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THE EFFECT OF CONCEPT MAPPING COMBINED WITH STUDENTS' PRESENTATION METHOD ON STUDENTS' ACHIEVEMENT IN MACROECONOMICS COURSE

Sunaryanto

Accounting Department, Faculty of Economics University Negeri Malang, Malang, Indonesia
Email: sunaryanto.fe@um.ac.id

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Abstract: *Research on concept mapping method has been conducted in colleges and has indicated some advantages of the method. However, it is rarely the method is combined with another method of teaching to increase its effectiveness in increasing students' performance. The study aims to explain the effectiveness of integration of concept mapping method into classroom presentation and discussion in macroeconomics course. The participants were 156 students who took macroeconomics course at Economics Faculty of a University in East Java Indonesia. Quasy experiment is used as design of the research. By using t-Test in analyzing collected data, the result of the research shows that students taught with concept mapping method combined with student's presentation method get the higher academic achievement to compare with students taught with students' presentation and discussion method of teaching. This has the implication that students' presentation method of teaching followed by concept mapping method can increase students' achievement.*

Keywords: *Concept Mapping, Student Presentation, Teaching Method, Students' Achievement*

Introduction

Macroeconomics course is one of the subjects that must be taken by students at the faculty of economics in univercities. The course aims to make students understand the concepts in macroeconomics, such as national income, economic growth, inflation and unemployment, etc., and also understand the relationships between the concepts. To achieve the expected learning objectives, students are encouraged to actively engage in the learning proces. The important of students engagement in classroom has been sugested by some educators

considering that students engagement in classroom has impact on not only students' achievement but also attitude (Killian & Bastas, 2015). In addition, student angagement actively in learning process contribute to students' satisfaction in graduate level courses (Hyun,et.al., 2017). One way to engage students in the classroom is by implementing active learning strategy, that is a students' involvement in the learning process which allows students to focus on constructing knowldge with an emphasis on analytical thinking skill, problem solving skill and meta cognitive activities that develop students' thinking (Demirci, 2017). Implementation of active learning strategy can increase student participation and engagement in the classroom, increase student achievement and satisfaction (Freeman, et.al., 2014). Student active involvement in the learning process will also make studens' learning meaningful. Learning comes from the combination of knowledge learned, feeling felt and action taken during a particular learning experience (Wong. 2012). Learning is said to be meaningfull when information that will be learned is structured according to the students cognitive structure, therefore students are able to relate their new information with cognitive sturcture. This has been formulated by Ausubel with his assimilaltion of theory meaningful learning, in which he state that complex knowledge requires understanding of conceptual meaning to be achieved and for meaningful learing accur. There are three conditions needed for meaningful learning will accur (Novak, 2010): relevan prior knowledge, meaningful material, and the learner must choose to learn meaningfully. Before the students involve in the learning process they must know some information that relates to the new information to be learned in some non-trivial way. The knowledge to be learn must be relevant to other knowledge and must contain significant concepts and proposition. The student must conciously choose to relate new knowledge to knowledge the student already knows in some non trivial way.

A teaching methods which can be enormously useful to engage student in a learning and get meaningful learning is concept mapping (Novak & Gowin, 2008). Novak and Gowin (2008) stated that concept maps are tools for organizing and representing knowledge. In the concept maps, concepts usually are enclosed in circles or boxes and relationship between concepts indicated by a connecting line that link two concepts. Researchs on concept mapping method has been conducted in colleges and has indicated some advantages of the method (Leauby &Brazina, 1998; Chiou, 2008; Dammani, 2012). Many studies indicate that maps facilitate learning in variety of instructional conditions including different topics and educational levels (Gurlit & Renkl, 2010).

Students' presentation method is a teaching method in which a group of students presents a topic of teaching material to other students. The method is implemented to make the students have opportunities to present their understanding about a topic and share to the class. Combination of concept mapping with student's presentation is expected to increase the effectiveness of concept mapping method. The problem is if the combination of concept mapping with students' presentation effective in increasing students' performance. However, research on concept mapping combined with student presentation is rarely conducted. Therefore, the objective of this study is to investigate the effect of concept mapping method combined with students' presentation on students' achievement in macroeconomics course.

Concept Mapping

Concept mapping is defined as a powerful instructional technique in which students visualize connections and relationships among different concept to organize, represent and eliciting knowledge. Student arranges concept maps in hierarchical way where more general and inclusive concepts are placed higher in the map and concepts at the same level of generalization are grouped together. Specific or less inclusive concepts are placed lower of the maps (Novak and Gowin 1984). Concepts map is presented in the form diagram consist of nodes and link. The nodes include facts or concepts, usually enclosed in circles or boxes of some type and the link indicate relationships between concepts. Words on the lines referred to as linking words or linking phrases specify the relationship between the two concepts.

Concept maps were developed by Joseph Novak and his colleagues as a way to assess children's understanding of science with graphical tools to organize and represent knowledge (Novak & Gowin, 1984). Novak defines a concept as "a perceived regularity in events or objects", or "records of events or objects" designated by a label. A concept by itself does not provide meaning, but when two concepts are connected using linking words or phrases, they form a meaningful proposition (Novak & Gowin, 1984).

Many studies have been done to explore the effectiveness of concept mapping method of teaching in increasing students' performance. Leauby and Brazina (1998) found that concept mapping can increase students' performance. A meta-analysis of 55 empirical studies conducted by Nesbit and Adespe (2006) conclude that concept mapping activities prove more effective for attaining knowledge retention and transfer while benefitting learner across a broad range of educational levels, subject areas, and settings. Cheema and Mirza (2013) found that concept mapping is more effective teaching learning strategy than the traditional method, to improve students' academic achievement of general science. In addition, implementation concept mapping technique in undergraduate student has brought some advantages. Fang (2014) found in his study that concept mapping technique that has been implemented engineering dynamics course enhance students' active learning. Martin et.al (2015) made similar conclusion that concept mapping groups classes academically out performed compared with alternative intervention classes.

In the concept mapping, students can make better inter-connections between courses. Students are encouraged to accept responsibility for their own learning, develop intellectual curiosity and acquire an effective learning strategy that will serve for their lifetime. Concept mapping allows instructors to improve course content and provides a new perspective on developing course material, hence become more effective educators. Chiou (2008) have similar finding. Concept mapping, used successfully in various disciplines, can benefit students not only by developing their capacity in learning how to learn, but also by integrating new knowledge with what was previously known, i.e. meaningful learning. As such, concept mapping is an effective meta-cognitive strategy, and this study is a pioneering detailed investigation in the usefulness of concept mapping in university-level business accounting courses (Chiou, 2008). Dammani (2012) found that concept mapping to be effective in developing reasoning of students.

Theoretical base of these methods of teaching is cconstructivist theory of learning. The central premise of constructivism is that learners construct their new understanding by actively building upon prior knowledge and experiences. Learners are said to create meaning

as internal representations based upon their experiences, rather than acquiring meaning directly from external sources. The teacher can facilitate this process by teaching in ways that make information meaningful and relevant to the students, by giving students opportunities to discover or apply ideas themselves, and by teaching students to be aware of and consciously use their own strategies for learning (Slavin, 2006).

Method

This study aims at explaining the effect of concept mapping combined with student presentation method of learning on students' academic achievement. The primary question of this study is as follow: what is the different in term of academic achievement between experimental group of students taught with concept mapping combined with students' presentation teaching and control group taught with conventional method?

To answer the question, this study is designed as quasy experimental research with a pre-test and post-test control group design. The participants in this study were 152 students who took macroeconomics course in a faculty of economics in a university in Indonesia enrolled in the second semester of 2017. They were divided into two groups of students, experimental group of 72 students and control group of 80 students. This study continued for six weeks. Pre-test was implemented to the two groups. The test was developed according to the objective of the course.

Treatment to the experimental group was conducted as follow. Firstly, dividing the class into groups of students, that consist of three or four student each group. Secondly, each group of students was assigned to prepare power point presentation in macroeconomics based on the topics of the course and make presentation in front of the class. The presentation was intended to make the classroom attractive, enhance students' engagement and support the students' development of macroeconomics concepts. Each group have 60 minutes to present their topics and following the presentation, classroom discussion was conducted to make student understand the content. Thirdly, the students were required individually to construct concept map based on the content that had been discussed and were asked to attempt better understanding connection and relationship among different concept on their concept map. Lastly, post-test was conducted to measure students' academic achievement. The control group was taught with normal learning activities.

Instructor and the textbooks for both classes were the same to avoid confounding effects on the experiment. The students do not familiar with previous experience in concept mapping.

Finding

The collected data was analyzing with t-test to see if there is statistically significant difference score of academics' achievements between experimental group and control group. Result of the analyses show that value of sig (2-tiled) is of 0.000. It means that hypotheses which state that there is no different in term of academics' achievement between students taught with concept mapping combined with students' presentation and students taught with conventional method was rejected. It also means that concept mapping method of teaching when combined with students' presentation would result in effectiveness in teaching.

Table 1. Paired Samples Statistics

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	Pre-Test Eksperimen	34.16	80	7.409	.828
	Post-Test Eksperimen	50.69	80	8.687	.971
Pair 2	Pre-Test Kontrol	31.42	72	5.704	.672
	Post-Test Kontrol	64.97	72	12.408	1.462

Table 2. Paired Samples Correlations

		N	Correlation	Sig.
Pair 1	Pre-Test Experiment & Post-Test Experiment	80	.395	.000
Pair 2	Pre-Test Control & Post-Test Control	72	.067	.578

Table 3. Paired Samples Test

	Paired Differences					t	df	Sig. (2-tailed)
	Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
				Lower	Upper			

Pair 1	Pre-Test Experiment - Post-Test Experiment	-16.531	8.917	.997	-18.516	-14.547	-16.582	79	.000
Pair 2	Pre-Test Control - Post-Test Control	-33.542	13.307	1.568	-36.669	-30.415	-21.388	71	.000

Discussion

The difference in term of academics' achievement between experimental group and control group of students indicates that concept mapping combined with students' presentation can effective as teaching method in macroeconomics course. The reason for concept mapping combined with students' presentation is effective in teaching macroeconomics course can be explained as following. Implementation of students' presentation method allows students learn the content of the course, try to understand fact, concept, principles and procedural knowledge of the course. The presentation of the concepts to the fellow students bring greater conceptual clarity for themselves. Student also prepare power point as presentation media. When a group of students present the material of the course, the others students try to find question or related issue, and this step of learning process encourage discussion among the peer. The arrangement of concept maps following the students' presentation make the student understand the relationship among the concepts, and provide opportunity for active involvement of students in their learning process. These activities encourage student engage in the learning and lead to students' success.

This study is consistent with previous research. Concept mapping assigned to the experimental group help students more active in their learning, as found by Fang (2014) who implement concept mapping technique in engineering dynamics course and found that the technique promotes student academic achievement. Concept maps allows the students to understand the relationships between concepts macroeconomic course by creating a visual map of the connections. This finding in line with Akcay (2014) who conduct research on concept maps in science. Active learning techniques increase students' engagement and success (Freeman et.al., 2014; Cheema & Mirza, 2013).

Conclusion

This study attempts to examine the effect of concept mapping combined with students' presentation on students' academic achievement. This research finds that concept mapping is more effective in achieving students' academic achievement when combined with students' presentation. Concept maps helps students make connection and relationship among concepts which is understood by students previously when they develop power point for presentation.

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