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The Effectiveness of Discovery Learning Model using Audio-Visual Media

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Abstract

The learning model is one of the factors that influence student learning outcomes. The purpose of this study was to determine the effectiveness of learning outcomes based on students' motivation in thematic learning with The Discovery Learning Model assisted by audio-visual media with the theme of Our Friends Environment in elementary schools. This type of research is quantitative with quasi-experimental research (quasi-experiment). This study uses a pre-test – post-test nonequivalent control group design with two class research objects consisting of a control class (Public Elementary School Kalipancur 2, Semarang) and an experimental class (Public Elementary School Purwoyoso 4, Semarang). The sample consisted of 72 students. This data collection technique uses N-Gain analysis. The results of this study are an increase in learning outcomes based on motivation significantly. Obtained an average increase in learning outcomes of 87.4% in the very good category. The average skill of 75.8% is in the very good category. An average motivation of 86% is in the very good category. The average N-Gain test of 0.602 is in the medium category. The conclusion of this research is an increase in student learning outcomes after participating in thematic learning with The Discovery Learning Model assisted by audio-visual media. Motivation accompanies an increase in student learning outcomes.

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INTRODUCTION

In the context of educational reform, there are three important things to consider, namely curriculum renewal, improvement in the quality of learning, and the effectiveness of learning methods (Roicha, 2017). Learning models have an important role in the learning process. The ability that is expected to be owned by students is determined by the suitability of the use of a learning model following the planned objectives. Thus, in educational reform, innovations must be made in the learning process of learning models that are still being applied and are more effective when assisted with the use of audio-visual media. Learning assisted by audio-visual media can make students more easily understand the subject matter described by the teacher.

Based on the results of interviews with the fifth-grade teacher in Public Elementary School Purwoyoso 4 Semarang, Public Elementary School Kalipancur 2 Semarang already using Curriculum 2013 for low and high classes. But, there are some problems faced by the school in implementing the curriculum. First, the lack of use of tools and learning media which has been provided by the school in the learning process, so learning is still centered on the teacher. Second, teachers still have difficulty designing models, methods, and strategies in thematic learning. The teacher transfixed on the learning design in the teacher's book and the student's book from the government, without being adjusted and developed according to student needs. Thos students are rarely actively involved in developing concepts of scientific discovery in learning. Third, the teacher still has difficulty linking some subject matter with daily life in one set of time together and also connecting to the specified learning outcomes. Another problem, learning outcomes are still centered on cognitive aspects, not including affective and psychomotor aspects. Students have not been directed to the development of divergent thinking, namely the ability to propose many different ideas or ideas (creative thinking).

The mentioned problems are not following Curriculum 2013, which requires teachers to support the successful implementation of the revised edition of Curriculum 2013. First, all teachers must teach characters in a hidden curriculum. This means that the teacher has a moral role in guiding the character of students, even though they do not conduct direct and structured assessments. Second, the teacher must develop development in learning, especially in terms of making effective, practical, and creative learning plans. Third, teachers must have learning strategy references up-to-date so that they can create learning and develop themes and sub-themes independently. Fourth, teachers must be able to develop students' thinking skills based on 21st-century skills by creating learning that leads to these skills, and this also answers the third challenge in terms of literacy and digital technology (Widodo, 2018).

Based on the problems described, one of the solutions used by researchers to overcome these problems is to use the learning model Discovery Learning that is assisted with audio-visual media. Hobday (2016) in Lyu, and Wang (2018) describes that Discovery Learning as an interaction between teachers and students to find important concepts, from past experiences to gradually enter critical thinking and evaluate learning activities which implemented comprehensively and to link teaching hastily with real life.

Following thematic learning, the theme of Our Friends Environment is a sub-theme of Human and Environment which aims to foster the ability to explore student learning experiences directly. It can be achieved through the development of scientific process skills and attitudes to improve student competencies by answering questions through discovery and scientifically understanding the natural environment to achieve learning outcomes optimally. The use of models discovery learning assisted with audio-visual media is expected to improve the learning process in the classroom.

In addition to Discovery Learning, audio-visual media can be used as an alternative to overcome the above problems so that the learning

process becomes more effective. Arsyad states that audio visual-based media are visual media that contain the use of additional sound to produce it (Cahyani, 2016). Burton states that audio-visual aids combine sensory objects and images that stimulate and strengthen learning and teaching. According to Ahluwalia, audio-visual material reinforces spoken and written words with concrete images and rich perceptual experiences on which learning is based. Reduce the boredom of teaching in class. (Sabrina, 2015).

Audio-visual media is an effective tool that invests the past in an atmosphere of reality. Audio Visual Media provides students with realistic experiences, which attract their attention and help in understanding historical phenomena (Rasul, Bukhsh, and Batool, 2011). According to Dike, audio-visual media refers to any tool that does not only rely on reading activities in the process of sending messages (Gayatri, Soegiyanto, and Rintayati, 2018). Media that is used as a teaching aid is called Dependent Media. As a tool, the effectiveness of the media is very dependent on the way and ability of teachers to use it (Rachmadhany, Sunardi, and Agung, 2018).

The purpose of this study was to determine the effectiveness of learning outcomes based on students' motivation in thematic learning with The Discovery Learning Model assisted by audio-visual media with the theme of Our Friends Environment in elementary schools.

METHODS

The research conducted was a quasi-experimental study (quasi-experiment) aimed at finding out the differences between two or more variables of the groups that were the research subjects. This study uses a pre-test – post-test nonequivalent control group design using two classes consisting of a control class and an experimental class. The technique used in this research is random sampling. The sample in this study is Purwoyoso 4 as an experimental school will be given a learning model Discovery Learning learning assisted with audio-visual and visual media in thematic learning and Elementary School Kalipancur 2 Semarang as a control class will be given learning treatment through The Discovery Learning Model assisted by audio media visuals on thematic learning. All grade 5 students will be used as research samples.

The variable measured in this study is The Discovery Learning Modeland utilizes audio-visual media, which is measured is the level of implementation of The Discovery Learning Modelassisted by audio-visual media and the learning process. The learning outcome variable, which is measured is the student's material mastery score on the theme of Our Friends Environment as measured by tests. Data collection techniques in this study were the instrument trials and instrument validity tests. Analysis and statistical models used are prerequisite tests, which include tests of normality and homogeneity, average similarity test, two average similarity test, classical completeness test, and N-Gain test.

RESULTS AND DISCUSSION

The Application of Model Discovery Learning Assisted by Audio Visual Media

This research was conducted to find out the increase in the implementation of model Discovery Learning assisted by audio-visual media. The learning process that was first carried out was the introduction of the material Our Friends of Environment, which was then given a questionnaire related to the implementation or syntax of The Discovery Learning Model assisted by audio-visual media.

The application of The Discovery Learning Model assisted by audio-visual media shows that students can try to complete the task as best they can in learning. Roestiyah (2012) in Sari, Gunawan, and Harjono (2016) defines the discovery learning as a way of teaching that involves students in the process of activity through the exchange of opinions, with discussions, seminars, reading by themselves and trying for themselves, so that children can learn on their own.

As for the steps in learning discovery, there are five stages: (syntax DL 1, stimulation)

students have been able to listen to pay attention to the learning video that is played by the teacher so that they are diligent in doing their assignments. (syntax DL 2, identify the problem) the teacher allows students to identify the problems that exist in the learning video displayed by the teacher. (syntax DL 3, find information) With the learning video displayed by the teacher makes it easy for students to understand the material, and students can help friends who have difficulty understanding the material. The learning process using The Discovery Learning Model provides opportunities for students to gather information. Based on the learning video that has been displayed by the teacher. (syntax DL 4, processing information) students can work together with groups and gather the information that has been found with each other and then processed into information and can maintain their opinions in working together (in groups). (syntax DL 5, proof) students can students work on problems correctly by seeing the learning videos that have been displayed by the teacher by proving the results of their group work in front of the class.

Differences in Learning Outcomes Based on Motivation in the Discovery Learning Model Assisted by Audio Visual Media

The differences in learning outcomes based on motivation in the thematic learning models Discovery assisted with audio-visual and visual media with models Discovery Learning assisted by audio-visual media theme of Our Friend's Environment Class 5. Results Learning the model of Discovery Learning Assisted Audio-Visual Media experimental class and control class can be seen in Table 1.

Tabel 1. Result of Discovery Learning Model Assisted by Audio Visual Media

	Result of study (%)		Skill (%)	Motivation (%)	N-Gain
	Pre-test	Post-test			
Control class	66.6	84.4	73.5	83	0.477
Experiment class	67.8	87.4	75.8	86	0.602

Based on Table 1, it can be explained that the average student learning outcomes of the experimental class in the pre-test data of 67.8% are in the moderate category, and the average student learning outcomes in the post-test data of 87.4% are in the very good category while the average student skills in the experimental class by 75.8% are in the very good category. The average motivation in the experimental class by 86% is in the very good category. The average N-Gain (Hake, and Reece, 1999) test the experimental class of 0.602 is in a good category.

The average learning outcomes of control class students in the pre-test data of 66.6% were in the sufficient category, and the average student learning outcomes in the post-test data of 84.4% were in the very good category. While the average student skills in the control class of 73.50 are in the medium category. The average motivation in the control class of 83% is in the very good category. The average N-Gain control class of 0.477 is in the medium category.

So, it can be concluded that The Discovery Learning Model assisted by audio-visual media is more effective and can improve learning outcomes in thematic learning assisted by audio-visual and visual media because The Discovery Learning Model assisted by audio-visual media is less effective in teaching thematic lessons because the second effectiveness indicator is not achieved related to the N-Gain test.

The Effectiveness of Learning Outcomes in the Discovery Learning Model Assisted by Audio Visual Media

The effectiveness of the learning outcomes of the skills variable with learning outcomes and motivation with learning outcomes can be seen in Table 2.

Based on Table 2, note that the value of r arithmetic between variables skills learning outcomes at 0.899 and sig. equal to 0.00 > 0.05, so H_1 is accepted. This means that there is a significant relationship between skills and

learning outcomes. A correlation value of 0.899 indicates the level of strong and positive relationships, meaning that the magnitude of the value of skills to accompany high learning outcomes. KP value = $r^2 \times 100\% = (0.899)^2 \times 100\% = 80.82\%$. This means that the influence of skills on learning outcomes is 80.82%.

Tabel 2. The Result of Variabel Skill with Learning Outcomes and Motivation with Learning Outcomes

Effectiveness			
	Skill x Learning outcomes	H_1	KP value
Sig.	0.899	√	$KP = r^2 \times 100\% = (0.899)^2 \times 100\% = 80.82\%$
0.00 > 0.005	Motivation x Learning outcomes	H_1	KP value
	0.967	√	$KP = r^2 \times 100\% = (0.967)^2 \times 100\% = 93.51\%$

It is known that the calculated r-value between the motivational variables with learning outcomes is 0.967 and the value of sig. equal to 0.00 > 0.05, so H_1 is accepted. This means that there is a significant relationship between motivation and learning outcomes. A correlation value of 0.967 indicates the level of strong and positive relationships, meaning that the magnitude of the value of skills to accompany high learning outcomes. KP value = $r^2 \times 100\% = (0.967)^2 \times 100\% = 93.51\%$. This means that the influence of skills on learning outcomes is 93.51%.

Multiple correlations can be seen that the value of multiple correlation between skills (X_1) and motivation (X_2) on learning outcomes (Y) is shown in column R in Tabel 3.

Table 3. SPSS Output of Multiple Correlation Tests

R	R square	Adjusted r square	Std. the error of the estimate
.970[a]	.940	.936	.97094

[a]predictors : (Constant),
X_2 : Motivation
X_1 : Skill

Based on Tabel 3, this can be interpreted that the level of the relationship between skills (X_1) and motivation (X_2) on learning outcomes (Y) is high. The magnitude of the influence exerted by the social intelligence variable (X_1) and learning interest (X_2) on learning outcomes (Y) is equal to R square = 0.940 = 94%, and other factors influence the remaining 6%. It has been stated earlier in the linearity test that the relationship of skills (X_1) and motivation (X_2) to learning outcomes (Y) forms a linear line. The equation of the regression is $\hat{Y} = -6.791 + 0.354X_1 + 0.785X_2$.

Based on the formula, it is known that X_1 and X_2 have a positive effect on Y. So in other words, each X_1 increases by 1 unit of food will increase the value of Y by 0.354 as well as the variable X_2 if X_2 increases by 1 unit then will increase the Y value by 0.785. The amount of influence or contribution made by X_1 and X_2 to Y was 47.4%, while 52.6% other variables influenced.

Based on statistical analysis with the pre-test and post-test (N-Gain) of class V Public Elementary School Purwoyoso 4 as an experimental class using Discovery Learning models assisted with audio-visual and visual media can be seen in Table 4.

Table 4. The Result of N-Gain (Pre-test and Post-test).

	N-Gain	Significance level
Experiment class	0.60	Sig. 5% (0.005)
Control class	0.48	

Based on Table 4, an average N-Gain score of 0.60 was obtained, and Public Elementary School Kalipancur 2, Semarang as a control class that uses The Discovery Learning Model assisted by audio-visual media obtained an average score of N-Gain 0.48.

It was concluded that the average final score of students' cognitive learning test results in the experimental class was better than the control class at the 5% significance level (0.05). So The Discovery Learning Model assisted by audiovisual and visual media is more effectively applied in thematic learning compared to The

Discovery Learning Model assisted by audio-visual media.

Based on the results of research in the previous chapter, after receiving thematic learning with The Discovery Learning Model assisted by audio-visual media experienced a significant increase based on data pre-test and post-test.

The results of the study are in accordance with the theory or relevant research results of some researchers including (Amalia, Syahrul, and Arief, 2018) which states that the writing skills of the exposition text of class VIII students of Public Junior High School 31 Padang after using models discovery learning assisted with audiovisual media is better than before using models discovery learning assisted by audiovisual media and able to improve learning outcomes. According to Davey (2017) Discovery Learning is an inquiry-based teaching process; discovery learning believes that it is best for students to find facts and relationships for themselves. The main objective of this learning model is to improve thinking power, build motivation from inside and outside, learn how to find, and develop thinking (Suminar, and Meilani, 2016).

Besides an increase in learning outcomes based on pre-test scores and scores post-test. Students also have the value of a good learning process. The results of teacher assessment prove this during the learning process. Learning outcomes in the realm of knowledge aided by the provision of motivation during the learning process were obtained from research data post-test.

From the data post-test, there is an increase in learning from the scores pre-test. The average values obtained from the scores post-test have completely met the Minimal Completeness Criteria (KKM) value of 70. Skill scores are assessments obtained during the learning process, in the implementation of activities carried out in groups, group activities are intended to be able to provide flexibility to students to explore their knowledge.

Based on the explanation above, it can be concluded that the thematic learning with model Discovery Learning assisted by audio-visual media in elementary schools can improve student learning outcomes in the process of the value of knowledge and skills.

The relationship between motivation and learning outcomes of students in thematic learning with The Discovery Learning Model assisted by audio-visual media shows the relationship between the two variables in the same direction. That is, if motivation increases, the learning outcomes will increase as well. So it can be concluded that after receiving thematic learning with The Discovery Learning Model assisted by audio-visual media, increased motivation to learn to accompany the increase in student learning outcomes in thematic learning with The Discovery Learning Model assisted with audio-visual media.

CONCLUSION

The conclusion of this research is in model Discovery Learning assisted by audio-visual media is more effective in learning thematic learning assisted with audio-visual and visual media because The Discovery Learning Model assisted with audio-visual media is less effective in learning thematic lessons because the second effectiveness indicator is not achieved regarding the N-Gain test.

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