Journal for Lesson and Learning Studies
Volume 6, Number 2, 2023 pp. 249-256
P-ISSN: 2615-6148 E-ISSN: 2615-7330
Open Access: https://doi.org/10.23887/jlls.v6i2.62625

Tutor Peer Learning Model Assisted with Video Media Learning on Students' Science Knowledge Competence

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ARTICLE INFO

Article history:
Received March 07, 2023
Accepted June 09, 2023
Available online July 25, 2023

Kata Kunci:
Tutor Sebaya, Video Pembelajaran, Kompetensi Pengetahuan IPA

Keywords:
Peer Tutor, Video Learning, Science Knowledge Cometence

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ABSTRAK

Kurang optimalnya penguasaan kompetensi khususnya IPA dikarenakan pengajaran yang dilakukan oleh guru kurang memberi pemahaman kepada siswa. Tujuan dalam penelitian ini untuk mendeskripsikan kompetensi pengetahuan IPA siswa kelas V setelah dibelajarkan model pembelajaran tutor sebaya berbantuan media video pembelajaran pada siswa kelas V di SD Gugus III Kecamatan Tabanan tahun pelajaran 2022/2023. Jenis penelitian yang digunakan yaitu eksperimen semu dengan bentuk desain nonequivalent control group design. Populasi dalam penelitian ini adalah seluruh siswa kelas V SD Negeri Gugus III Kecamatan Tabanan Tahun Pelajaran 2022/2023 sebanyak 152 orang. Seluruh populasi disetarakan dengan Uji Anava. Setelah populasi dinyatakan setara, pengambilan sampel pada penelitian ini dilakukan dengan teknik clauster random sampling. Bedasarkan hasil perhitungan uji-t diperoleh t_{hitung} lebih besar dari $t_{tabel,}$ sehingga H0 ditolak dan Ha diterima. Dapat dibedakan yang signifikan kompetensi pengetahuan IPA antara kelompok siswa yang dibelajarkan model pembelajaran tutor sebaya berbantuan video pembelajaran dan kelompok siswa yang dibelajarkan pembelajaran konvesional pada kelas V SD Gugus III Kecamatan Tabanan Tahun Pelajaran 2022/2023. Dengan demikian dapat disimpulkan bahwa model pembelajaran tutor sebaya berbantuan media video pembelajaran berpengaruh terhadap kompetensi pengetahuan IPA siswa kelas V SD Negeri Gugus III Kecamatan Tabanan tahun ajaran 2022/2023.

ABSTRACT

The current low mastery of science competencies is because it is still considered difficult for some students. The lack of optimal mastery of competencies, especially science, is due to the fact that the teaching carried out by the teacher does not provide sufficient understanding to students. The purpose of this research is to describe the science knowledge competence of fifth grade students after being taught a peer tutor learning model assisted by instructional video media to fifth grade students at SD Gugus III, Tabanan District, in the 2022/2023 academic year. The type of research used is a quasi-experimental design with nonequivalent control group design. The population in this study were all fifth grade students at Gugus III Public Elementary School, Tabanan District, 2022/2023 academic year, consisting of 152 people. The entire population is equated with the Anava test. After the population was declared equal, the sampling in this study was carried out using the cluster random sampling technique. Based on the results of the t-test calculation These results show that tcount is greater than ttable, so H0 is rejected and Ha is accepted. There is a significant difference in the competence of science knowledge between the group of students who were taught the peer tutor learning model assisted by learning videos and the group of students who were taught conventional learning in class V SD Gugus III, Tabanan District, Academic Year 2022/2023. Thus it can be concluded that the peer tutor learning model assisted by learning video media has an effect on the competence of science knowledge in class V SD Negeri Gugus III Tabanan District in the 2022/2023 academic year.

1. INTRODUCTION

Indonesia is currently using the 2013 curriculum in the learning process, before the 2013 curriculum was established in the learning process. The government had tried various ways to optimize education in Indonesia (N. D. Lestari, 2018; Rohita et al., 2018; Subagia & Wiratma, 2016). The 2013 curriculum aims to improve the quality of educational processes and outcomes, which leads to the

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formation of the character and noble character of students as a whole, integrated and balanced, in accordance with graduate competency standards in each educational unit (Rohita et al., 2018; Setiawan et al., 2020; I. G. A. A. Wulandari, 2020). Implementation of the 2013 curriculum combines subjects into one under the auspices of integrated thematic subjects. The 2013 curriculum carries integrated learning between materials from various fields of study, of which IPA is one of them (Ariyani & Ganing, 2021; Ariyanto, 2018). Natural science, which is often referred to as science education, is shortened to IPA. The development of science learning competence achievements in Indonesia is still relatively low.

The current low mastery of science competencies is because it is still considered difficult for some students (Abdul Karim et al., 2020; Dwiqi et al., 2020; Juniari, 2021). The lack of optimal mastery of competencies, especially science, is due to the fact that the teaching carried out by the teacher does not provide sufficient understanding to students (N. L. Dewi et al., 2013; Oktafiani et al., 2020). The learning plan designed by the teacher must be in accordance with the characteristics of the students in order to achieve the learning objectives. Learning is a way or plan that has been prepared to help students learn and develop according to the goals that have been prepared (Putri et al., 2019; Sedana & Semara, 2021). In achieving optimal science learning competencies students are directed to achieve several competencies related to science itself, namely science as a product, process, and attitude. The achievement of the three basic science competencies classically can be seen from the students' science learning outcomes. In other words, the success of learning science can be seen from the competence of science knowledge acquired by students (Budiartini et al., 2013; Putra & Suniasih, 2021).

Realizing the expected science learning is not easy. In fact, in schools there are still many students who tend to be low in science knowledge competence. This is what causes students to score in the Mid Semester under the Minimum Completeness Criteria (KKM), which is 70. The reality that is currently happening in the field proves that the learning being carried out is still centered on the teacher who only provides theory so that the knowledge possessed by students is not optimal, especially in science content. . This is reinforced by the results of the science knowledge competence of class V students, 60% of whom are under the Minimum Completeness Criteria (KKM) for science subjects that have been set, which is a score of 70. In addition, there is no innovative learning model used, there should be many things that can be carried out by teachers such as applying methods, strategies, or learning models to vary teaching methods, one of which is the use of learning models or media in the teaching process.

Based on these problems, an innovative learning model or media is needed to improve the results of students' science knowledge competencies. The innovative learning model used in class will make the class run effectively, fun and in accordance with the expected goals (Lestari et al., 2017; Moto, 2019; Safitri et al., 2019; P. Wulandari et al., 2018). One of the learning models that can be used to generate students' science knowledge competency results is the peer tutor learning model. Peer tutors are guidance, learning assistance by peers to students who lack systematic understanding of material to understand material (Kumolontang, 2021; Noryanti et al., 2019; Ramda et al., 2022).

Learning with peer tutors can help peers in academic aspects, emotional discipline. With the help of peer tutors, learning will be more effective, communicative and efficient because the tutor's language is easier to understand (Dewi & Apsari, 2021; Nasihah et al., 2018). With the help of peer tutors, students are used as learning subjects, namely students who are invited to be tutors or learning resources and a place to ask questions for their peers. The language used will also be easier to understand and interpersonal relationships between colleagues will be well established, resulting in effective, active, innovative and communicative learning transactions (Nurlizawati, 2019).

The use of the peer tutor model can also be applied with a media that helps during the learning process. One of which is learning media in the form of audio-visual media with the type of learning video media (Arisantiani et al., 2017; Nurfadhillah et al., 2021; Virgiana & Wasitohadi, 2016). Audio Visual is a type of media used in learning activities by involving hearing or sight as well as in one process or activity (Kurniawan et al., 2020; Limin & Kundiman, 2023; Yuanta, 2017). Messages and information that can be channeled through this media can be in the form of verbal and non-verbal roles that rely on both sight and hearing. Some examples of audio-visual media are films, videos, TV programs and others (Widiana et al., 2019).

The research found that peer tutors can help students learn so that they can improve student learning outcomes. Other research findings also state that audio-visual media can facilitate students in learning. Based on the explanation above, the peer tutor learning model is an alternative learning model used. However, because the problems that occur in the field are quite complex, the peer tutor learning model assisted by learning videos needs to be proven. The purpose of this study was to analyze the effect of the peer tutor learning model assisted by learning video media on the science knowledge competence of Class V SD Cluster III, Tabanan Regency.

2. METHOD

This research was conducted at SD Gugus III Tabanan District in the even semester. The method used in this research is quasi experiment. In quasi-experimental research it is not possible to control all relevant variables. This study aims to determine the effect of the peer-tutor learning model assisted by learning video media on the science knowledge competence of fifth grade students at SD Gugus III, Tabanan District. This study went through three stages, namely the preparation stage which included conducting interviews, preparing instruments, testing instruments and determining sample classes and experiments. The implementation phase included treatment in the experimental group using the peer tutor learning model with learning video media 6 times and at the end of the study it was given in the form of a post-test and the final stage was data analysis and hypothesis testing. Subjects in this study were selected by means of a sampling technique with the type of cluster random sampling to determine the sample to be used in the study by collecting data in the form of tests and conducting data analysis using descriptive statistics and inferential statistics. The type of design used is the Nonequivalent Control Group Design. The research instrument grid used in this study is to identify the properties of objects and changes in the form of objects in everyday life. In this study, the entire population was tested for equivalence using One-way Analysis of Variance (Anava A).

The data collection method used in this study is the test method. The type of test used to collect data is an objective test with the usual multiple choice form. Objective tests were used in this study to obtain data regarding the achievement of science learning competencies. Before the test was given to the experimental class, an instrument test was first carried out. Testing of research instruments is used to get an empirical picture of whether the instrument is suitable for use as a research instrument. After testing the instrument, it is then tested for validity, differential power test, index of difficulty, and reliability test to get a good instrument. After the instrument test was carried out, it was found that there were 30 questions that were feasible to continue the research stages in the experimental and control classes. Data analysis techniques in this study include descriptive statistical analysis and inferential statistics. Descriptive statistical analysis includes the calculation of the mean (average score), standard deviation and variance. Furthermore, inferential statistical analysis includes hypothesis testing which consists of prerequisite tests before using the hypothesis, namely testing for normality and homogeneity of variance. After the prerequisite test is fulfilled, it is continued with hypothesis testing. Inferential statistical testing was carried out using the polled variance t test formula.

3. RESULT AND DISCUSSION

Result

The results obtained from the tests given to the achievement of science knowledge competencies were analyzed using descriptive statistics and inferential statistics. Descriptive statistics include the mean, standard deviation and variance. Description of the data from the results of the descriptive analysis of the Science Knowledge Competency results is presented in Table 1, and Table 2.

Table 1. Posttest Descriptive Statistical Results for Science Knowledge Competence

Data	Experiment Group	Control Group
Mean	77.62	79.48
Standard Deviation	4.04	2.37
Variance	16.32	5.61
Minimum Score	85	85
Maximum Score	69	75

Table 2. Descriptive Statistical Results of Science Knowledge Competency Pretest

Data	Experiment Group	Control Group
Mean	57.78	65.51
Standard Deviation	4.22	3.02
Variance	17.80	9.12
Minimum Score	66	67
Maximum Score	50	57

Based on Table 1, and Table 2, in the experimental class there was an increase in the achievement of science knowledge competence between before and after treatment with the use of video-assisted peer

tutoring learning models compared to the control class without any treatment using video-assisted peer tutoring learning models. Testing inferential statistics first carried out a prerequisite test before proceeding with testing the hypothesis. Two prerequisite tests, namely the normality test and homogeneity test, are then followed by a t-test to test the hypothesis. The data distribution normality test was carried out using the Kolmogrov-Smirnov formula, where it was obtained that the maximum value |Ft–Fs| namely 0.150 so it is known that the maximum value of |Ft–Fs|< K-S table is 0.150 < 0.254. So it was concluded that the pretest data of the experimental group followed a normal distribution. Then for the posttest data normality test for the experimental group, the maximum value of |Ft–Fs| was obtained namely 0.150, so it is known that the maximum value of |Ft–Fs|< K-S table is 0.130 < 0.254. So it was concluded that the posttest data of the experimental group also followed a normal distribution.

While the results of the normality test work table calculations using the Kolmogorov-Smirnov technique, the control group's pretest data obtained the maximum value |Ft–Fs| which is equal to 0.160 so that it is known that the maximum value of |Ft–Fs| < K-S table, namely 0.160 < 0.254. So it was concluded that the pretest data of the control group followed a normal distribution. Then for the posttest data normality test for the control group, the maximum value of |Ft–Fs| was obtained namely 0.150 so it is known that the maximum value of |Ft–Fs|< K-S table is 0.130 < 0.254. So it was concluded that the posttest data of the control group also followed a normal distribution. The results of the normality test for the experimental class and the control class are presented in Table 3.

Table 3. Data Distribution Normality Test Results

No.	Sample Group	Data	Maximum Value	K-S Table Value	Conclusion
1	Experiment	Pretest	0.150	0.54	The data follow a normal distribution
		Posttest	0.130		
2	Control	Pretest	0.160	0.254	The data follow a normal distribution
		Posttest	0.130		

The homogeneity test aims to prove that the two classes have the same (homogeneous) variance. This test was carried out using the F test formula, based on the results of the analysis, the F-count value was 1.629. F-table at α = 0.05 with df numerator = 26 and df denominator = 26 obtained the value of F-table = 1.929. So that the ratio of F-count < F-table is 1.626 < 1.929. Based on the results of these calculations it can be concluded that the data is declared homogeneous. The calculation results can be seen in Table 4.

Table 4. Variance Homogeneity Test Result

No.	Sample Group	Variance	F_{Count}	F_{Table}	Conclusion
1	Experiment	1.09	1,629	1.929	Homogeneous
2	Control	1.78			Homogeneous

After fulfilling the prerequisite test, proceed with testing the hypothesis with polled variance t-test. The hypothesis tested in this study, namely that there is no significant difference in science knowledge competence between groups of students who are taught the peer tutor learning model assisted by learning videos and groups of students who are taught conventional learning in class V SD Gugus III, Tabanan District, Academic Year 2022/2023. Hypothesis testing was carried out using the polled variance t-test formula. The results of hypothesis testing in Table 5.

Table 5. Recapitulation Uji- t

No.	Sample Group	F_{Count}	F_{Table}	Conclusion
1	Experiment	2.102	1.675	H_0 rejected
2	Control			

The results of the t-test analysis are then compared with the ttable price of 1.675. These results show that tcount = 2.102 ≥ ttable = 1.993, so H0 is rejected and Ha is accepted. There is a significant difference in the competence of science knowledge between the group of students who were taught the peer tutor learning model assisted by learning videos and the group of students who were taught conventional learning in class V SD Gugus III, Tabanan District.

Discussion

Natural science learning with the peer tutor learning model assisted by learning video media provides an increase in student learning activities where all students are active, students are very enthusiastic in carrying out the learning process, students also dare to ask questions, and students' responses are very high. The peer tutor learning model is implemented by dividing the class into small groups, where the source of learning is the teacher and peers who are clever and fast in mastering certain material. This peer tutor learning model greatly stimulates student activity in the learning process and also develops student talents (Nasihah et al., 2018; Noryanti et al., 2019; Ramda et al., 2022). In addition, the peer tutor learning model can also train students to think critically and can train students to solve problems in everyday life (Kumolontang, 2021; Nasihah et al., 2018). Student activity can be seen from various aspects, such as paying attention to listening, discussing, student readiness, asking questions, student courage, listening, and solving problems (Ningrum, 2016; Zahranie et al., 2020). Students' activeness in learning will increase the competence of knowledge achieved in learning.

The peer tutor learning model assisted by learning video media influences the competence of science knowledge in class V SD Negeri Gugus III, Tabanan Regency. In applying the peer tutor learning model assisted by video learning media, this model can increase student enthusiasm in the learning process. Compared to conventional learning, which only tends to use lecture and question-and-answer methods, which makes students quickly bored and passive in the learning process. Video also makes it easy for humans to get information, knowledge and entertainment (Fadhashar et al., 2017; Novita et al., 2019; Ridha et al., 2020). Likewise, in the world of education, videos have a very positive effect on the teaching and learning process (Apriansyah et al., 2020; Sholikah et al., 2018). In developing video as a learning medium, several conditions must be considered. First, human resources or HR must be able to design and produce videos; secondly, the equipment for making videos is sufficient. Third, they design scripts to make videos (Anggraeni et al., 2021; Yuliani et al., 2017).

Learning videos are a medium that has audio (sound) and visual (image) elements (Prasetya et al., 2021; Wijaya et al., 2021). As a learning medium, video is important in providing information from teachers to students. Video is very useful and has enough advantages in the learning process. Video can make a substitute for learning processes that are difficult to see in plain human eyes, for example, material on the processes of digestion, breathing, and others (Asnur & Ambiyar, 2018; Candra Dewi & Negara, 2021). Videos combined with the peer tutor model are very effective in learning. Previous findings also state that learning videos can facilitate students learning (Muskania et al., 2019; Putri et al., 2020). Other findings also reveal that peer tutors are very helpful to students because students will feel learning is safe and comfortable (Noryanti et al., 2019; Nurlizawati, 2019).

4. CONCLUSION

The data analysis results showed significant differences in the competence of science knowledge between the group of students who were taught the peer tutor learning model assisted by video learning and the group of students who were taught conventional learning in class V SD Gugus III, Tabanan Regency. It was concluded that the peer tutor learning model assisted by learning videos can improve student learning outcomes. The use of peer tutor learning models assisted by learning videos makes students active in the learning process in class and increases student interest. It causes students' science learning competence to increase.

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