Improving Students Understanding of Concept through Collaborative MURDER (Mood, Understand, Recall, Digest, Expand, and Review) Learning Model: An Experimental Study

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Abstract: The research aims at investigating whether or not there is significant influence on students' understanding of concept by implementing Collaborative MURDER in economics subject. The investigation was conducted through quasi-experimental method to the treatment class and control class. Techniques of collecting the data were written test, observation, and questionnaire distributed by the teacher to the students. The data were analyzed by using Wilcoxon's Matched-Pairs Test and Mann-Whitney U-Test calculated by SPSS 23 application pro-gram. The research result reveals that there are significant influences on students' understanding of concept on both classes taught by implementing collaborative MURDER learning models and conventional models before and after treatment. Furthermore, there is a different level of students' understanding of concept on both classes taught by implementing collaborative MURDER learning models and conventional models after treatment.

1 INTRODUCTION

In the learning process, the ability to understand must be absolutely owned by the students. Since it is related to Bloom's Taxonomy, this students' ability is included in the cognitive process dimension level two. This means that understanding ability is the important ability that must be owned by the students, because if the students do not have it, then the students will never be able to follow the next learning process which needs the high level of thinking abilities such as applicating (C3), analyzing (C4), evaluating (C5), and creating (C6).

In the reality, students' ability to understand the materials and learning concepts is still low. This is proven by the survey results of PISA (Programme for International Student Assessment) held by OECD (Organization for Economic Cooperation and Development) which shows that in 2015, from 72 countries, Indonesia is in the 64th position. Besides, based on the median score, students' reading achievement is increasing from 337 in 21012 to 350 in 2015. Generally, this survey result shows that students' ability in Indonesia in mastering and understanding the materials is still low compared with the other countries in South Asia.

To improve students' understanding, teacher's role in the learning process is not only as knowledge conveyor but also to plant and cultivate knowledge and guide the students to study independently while the teacher monitors the development. The learning process that can train students' understanding ability is the learning process which is student centered. With this principle, students will try to construct their knowledge to get the whole understanding as the result of the learning process.

One of the examples of learning models that refers to student centered principle is Collaborative MURDER learning model that is learning model which emphasizes on the cooperation of several students in the group to reconstruct their knowledge and understanding on a concept. In addition, Collaborative MURDER is also a learning model that focuses primarily on the ability to understand students' concept of understanding, it can be seen from the collaborative learning process MURDER consisting of several steps.

Specifically, Gokhale (2004) explained, "Collaborative learning refers to an instruction method in which various performance levels at work are responsible for helping one another to be successful".

Nevertheless, the result of the previous empirical study showed that factors and models can influence the improvement of understanding and show the different results. Based on the research result by Ali Saeedi et. al (2013) shows that the learning model that has the positive influence towards the students' understanding is mapping concept model, while research by Rasaya Marimuthu (2013) shows that understanding is significantly influenced by Cooperative Learning model. Based on those results, there is still no consistent variable that can improve students' conceptual understanding consistently. This inconsistency in the previous empirical research

motivates the writer to study the understanding concept with Collaborative MURDER model.

In the other hand, not all teachers are able to apply the Collaborative MURDER learning model which is believed to be able to train students' comprehension abilities as a whole and comprehensive. This is evident from the use of conventional teaching model (lecture) which is still the main choice for teachers in Indonesia. One of the most visible impacts of the conventional learning is the low ability of students to understand the material. This can be seen from the daily assessment of the 11th Grade of Social Class SMA Negeri 1 Tasikmalaya in table 1.

Table 1: Recapitulation of Daily Assessment Score of Economics at the 11th Grade of Social Class Academic Year 2016-2017

``	Test	Minimum Score	Students' Score ≥ Minimum Score		Students at the Minimum Score	
			Students	%	Student	%
Recapitulation of Daily Assessment XI IPS 1						
1	TEST 1	78	11	33,30	22	66,50
2	TEST 2	78	14	42,40	19	57,60
Recapitulation of Daily Assessment XI IPS 2						
1	TEST 1	78	12	37,50	20	62,50
2	TEST 2	78	29	90,52	3	9,37
Recapitulation of Daily Assessment XI IPS 3						
1	TEST 1	78	10	31,25	22	68,50
2	TEST 2	78	10	31,25	22	68,50
Recapitulation of Daily Assessment XI IPS 4						
1	TEST 1	78	8	25,00	24	75,00
2	TEST 2	78	23	71,87	9	28,13

2 LITERATURE REVIEW

Basically, the process of learning and knowledge is always dynamic, there is always change or renew-al. In this position, students are required to have an understanding in order to be able to link the previous learning with new learning.

On the other hand, Anderson and Krathwohl (2001: 66-88) states that understanding is the ability to formulate the meaning of the message learning and ability to communicate it in the form of oral, written, and graph. Students understand when they are able to determine the relationship between the newly acquired knowledge and their past knowledge. Understand categories consist of cognitive processes Interpreting, Exemplifying, Classifying, Summarizing, Inferring, Comparing and Explaining.

One of the learning models that can improve students' concept of understanding is Collaborative MURDER learning model. This learning model is a model of learning adapted from The Complete Problem Solver written by John R. Hayes. MURDER

is an acronym of the six learning steps. According to Hayes, John R (1940: 121), that "The Acronym MURDER stands for the six parts of Dansereau et al's (1979) study system; Mood, Understand, Recall, Digest, Expand, and Review. Referring to Hayes's opinion, the MURDER learning steps are general steps to focus on improving understanding. The steps of MURDER is as follows:

1) Mood

Mood means to set the mood in learning. Dansereau's sees two major problems in regulating mood in the learning process. First, positive behavior is in terms of overcoming fear and discomfort in learning situations. Second, it deals with confusion in learning.

2) Understand

At this stage, students are encouraged to read books or sources that have relevance to the material. Next, mark the material to be presented then ask the students to mark the piece of material that is not un-derstood.

3) Recall

After the students take the second step, namely the stage of understanding, then students are required to repeat the information that has been read.

4) Digest

At this stage, students are required to describe and conduct a more in-depth study of what has been understood. The trick is to do the deepening by reading other sources.

5) Expand

Development here can be by looking for examples of events related to the material being discussed. In this process, students will be required to link the various materials or information that can be previously.

6) Review

The review process is the step to understand the material more and to avoid forgetting.

Generally, Collaborative MURDER model is based on two learning theories. According to Piaget and Vygotsky in Sumarli, (2015: 42) argue that; "Actually, Collaborative is a learning model which is based on two learning theories, cognitive psychology learning theory, and Social constructivist." Cognitive psychology learning theory is a theory emphasizing that learning is seen as an effort to understand something. While social constructivism learning theory believes that a knowledge is built and constructed mutually, by that reason, a teacher must create many learning opportunities with teacher and friends in constructing knowledge together. This is supported by Vygotsky (1978), "Student is capable of performing at higher intellectual levels when asked to work in collaborative situations than when asked to work individually".

3 METHODS

3.1 Research Method

The method used in this research is the quasi experiment.

3.2 Research Design

The design used in research is Nonequivalent Control Group Design.

3.3 Research Object

The object of this study is the ability to understand students' concepts. While the subjects of this research

are a population consists of four classes. The population is presented in Table 2.

Table 2: Description of Data Population

Class	Students
XI IPS 1	33 Students
XI IPS 2	32 Students
XI IPS 3	32 Students
XI IPS 4	32 Students

Two samples are taken based on the above population by using Simple Random Sampling Technique. This technique took two of four classes randomly without paying attention to the degree existed in that population. From the sample collection, it is decided that Class 11 IPS 1 and 3 are the samples. Class IPS 1 is as experiment class and IPS 3 is as control class.

3.4 Data Collection Instrument

a. Understanding Test Tools
The test tool used in this research is multiple questions consist of 45 questions.

b. Observation
Observation used in this research is not a participant.

c. Questionnaire
The questionnaire is only used as data supporting the results of research and to know the students' responses towards the learning model Collaborative MURDER.

3.5 Data Analysis

Data analysis performed in this research include Normality test with Shapiro Wilk technique, homogeneity test through Levene Test, and test of nonparametric statistic hypothesis with Mann-Whitney U Test and Wilcoxon's Matched Pairs test.

4 RESULTS AND DISCUSSION

4.1 Description of Learning Model Implementation

In the experimental class that received treatment with Collaborative MURDER learning model, the first meeting, students were given pretest, then in the second to the fourth meeting, the learning was done by Collaborative MURDER learning model. Then, at the fifth meeting students were given Post-test. In general, the learning model of Collaborative

MURDER consists of six steps that are implemented in the classroom.

Steps in this learning model are suited with psychology cognitive learning theory stated that learning is seen as an effort to understand something. The adherents of this theory believe that the knowledge possessed previously determines the success in learning new knowledge. This cognitive learning theory is concerned with the realization of the exchange of concepts among group members on collaborative learning so that in a group there will be a process of transforming knowledge to each member.

Involvement of students in learning will be able to improve students' ability in improving understanding of learning materials that are being taught. This is in accordance with the theory of learning underlying the Collaborative MURDER model, the theory of social constructivism learning which assumes that students will reconstruct their knowledge through social interaction with others. Bearison and Dorval in Santrock, (2007: 390) Affirms, "the social context of learning and that knowledge is constructed and constructed together (mutual)".

4.2 Student's Response to Collaborative Learning Model MURDER

In the implementation of learning by using Collaborative MURDER model, students become more motivated to be involved directly in the learning process, because of the learning model Collaborative MURDER. This is relevant to the various learning theories that underlie this learning model, so that through this kind of learning activities can improve students' understanding because in the learning process takes place, students not only listen and record teacher explanations, but the students are directly involved in learning activities so that Students' understanding of a concept may increase.

Improved understanding of concepts formed through Collaborative Learning MURDER this happens because students can exchange information and knowledge with the environment. This is as revealed by Sudarman (2008: 94) that: "Collaborative Learning is a process of group learning that each member contributes information, experiences, ideas, attitudes, opinions, abilities, and skills to equally enhance the understanding of all members."

In Table 3 the overall student response to the Collaborative MUR-DER learning model provides a positive response. This is apparent from the answers of the majority of students who gave "Yes" more than 50% for questionnaires with positive statements. While for statements 1 and 5 are questionnaires with negative statements, however for both numbers, students give negative answers that implicitly have a positive meaning. This can be seen from the percentage of students who answered "No" answer at number 1 and 5 reached 50% more.

Table 3: Students' Response to Collaborative MURDER Learning Model

Students' Response	F	%	F	%	F	%	F	%
Number	1		2		3		4	
Yes	8	24,2	30	90,9	27	81,8	28	84,8
No	25	75,8	3	9,1	6	18,2	5	15,2
Total	33	100	33	100	33	100	33	100
Number	5		6		7		8	
Yes	12	36,4	32	97	31	93,9	28	84,8
No	21	63,6	1	3	2	6,1	5	15,2
Total	33	100	33	100	33	100	33	100
Number	9		10		11		12	
Yes	31	93,9	18	54,5	24	72,7	11	33,3
No	2	6,1	15	45,5	9	27,3	22	66,7
Total	33	100	33	100	33	100	33	100
Number	13		14		15		16	
Yes	26	78,8	14	42,4	31	93,9	31	93,9
No	7	21,2	19	57,6	2	6,1	2	6,1
Total	33	100	33	100	33	100	33	100
Number	17		18		19		20	
Yes	25	75,8	30	90,9	31	93,9	25	75,8
No	8	24,2	3	9,1	2	6,1	8	24,2
Total	33	100	33	100	33	100	33	100

Source: Student Response Questionnaire, processed data

In addition, for the 12th item, students about response students on the media used indicate a lower percentage, ie 33.3% for the "Yes" answer, while the "No" answer reaches 66.7%, the condition This is not without reason, because the conditions in the experimental class of researchers found a fairly heavy constraints, namely projector, and Screen view commonly used to damage. On the other hand, the backup projectors provided by the school are always used by other teachers.

Through this student response, we can more in detail see the students' enthusiasm in the use of Collaborative MURDER learning model, in addition, the result of this student response, we can see what things need to be improved in order to increase understanding of student concept can be more optimal. Through the good response that students show to the use of this MURDER Collaborative model, it implicitly shows that students find it helpful to understand the theories as well as the economic concepts. That is, it reinforces the theory of cognitive psychology and social constructivism theory that Collaborative MURDER model can improve students' conceptual understanding.

4.3 Data Processing

4.3.1 Research Results on Pretest and Posttest in Experiment Class

Table 5 shows the pretest and posttest score for the basic competencies tested in the experimental class using the MURDER collaborative learning model. These results show the average acquisition value of 51.91 to 76.94. As for the average increase of pretest value to the post-test value of 0.509. This means that the increase in value is moderate.

Table 4: Mean Score of Experiment Class

Students	Mean Score		
	Pretest	*Posttest*	N-Gain
33	51,91	76,94	0,509

4.3.2 Research Results on Pretest and Posttest in Experiment Class

The data in Table 5 shows the average pretest and post-test values for the basic competencies tested in the control class using the conventional learning model showing an increase from 54.89 to 72.41. However, the magnitude of the increase in the pre-test and post-test values is only 0.364. That is, the increase in value is moderate.

Table 5: Mean Score of Control Class

Students	Mean Score		
	Pretest	*Posttest*	N-Gain
32	54,89	72,41	0,364

4.4 Data Analysis Result

4.4.1 Normality Test

In this study, the normality test is performed to determine whether the data pretest and post-test results are normally distributed or not.

Table 6: Normality Test Pretest and Posttest

Class	Test	Kolmogorov Smirnov			Shapiro Wilk		
		Statistik	df	Sig.	Statistik	df	Sig.
Experi-ment	*Pretest*	0,087	33	0,200	0,979	33	0,749
	Posttest	0,121	33	0,200	0,954	33	0,177
Kontrol	*Pretest*	0,158	32	0,041	0,963	32	0,338
	Posttest	0,149	32	0,069	0,959	32	0,250

Based on normality test results, for pretest and post test grade of experiment class and control class can be seen in Table 6. Indicates that all pretest and posttest scores of both the experimental class and the control class are normally distributed.

4.4.2 Homogeneity Test

Based on homogeneity test results, for pretest and post test grade of experimental class and control class can be seen in Table 7.

Table 7: Homogeneity Test Pretest dan Posttest

Class	Levene Statistic	df1	df2	Sig.
Experiment	4,769	1	64	0,033
Control	4,343	1	62	0,041

4.4.3 Result of Hypothesis Test

a. First Hypothesis

The first hypothesis is that there is a different under-standing of the concept of the students in the experimental class group using the Collaborative MUR-DER learning model on the initial measurement (Pre-test) and on the final measurement (Posttest). Data processing is done by SPSS 23 program

Table 8: Summary of the First Hypothesis Test

Test	Students	Mean	Z hitung	*P-Value*
Pretest	33	51,91	-5,018	0,000
Posttest	33	76,94		

In Table 8, it appears that there is a probability that the average value of pretest to the Posttest value is 51.91 to 76.94. These improvements indicate that the use of the Collaborative MURDER learning model can improve students' conceptual understanding. The above data also shows that Z arithmetic reaches -5.018 with P-value smaller than 0.05, it means that the first hypothesis is acceptable that there is the different understanding of the concept of students in the experimental class group using the learning mod-el Collaborative MURDER on initial measurement (Pre-test) and on final measurement (Posttest).

b. Second Hypothesis

The second hypothesis is that there is a difference in the students' understanding of the control class using the Conventional learning model on the initial measurement (Pretest) and on the final measurement (Posttest).

In Table 9, it appears that there is an increase in the average value of pretest to the Posttest value of 54.89 to 72.41. These improvements indicate that in the control class there is also an increase in understanding of students' concept of understanding, although the increase is relatively small. In addition, the data above shows that Z arithmetic reaches -4.944 with a P-value smaller than 0.05, meaning that the second hypothesis is acceptable that there is a difference in students' understanding of the control class using the Conventional learning model on initial measurement (Pretest) and on final measurement (Posttest).

c. Third Hypothesis

The third hypothesis is that there is a difference in the comprehension of the concept of the students of the experimental class using the Collaborative MURDER learning model with the control class students using the convention-al-learning model.

Table 9: Summary of Second Hypothesis Test Result

Test	Students	Mean	Z hitung	*P-Value*
Pretest	32	54,89	-4,944	0,000
Posttest	32	72,41		

Table 10: Summary of Third Hypothesis Test Result

	Students	Mean Rank	Z hitung	*Eta Squared*	*P-Value (2-Tailed)*
N-Gain Experiment	33	40,15	-3,101	0,14794	0,002
N-Gain Control	32	25,63			

Table 10 shows that it appears that the value of t is -3.101 with the significance test value (2-tailed) 0.002. That is, H0 is rejected, the test results significantly. Thus, there is a difference in the increased understanding of concepts in experimental class students using the Collaborative MURDER learning model with control class students using the conventional learning model. On the other hand, this means that in enhancing the conceptual understanding of economic subjects, the Collaborative MUR-DER learning model tends to be more effective than conventional models.

4.5 Discussion

4.5.1 Differences Understanding Student Concept Experiment Class on Pretest and Posttest Measurements

From the result of the research, there are differences of understanding of student concept which in the learning process using the Collaborative MURDER learning model before and after treatment. In Table 4 shows an increase in the average increase that the pre test and Posttest values are from 51.91 to 76.94.

Hypothesis test results stated that Ha ¬ accepted, meaning there is a different understanding of the concept of students in experimental class groups that use Collaborative MURDER learning model on the initial measurement (Pretest) and on the final measurement (Posttest).

In practice, before the treatments are done by the researcher, the teacher teaches in a conventional way. The most visible condition of the conventional learning model is the students easily feel bored in listening to the lessons conveyed by the teacher. To reduce the saturation, the Collaborative MURDER learning model is believed to anticipate such a situation. It was proven to be a questionnaire of students' responses to the 11th item, out of 33 students in the experimental class, 72.7% gave the answer "Yes". This means that the Collaborative MURDER learning model is considered not saturated by the majority of students in the experimental class.

In the application of conventional models, teachers are generally more often present the concepts in the text of the book. This condition resulted in students lacking a deep understanding of the concept of the material discussed. In addition, the conventional learning model is less stimulate students to look for facts related to the material, because in conventional models, students are only positioned as the recipient of information and not actively involved in reconstructing their understanding.

The effects of using conventional models and the lack of innovation by teachers to improve students' conceptual understanding are evident when students are given in-depth and detailed test questions when pretest. The average result of the pretest value shows a low value.

Based on the questionnaire of students 'responses to the Collaborative MURDER learning model, the students showed positive responses on the 3rd, 4th, and 7th items. This was evident from the percentage of students answered "Yes" exceeding 80%, the students' answers to these three items proved that the Collaborative MURDER Is a model of learning that makes students understand more about the material being studied. In addition, this model makes students more active in exploring students' abilities.

The active participation of students in exploring their own capabilities has become the basis for more searching for information relevant to the material discussed in the classroom. This means that with the Collaborative MURDER learning model, students are not only positioned as recipients of information, but students become part of the information resources in the learning process in the classroom. Such conditions are believed to have implications for improving students' understanding of the concept of economics.

To create a comfortable learning condition, in the Collaborative MURDER learning model, the teacher must have the ability to improve students' learning motivation. Based on the questionnaire of student responses on such matters, on items 8 and 17, students answer "Yes" more than 70% of 33 students. That means the majority of students expect motivation and appreciation as a secondary factor in improving conceptual understanding. In addition, proper use of diction and loud voice also influences achievement in the learning process.

Finally, if analyzed from the pretest and post test results, the steps implemented in the Collaborative MURDER learning model based on these three educational theories succeeded in increasing the students' understanding of the concept significantly,

with the average normalized Gain reaching 0.509 which means moderate category.

4.5.2 Differences in Understanding Student Concept of Control Class at Initial Measurement (Pretest) and Final Measurement (Posttest)

Based on the results of the study there are differences understanding of student concepts in the learning process using Collaborative MURDER learning model before and after treatment. Table 5 shows an increase in the average increase that the pretest and post-test values are from 54.89 to 72.41.

The conventional model here means the lecture method accompanied by explanations of the division of tasks and exercises. After the conventional model has been implemented several meetings, the last meeting was held by Posttest to increase the understanding of students' concept in understanding the economic concept. The average value of Posttest achieved is 72.41 that means the average value of N-Gain is 0.364.

4.5.3 Comparison of Improved Understanding of Stu-dent Concept in Experiment Class Using Collaborative Model MURDER and Student Control Class Using Conventional Model

Based on the result of research, we get the average gain in the experimental group using the Collaborative MURDER model of 0,509. The average gain in this experimental class is higher than the average gain class gain that only reaches 0.364. This indicates that the Collaborative MURDER learning model tends to be more effective than the conventional learning model in improving students' economic concepts.

The Collaborative MURDER learning model is more effective in enhancing the understanding of concepts because the learning model focuses more on the active participation of students in the learning process. Student participation means the participation of students in an activity which is indicated by their physical and psychological behavior. For example; involving student's optimal learning will occur when students participate responsibly in the learning process. Participation is necessary for the learning process because in principle learning is doing to change behavior.

This active participation can be seen from students' physical and psychological activity such as

visual activities, Oral activities, Listening activities, Writing activities, mental activities, and Emotional activities. Such an activity, based on the assumption that understanding can be obtained by students through their own safeguards and experiences.

Through the stages in the Collaborative MURDER learning model, students become more likely to seek information related to the subject matter. In addition, the stages in Collaborative MURDER learning are also considered to be more interesting and not saturating so that students are faster and able to understand more about the concepts taught.

The effect size of the use of Collaborative MURDER model shows a very significant result to the improvement of students' conceptual understanding that is 0.147. This means that the variability of the understanding of the concept of understanding in economics subjects of 14.7% is significantly influenced by the treatment with the Collaborative MURDER learning model.

5 CONCLUSIONS

In general, from the results of the study can be concluded that the application of collaborative learning model MURDER is a method of learning that can be used in improving the students' conceptual understanding, by comparing experiment and control class, the higher improvement of students' conceptual understanding is shown by the experiment class that used Collaborative MURDER model in learning.

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