

The effect of video-assisted jigsaw learning on students' motivation and science learning outcomes

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Abstract: This research aims to determine the effect of jigsaw learning assisted by video media on students' motivation and cognitive learning outcomes. This research uses an experimental design, which is one part of the quantitative method. Sampling for the experimental group and control group in this study used simple random sampling from all class V students in Gugus Melati, East OKU Buay Madang District, which consists of 5 state elementary schools. A total of 60 students were sampled, of which 30 were in the experimental class (SD Negeri 2 Tokorejo) and 30 were in the control class (SD Negeri Pengandonan). Data collection instruments use questionnaires and tests. Learning outcomes data were analyzed using the Mann-Whitney test and motivation using the t test. The results show that the students' initial abilities are the same (Sig. > 0.05), and after treatment they show differences (Sig. < 0.05). The motivation of experimental and control class students also has differences (Sig. < 0.05). The motivation and cognitive learning outcomes of students in the experimental class that used video-assisted jigsaw learning were better than those in the control class that used the lecture method. So it can be concluded that jigsaw learning assisted by video media has an effect on students' motivation and cognitive learning outcomes.

Keywords: Jigsaw learning, learning outcomes, motivation, science learning, video

Abstrak: Penelitian ini bertujuan untuk mengetahui pengaruh pembelajaran Jigsaw berbantuan media video terhadap motivasi dan hasil belajar kognitif siswa. Penelitian ini menggunakan desain eksperimen yang merupakan salah satu bagian dari metode kuantitatif. Pengambilan sampel kelompok eksperimen dan kelompok kontrol dalam penelitian ini menggunakan simple random sampling dari seluruh siswa kelas V di Gugus Melati Kecamatan Buay Madang Timur OKU Timur yang terdiri dari 5 SD Negeri. Total 60 siswa sebagai sampel, dimana 30 siswa kelas eksperimen (SD Negeri 2 Tokorejo) dan 30 siswa kelas kontrol (SD Negeri Pengandonan). Instrumen pengumpulan data menggunakan angket dan tes. Data hasil belajar dianalisis dengan Mann-Whitney tes dan motivasi menggunakan uji t. Hasil menunjukkan bahwa kemampuan awal siswa adalah sama (Sig. > 0.05), dan setelah perlakuan memiliki perbedaan (Sig. < 0.05). Motivasi siswa kelas eksperimen dan kontrol juga menggunakan pembelajaran jigsaw berbantuan video lebih baik dibandingkan kelas kontrol yang menggunakan metode ceramah. Jadi dapat disimpulkan bahwa pembelajaran Jigsaw berbantuan media video berpengaruh terhadap motivasi dan hasil belajar kognitif siswa.

Kata kunci: Pembelajaran jigsaw, hasil belajar, motivasi, pembelajaran IPA, video

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INTRODUCTION

Classroom instruction and learning activities constitute the foundation of education (Muyasaroh, 2019; Nugraha, 2018; Rani et al., 2022). The success of education in schools is influenced by human resources (HR), namely teachers (Baransano et al., 2017). Teachers are important for quality education (Alfiyanto & Hidayati, 2022; Guerriero, 2013; Kawuryan et al., 2021). Quality education is learning that can arouse student learning motivation (Agustina et al., 2023; Huang et al., 2019; Lo et al., 2022; Maryance et al., 2022). Learning

motivation is a driving force in students that provides direction for learning activities to achieve learning objectives (Setiyaningsih, 2020).

Students' good cognitive learning outcomes are considered an indicator of the attainment of learning objectives (Aji et al., 2022; Fauhah & Rosy, 2020; Ismail et al., 2023; Kuhlmann et al., 2023). Learning outcomes are the level of understanding students achieve after participating in classroom learning according to the expected goals (Afandi et al., 2013). Students' understanding of the material learned is a benchmark for success in the learning process (Runnerstrom & Koralek, 2018; Welerubun et al., 2022). Motivation and learning outcomes are important issues in classroom learning (Nasir et al., 2023; Sirait et al., 2022). According to one of the grade V teachers of SDN in the Melati Cluster, student motivation and learning outcomes, especially in science learning, have not been maximized. It can be seen that students are passive during learning, and their average daily test score is low, which is 65, and has not reached the minimum learning standard of 70.

Based on the observations of SD Negeri in the Melati Cluster, students' low motivation and cognitive learning outcomes are due to most teachers still applying the lecture method in science learning. Natural science is a human effort to conclude understanding of the universe through observation, using procedures and reasoning (Nasir et al., 2020). So, teacher creativity is needed in packaging fun science learning so that students are interested in learning and the expected goals can be achieved (Muhtar et al., 2020). Teachers can overcome these problems by implementing cooperative learning. One is jigsaw-type cooperative learning (Brame, 2019; Muhammad, 2018; Putra et al., 2018). Jigsaw is one of the cooperative learning that increases student activeness in groups and helps each other understand the material to achieve maximum results (Arlinayanti et al., 2020; Bahri & Mustajab, 2020). If applied to divisible material, the jigsaw learning is the right choice, and the parts must be taught sequentially (Cerón-García et al., 2022; Mardiyah, 2015; Pahwa et al., 2022).

The advantages of the Jigsaw learning on student motivation and their learning outcomes are: a) The jigsaw learning can foster in students a greater sense of accountability for their own and others' education. (Kusuma, 2018; Lubis & Harahap, 2016; Puspita et al., 2019); b) The Jigsaw can improve student engagement and cooperation in learning. Students can discuss with each other, share information, and give feedback to each other in groups (Sholihah et al., 2018); c) The Jigsaw learning can enhance students' cognitive learning outcomes. Students can understand the material better and more deeply, because they have to repeat and explain the material to their group mates (Adhi et al., 2013; Moningka, 2017); and d) The Jigsaw Learning can enhance students' intrinsic motivation in learning. Students feel more interested, enthusiastic, and confident in learning, because they experience a sense of appreciation and acknowledgment from their peers (Yuniarti & Widyanti, 2023).

The disadvantages of using jigsaw learning are: a) The Jigsaw learning requires extra coordination and preparation from the teacher. Teachers should divide the material into balanced and relevant parts, as well as monitor and guide the student discussion process (Hoerunnisa & Suherdi, 2017); b) The Jigsaw Learning depends on student participation and contribution. If there are students who are less active, lazy, or do not master the material, it will cause knowledge inequality among group members and reduce the effectiveness of this learning (Nurbianta & Dahlia, 2018); c) The Jigsaw learning takes

longer than conventional methods. Students must move between groups and repeat the material that has been learned. This can lead to student boredom or fatigue (Alfaruqy, 2021); d) The Jigsaw learning has the potential to cause conflict among students. Students who have different views, attitudes, or learning styles may disagree or disagree with each other. This can interfere with the learning process and social relations of students (Sholihah et al., 2018).

Learning is a communication process and takes place in a system, so in addition to learning media, it is also the most important thing in learning (Wikantari et al., 2022; Haleem et al., 2022; Jagat et al., 2022; Marpanaji et al., 2018). With the development of science and technology, media use, especially video media, is an urgent demand (Abbas et al., 2019; Dwivedi et al., 2021; Kapoor et al., 2018). Video media can display images and sounds, present information, and explain complex concepts to help students understand the material (Abdulrahman et al., 2020; Lange & Costley, 2020). Video is a learning medium that can display images and sound, as well as present information and explain complex concepts. Videos can help students understand material more easily and interestingly, as well as increase students' curiosity and enthusiasm for learning (Brame, 2016). Videos can also provide variety and stimulation which can reduce student boredom and boredom. Thus, videos can have a positive influence on student motivation and learning outcomes, especially in science subjects (Ismiyanti et al., 2023).

Using the jigsaw learning and video media can help smooth the learning process, thus affecting student motivation and cognitive learning outcomes (Zaenal et al., 2023). This is supported by research conducted by Juwaeriah et al. (2017), showing that learning using a jigsaw-type cooperative model significantly affects student learning motivation and outcomes compared to conventional learning. Safira et al. (2021) research shows that video media significantly positively affects student motivation and learning outcomes.

Based on complex learning problems at SD Negeri 2 Tekorejo and the results of previous research, researchers are interested in researching the effect of video media-assisted jigsaw learning on learning motivation and cognitive learning outcomes of grade V students of SDN 2 Tekorejo in Science Learning". Based on this description, the objectives of this study are: (1) To determine the effect of the video media-assisted jigsaw learning on the learning motivation of grade V students in science learning. (2) To determine the effect of the video media-assisted jigsaw learning on the cognitive learning outcomes of grade V students in science learning.

METHOD

This type of research is quantitative, using the true experiment design method. According to Sugiyono, the true experiment design method's main characteristic is that the experimental and control groups are randomly selected (Sugiyono, 2019). The randomly selected group in this study consisted of two groups: group one, the experimental group, and group two, the control group. This study used a pretest-posttest control group design.

Two randomly selected samples were given a pretest before learning to determine the initial state. Then, the posttest was carried out after learning, where the experimental class was given treatment, namely using the video media-assisted jigsaw learning, while the control class did not (expository learning). This aims to determine whether the video media-assisted jigsaw learning affects student motivation and cognitive learning outcomes.

This research was carried out at SD Negeri in the Melati Cluster, Buay Madang Timur District, East OKU Regency, consisting of 5 schools, in the Even semester of the 2021/2022 school year, from July 25 to August 13, 2022. The population in this study is all grade V students of SD Negeri in the Melati Cluster, Buay Madang Timur District, East OKU, consisting of 5 public elementary schools, namely SDN 1 Tekorejo, SDN 2 Tekorejo, SDN Pengandonan, SDN Sumber Asri, and SDN Rawa Bening. Sugiyono (2019) defines a population as a collection of entities or subjects possessing distinctive attributes and qualities that are selected for investigation by scientists to derive conclusions.

The samples in this study were two public elementary schools, namely SD Negeri 2 Tekorejo with 30 students as an experimental class and SD Negeri Pengandonan with 30 students as a control. A simple random sampling technique does sampling. According to Arikunto (2019), the sample is a portion of the population to be studied. This research instrument uses questionnaire sheets and tests (Arikunto, 2019). Before being used, this instrument was tested for content validity by expert lecturers and empirical validity tests using the product moment correlation formula with rough numbers. The results are then consulted with the r value of the product moment table, by setting a significance level of 5%. The measuring instrument is said to be valid if $r_{xy} \geq r_{table}$. The validity of the instrument was calculated using the SPSS version 23. The findings showed that the test and questionnaire were valid and each had a reliability of 0.893 (questionnaire) and 0.729 (test).

RESULTS AND DISCUSSION

Table 1 reveals that the pretest and posttest data for the experimental class are normal, but the control class is not normal. This indicates that student learning outcomes data cannot be subjected to parametric analysis, so the Mann-Whitney test was carried out (Table 2). Meanwhile, the motivation posttest data in both experimental and control classes was normal. The results of data homogeneity testing obtained Sig. < 0.05 ($df_1 = 1$, $df_2 = 58$, and Sig. 0.002. In this way, the motivation data was subjected to a t test with equal variances not assumed (Table 3).

Table 1. Normality test results

	Group	Mean	SD	Kolmogorov-Smirnov ^a		
				Statistic	df	Sig.
Pretest	Experimental	57.167	8.060	0.139	30	0.142
	Control	57.500	8.484	0.183	30	0.012
Posttest	Experimental	83.833	8.272	0.157	30	0.057
	Control	72.167	8.875	0.163	30	0.041
Motivation	Experimental	91.400	2.581	0.159	30	0.052
	Control	76.900	6.610	0.143	30	0.120

Table 2 indicates that the students' pretest did not show any differences at the beginning. The results of posttest data testing indicated that there were differences in student learning outcomes in the experimental and control classes. This indicates that video-assisted jigsaw learning has succeeded in improving student learning outcomes.

Table 2. Mann-Whitney test results

	Pretest	Posttest
Mann-Whitney U	427.500	159.500
Z	-0.339	-4.338
Sig.	0.735	0.000

The data in Table 3 indicates that there are differences in the learning motivation of experimental and control class students. The experimental class had a score of 91.400 which indicated that the class was better than the control.

Table 3. Results of t-test of motivation

	N	Mean	SD	Std. Error Mean	df	Sig.
Experimental	30	91.400	2.581	0.471	40.751	0.000
Control	30	76.900	5.610	1.024		

This research was carried out in class V of SDN 2 Tekorejo, consisting of 30 students as an experimental class using the video media-assisted jigsaw learning, and class V of SDN Pengdough, consisting of 30 students as a control class using the lecture method. The results showed that the jigsaw learning assisted by video media affected the learning motivation of grade V students of SDN 2 Tekorejo in science subjects. Similar results were also found by Juwairiyah et al. (2017) that there is an increase in learning motivation in students who use the Jigsaw learning. One benefit of utilizing the jigsaw is its potential to enhance students' motivation to learn (Zaenal et al., 2023). Jigsaw learning can educate students to express their opinions and engage in more active speech (Safitri et al., 2021).

In addition to jigsaw learning, video media has a major influence on student learning motivation. Video learning media contribute to improving student motivation and learning outcomes (Safira et al., 2021). Video media can complement students' basic experiences when students discuss and increase student motivation (Bravo wt al., 2011). Video media is a technological medium that can arouse student motivation for learning. Learning media and technology can motivate students during learning activities (Odera, 2011). The use of the video-assisted jigsaw learning also affects student learning outcomes. Yuliani (2019), Juwaeriah et al. (2017), and Ummah and Hamna (2021) all reached comparable conclusions regarding the positive impact of jigsaw learning assisted by video media on student learning outcomes. Students can comprehend the material more readily when jigsaw learning is implemented. Video learning media utilization is an additional factor that may influence student learning outcomes (Kurniasih & Sani, 2015).

Using video-assisted jigsaw learning effectively improves student motivation and their learning outcomes in science subjects. This is the purpose of science learning in elementary schools to develop students' knowledge and understanding of investigating the natural environment and solving problems. Through science learning, students can develop curiosity and process skills to investigate the environment, solve problems, and participate in maintaining and preserving the natural environment (Nasir et al, 2020). Science learning equips students with the ability to develop knowledge and understanding of concepts useful

in everyday life and develop positive attitudes and awareness about the relationship between science, society, technology and environment (Safitri et al., 2021).

CONCLUSION

Based on the study's results, using the video media-assisted jigsaw learning affects students' motivation and cognitive learning outcomes in science subjects. This proves that the learning process in class greatly determines student learning outcomes. Hence, a teacher needs to prepare learning as well as possible by using varied methods and media to stimulate thinking so that students are interested in delivering the material. This is because the method and the media are related and are among the most important elements in learning activities. So, it can be concluded that using appropriate learning methods and media can help teachers deliver material that can affect student motivation and their learning outcomes. Educators must leverage the potential and variety of character traits students exhibit to implement engaging and innovative learning strategies that enhance student motivation and academic achievement. An alternative strategy educators can employ to enhance student motivation and learning outcomes is using video learning media to support jigsaw learning.

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