



## Research Article

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# Meaningful Learning Model: The Impact on Students' Reading Comprehension

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## Abstract

The purpose of this study is examining the impact of meaningful learning model on students' reading comprehension. This study uses true experimental research with pretest-posttest control group design. The class is divided into two classes; experimental class who receives treatments by using meaningful learning model and control class who receives treatments by using conventional teaching model. The total of sample is 110 students who are selected from eight grade students of junior high schools either state or private schools in Central Java Province. To obtain valid data, this study uses tests given at the pre-test and post-test in both classes. After the data is obtained, the data is analyzed by using the SPSS *t*-test formula. Based on the results of the calculations in the pretest and posttest, it was known that both classes are homogeneous and normally distributed from the calculation of the Levene's test method and Saphiro-Wilk. In the pretest, *t*-count (0.452) is lower than *t*-table (1.982), whereas in the posttest, *t*-count (2.361) is higher than *t*-table (1.982). This indicates that meaningful learning model has an influence on student grades in reading comprehension rather than using conventional teaching model.

**Keywords:** meaningful learning, learning model, reading comprehension

## 1. Introduction

The current curriculum in Indonesia requires teachers to be able to increase student participation and achievement that are not only on the cognitive aspects, but also attitudes and skill aspects as stated in Indonesian curriculum through regulation of the Minister of Education and Culture no 58. Mystakidis et al., (2019) stated that the purpose of curriculum in schools is to facilitate students to acquire skills and competencies and to update their life.

One of the challenges faced by English teachers is the availability of learning materials using innovative learning strategies that could engage student to be active in class. But in reality, teachers still do not understand very well the true nature of English language teaching and have not touched the domain of students' competency development. This raises problems in learning English where student achievement is still low. This is proven by the decline in the national examination scores of English subjects released by the Ministry of Education and Culture of the Republic of Indonesia on the aspects of social function and linguistic elements that are still low (Kemdikbud, 2017). This result was also in line with the results of international assessments published by PISA (Program of International Student Assessment) which stated that students' reading ability was still low (Widana, 2017).

In some cases, students are difficult to understand and interpret texts (Clarence, 2019) and they are lack in comprehension, fluency, and decoding (Vaughn et al., 2019). Indonesian EFL students do not have regular English reading practice since they do not understand the content of English reading materials and encounter a lot of unfamiliar words that obstruct their reading comprehension (Reswari, 2018). Besides that, the lack of facilities and resources for teaching English also appears because of the limitation of the budget to buy instruction media (Hawanti, 2014). On the other hand, teachers have to teach large class in which forty to fifty students learn together which ask teachers to use traditional teaching model and individual learning method (Khan & Ahmad, 2014).

To overcome the problems, teachers should find appropriate teaching model which enables students better understanding of the printed and online materials. By implementing teaching model, students could enhance their own learning (Brown, 2007). One of them is by implementing meaningful learning in class teaching. If students can establish a bond between newly learned knowledge and the information that is in his cognitive structure, meaningful learning comes true (Meydan, 2018). Meaningful learning is closely related to the constructivism theory introduced by Vygotsky. In constructivism theory, students construct knowledge or create meaning as a result of thought and interaction in a social context. This theory is known as the theory of meaning creation. Furthermore, this theory was developed by Piaget who stated that each individual creates new meaning and understanding based on the interaction between what he already has, knows and believes with new phenomena, ideas or information learned. Meydan (2018) stated that American psychologist David P. Ausubel has drawn a frame for the theory depending on Jean Piaget's studies on the cognitive development and learning in his comprehensive study of "The Acquisition and Retention of Knowledge: A Cognitive View".

Meaningful learning refers to learning that involves the active participation of students in experiences that are cognitively engaging (Koh, 2017). This learning is a process for linking new information to relevant concepts contained in students' cognitive and the intentional connecting of new information to anchored ideas or prior knowledge (Perlman et al., 2010). Meaningful learning is first introduced by (Ausubel, 2000) where meaningful reception learning primarily involves the acquisition of new meanings from presented learning material. This concept explains that the knowledge learned is fully understood by students and that students already have an organization and clarity about knowledge in a particular field. This organizational structure can lead students to associate the relationship of new material with the cognitive structure that is already owned by them.

Ausubel (2000) classifies learning into two dimensions; The first dimension relates to the presentation way of material received by students. Through this dimension, students obtain information through reception and discovery. The second dimension concerns the way students learn new information with existing cognitive structures. If students try to memorize information without connecting concepts that already exist in the cognitive structure, then there is memorization. However, if students connect new information with concepts that already exist in their cognitive structures, meaningful learning occurs.

Meaningful learning seeks to engage students to 1) be active through learning experiences. Meaningful learning stimulates students to be actively involved in meaningful tasks where they manipulate objects and environments and observe results as meaningful experiences. 2) Meaningful learning requires students to actively construct their knowledge, not passively. 3) Meaningful

learning refers to the concept where learning will be effective if there is collaboration and interaction between students. 4) Authentic learning is a learning approach that allows students to explore, discuss, and build meaningful concepts and relationships, which involve real problems and projects that are relevant to students. 5) The last is intentional dimension which is used to analyze how learning experiences addresses the motivations and goals of students (Koh, 2017).

Many studies state that meaningful learning is beneficial in learning as described by Y. M. Huang & Chiu (2015) who state that meaningful learning can be applied well in the learning assessment process. Hakkarainen (2011) indicates that video production supported problem-based learning can promote students to learn meaningfully. Besides that, design factors (i.e., student engagement, group structures, and organization) influence the nature and degree of meaningful learning (Johnson et al., 2017).

Reading could be interpreted as an understanding the meaning of printed words. It is an active process which consists of recognition and comprehension skill (Patel & Jain, 2008) and a basic skill for learning at every stage of education process (Kanik & Bilge, 2018). A student's reading skill is essential to learning (Severino, Jean, Decarlo, & Sondergeld, 2018). Therefore, in language teaching, reading plays an important role in course achievement because it is a source of information (Esmer & Melih, 2019) and aims to develop students' decoding skills and knowledge of syntax or vocabulary for literal comprehension (Huang & Yang, 2015) and usually relates to pleasure, information and general understanding (Kredátusová, 2016). When students as readers are not comprehended, they are not reading (Nejabati, 2015). It could be point out that the objective of reading is to read for meaning or recreate writer's meaning.

The process of reading could be elaborated into three stages; recognition, structuring, and interpretation stage (Patel & Jain, 2008). In recognition stages, students recognize the graphic counterpart of the phonological item such as recognizing spoken words. Structural stage urges students to analyze the syntactical relationship of the items and understands the structural meaning of the syntactical units. Interpretation stage asks students to comprehend the significance of words, phrases, and sentences in the overall context.

According to Gough and Tunmer in Stott & Beelders (2018), reading comprehension is the product of decoding and language comprehension. Decoding refers to recognize written words, while language comprehension refers to understanding the language; surface, situation, and global representation. Students as readers can enrich the meaning of the text depending on past knowledge, upper-level linguistic processes and context knowledge during this process (Bastug & Demirtas, 2016). This statement infers that there is correlation between students' reading fluency and their comprehension of the text which is in line with Robinson, Meisinger, & Joyner (2019) who state that reading fluency supports reading comprehension. Reading fluency is considered to be a powerful predictor of reading comprehension (Bastug & Demirtas, 2016).

Reading comprehension is assumed to be the ability to construct meaning before, after and during reading through linking reader's background knowledge and the presented information by the author in the context. It is constructing an acceptable accurate meaning by making the connection between what has been read to what the readers already know and think about all of this information until it is recognized (Ahmami Gillani (2012 in Nejabati, 2015). Reading comprehension includes the complex cognitive processes that need to be used in conjunction with reading activity to provide readers the opportunity to understand the meaning from a reading material (Iltter, 2017)

Some studies indicate that no one instructional method and particular learning strategy is more effective than others in improving students reading comprehension (Alharbi, 2015). Javadi & Mohammadi (2019) show that CDA-based instruction can influence significantly on EFL students' reading comprehension. Cooperative learning is more effective instructional paradigm for improving reading comprehension as compared to the traditional teaching method (Khan & Ahmad, 2014).

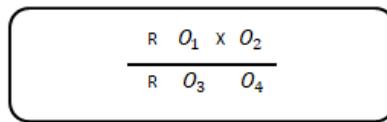
This study is aimed at examining the effect of meaningful learning as teaching model toward students' reading comprehension. This research used two classes to compare the model used; experimental class and control class.

## 2. Methodology

This research used true experimental research method because it provided completely adequate controls for all sources in internal invalidity (Tuckman, 2000). Experiments are carried out in order to explore the strength of relationship between variables (Nunan, 2002). In implementing the research design, this study applied pretest-posttest control group design where two classes were employed; experimental class and control class.

There were two variables in this study; independent variable and dependent variable. The independent variable was meaningful learning method (X) for experimental class and conventional teaching model for control class, while the dependent variable in this study was students' reading comprehension (Y). It assumed that students' reading comprehension might be influenced by the teaching model.

This research procedure can be illustrated by the diagram below.



The participants of this study both the experimental class and the control class were all randomly selected (R symbol). Pre-test was done on both classes which were symbolized by  $O_1$  and  $O_3$ , while post-tests were carried out on both classes which were symbolized by  $O_2$  and  $O_4$ .

Treatments were given to both classes at different times. Each treatment was carried out twice. For the experimental class, students received classroom learning by using meaningful learning models with four main steps; advance organizer, concept of elaboration, subordinate learning, and integrative adjustment as elaborated by Ausubel (2000). Initial conditioning (or advance organizer) in the learning process would direct students to connect material that already exists in their cognitive structure with new material and help them to remember that information. As long as meaningful learning took place, there would be development and elaboration of concepts in the way the most common elements were introduced first after that specific or detailed matters would be discussed. After that, students learnt these concepts in an inclusive and broad manner so that new things would be found. At some point, students would realize that two or more concepts would have the same meaning. That concept happened when students would learn integrative in connecting these concepts.

### 2.1 Participants

The participants of this study were 8th grade students of junior high school either private or state schools which spread over 15 schools in Central Java province with a total population of 440. Research participants had received English language material, especially reading with a genre-based approach in accordance with the applicable curriculum in Indonesia. The number of samples taken was 110 which were divided into two classes; experimental class and control class.

### 2.2 Data Collection

To obtain good research data, the instrument used in this study was a test. The type of test used was an objective test with a multiple-choice type consisting of four answer choices; one correct answer choice and three distractors. The test instrument was used to determine students learning outcomes on cognitive aspects. The test instrument used to obtain the test data has passed the instrument validity test through the internal validity of the test item. In practice, the test was carried out twice;

pre-test and post-test. Pre-test was used to determine the initial conditions of students before being treated, while the post-test was used to determine students learning outcomes after being treated. The treatments used in the two classes that became the study sample were different. For the experimental class, students were treated using a meaningful learning model. While for the control class, students were given treatment using conventional learning model.

### 2.3 Data Analysis

After the data was collected, the data would be analyzed through the statistical t-test formula using SPSS type 20. The purpose of this analysis was to determine the results of the treatment given to the experimental class and the control class at the time of pre-test and post-test. Before t-test was implemented, the writers would do 1) homogeneity test to determine whether the research sample was homogeneous or heterogeneous and 2) normality test to find out whether the research data was normally distributed or not.

### 3. Finding and Discussion

The first step taken in the study was to conduct a pre-test to two classes that became research sample. After the data was obtained through a test instrument, the data was carried out preliminary analysis in the form of normality test and homogeneity test before the t-test analysis. Based on the calculation of normality test by using Shapiro-Wilk, it was obtained that the data in this study were normally distributed where the p-value (Sig) 0.07 was greater than 0.05. The result of homogeneity test could be seen below:

Table 1: Test of Homogeneity of Variance

		Levene Statistic	df1	df2	Sig.
Score	Based on Mean	1,556	1	108	,215
	Based on Median	1,525	1	108	,219
	Based on Median and with adjusted df	1,525	1	106,257	,220
	Based on trimmed mean	1,554	1	108	,215

The table above showed the results of homogeneity test with the Levene's test method. The Levene's test in the table above was shown by the mean value of 1.556 with p-value (Sig) of 0.215 where the p-value was higher than 0.05. It means that there are similarities between groups or can be called homogeneous. Because the calculation of the data was normal and varied, then the data analysis could be proceeded with t-test analysis.

Table 2: Mean Scores of Pre-test

Group Statistics					
	Class	N	Mean	Std. Deviation	Std. Error Mean
Score	Experiment	55	76,8909	7,05185	,95087
	Control	55	76,3273	5,99708	,80865

From the calculation of the mean above it was known that the mean score for the experimental class was 76.89 and the mean score for the control class was 76.32. This showed the mean score of the experimental class was greater than the mean score of the control class even if it was slightly adrift. This was because the two classes had not been treated especially for the experimental class which was treated by using meaningful learning models.

Hypothesis testing was used to test whether or not there are differences in the results of the two

classes that were treated where the experimental class was treated using meaningful learning models and for the control class using conventional learning models. The criterion of the hypothesis could be formulated 1) if t-count was lower than t-table ( $t\text{-count} < t\text{-table}$ ), null hypothesis ( $H_0$ ) was accepted, and 2) if t-count was higher than t-table ( $t\text{-count} > t\text{-table}$ ), working hypothesis ( $H_a$ ) was accepted. This research hypothesis could be formulated like the following:

### 3.1 Research Hypothesis

$H_0$ : There is no significant difference between students who are taught by using meaningful learning model with students who are not taught by the model.

$H_a$ : There is significant difference between students who are taught by using meaningful learning model with students who are not taught by the model.

**Table 3:** T-test Calculation of Pre-test

		Independent Samples Test								
		Levene's Test for Equality of Variances					t-test for Equality of Means			
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
								Lower	Upper	
Score	Equal variances assumed	1,556	,215	,452	108	,652	,56364	1,24822	-1,91056	3,03783
	Equal variances not assumed			,452	105,284	,653	,56364	1,24822	-1,91129	3,03856

Based on the t-test calculation using SPSS in the above table, the t-count was 0.452 with 108 degree of freedom (df). The t-count was then converted to t-table (1.982) with 0.05 significance level where the t-count was smaller than the t-table ( $0.452 < 1.982$ ). This meant that before treatments were done there was no significant difference between the experimental class and the control class. In other words,  $H_0$  was accepted and  $H_a$  was rejected. This was because students in the two groups had not been treated using meaningful learning model for experimental class or conventional learning model for control class. On the other hand, students had been asked to answer questions in the pre-test even though they actually had gotten the material about various genres.

After the pre-test, the two classes were given treatments where each class got the treatment of learning English for two meetings using different learning models. For the experimental class, students learnt English by using a meaningful learning model with four main steps (advance organizer, concept of elaboration, subordinate learning, and integrative adjustment) combined with a scientific approach as stated in the curriculum. For the control class, students learnt conventionally by using textbooks and following the learning steps in the book.

The data obtained at the time of the post-test were analyzed in advance through the tests of normality and homogeneity. Based on the results of the normality test, it was known that the data in this study had a normal distribution. This was evidenced by the Shapiro-Wilk test where the p-value 0.109 is greater than 0.05. The result of homogeneity test could be found in the following table.

**Table 4:** Test of Homogeneity of Variance

		Levene Statistic	df1	df2	Sig.
Score	Based on Mean	1,478	1	108	,227
	Based on Median	1,582	1	108	,211
	Based on Median and with adjusted df	1,582	1	107,464	,211
	Based on trimmed mean	1,417	1	108	,236

The homogeneity test using Levene’s test method in the post-test showed that the mean score is 1.478 with p-value (Sig) of 0.227 where the p-value was higher than 0.05. It meant that the two classes or groups were similar or it could be said that the classes were homogeneous. By looking at the preliminary test above (normality and homogeneity test), then the t-test could be carried out to determine whether there was an effect of the treatments given to the experimental class and the control class.

**Table 5:** Mean Scores of Post-Test

	Class	N	Mean	Std. Deviation	Std. Error Mean
Score	Experiment	55	82,5273	6,45742	,87072
	Control	55	79,8000	5,62863	,75896

The mean post-test score of students in the experimental class was 82.52. This mean score was higher than the mean score of the control class which showed 79.80. The mean score of the two classes had increased when it was compared with the mean score at the time of the pre-test. For the experimental class, the mean score of the pre-test was 76.89 while in the post-test it rose to 82.52. For the control class, the mean score of the pre-test was 76.32 while in the post-test it rose to 79.80. The increasing mean score was understandable because both classes had received treatments during the learning process.

**Table 6:** T-test Calculation of Post-test

		Independent Samples Test								
		Levene’s Test for Equality of Variances					t-test for Equality of Means			
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
Score	Equal variances assumed	1,478	,227	2,361	108	,020	2,72727	1,15507	,43773	5,01681
	Equal variances not assumed			2,361	106,024	,020	2,72727	1,15507	,43725	5,01730

The table above showed the result of t-test calculation in post-test. The t-count of post-test was 2.361 with 108 degree of freedom (df) and the t-table was 1.982. If the t-count was converted to t-table, then t count was greater than t-table. This meant that treatments given to the experimental class had an influence on students’ reading achievement rather than treatments given to the control class. In other words, working hypothesis (Ha) was accepted and null hypothesis (Ho) was rejected which meant there was a significant difference between the experimental class and the control class related to students’ reading achievement. This was because the experimental class had received treatments by using meaningful learning model that asked students to be active in developing reading skills. In addition, meaningful learning required students to build new knowledge based on concepts that were already owned by students with the aim of these concepts could help them to find new knowledge. At

the same time, the teacher acted as a facilitator who helped students to foster knowledge and to solve problems. Meaningful learning in the experimental class could occur because of collaboration between students in solving given problems. This result was in line with the study conducted by Johnson et al. (2017) that showed that students' engagement, group structures, and organization influence the nature and degree of deep learning.

The increasing of students' reading achievement, which was showed with mean score of both classes in post-test, included not only about the structure of the genre but also related to the mastery of their language components such as vocabulary and grammar. In the structure of genre, students could distinguish the various genres contained in reading. Students could also identify the purpose of the text, the structure of the text, and implement reading strategies.

#### 4. Conclusion

The results of this study states that the use of meaningful learning model in reading learning can improve students' reading achievement where the hypothesis in the post-test shows that working hypothesis ( $H_a$ ) is accepted and null hypothesis ( $H_o$ ) is rejected. This means that there is a significant difference between the experimental class who are taught by using the meaningful learning model and the control class who are taught by using the conventional learning model. This is because students will have more opportunities to develop their knowledge and relate it to the concepts that already exist in each student. Students will be more active in learning if it is directed towards constructive and contextual learning so that learning will be more meaningful. Meaningful learning is expected to be applied to schools in Indonesia as an alternative learning model in English language teaching. This meaningful learning model does not conflict with the principles of scientific learning as recommended by the Indonesian government.

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