THE EFFECT OF PICTURE AND PICTURE COOPERATIVE LEARNING MODEL WITH THE ASSISTANCE OF FLASHCARD MEDIA ON STUDENTS' LEARNING OUTCOMES AT SMA NEGERI 3 WAINGAPU

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Abstract

This study intends to ascertain the impact of the picture and picture cooperative learning type on students' biology learning outcomes in the subject of the human excretory system with the aid of flashcard media. This research is quasi-experimental and uses a control group with a pretest-posttest design. The sample in this study was class XI MIPA2 (experimental class) and XI MIPA3 (control class). The sampling technique used is purposive sampling, conducted at SMA N 3 Waingapu, even semester, Academic Year 2022/2023. The research instruments were in the form of documentation and written tests in the form of multiple choices, consisting of pretest and posttest questions which were conducted in 2 meetings. The research data utilizing SPSS version 22 were examined using statistical tests, including the Validity Test, Reliability Test, Normality Test, Homogeneity Test, and t Test (paired Sample T Test). According to the analysis's findings, the experimental class's average posttest score was 77.70, while the control group's was 55.2. When the hypothesis was further tested using a paired sample t test, the findings were sig (2-tailed) 0.05 (0.00 0.05). It is possible to infer that the cooperative learning approach that uses pictures and pictures can improve learning outcomes.

Keywords: Picture and Picture, Flashcard, Learning Outcomes

Abstrak

Penelitian ini bertujuan untuk mengetahui pengaruh model pembelajaran kooperatif tipe *picture and picture* berbantuan media *flashcard* terhadap hasil belajar biologi siswa pada materi sistem ekskresi manusia. Penelitian ini merupakan *quasi eksperimen,* dengan *pretets-postest control group desain*. Sampel dalam penelitian ini kelas XI MIPA[2] (kelas eksperimen) dan XI MIPA[3] (kelas kontrol). Teknik sampling yang di gunakan yaitu *purposive sampling,* dilakukan di SMA N 3 Waingapu, semester genap, T.A 2022/2023. Instrumen penelitian berupa dokumentasi dan tes tertulis berupa pilihan ganda, terdiri dari soal *pretest* dan soal *postest* yang dilakukan sebanyak 2 kali pertemuan. Data penelitian ini dianalisis uji statistik yaitu uji Validitas, uji Reliabilitas, uji Normalitas, uji Homogenitas, uji t (*paired sampel t test*) menggunakan SPSS versi 22. Berdasarkan hasil analisis diperoleh data rata-rata nilai *postest* kelas eksperimen adalah 77,70 dan kelas kontrol 55,2. Lebih lanjut pengujian hipotesis dengan uji *pa ired sampel t test* diperoleh hasil *sig (2-tailed)< 0,05 (0,00<0,05).* Dapat disimpulkan bahwa model pembelajaran kooperatif tipe *picture and picture* berbantuan media *flashcard* terhadap hasil belajar.

Kata Kunci: Picture And Picture, Flashcard, Hasil Belajar

INTRODUCTION

Education is the process of molding a person's or a group of people's conduct and character in order to help individuals become more mature through teaching and training efforts (Anwar 2014:63). Secondly,

based on Law No. 20 of 2003 Article 1 Paragraph 1 concerning "National Education System, education is a conscious and planned effort to create a learning atmosphere and learning process so that students actively develop their motivation to have religious spiritual strength, self-control, personality, intelligence, noble character, and skills, which are needed by himself, society, and the State," This might be taken to mean that education is a long-term process that requires a lot of work and money in order to survive in the future. Because education is important for growth and because a well-educated society can sustain a generation that is knowledgeable, enlightened, and open. (Nawahdani et al., 2022)

Every process of information acquisition, mastery, and the development of students' attitudes and character can be realized through learning. The teacher determines if learning is successful in and of itself. As a result, the teacher is capable of facilitating the learning process so that students can investigate the thinking techniques that the instructor has described throughout the learning process in the classroom. The goal of continuing education is to improve students' learning capacities and outcomes. (Saraswati & Hartiningrum, 2019:80).

According to information obtained from an interview with a class XI biology teacher (Sry Mulyati, S.Pd), conducted on Saturday, June 16, 2022, it is known that the biology learning process is ineffective when lectures are frequently employed as the learning model. Teachers of biology subjects use a conversional learning model with the lecture method, whose explanations are still teacher-centered, which makes students bored and occasionally just busy telling stories to classmates, starting games, or opening social media. Students are also purposefully allowed to leave class and tell stories with friends outside of class. Only a few pupils consistently follow the lessons being taught. The findings of the final semester exam (PAS) reveal the poor student learning outcomes..

Given the subpar biology learning outcomes of Waingapu 3 Public High School pupils, instruction that can raise these results is required. Learning models are crucial for broadening and deepening subject matter and for facilitating teacher communication of the subject matter. The learning model is an effort to put prepared plans into practice in order to attain the intended goals as effectively as possible (Lokat et al., 2022). The cooperative picture and picture learning paradigm is one that may be used. The picture-and-picture cooperative learning strategy encourages students to actively participate in their education by using drawings to explain concepts (Daswati, 2020). The cooperative learning paradigm using pictures (Handayani et al., 2017).

Using visuals to teach concepts or encourage active learning in pupils is known as the "picture and picture" technique (Daswati, 2020). visuals are dynamic, inventive, creative, and enjoyable. The Picture and Picture model is a learning tool that, according to Kurniasih and Sani (2015), may prompt student

learning activities by logically grouping or matching photographs. A new learning approach will be enjoyable with in-class learning activities. According to the questions and answers, each student correctly arranges and pairs the photographs. Through this comprehension, the researcher intends to convey that the picture and picture cooperative learning model is a method or approach in a fun learning process that may motivate student engagement in class by helping them remember what they have learned.

The study's use of a learning model is aided by the usage of flashcard media. Given that the goal of this learning medium is to increase student enthusiasm and to improve learning outcomes, this is regarded as acceptable or suitable to be utilized to determine student learning results. In order to increase learning outcomes, it is intended that the range of learning methods and media employed would help students learn in a way that is fascinating, effective, and enjoyable. When selecting instructional medium, the breadth of the subject matter to be taught must also be taken into account. Interesting and suitable learning materials are required to guarantee that students recall and comprehend all knowledge (Djamarah, 2010: 140). A flashcard is a piece of media that includes words and images of a certain size or format.

When using the picture and picture cooperative learning approach with the use of flashcard media, several prior research found that student learning results had a substantial impact. According to Wardiah (2015), whose study was titled "Implementation of the Picture and Picture Type Cooperative Model to Improve Student Learning Outcomes on Human Reproductive System Material," the findings showed that the Picture and Picture Learning Model had a Positive Effect on Student Learning Outcomes and that there were Differences in Posttest Results in Cycle I the First Meeting of Classical Completeness was Only 52.77%, and at the Second Meeting t At the Second Meeting t Then (Khotimah & Jaelani, 2019) said that the use of *picture and picture* cooperative learning models in science learning had a significant effect. This can be seen from the pretest average score of 60.9, while the posttest average is 90.6. Then according to (Mulyorini et al, 2014) revealed that the development of *flashcard media* in PKN learning had a significant influence. This indicates that student learning outcomes in cycle II have reached the set mastery indicator of 80%, while the classical average score has increased 32% from cycle I, namely 76 to 82 findings of research conducted, and during cycles I – II experienced the increase is from: the percentage gain of 71.42% (cycle I) and 92.8 (cycle II). This study was done to determine the impact of the cooperative learning paradigm using pictures and pictures, supplemented by flashcard media, on student learning outcomes at SMA N 3 Waingapu.

In order to assist students retain the information or concepts they have learned, this flashcard media will be utilized in conversations utilizing the image and picture cooperative learning model during the assessment stage of the learning process. The outcomes of this study are anticipated to be able to offer

scientific input into the teaching and learning process at the school on the effects of the cooperative model supported by flashcard media. This can help students study more effectively and provide them with a visual grasp of the excretory system. It may also be utilized by instructors as a selection of learning models and media to facilitate learning in the classroom.

The excretory system in persons with basic competencies (KD) is the only subject matter covered in this research. 3.9 Examining the connection between bioprocesses and functional problems that might affect the human excretory system and the anatomy of the organ-composing tissue in the excretory system. In the even semester of the 2022–2023 academic year at SMA Negeri 3 Waingapu, a sample of students from class XI mipa 2 (the experimental class) and class XI mipa 3 (the control class) were examined for the cognitive domain findings. Purposive sampling is employed in the sample withdrawal procedure. this kind of experimental study using a quantitative comparative methodology. The research's main premise is that there is a connection between the picture and picture-type learning models, which are supported by

RESEARCH METHODS

This study was carried out in January 2023 during the even semester of the 2022–2023 academic year at SMA Negeri 3 in Waingapu, East Sumba, Indonesia. All SMA Negeri 3 Waingapu students enrolled in the even semester of the 2022–2023 academic year made up the population of this research. Class XI MIPA 2, which included 31 students as the experimental class and 31 students as the control class, made up the sample for this study. Purposive sampling, also known as a purposive sample, is used in the sampling process. Regarding the excretory system in persons with basic cognitive ability (KD), specifically: 3.9 Examining the interactions between the tissue structures that comprise the excretory system's organs.

This study employed an experimental methodology with a pretest-posttest control group design, wherein two tests—the pretest and posttest—were administered. The group's condition was evaluated prior to therapy using a pretest, and the group underwent treatment before a posttest was administered. Quantitative data in the form of data on student learning outcomes were collected for this study using test sheets for the pretest and posttest in the form of multiple-choice questions. The validity, reliability, homogeneity, and normality tests using Shapiro-Wilk, as well as the paired sample t-test with a significance level, were used to assess the pre- and posttest data from this study.

RESULTS AND DISCUSSION

The results of the analysis of data on student learning outcomes at SMA Negeri 3 Waingapu using SPSS version 22 are as follows:

Table 1. Data recapitulation of pretest and posttest control class and experimental class

Data	To control welding		Experiment class	
	pretest	**postest**	**Pretest**	**Postest**
The number of students	31	31	31	31
Lowest value	20	4,5	50	50
Highest value	70	73	71	95
Average	45,2	50,91	55,2	77,70
Standard deviation	13.60	11.62	10.08	10.06

According to the findings in Table 1, the experimental class's lowest and highest pretest scores were 4.5 and 73, however after using a cooperative learning approach that uses pictures and pictures with the use of flashcard media, their lowest and highest scores were 50 and 95. The posttest results for the control class likewise indicated an increase in student learning outcomes, but the experimental class's gain in learning outcomes was superior to the control class's. These numbers indicate that the experimental class outperformed the control class in terms of increased learning outcomes.

Validity and Reliability Test

1. test the validity and reliability of *pretest questions*

Table 2. Test the Validity of *Pretest Questions*

Question number	Sig. (2-tailed)	relationship	Conclusion
1	0.063	< 0.05	Valid
2	0.086	>0.05	Invalid
3	0.677	>0.05	Invalid
4	0.576	>0.05	Invalid
5	0.553	>0.05	Invalid
6	0.001	< 0.05	Valid
7	0.006	< 0.05	Valid

8	0.000	< 0.05	Valid
9	0.000	< 0.05	Valid
10	0.001	< 0.05	Valid

Based on table 2 above, it can be concluded that there are 4 questions that are invalid. The valid questions are found in question numbers 1,6,7,8,9,10, while the invalid questions are in question numbers 2,3,4,5.

2.   Reliability of *pretest questions*

Table 3. Pretest Question Reliability *Test Results*

Reliability Statistics

Cronbach's Alpha	N of Items
.684	10

Table 3 above shows that Cronbach's alpha is 0.684, which is more than 0.70, indicating that the data are trustworthy.

3.   Test the validity and reliability of *posttest questions*

Table 4. *Posttest* Question Reliability Test

Question number	Sig. (2-tailed)	Information	Conclusion
1	0.788	< 0.05	Valid
2	0.337	>0.05	Invalid
3	0.212	>0.05	Invalid
4	0.699	>0.05	Invalid
5	0.114	>0.05	Invalid
6	0.048	< 0.05	Valid
7	0.004	< 0.05	Valid
8	0.087	>0.05	Invalid
9	0,206	> 0,05	Tidak valid
10	0,000	< 0,05	Valid
11	0,005	< 0,05	Valid
12	0,369	< 0,05	Valid
13	0,002	< 0,05	Valid
14	0,001	< 0,05	Valid
15	0,001	< 0,05	Valid

There are nine legitimate questions and six invalid questions, according to table 4 above. The questions with the numbers 1, 6, 7, 10, 11, 12, 13, and 14 were deemed legitimate, whereas the questions with the numbers 2, 3, 4, and 8 were deemed invalid.

4.   Reliability about *the posttest*

Table 5. Reliability Test of *Posttest Questions*

Reliability Statistics

Cronbach's Alpha	N of Items
.870	15

Based on the table above, it is known that Cronbach's alpha value is 0.870, meaning more than 0.70, so it can be concluded that the data is reliable.

Normality and Homogeneity Test

Table 6. Normality Test Results

Statistics	Pretest		Postest	
	Control	Experiment	Control	Experiment
Sig (2-tailed)	0.200		0.156	
sig level		0.05		
Conclusion	Normal		Normal	

A Shapiro-Wilk Sig value of >0.05 can be seen in Table 6's experimental and control class data as well as in its pretest and posttest data. The data are found to be regularly distributed.

Table 7. Homogeneity Test Results

Statistics	*Pretest*		*Posttest*	
	Control	Experiment	Control	Experiment
Sig (2-tailed)	0.269 0.231			
sig level		0.05		
Conclusion	Both data are homogeneous		Both data are homogeneous	

Table 7 indicates that the sig value for homogeneity calculations is 0.231. The number produced from the homogeneity computation is > 0.05, which indicates that the variance of the data groups is the same.

Table 8. Test Paired *Sample T Test*

Statistics	Pretest		Posttest	
	Control	Experiment	Control	Experiment
Sig (2- *tailed*)	0.000		0.000	
Sig level	0.05			
Conclusion	0.000 < 0.05 so that Ho is rejected and Ha is accepted			

The paired sample t test findings show that the sig (2-tailed) value for the experimental class is 0.000, indicating a sig value of 0.05. Therefore, it can be said that Ho is rejected and H1 is approved, indicating that applying the cooperative learning model of the picture-and-picture type with the use of flashcard media has an impact on learning outcomes.

Discussion

Students in the control class and experimental class had relatively poor beginning abilities, according to the study's findings. Similar findings were made by Wanda et al. (2023: 129) who claimed that pupils' first talents were still weak. A 15-number multiple-choice pretest is administered before engaging in learning activities. The purpose of the pretest is to determine the students' prior knowledge, and at the conclusion of the course, 10 multiple-choice posttest questions will be provided to them. After participating in learning, students take a posttest to gauge their learning results. Learning took place in the experimental class utilizing a cooperative learning model of the picture and.

The experimental class's lowest and highest pretest values were 4.5 and 73, according to data analysis in Table 1, but their lowest and greatest posttest scores were 50 and 95 following the application of the picture-and-picture type cooperative learning model supplemented by flashcard media. Posttest results data for the control class likewise revealed an improvement in student learning outcomes, however the improvement in learning outcomes for the experimental class was superior to that of the control class. 6 valid and 4 incorrect pretest item numbers were found using SPSS (Table 2). There were 15 question numbers in total on the posttest, 9 of which were legitimate and 6 were not (Table 4). Widoyoko (2018) states that an instrument is considered legitimate if it can measure the object being measured properly. In other words, a test's validity is a gauge of its correctness. Additionally, when the reliability of the pretest and posttest items was tested using SPSS, it was discovered that the pretest items had a Cronbach's alpha value of 0.684 (Table 3) and the posttest items had a Cronbach's alpha value of 0.870 (Table 5), indicating

that Cronbach's alpha value pretest and posttest 0.70 so that it can be used to determine the reliability of the pretest and posttest items.

Additionally, a paired sample t-test is performed to assess if a hypothesis is accepted or rejected, although normality and homogeneity tests are run beforehand. Shapiro Wilk is required for the normality test since it determines if the sample is drawn from a population with a regularly distributed population, according to Sugiyono (2015: 241). A distribution or distribution of the average score that is fully symmetrical is called the normal distribution. According to the findings of the normality test (Table 6), the control class pretest had a sig value of 0.200, the experimental class pretest had a sig value of 0.156, and the experimental class posttest had a sig value of 0.200. the worth (Rihi & Bano, 2022: 186) .

The posttest data also yielded a Sig (2-tailed) value of 0.000 in the paired sample t test (Table 8), indicating that the value is less than 0.05 (0.05), signifying that H0 is rejected and H1 is accepted. Thus, it can be said that the class XI students' learning results on the subject of the human excretory system are influenced by the usage of the image and picture learning model supported by flashcard media. This is also reinforced by studies showing that the picture-and-picture cooperative learning paradigm has an impact on students' learning results (Lokat et al., 2022). In a similar vein, Wanda et al. 2023) claimed that the cooperative learning model had an

According to the previous explanation, the cooperative learning model of the picture-and-picture variety with the aid of flashcard media is able to directly involve students so that learning is more enjoyable and students understand it easily (Anjani & Safitri, 2023; Handayani et al., 2023; Latif et al., 2020; Romaito et al., 2021; Safitri, 2017; Safitri et al., 2023). There is also responsibility and enthusiasm for obtaining information that encourages students to try to understand the material that has been presented to them during classroom learning.

CONCLUSION

Based on the data analysis and discussion results from this study, the researchers came to the conclusion that the null hypothesis (Ho) was rejected and the alternative hypothesis (Ha) was accepted when the hypothesis test employing a paired sample t-test yielded results of 0.000 0.05. As a result, class XI students at SMA Negeri 3 Waingapu learn more about the human excretory system as a result of using cooperative learning models of the picture and picture type helped by flashcard media.

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