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The Effect of Discovery Learning Under Mind Mapping on Students' Results of History Learning at SMAN 1 Tenggarang

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The Effect of Discovery Learning Under Mind Mapping on Students' Results of History Learning at SMAN 1 Tenggarang

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Abstract. Learning in the era of globalization requires knowledge and understanding of skills so that students are able to empower themselves to find, support, assess, and use information, and collect innovations that are creative in making decisions. This research was conducted to analyze the presence or absence of significant influence of discovery learning models by mind mapping on the learning outcomes of history of students of SMAN 1 Tenggarang. The research method is a quasi-experimental design with nonequivalent control group design. To determine the sample using cluster random sampling as many as 69 respondent. Data use collection methods use are pre test and post test. Data were analyzed by Paired Sample Test and independent t test.Result showed that: 1) there is significant effect for discovery learning with mind mapping models on the learning outcomes because of its significant value 0.000; 2) there is significant effect for discovery learning without mind mapping models on the learning outcomes because of its significant value 0.000; 3) there are differences in the influence of discovery learning models with mind mapping and discovery learning models without mind mapping because of its significant value 0.000.

Keywords: Discovery Learning, Mind Mapping, History Learning Results

1. Introduction

Education in Indonesia has a major contribution to the development of the nation. However there are many criticisms given by the community related to the success of the education program. In this globalization era, knowledge and diversity of skills are needed so that students are able to empower themselves to find, interpret, assess, and use information, as well as produce creative ideas to determine attitudes in decision making. Therefore according to Rusen, historical learning should play a vital role in moral development.

Rusen distinguishes three dimensions of historical learning, called an operation. First, historical learning is the growth in knowledge obtained from the human past. Second, historical learning is of advantage to improve the competency to find the meaning in which the improvement of experience and knowledge is transformed into productive changes in model or interpretation. Third, historical learning is the improvement of capacity to orient [7]

Learning at the level of the education unit has a purpose, as well as learning history. In essence the purpose of historical learning is to develop cultural values and past achievements into national cultural values that are in line with present and future life and develop new achievements that become a new character of the nation [6]. The character of students needs to be developed in accordance with

the ability to think historically which is the basis for having the ability to think logically, creatively, inspiratively, and innovatively.

Based on empirical evidence and the results of preliminary observations found several facts in the field, namely : 1) material in historical learning is still not integrated with everyday life. Students only receive historical learning without follow-up such as applying in daily life and have better plans in the life to come. This can be seen from the learning model used by educators, namely educators as the only source of learning and have not yet seemed to attempt to link the material with the objectives of historical learning, as well as classroom learning activities only lectures and assignments. This is related to students' low understanding and lack of interest who are interested in learning history. As a result the learning outcomes of students are low and students do not get the opportunity to explore a historical event. 2) the ability of students to analyze a historical event is still low. This is due to the understanding of students who are low and have less interest in learning history. As is known that studying history is something unique, in which students can associate one event with another event by collecting various facts from the results of the analysis.

One of the relevant models in implementing historical learning is the Discovery Learning model. Discovery Learning is seen as a promising learning method due to the active involvement of students with a domain that will produce a structured knowledge base compared to traditional learning methods, where knowledge is only transferred to students [5] According to Jacobsen [4]that in the Discovery Learning model, the role of educators is fewer and more active in learning cognitively and fostering high learning motivation. This is evident from the enthusiasm that grows in students in finding their own knowledge, solving problems obtained, and communicating well in written and oral forms.

Creative thinking of students can be trained through learning techniques, namely Mind Mapping. Mind Mapping is a note-taking technique that can be used in certain situations and conditions, such as in planning, problem solving, summarizing, structuring, gathering ideas, taking notes, lectures, meetings, debates, and interviews [12]. Mind Mapping helps students to associate ideas, promote creative thinking and build meaningful connections between ideas [2]. The details of learning through Mind Mapping include: students are able to plan something, be able to communicate well, be more creative, able to solve problems faced, able to focus attention, be able to compile and explain thoughts, be able to remember well, learn faster and efficient, and practice the whole picture.

Mind mapping is an interesting learning strategy. Students are free to put their ideas into a creative concept map [8]. The creative results help students remember the learning material for a longer period of time. This is because students are directly involved in learning processes and processing their own creative ideas. In addition, through Mind Mapping also helps students improve the results of learning history. Where historical learning requires creative thinking so that students can understand and explore a historical event well.

The learning process includes a process and results. The main thing that students get in the learning process is learning outcomes. The classification of learning outcomes from Benjamin Bloom includes cognitive, affective and psychomotor processes [9]. Finally, through the implementation of the Discovery Learning model with Mind Mapping it is hoped that it can influence student learning outcomes, as well as improve the previous learning system.

Based on the background above, the problems in this study are:

1) Is there influence on the implementation of the Discovery Learning model with Mind Mapping on the historical learning outcomes of students of class XI in SMAN 1 Tenggarang;
2) Is there influence on the implementation of the Discovery Learning model without Mind Mapping on the historical learning outcomes of students of class XI in SMAN 1 Tenggarang;
3) Are there differences in influence between the Discovery Learning model and Mind Mapping and the Discovery Learning model without Mind Mapping on the historical learning outcomes of students of class XI SMAN 1 Tenggarang.

2. Method

The research was carried out in Jember Regency, Indonesia. The subjects of this study were high school students with a population of all class XI Sosial in social studies in Tenggarang 1 Hight School , whereas the sample was 69 people selected using cluster random sampling techniques

This type of research is quasy experiment. This design has a control group, so it is not entirely to control the outside variables that affect the implementation of the experiment. This design was developed to overcome difficulties in determining the control group in research [10]. The experimental design used in this study was the nonequivalent control group design. This design is almost the same as the design of the pretest-posttest control group, but the experimental group and the control group in this study were not randomly selected. Data collection techniques using tests, interviews, questionnaires and documents.

Data analyses used for hypothesis testing in this study are descriptive and parametric statistic available in SPSS. Experimental data that compares the value of students in learning before and after using the Discovery Learning model with Mind Mapping analyzed by the Paired Samples Test. Whereas to see whether there is a difference in influence between the Discovery Learning model and Mind Mapping and the Discovery Learning model without Mind Mapping using the Independent Sample t-Test analysis. Before conducting research, tests of normality and homogeneity were carried out. The following are the results of normality and homogeneity test:

Tabel 1. The Result of Normality Test with Kolmogorov-Smirnov Test

One-Sample Kolmogorov-Smirnov Test

		XI1	XI2
N		35	34
Normal Parameters[a,b]	Mean	76.74	77.29
	Std. Deviation	8.262	8.383
Most Extreme Differences	Absolute	.103	.127
	Positive	.060	.091
	Negative	-.103	-.127
Test Statistic		.103	.127
Asymp. Sig. (2-tailed)		.200[c,d]	.184[c]

a. Test distribution is Normal.
b. Calculated from data.
c. Lilliefors Significance Correction.
d. This is a lower bound of the true significance.

Table 2. The Result of Homogenity

Test of Homogeneity of Variances

XI1

Levene Statistic	df1	df2	Sig.
2.082	9	19	.085

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3. Result dan Discussion

The first hypothesis is to analyze the presence or absence of the influence of the Discovery Learning model with Mind Mapping on historical learning outcomes using SPSS version 23, obtained significance (sig.) = 0.000 < 0.05. This means that the statistical hypothesis (H0) is rejected and (Ha)

is accepted. It can be concluded that there is an influence of the Discovery Learning model with Mind Mapping on the historical learning outcomes of students of class XI in SMA 1 Tenggarang.

Table 3. Paired Samples Correlations 1

Paired Samples Correlations

		N	Correlation	Sig.
Pair 1	pretest & postest	34	.774	.000

Based on the research using Paired Samples Test analysis, it can be seen that there is a significance value (sig.) = 0.000 <0.05. This means that the statistical hypothesis (H0) is rejected and (Ha) is accepted. It can be concluded that there is an influence of the Discovery Learning model with Mind Mapping on the historical learning outcomes of students of class XI in SMA 1 Tenggarang. This can be seen from the average value of the experimental class after applying the Discovery Learning model with Mind Mapping which is equal to 87.6. Whereas the average value before the enactment of the Discovery Learning model with Mind Mapping was 77.3, so the hypothesis is accepted.

The application of the Discovery Learning model requires students to play an active role in the learning process. When the Discovery Learning and Mind Mapping models combined with historical learning will trigger students to play an active role in learning activities in the classroom. This is because with the Discovery Learning model with Mind Mapping, historical learning becomes more interesting.

Therefore, the application of the Discovery Learning model with Mind Mapping can affect the learning outcomes of students of class XI at SMAN 1 Tenggarang. So, the application of the Discovery Learning model with Mind Mapping can help students find their own knowledge and make it a creative idea because it is contained in a mind mapping so that historical learning becomes meaningful. The application of the Discovery Learning model with Mind Mapping in class XI in Senior High School 1 Tenggarang deadline not only has an impact on learning outcomes, but also has an impact on students' learning activities.

The second hypothesis, which is to analyze the presence or absence of the influence of the Discovery Learning model without Mind Mapping on the results of historical learning using SPSS version 23, obtained significance (sig.) = 0.000 <0.05. This means that the statistical hypothesis (H0) is rejected and (Ha) is accepted. It can be concluded that there is an influence of the Discovery Learning model without Mind Mapping on the historical learning outcomes of students of class XI in SMA 1 Tenggarang.

Table 4. Paired Samples Correlations 2

Paired Samples Correlations

		N	Correlation	Sig.
Pair 1	pretest & postest	35	.944	.000

Based on the research using Paired Samples Test analysis, it can be seen that there is a significance value (sig.) = 0.000 <0.05. This means that the statistical hypothesis (H0) is rejected and (Ha) is accepted. It can be concluded that there is an influence of the Discovery Learning model without Mind Mapping on the historical learning outcomes of students of class XI in SMA 1 Tenggarang. This can be seen from the average value of the control class after the implementation of the Discovery Learning model without Mind Mapping which is equal to 80.45. As for the average value before the enactment of the Discovery Learning model without Mind Mapping of 76,7, so the hypothesis was accepted.

The application of the Discovery Learning model without Mind Mapping also affects the historical learning outcomes of students of class XI in SMAN 1 Tenggarang, in addition to the Discovery Learning model with Mind Mapping. However, the average students get higher in the class that applies the Discovery Learning model with Mind Mapping. Thus, the Discovery Learning model with Mind Mapping is better.

The application of the Discovery Learning model has advantages such as those expressed by Castronova (2002), namely (1) students become active in learning activities because students think and use the ability to find the end result; (2) students lecture learning, because they experience the process of discovering their own knowledge; and (3) students gain knowledge with the discovery method will be better able to transfer their knowledge to various contexts. Thus the learning process with the Discovery Learning model makes it easier for students to remember a learning for a long time.

The third hypothesis is to analyze whether there is a difference in the influence of the Discovery Learning model with Mind Mapping and the Discovery Learning model without Mind Mapping on historical learning outcomes obtained significance (2 tailed) = 0.000 < 0.05. This means that the statistical hypothesis (H0) is rejected and (Ha) is accepted. It can be concluded that there are differences in the effect of learning outcomes on the experimental class, namely by applying the Discovery Learning model with Mind Mapping and the control class by applying the Discovery Learning model without Mind Mapping.

Table 5. Independent Sample Test

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
nilai	Equal variances assumed	.078	.781	4.478	67	.000	7.190	1.605	3.985	10.394
	Equal variances not assumed			4.471	65.765	.000	7.190	1.608	3.979	10.401

Based on the research using the Independent Sample t-Test analysis which can be known the significance (sig.) = 0.000 <0.05. Independent Sample t-Test is used to test the differences in historical learning outcomes (post test), namely between the experimental class (Discovery Learning model with Mind Mapping) and the control class (Discovery Learning model without Mind Mapping). This means that the statistical hypothesis (H0) is rejected and (Ha) is accepted. It can be concluded that there is a significant difference between the post test results in the experimental class (Discovery Learning model with Mind Mapping) and the control class (Discovery Learning model without Mind Mapping). The average value obtained by the experimental class is 87.6 and the average value of the control class is 80.45. This proves that there are differences in learning outcomes after each class gets a different treatment.

Based on the opinion of Thorset (2002: 1) the Discovery Learning model is a learning situation where the subject matter being studied is not given, but students must find their own knowledge and make students active in the learning process. This means that the knowledge gained will last a long time because students are directly involved in the learning process. Research on the influence of the Discovery Learning model on learning outcomes by Balim (2009) revealed that through Discovery Learning, educators can direct students to be able to deal with various problems and help students to support in overcoming difficulties in learning. Thus the learning outcomes of students are getting better

The Discovery Learning model that is applied in historical learning, namely in the control class has a good influence on learning outcomes. This is evident from the difference in the average value obtained between the pre test is 76.7 and the post test is 80.45. However, the Discovery Learning model with Mind Mapping is better than just the Discovery Learning model. This is evident from the average obtained in the experimental class (Discovery Learning model with Mind Mapping), namely the pre test with a value of 77.3 and post test with a value of 87.6. The average value of the experimental class is higher than the control class. Thus, it can be concluded that the application of the Discovery Learning model with Mind Mapping has a higher influence on the learning success of students especially in history learning compared to the Discovery Learning model without Mind Mapping.

4. Conclusions

Based on research, conclusions can be taken as follows:

1. There is the influence of the Discovery Learning model with Mind Mapping on the results of historical learning in students of class XI at SMAN 1 Tenggarang which is equal to significance (sig.) 0,000 <0.05. This means that the statistical hypothesis (H0) is rejected and (Ha) is accepted.
2. There is the influence of the Discovery Learning model without Mind Mapping on the results of historical learning in students of class XI at SMAN 1 Tenggarang which is equal to significance (sig.) 0,000 <0.05. This means that the statistical hypothesis (H0) is rejected and (Ha) is accepted.
3. There are differences in the influence of student learning outcomes between the Discovery Learning model and Mind Mapping (experimental class) and Discovery Learning models without Mind Mapping (control class) with a significance level (sig.2 tailed) 0,000 <0.05. The difference can be seen from the post test results obtained by students after obtaining treatment in the learning process. This means that the statistical hypothesis (H0) is rejected and (Ha) is accepted.

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