (Mi) and ideal standard deviation (SDi), and determining the scale assessment five. Meanwhile, inferential analysis was used to find the t-test. Before carrying out the t-test, the prerequisite test analysis was carried out, including the normality test and the homogeneity test.

3. Result and Discussion

This research's object was the science learning outcomes resulting from the treatment of guided inquiry learning models assisted by audio-visual media. Science learning outcomes data obtained through post-test were analyzed using descriptive analysis. The summary of the descriptive analysis results can be seen in Table 1.

Table 1. Summary of Descriptive Analysis Results

Descriptive statistics	Learning outcomes	
	Experiment Group	**Control Group**
N	24	20
Mean	22,12	18,20
Median	22,50	17,50
Mode	23	14
Standard Deviation	2,953	3,222
Variance	8,723	10,379
Maximum Score	28	24
Minimal Score	17	14
Range	11	10

Based on the data's descriptive analysis, the experimental group's science results that were given treatment using a guided inquiry learning model assisted by audio-visual media were obtained by providing a post-test to 24 students. The results of the post-test obtained the smallest score was 17, and the highest score was 28. Based on the calculations that have been done in the experimental group, it is obtained Mean = 22, 12, so the results of learning science in the experimental group are classified as "very high" category, in the range 22 X 30. At the same time, the science learning outcomes data in the treatment control group without using the guided inquiry learning model assisted by audio-visual media were obtained by providing post-tests to 20 students. The results of the post-test obtained the lowest score, 14, and the highest score, 24. Based on the calculations that have been done in the control group, it is obtained Mean = 18.20, so the score of the science learning outcomes in the control group is classified as "high" category, in the range 17.20 X <22.50. It showed that the experimental group's science learning outcomes with treatment using the guided inquiry learning model assisted by audio-visual media have a higher average score than the control group treated without using the guided inquiry learning model and not using audio-visual media. After obtaining the data's descriptive analysis results, before carrying out the t-test, the prerequisite test analysis was carried out, which included the normality test and the homogeneity test.

The normality test was carried out using the Kolmogrorow-Smirnov statistical technique assisted by SPSS 16 with the criteria for testing normally distributed data if the resulting significance score was greater than 0.05 then the data was declared normally distributed, the homogeneity test of data variants was carried out using SPSS 16 with the test criteria if the significance> 0.05, then H0 was accepted. The variance is homogeneous, whereas if the significance <0.05 then H0 and the variance are not homogeneous. The following results of the normality test are presented in Table 2.

Table 2. Results of Normality Test and Homogeneity Test

Test of Normality				
Kolmogorov-Smirnov[a]				
	Group	Statistik	df	Sig.
Learning Outcomes	Experiment	0,116	24	0,200
	Control	0,145	20	0,200
Learning Outcomes	Experiment		1	0,612
	Control		1	0,612

Based on Table 2 above, the results of calculations using the help of SPSS 16 obtained the Kolmogorov-Smirnov test results, the significance score of the fourth-grade students' science learning outcomes in the experimental group was 0.200> 0.05, while the control group was 0.200> 0.05, which means the learning outcomes Science subjects in the fourth grade of elementary school were tested using the Kolmogorov-Smirnov test with a "Normal" distribution. Meanwhile, the homogeneity test showed that the experimental group and the control group's results were 0.612> 0.05, which means that the results of learning science in the experimental group and the control group had a variance that was "homogeneous." After the data analysis prerequisite test results were obtained, the next step was to test the hypothesis using the t-test.

The testing criteria were if the tcount <ttable, then H0 was rejected, while H1 was accepted. If the tcount> ttable is accepted, The results of hypothesis testing are presented in Table 3.

Table 3. Hypothesis Test Results

						Mean Differ ence	*Std Errol Differe nce*	*95% Confidencer Interval of the Difference*	
					Sig (2-tailed)				
		F	**Sig.**	**t**	**df**			*Lower*	*Upper*
Learning Outcomes	*Equal variaances*	0,261	0,612	4,212	42	0,000	3,925	0,932	2,045	5,805
	Equal variances not assumed			4,178	39,093	0,000	3,925	0,939	2,025	5,825

Based on Table 3 above, the result of the sig. (2-tailed) is 0.000 <0.05 with the results of tcount> ttable (4.212> 2.018), this means that H0 is rejected and H1 is accepted. Therefore, it can be concluded that there is a significant influence on the guided inquiry learning model assisted by audio-visual media on fourth-grade students' learning outcomes at SD Gugus III, Kecamatan Tembuku Kabupaten Bangli, Academic Year 2019/2020. The average science learning outcome in the experimental group was higher than the control group. It happens because the guided inquiry learning model assisted by audio-visual media has advantages and is well implemented by the teacher. The influence on fourth-grade elementary school students' science learning outcomes taught with a guided inquiry learning model assisted by audio-visual media in the experimental group due to several factors.

The first factor, the use of an inquiry learning model assisted by audio-visual media in the form of video, allows students to discover the concepts of learning material in their way or style. The students' knowledge was extracted through the video that was shown by the teacher. Students also responded to several questions. It can be seen when students pay attention to the video about the effect of force on objects and other videos. Students record important things in the video and make hypotheses. The video in the learning process can attract students' attention to learn better and make it easier to understand learning material and improve science learning outcomes. This is also in line with what was stated by (Barliana, 2015; Pranowo & Prihastanti, 2020) that the presence of video media can display a display of movement and animation in explaining material that can evoke impressions on students and attract their attention so that students easily understand the learning material.

The second factor, through group discussions, can solve problems that can increase students' knowledge. In group discussions, students ask questions about the results of investigations carried out with their group friends. Through question and answer, it can train students' abilities when expressing opinions and responding to problems. This review is in line with the opinion expressed by (Kristanto, Y. E., & Susilo, 2016; Suryaningsih et al., 2016) stated that through questioning activities, students can convey opinions or ideas about learning activities.

The third factor, students are directed to apply the concepts found during the investigation and negotiation of meaning. Students manage the information obtained through discussion to find solutions to problems actively, and students can make conclusions from the learning process. It is following the theory presented by (Indriyani et al., 2019; Iswatun et al., 2017) which stated that the inquiry learning model is a model as a structured inquiry process that aims to find concepts and can explain the relationship between objects and events to find a concept and make generalizations or conclusions.

The application of the guided inquiry learning model with audio-visual media has involved students actively finding a problem, solving problems, making hypotheses, and finding the results of hypothesis testing so that students can conclude the learning process. The teacher only guides and facilitates students. The ability to think critically of students is increasingly being trained in solving a problem that has been given by the teacher. The learning process will also give students a meaningful impression to be more enthusiastic in improving learning outcomes (Krisnayanti et al., 2017; Saraswati et al., 2013).

In contrast to learning in the control group, learning without using the guided inquiry learning model shows that student interaction is passive and less active in learning. The teacher mostly uses the lecture method, which makes students bored and ignores material explanations from the teacher. It affects student learning outcomes. The learning outcomes taught with the guided inquiry learning model are higher than those without using the guided inquiry learning model. A guided inquiry learning model can make students more active in participating in learning activities (Wahyudin et al., 2016; Yulianti, 2016).

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By applying the guided inquiry learning model assisted by audio-visual media, theoretical and practical implications are obtained. The theoretical implications influence student learning outcomes. Therefore this research was conducted to improve student learning outcomes, especially in science subjects that have not been achieved optimally. So that with the implementation of the guided inquiry learning model with the help of audio-visual media that can influence student learning outcomes is achieved optimally. While the practical implications are providing opportunities for teachers to develop teaching abilities using innovative learning models and learning media and providing input for schools to improve school education quality by determining policies to use innovative models and media in implementing learning.

4. Conclusion

Based on the discussion above, it can be concluded that there is a significant influence on the guided inquiry learning model assisted by audio-visual media on science learning outcomes in fourth-grade students of SD Gugus III, Kecamatan Tembuku, Kabupaten Bangli, 2019/2020 Academic Year.

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