Comparation of Discovery Learning Model and Cooperative Model on Writing Procedure Text of Vocational Students

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Abstract

The purpose of this research is to examine how the skills of writing instructional texts and the learning results of Indonesian topics differ for students who are exposed to the Exploration Learning learning model versus those who are exposed to the Collaboration learning model. SMK Negeri 1 Pinrang served as the study site. Using a quasi-experimental technique with a pre- and post-test setup, samples from two groups will be randomly assigned to receive one of several therapies. About 30 pupils make up a typical classroom. We used a random selection method to collect our data. Class XI MM 2 served as the experimental group's implementation of the Discovering Learning model, while class XI MM 3 served as the control group's implementation of the Collaboration model. Final exams, comprised of multiple-choice questions, were administered to pupils in order to collect data for the study. The findings of the data analysis (t test), specifically $t_{count} = 0.476$, suggest that when it comes to teaching Indonesian topics, the Exploration Learning model yields superior results to the Collaboration model. After comparing them to a significance threshold of 0.05, we conclude that H0 cannot be supported. Students who engage in the Exploration Learning approach to education have higher learning results (average score of 85.66) than those who engage in the Collaboration approach (average score of 84.83). On average, students who are instructed using the Exploration Learning approach perform better than those whose education is based on the Collaboration approach.

Keywords: Procedure Text, Discovery Learning, Cooperative

Introduction

In addition to focusing on the past and the present, education should be a forward-looking process. The goals of education should be futuristic, taking into account the challenges that pupils will encounter in the long run. Education, According to Nurlita (2015), does more than just help people get jobs or advance in their careers; it also helps them deal with the challenges of daily living. Students' inability to think critically is a significant contributor to the educational system's failure to meet its goals.

The 2013 curriculum proposes the exploration learning paradigm as the optimal method of instruction. Ramdhani et al (2017) explains that the Exploration learning model is one in which students are not given a predetermined, conclusive summary of the learning process but are instead expected to take responsibility for planning their own education. Exploratory learning, on the other hand, is defined by Muller et al. (2009) as learning in which students actively engage in problem-solving to acquire and apply new information and abilities.

The goal of the discovery learning approach is to get pupils engaged in what they're learning. To better arrange their education, students must find creative solutions to the challenges posed by their instructors. Students in this form of education are encouraged to think outside the box

in order to find solutions to the challenges posed by their instructor. Learning in the modern period, and particularly the learning that is wanted in the 2013 curriculum, is characterized by its emphasis on student participation and its ability to foster both increased ingenuity and invention in the learning process.

Discovery-based education has been shown in numerous studies to inspire greater participation and originality in the classroom. Findings from a study conducted by Rahmah et al. (2023) demonstrate that using learning tools created with the Discovery learning model and the aid of audio-visual media can improve students' ability to write procedural texts.

Adeninawaty et al. (2018) ran their own research. The purpose of this study is to investigate the efficacy of using discovery learning in conjunction with the think, speak, write approach in enhancing the capacity to compose review texts. The findings demonstrated that the students improved their skills as review text writers. The findings of the study also showed an uptick in instructor engagement, teacher enthusiasm, and pupil learning activities. Between cycles I and II, this rise was spotted. Student participation in the learning process and exchanges between students in the classroom during group talks were two areas that saw significant improvements from cycle I to cycle II. These enhancements have an effect on students' ability to recognize issues, collect relevant data, analyze it, and make valid conclusions. Students' ability to think outside the box while composing study materials is enhanced by these exercises.

Subsequent research was conducted by Fattah (2015), who examined The Effectiveness of Using WhatsApp Messenger as One of Mobile Learning Techniques to Develop Students' Writing Skills. The results of his research showed that the results of learning to write short stories increased and students gave positive responses in participating in learning to write short stories by applying the Discovery learning model with the help of short film media. Short story writing is synonymous with student creativity. Through the Discovery learning model, it is proven that students are more creative in writing short stories both when identifying problems, processing data, proving, and drawing conclusions.

The three studies that are relevant to this research show the use of discovery learning in teaching writing to students. These studies prove that the use of the Discovery learning model is effective in increasing student involvement or activeness in the classroom and increasing student creativity in writing. This inspired researchers to use the Discovery learning model in learning to write procedural texts. Different things are done by researchers, namely in the use of learning models. This time the researcher will compare the Discovery learning model with the Cooperative learning model.

Cooperative use as a comparative model is not without reason. Thus, learning with the cooperative model has also been widely used and researched, and based on research results the cooperative model is also effectively used in activating or involving students in the learning process, especially in group discussion activities.

Research using the STAD type cooperative model in learning to write has been carried out a lot. One of them is research conducted by San Fauziya (2018) which examines learning to write arguments using the Cooperative learning model through the Duti-Duta technique. The results of his research showed that in cycles I and II, students' ability to write arguments experienced a significant increase, namely 89.29% of students were able to achieve a better assessment category. The use of the Duta-Duti technique is carried out to strengthen the use of the Cooperative model in students studying in a cooperative system or structured group learning so that they can explore students' thoughts more deeply.

Furthermore, another study was conducted by Singh et al. (2020), which examined The use of think pair share of cooperative learning to improve weak students' speaking ability. The results showed that the application of the think-pair-share cooperative learning model can increase

interest and participation, make it easier for students to make an outline of dialogue essays neatly and structured based on each other's ideas, make it easier for students to develop ideas and ideas according to the topic of the essay so as to create a positive impression. kind to readers, and makes it easier for students to work together with friends who become partners in making a dialogue essay that readers can read and understand.

Based on the results of the Cooperative model research, it can be concluded that the Cooperative model can be used to increase student cooperation and activeness in the classroom in participating in learning and especially learning to write. Based on this research, researchers are interested in comparing Discovery learning models with cooperative learning. Comparison of this learning model is expected to provide an overview of the learning process of the two models, especially in learning to write. Learning to write was chosen because writing is a learning that requires students' creativity in developing their written work. In addition, writing can also be done in collaboration, so that these two models are considered suitable for use in teaching writing.

According to Nurlita (2015), to see the level of feasibility of a learning model for the validity aspect, experts and practitioners are needed to validate the learning model that will be developed. As for the practicality and effectiveness aspects, a learning tool is needed to carry out the developed learning model. So, to see these two aspects, it is necessary to develop a learning tool for a particular topic that is in accordance with the learning model being developed. In addition, instruments were also developed in accordance with the desired objectives. Therefore, in choosing a learning model must have considerations. For example, the subject matter level of students' cognitive development and the facilities or facilities available, so that the learning objectives that have been set can be achieved.

Methods

This research is a quantitative approach with experimental research methods. The type of experiment used in this study is a quasi-experiment (quasi-experiment). The design used in this study was a non-equivalent pretest-posttest control group design. Experiment 1 was carried out using the Discovery learning model and Experiment 2 was carried out using the STAD Cooperative model. The results of the two experiments after the action was carried out, were compared in terms of learning outcomes and writing procedural texts.

Results and Discusion

Descriptive Statistical Analysis

Descriptive Analysis of Students' Ability to Write Procedural Texts

Descriptive data analysis of the ability to write procedural texts of students after carrying out tests of the ability to learn to write procedural texts taught using the Discovery Learning and Cooperative model of class XI Multimedia SMKN 1 Pinrang can be seen in Table 1.

Table 1. Descriptive Data on Ability to Write Procedure Text with Discovery Learning and Cooperative Models

Statistics	Type Discovery Learning	Cooperative Model
Number of samples	30	30
Lowest value	80	84
Top rated	100	100
Average value	93,33	92,93
Standard deviation	4,618	4,025

The scores obtained by class XI Multimedia students of SMKN 1 Pinrang who were taught using the *Discovery Learning* and Cooperative models in the procedure text material can be seen in Table 2.

Table 2. Percentage of results of Ability to Write Procedure Text with Discovery Learning and Cooperative Models

	Aspects of Ability to Write Procedure Texts	*Discovery Learning* Model		Type Cooperative	
		%	**Category**	**%**	**Category**
1	Ability to Analyze	92,67	Excellent	96,67	Excellent
2	Synthesize Ability	88,67	Excellent	96,00	Excellent
3	Ability to recognize and solve problems	91,33	Excellent	89,33	Excellent
4	Ability to infer	94,67	Excellent	89,33	Excellent
5	Ability to Evaluate	87,33	Excellent	93.33	Excellent
	Average	93,33	Excellent	92,93	Excellent

The graph from the aspect of the ability to write procedure text using the learning model of *the Discovery learning* and Cooperative models is presented in Figure 1
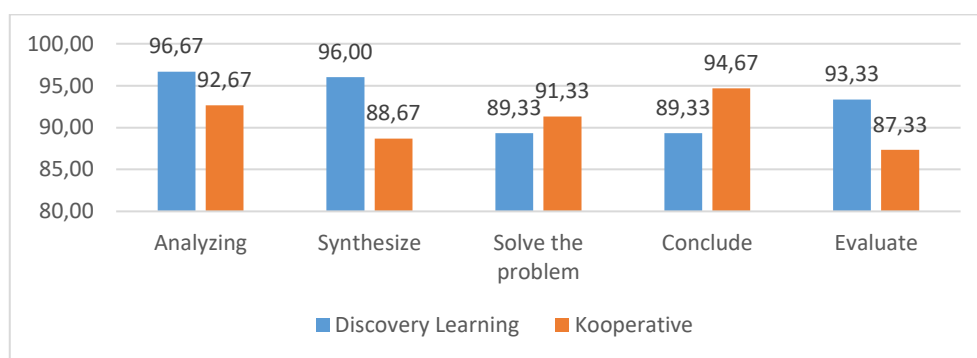

Figure 1. Aspects of Ability to write procedure text Using Discovery learning model and Cooperative model

Based on the research conducted, it was found that the results of using the Discovery Model learning on the ability to write Procedure Texts were 0.40 percent higher than using the Cooperative Model.

Descriptive Analysis of Cognitive Learning Outcomes of Learners.

Descriptive data analysis of student learning outcomes after conducting a learning outcomes test on the text material of the procedure taught with the Discovery Learning and Cooperative model learning model in class XI Multimedia students of SMKN 1 Pinrang can be seen in Table 3.

Table 3. Descriptive Data on Student Learning Outcomes in the Discovery Learning and Cooperative Model Classroom

Statistics	Type Discovery Learning		Cooperative Model	
	PreTest	**Post Test**	**PreTest**	**Post Test**
Number of samples	30	30	30	30
Lowest value	25	75	20	60
Top rated	80	95	85	85
Average value	47,66	85,66	41,33	84,83
Standard deviation	12,712	5,832	16,449	8,250

In addition to being presented a table containing descriptive data on the learning outcomes of learners who were taught with the Discovery Learning and Cooperative models The following, also presented an analysis of the frequency distribution data and percentage of categories of learning outcomes of learners who were taught with the Discovery Learning model model can be seen in Table 4.

Table 4. Frequency and Percentage Distribution of Categories of Student Learning Outcomes in Discovery learning and Cooperative model Classes

Category	N-gain			
	Model Discovery Learning		Cooperative Model	
	F	P (%)	F	P (%)
Tall	16	46	16	46
Keep	14	54	14	54
Low	0	0	0	0
Sum	30	100	30	100

The completion of the class of learners taught with the Discovery learning and Cooperative models can be seen in Table 5.

Table 5. Student Class Completion

Category	Percentage			
	Model Discovery Learning		Cooperative Model	
	F	P %	F	P %
Complete	30	100	30	100
Incomplete	0	0	0	0
Sum	30	100	30	100

The completion of classes in classes taught using the *Discovery learning* model model is the same as the completion of classes taught using the Cooperative model. So that 30 students of each class are declared complete. Students are said to be complete if they obtain KKM ≥75.
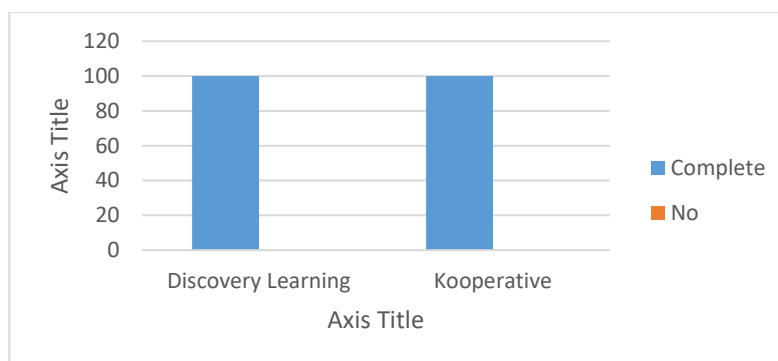

Figure 2. Student Learning Completion of Discovery Learning and Cooperative models

The presentation of data from the Implementation of Learning Models for each class taught using the Discovery learning and Cooperative models is presented in Table 6.

Table 6 Implementation of Learning Models Taught Using Discovery Learning and Cooperative Models

Indicators	Percentage (%)			
	Type Discovery Learning	Category	Cooperative Model	Category
Students are expected to be able to determine information in the form of	88,50	Complete	88,00	Complete

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general statements in the text of the procedure				
Students are expected to be able to show information in the form of stages in the text of the procedure	82,50	Complete	84,50	Complete
Students are expected to be able to determine information in the form of stages in the procedure text	88,50	Complete	90,00	Complete
Students are expected to be able to construct information by compiling general statements and stages in the text of the procedure orally and in writing	90,00	Complete	81,00	Complete
Learners are expected to compare common statements in two texts of the procedure	82,50	Complete	79,50	Complete
Students are expected to be able to criticize the stages of the procedure text in writing	88,50	Complete	86,50	Complete
Learners are expected to be able to Design general statements and stages in the text of the procedure with proper organization orally	88,50	Complete	90,50	Complete
Average	87,00	Complete	85,71	Complete

The data from the learning activities of learners who were taught using the *Discovery learning* and Cooperative models is presented in Table 7.

Table 7. Learning Activities and Syntax of LKPD Students Using *Discovery Learning* and Cooperative Models

Discovery Learning Activities	Percentage %	Cooperative learning activities	Percentage %
Stimulus 1. Learners observe a video shown about the structure and linguistic characteristics of the procedure text 2. Learners are given a text of the procedure to read 3. Learners brainstorm based on the text of the procedure that has been read 4. Learners respond to stimulus questions from educators about the procedures read.	86,4	**Delivering goals and motivating learners** 1. The teacher conveys the learning objectives and the learner can explain the meaning of the procedure text 2. The teacher conveys indicators of competency achievement: Determine information in the form of general statements in the text of the procedure and then the learner records it. 3. Teachers motivate students by providing an overview of the importance of the material to be studied and its benefits in everyday life. Learners listen and listen to the teacher's motivation.	80,0
Problem Statement / Identification	81,6	**Presenting information.** 1. The teacher presents information to the learners	74,4

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1. Learners are divided into groups of 4-5 randomly selected people 2. Learners are given an LKPD containing a problem that leads the learner to find the stages in the text of the procedure 3. Learners are directed to observe and understand the problems presented at LKPD		by means of demonstrations or literacy of learning resources related to organizing the text of the procedure 2. The teacher presents examples of problems related to organizing the text of the procedure	
Data *Collection* 1. Learners discuss the results of their observations with their group of friends 2. Students are guided in using learning media 3. Students are given the opportunity to ask problem-solving questions given to LKPD 4. Learners are directed to collect information related to the questions asked by discussing with their group of friends 5. Students collect information / related to the structure of the text of procedures and linguistic rules contained in teaching materials as a reference in solving problems contained in LKPD	86,4	**Organizing Learners into study groups** 1. The teacher explains to the learners how to form a study group according to the STAD type approach. 2. Teachers help each group make the transition efficiently. 3. Teachers assign 4-5 students into each group heterogeneously by considering the achievements of students	75,2
Data Processing 1. Students process information by relating it to problems presented in LKPD 2. Students pour the information obtained into LKPD	85,6	**Guiding work and study groups.** 1. Teachers give group assignments through LKPD 2. The teacher monitors the activity of each group. 3. Teachers guide study groups while working on their assignments.	72,0
Verification 1. Students of each group present the results of their group discussions on the structure of the procedure text 2. Learners in another group respond or give questions to the presenting group then the	84,0	**Evaluation**. 1. Teachers evaluate learning outcomes about the material that has been studied through individual assessments by taking quizzes. 2. The teacher randomly appoints student	76,56

presenting group gives answers to responses or questions asked from other groups 3. Students observe the results of the discussion group of presenters then reason the suitability of the discussion results with the problems presented		representatives from each group to solve the problem by performing on the blackboard.		
Generalization 1. Students conclude the results of the discussion by taking notes and responding to friends' responses 2. Learners deduce the structure and linguistic features of the procedure text	86,2	**Giving awards** 1. Teachers give appreciation to each group for their achievements in the form of praise or in the form of good grades that are published openly.	78,0	

To find out whether the data obtained is normally distributed and has a homogeneous variance, an inferential statistical analysis is carried out.

Inferential Statistical Analysis

Inferential statistical analysis was used to test the research hypothesis. Prior to testing the hypothesis, a normality test and homogeneity test were first carried out where all data was processed using the SPSS analysis program.

Normality test

The normality test aims to state whether the score data on student procedural text writing learning outcomes for experimental class 1 and experimental class 2 of the population is normally distributed or not. Testing whether or not the data is normal in this study uses SPSS version 20 statistics through the One-Sample Kolmogorov-Smirnov Test.

Data normality testing is used to determine whether the data is normal or not. If the data is normally distributed then sig α and if the data is not normally distributed then sig$<\alpha$. The normality test can be seen in the following SPSS output:

Table 8. Normality Test Results of Student Learning Outcomes

		Kolmogrov-Smirrov[a]			Shapiro-Wilk		
		Statistics	df	Sig.	Statistics	df	Sig.
Students' Learning Outcome	Discovery Learning	.139	30	.145	.904	30	.010
	Cooperative	.134	30	.170	.907	30	.013

Based on the results of data processing, the Kolmogorov-Smirnova sign value was obtained for each of the two populations, namely the Discovery learning model was sign = (0.145) > α = 0.05 and the Cooperative model population was sign = (0.179) > α = 0.05, meaning that the data normally distributed.

Homogeneity Test

After carrying out the normality test, then the homogeneity test was carried out. Homogeneity test aims to determine whether the data that has been analyzed is homogeneous or not.

Table 9. Results of the Homogeneity Test of Student Learning Outcomes

		Levene Statistics	df1	df2	Sig.
Students's Learning Outcome	Based on Mean	1.825	1	56	.182
	Based on Median	1.780	1	56	.188
	Based on Median and with Adjusted off	1.780	1	48.489	.188
	Based on trimmed mean	1.637	1	56	.206

From the results of the analysis of the processed data obtained, the Discovery learning and Cooperative models were processed, a significance value of $0.182 > α = 0.05$ was obtained so that it can be concluded that both data groups have the same (homogeneous) variants.

Hypothesis Test (t-test)

The hypothesis test using the t-test aims to determine whether there is a significant difference between the results of learning to write the text of the procedure taught using the Discovery learning learning model and the STAD type cooperative learning model in class XI Multimedia students of SMK Negeri 1 Pinrang.

Table 10. Student Learning Outcomes Hypothesis Test Results

	Methods	N	Mean	Std. Dev	Std Error Mean
Students' Learning Outcome	Discovery Learning	30	85.7667	7.83310	1.43012
	Cooperative	30	84.2667	8.35395	1.52522

Hypothesis testing with the SPSS program obtained a sig (2-tailed) value of $0.476 < α = 0.05$ then H_0 was rejected and H_1 was accepted. Thus, it can be said that the hypothesis in this study is acceptable, namely that there are differences in the ability to write procedure texts and the learning outcomes of students who are taught using the *Discovery learning* and Cooperative models in the material of writing procedure texts.

N-Gain Test

The N-gain test aims to show whether there are differences before and after treatment in each class both in the class taught using the *Discovery Learning* and Cooperative models.

Table 11. Test Results N Gain Learning Outcomes Si

	Method	Statistics	Std. Error
Ngain_Score	Discovery Learning	.7145	.02292
	Cooperative	.7206	.02567

The results of the data analysis of cognitive learning outcomes of students were in classes that were taught using the Discovery learning model, an average N-Gain of 0.71 was obtained while in classes using the Cooperative learning model, an average N-Gain of 0.72 was obtained. taught using the Discovery learning and Cooperative models on the material of writing the text of the procedure.

Conclusion

The results of learning procedure texts in class XI Multimedia 2 students of SMK Negeri 1 Pinrang before the application of the Discovery learning learning model obtained an average score of 47.66 in the low category, while after the application of the learning model the learning outcomes of writing student procedure texts increased with an average score of 85.66 being in the high category.

The results of learning procedure texts in class XI Multimedia 3 students of SMK Negeri 1 Pinrang before the application of the STAD type Cooperative learning model obtained an average score of 41.33 in the low category, while after the application of the learning model,

the learning outcomes of writing student procedure texts increased with an average score of 84.83 being in the high category.

Based on the improvement in student learning outcomes after pretesting and posttest in experimental class 1 is 38.00 and experimental class 2 is 43.50. After hypothesis testing, there was a significant difference between the learning outcomes of writing texts of student procedures taught using the Discovery learning learning model and the STAD type Cooperative learning model in class XI Multimedia students of SMK Negeri 1 Pinrang.

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