

**PENGARUH MODEL PEMBELAJARAN GENERATIF TERHADAP
HASIL BELAJAR MATEMATIKA BERBASIS DIMENSI KOGNITIF
TAKSONOMI BLOOM**

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**THE INFLUENCE OF GENERATIVE LEARNING MODEL TOWARDS
LEARNING'S ACHIEVEMENT IN MATHEMATICS BASED ON
COGNITIVE DIMENSION OF BLOOM'S TAXONOMY**

by

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ABSTRACT

The objective of this research is to analyze the influence implementation generative learning model towards learner's achievement in mathematics based on Cognitive Dimension of Bloom's Taxonomy. Population in this research is all learners grade VII in SMP Negeri 1 Kaliwungu and samples are learners in class VII A as control sample and VII D as experiment sample. Sampling technique used by researcher is Cluster Random Sampling. Data collecting methods in this research is documentation method and test method. Technique of data analysis is Mean Difference Testing; prerequisite test is using Liliefors method to test normality and Bartlett to test homogeneity. The result of data analyzing with significant level 5%, there is influence generative learning model towards learner's achievement in mathematics based on cognitive dimension of bloom's taxonomy with $z_{\text{computation}} = 2,289$.

Keywords: Generative learning model, conventional learning model, taxonomy bloom.

1. Introduction

Education is the need of all human beings in this world, both children and adults, even old peoples are also still need it. Education can make people's lives better, peaceful, and safe also comfort. According to John Dewey, education is process of establishing fundamental basic skills, both related to the intellect or intellectual faculties, and emotional power or feelings directed against human nature and to one another (Faturrahman dkk, 2012: 4).

In Indonesia, education may be said to lag behind other countries. It can be seen from the results of the research Programme for International Learner Assessment (PISA) in 2009, the average mathematics score of learners in Indonesia is 371. Based on the value of Indonesia is ranked 61st out of 65 countries. Indonesia ranked slightly higher than Qatar, Peru, Panama, and Kyrgyzstan. However, Indonesia lags far with Thailand, who is ranked 50th and Singapore is ranked 2nd (PISA, 2010: Annex).

The survey Trends in International Mathematics and Science Research (TIMSS) in 2011 also showed similar results. The average value of mathematics learners in Indonesia is 386 and Indonesia ranked 38th out of 63 countries surveyed by TIMSS. Indonesia ranked slightly higher than Morocco, Oman and Ghana, but Indonesia is far behind from Thailand and Malaysia.

On 21 April 2013, the entire Junior High School (SMP) in Indonesia held a National Examination (UN) to four (4) subjects, namely Indonesian, English, Mathematics, and Science. On 1 June 2013, the results were announced. From 3.650.625 learners participating in UN and 16.616 learners did not pass, but the achievement used is not pure. It's combined between achievement of UN and achievement of School. However, if it's only use pure achievement of UN, then the 44.45% or approximately 1,622,702 learners do not pass the exam. This is show that learner's achievements are still very low and rule of school is still very dominant. In mathematics, the mean of pure achievement in UN is 5.78. This is a fairly low achievement (Konpers Hasil UN Tahun Pelajaran 2012/2013, 2013).

Based on the results of the UN Academic Year 2012/2013, in the area of Central Java, learners of junior high school who do not pass the exam are 1.118 learners of 492.217 learners and it is ranked 4th for areas that have number of learners who did not pass. This is show that education in Central Java is not maximized and still in need of repair (Konpers Hasil UN Tahun Pelajaran 2012/2013, 2013).

The description above shows that there is still a problem in the learning process, especially with regard to quality of teachers in Indonesia. Based on the results of a survey released by World Bank in 2011, World Bank concluded that quality of teachers in Indonesia is still low. The survey of 50 countries in the world put education in Indonesia lower under Brazil and Mexico (Lembaga Partner Survey Aceh, 2012).

The low quality of teachers in Indonesia led to decreased quality of learning as well. To fix learning process needs to be developed a learning model that is appropriate, innovative, and can improve performance of learners. One of mathematical learning model is Generative learning model.

Generative learning model is a learning model which is based on view of constructivism with the basic assumption that knowledge is constructed in the minds of learners. This model was developed by Osborne and Wittrock. Generative learning model is a learning model that emphasizes the integration of a new knowledge using the knowledge he already owns (Wittrock, 1991: 531).

Generative learning model is a model that can improve cognitive abilities and learning outcomes of learners in mathematics. This is supported by research Lily Suryani (2010) concluded that implementation of generative learning model can improve critical thinking skills and learner learning outcomes. Agina Anggraeni (2011) concluded that implementation of generative learning model can improve ability of reasoning and learning outcomes of learners.

Based on description above, researcher want to do a research “**The Influence of Generative Learning Model Towards Learner’s Achievement in Mathematics Based on Cognitive Dimension of Bloom Taxonomy**”

2. Research Method

Type of research that is used is experimental research, that is the method used to find the effect of a particular treatment against the other under controlled conditions. In this research, independent variable is learning model

and dependent variable is result of learning mathematics. In this case, the effect of implementation of generative learning model to learner's achievement in mathematics that will be based on cognitive dimensions of taxonomy bloom.

The research was conducted by dividing the sample into two groups, namely experimental group will apply generative learning model and control group will be applied to the conventional learning model. The experiment was conducted at SMP Negeri 1 Kaliwungu that is located in kaliwungu village, kaliwungu district, Semarang regency, Central Java. The population of this research were all learners of class VII semester consisting of 36 learners in each class. Researchers took two samples, namely VII Class D as experimental group and Class VII A as a control group.

The sampling technique used was cluster random sampling. Cluster random sampling is a sampling technique that is used to determine if sample to be studied object or data source is very broad. Before being given treatment or stimulus, both samples must be tested balance.

Methods of data collection using test method in the form of essay and documentation. Before test instrument used should be tested first to determine the validity and reliability of instrument. To determine the validity of instrument, instrument was tested with a product moment correlation technique and level of reliability of instrument using Cronbach alpha coefficient.

The data analysis technique used Mean Difference Testing. Before analyzing data, prerequisite test must be done, namely normality testing uses Liliefors method and homogeneity testing uses Bartlett method.

3. Research result and Explanation

Normality testing is a test that determines whether data analyzed are normally distributed. Method used in normality testing is method Liliefors at significance level of 5%. Data considered normal if $L_{\text{calculation}} < L_{\text{table}}$. From calculations, normality testing results as follows:

Table of Result of Normality Testing

Liliefors	L_{calculation}	L_{table}	Decision
A₁	0,08901	0,14767	Normal
A₂	0,11935	0,14767	Normal

Note:

A₁ : Generatif learning model

A₂ : Conventional learning model

Table above shows that significance level of 5% was obtained $L_{\text{calculation}} < L_{\text{table}}$, it can be conclude that H_0 is accepted. It's averages that samples come from populations that are normally distributed.

Homogeneity testing is a test to determine whether two independent variables have same variance or not. To test homogeneity in this research, using Bartlett method with a significance level of 5%. From the calculation results of homogeneity testing as follows:

Table 4.5

Result of Homogeneity Testing

Homogeneity	$\chi^2_{\text{calculation}}$	χ^2_{table}	Decision
Learning Model (Between A₁ dan A₂)	2,849	3,814	Homogen

Keterangan:

A₁ : Generatif learning model

A₂ : Conventional learning model

From table above with a significance level of 5% was obtained $\chi^2_{\text{calculation}} < \chi^2_{\text{table}}$. It's averages that independent variables have the same variance, or in other words the data analyzed are from same population or homogeneous.

With fulfillment of nature of normality and homogeneity, then Mean Difference Testing can be performed. Result of mean difference testing is $Z_{\text{calculation}} = 2,289$ dan $Z_{\text{table}} = 1,6669$. Because $Z_{\text{calculation}} > Z_{\text{table}}$, then H_0 is rejected. It can be concluded that Generative Learning Model is better than Conventional Learning Model towards learner's achievement in mathematics

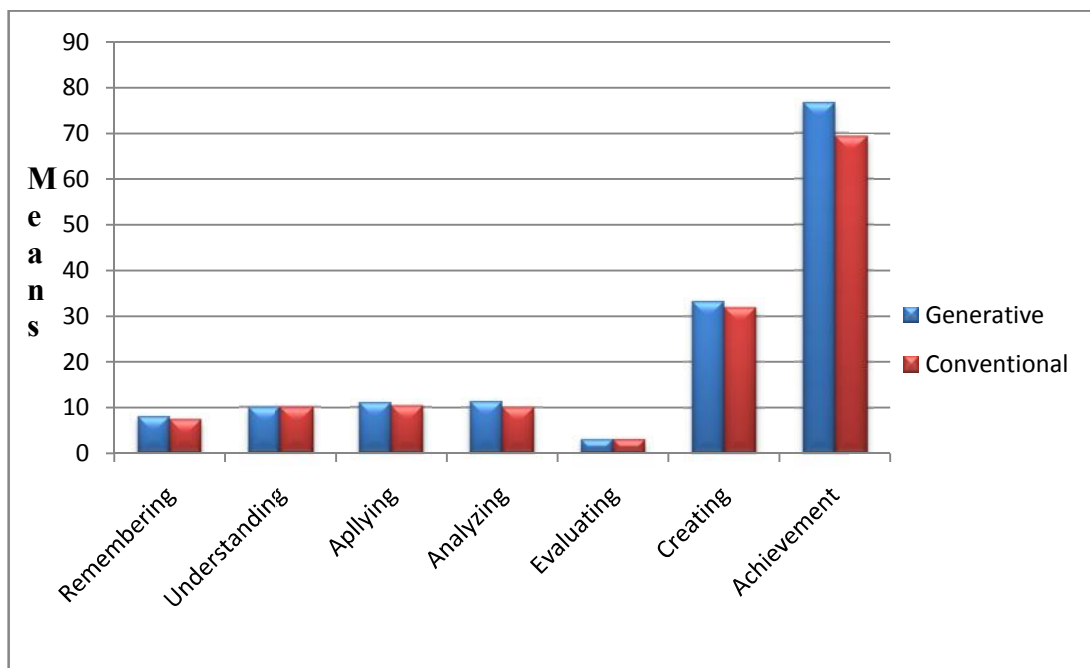
in SMP Negeri 1 Kaliwungu. Its means that there is influence implementation Generative Learning Model towards learner's achievement in mathematics.

From above, it known that there is influence implementation of generative learning model towards learner's achievement in mathematics. For next step, it will analyze influence generative learning model and conventional learning model towards learners learning's achievement in mathematics based on cognitive dimension og bloom's taxonomy. This conditions can be presented in tables and graphs of averages of learner's achievement in mathematics as follows:

Table of Averages of Learner's Achievement in Mathematics Based on Cognitive Dimension of Bloom's Taxonomy

A \ B		Cognitive Dimension of Bloom's Taxonomy						Nilai
		B ₁	B ₂	B ₃	B ₄	B ₅	B ₆	
Learning Model	A ₁	8	10	11,111	11,333	3	33,306	76,750
	A ₂	7,333	10	9,583	8,861	3	30,583	69,361

Graph of Averages of Learner's Achievement in Mathematics Based on Cognitive Dimyion of Bloom's Taxonomy



The difference of learners learning's achievement in mathematics by learners also cause difference on achivement in cognitive dimension of bloom's taxonomy (Remembering, Understanding, Applying, Analyzing, Evaluating, and Creating). It can be seen at table and graph above. It's show that learners learning's achievement in mathematics which is using generatif leaning model is better than learners learning's achievement in mathematics which is using conventional learning model. Achievement in cognitive dimension of bloom's taxonomy by generative learning model is better than Achievement in cognitive dimension of bloom's taxonomy by conventional learning model. At table and graph above show that learner's achievement which is using generative learning model in applying, analyzing, and creating categories are better than learner's achievement which is using conventional learning model in applying, analyzing, and creating categories.

4. Conclusion

Based on results of analyzing and explanation that has been done, then can be taken conclusion that is there is influence of implementation Generative Learning Model towards learner's achievement in mathematics based on Cognitive Dimention of Bloom's Taxonomy in SMP Negeri 1 Kaliwungu.

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