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Does Mind Mapping Matters in Engaging Students' Creativity and Learning Achievement?

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Abstract

This study examines the implementation of Mind-Mapping Model in the classroom and its impacts on creativity and learning achievement of high school students. This paper includes Classroom Action Research which conducted in economics class in a Senior High School in East Java, Indonesia. The data were collected using documentation technique, in-depth interview, and comparing pre-test and post-test results. The findings revealed that the implementation of Mind-Mapping in economics class affects students creativity and learning achievement. There a noticeable change in students' creativity which is shown by fluency releases creative new ideas easily and quickly, and flexibility in seeing things from another perspective and considering things from the opposite point of view.

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INTRODUCTION

Education plays an important role in developing the abilities and personalities of the human being. Therefore, education is always used as a benchmark of success that must be built, improved, and developed so that humans can face all changes and problems in their surrounding environment. The success or failure of education depends on the learning process being carried out. This process involves various components including educators, students, curriculum, learning methods, evaluations, and the environment.

Learning involves thinking that works associatively and needs a connection between one and other information. Learning has an acquaintance with the use of the brain as the center of mental activity ranging from retrieval, processing, to concluding information. In order to optimize learning achievement, the learning process must use the whole brain approach. Due to the fact that the world of learning for children is currently flooded with information that is up to date at all times. The inability to process information optimally amid the flow of information which causes many individuals obstacles in learning. The obstacles to information processing lie in two main things, namely the process of recording and restatement. Both are processes that are interconnected with each other.

Learning innovations are needed to overcome learning difficulties, namely with mind maps. The mind mapping concept was originally introduced by Tony Buzan in 1975. Buzan (2013) remarked that Mind Mapping is a recording technique that develops a visual learning style using words, colors, lines, and images. By combining and developing the work potential of the brain, it makes easier for individual to organize and remember all information. Mind maps are also very effective thinking tools because they give us the opportunity to outline various main ideas for a topic. The basic ideas are linked to each other so that it is easier to understand the particular topic clearly (Basuki, 2007).

The brain stores information in the form of images, symbols, shapes, sounds, and feelings. The brain stores information with patterns and associations such as trees with branches, not word for word, column by column in neat line sentences as we speak in language. To recall quickly what we have learned should mimic the workings of the brain in the form of a mind map. Thus, the process of presenting and capturing the content of lessons in concept maps approaches natural operations in thinking (Hermawati, 2009). De Porter & Hernacki (2011) argues that an effective note-taking technique is a note-taking technique that fits the workings of the brain. Good and effective notes are useful for remembering details about key points, understanding the main concepts, and seeing the connection.

According to Munandar (2009) creativity as the ability to create something new, as the ability to provide new ideas that can be applied in problem-solving, or as the ability to see new relationships between elements that already existed before. A person's creativity can be seen from his behavior or creative activities. According to Slameto (2003) that what is important in creativity is not the discovery of something that has never been known before. But rather that the product of creativity is something new for oneself and does not have to be something new for other people or the world in general.

Actually the discussion about mind maps is because this model provides several benefits that shown from several previous research conducted by Wulandari (2014) through a study entitled "Application of Mind Mapping Learning Models to

improve Student Creativity and Learning Outcomes in economic subjects in class X IPS 1 of SMAN 8 Malang". With conclusions, the application of mind mapping can improve students' creativity in learning. besides the research conducted by Widiana, I. W., & Jampel, I. N. (2016), through a study entitled "Improving Students' Creative Thinking and Achievement through the Implementation of Multiple Intelligence Approach with Mind Mapping", with conclusion the improvement in the students' creative thinking from cycle 1 to cycle 2 is 16.56%, and the improvement of the students' achievement in learning science from cycle 1 to cycle 2 is 11.46%.

METHOD

This study follow classroom action research based on Lesson Study. In this study the data were analyzed qualitatively. Data about creativity is taken through observation sheets of student creativity while student learning outcomes through pretest and posttest after the application of cycles 1 and 2. In addition, data is also taken from observations of researchers and photo documents taken by researchers and observers. This study employs 25 students in economics class. The data were collected using documentation technique, in-depth interview, and comparing pre test and post test results. In more precisely, this study using two types of research instruments, namely treatment instruments and measurement instruments. Measurement instruments consist of lesson plans and learning scenarios. While the instrument of treatment is using guidelines for evaluating the implementation of learning, guidelines for creativity and student learning outcomes

RESULTS AND DISCUSSION

This classroom research employs teacher model and two observers. In the observation sheet, the teacher's activity was used to determine the success of the implementation of learning arranged with 15 aspects in each meeting adjusted to the learning scenario. Each of the descriptors perfectly gets a score of 2, an imperfect descriptor that appears gets a score of 1, and no emergence of descriptors gets a score of 0. Then the results will be calculated in percentage form with the learning assessment guidelines. The results in the first cycle will be explained in the following table 1.

Table 1. Cycle 1 Teacher Activities

		Results		
		Meeting 1	Meeting 2	
	Appropriate Aspects	Percentage	Appropriate Aspects	Percentage
	18	60%	22	73.33%
	16	53.33%	22	73.33%
	18	60%	21	70%
Total	52	173.33%	65	216.66%
Average	57.77%		72.22%	
Average Cycle 1		64.99%		

(Resource: Author, 2018)

From the table 1, it can be seen that at first meeting the corresponding total aspects are 52 if the average percentage is 57.77%. While at the meeting 2 the corresponding total aspects are 65 if the average percentage is 72.22%. The average yield percentage of the first cycle is 64.99% in the less category.

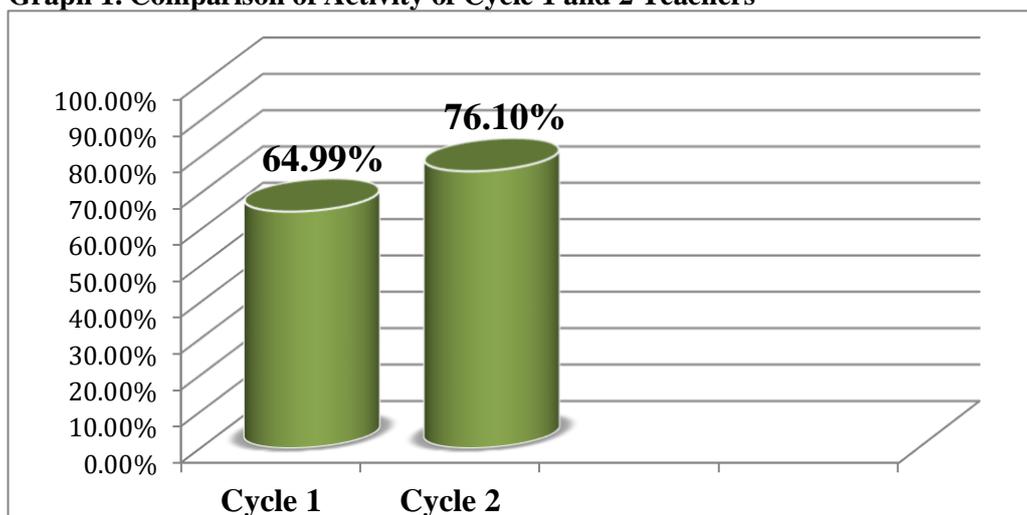
Like the first cycle, in the second cycle, the researcher was assisted by three observers. The results of the second cycle will be explained in table 2 as follows.

Table 2. Cycle 2 Teacher Activities

		Results	
		Meeting1	Meeting2
Appropriate Aspects	Percentage	Appropriate Aspects	Percentage
21	70%	25	83.33%
23	76.66%	23	76.66%
20	66.66%	25	83.33%
Total	64	73	243.32%
Average	71.1%		81.1%
Average Cycle 2		76.1%	

(Resource: Author, 2018)

Based on the table, it can be seen that at meeting 1 the corresponding total aspects are 64 if the average is 71.1%. While at the meeting 2 the corresponding total aspects are 73 if the average percentage is 81.1%. So the average yield percentage of cycle 2 is 76.1% with enough categories. Assessment of teacher activities in cycle 1 and 2 can be seen through graph 1 as follows.

Graph 1. Comparison of Activity of Cycle 1 and 2 Teachers

(Resource: Author, 2018)

Based on the graph there is an increase from the first cycle, namely 64.99% with the less category to the second cycle, which is 76.10% with sufficient categories.

Assessment of student activities in learning is obtained from the student activity sheet. In filling out the observation sheet the activities of the student researchers were assisted by observers consisting of 2 friends and economic subject teachers. The results of the assessment of student activities in learning in the first cycle will be explained in the following table 3.

Table 3. Activity of Student Cycle 1

		Results	
		Meeting1	Meeting2
Appropriate Aspects	Percentage	Appropriate Aspects	Percentage
19	63.33%	21	70%
18	60%	24	80%

	20	66.66%	23	76.66%
Total	57	189.99%	68	226.66%
Average	63.3 %		75.55%	
Average Cycle 1	69.44%			

(Resource: Author, 2018)

Based on the table it can be seen that at meeting 1 the corresponding total aspects are 57 if the average percentage is 63.33%. While at the meeting 2 the corresponding total aspects are 68 if the average is 75.55%. So the average percentage results from the first cycle are 69.44% with fewer categories.

The results of the assessment of student activities in learning in the second cycle will be explained in the following table 4.

Table 4. Activity of Student Cycle 2

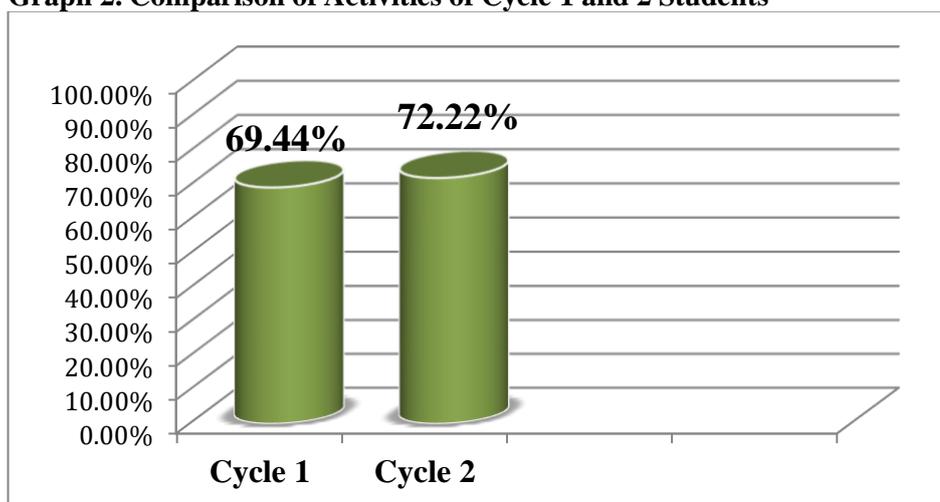
		Results		
		Meeting1	Meeting2	
	Appropriate Aspects	Percentage	Appropriate Aspects	Percentage
	21	70%	22	73.33%
	20	66.66%	22	73.33%
	22	73.33%	23	76.66%
Total	63	209.99%	67	223.32%
Average	70%		74.44%	
Average Cycle 2	72.22%			

(Resource: Author, 2018)

Based on the table, it can be seen that at the meeting 1 the corresponding total aspects are 63 if the average percentage is 70%. Whereas in meeting 2 the corresponding total aspects were 67 if the average percentage was 74.44%. So the average yield percentage of the second cycle is 72.22% with enough categories.

Assessment of teacher activities in cycles 1 and 2 can be seen through graph 2 as follows.

Graph 2. Comparison of Activities of Cycle 1 and 2 Students



(Resource: Author, 2018)

Based on the graph there is an increase from the first cycle, which is 69.44% with a less category to the second cycle, which is 72.22% with sufficient categories.

Student creativity in making mind mapping is obtained from the observation sheet of student creativity. In filling out the observation sheet the activities of the student researchers were assisted by observers consisting of 2 colleagues and economic subject teachers. The results of students' creativity in making mind mapping in the first cycle will be explained in table 4.5 as follows.

Table 5. Student Cycle 1 Creativity

Assesment of Mind Mapping Cycle 1			
Observer	Observer 1	Observer 2	Observer 3
Average	69.73	74.55	78.28
Average Total	74.19		

(Resource: Author, 2018)

Observation of student creativity in making mind mapping was carried out by 3 observers, obtained a total average score of 74.19 where there were 2 students in the less category, 16 students in the sufficient category and 1 student in the very good category. It can be concluded that the average creativity of students in making mind mapping is classified as sufficient. The results of students' creativity in making mind mapping in the second cycle will be explained in table 6 as follows.

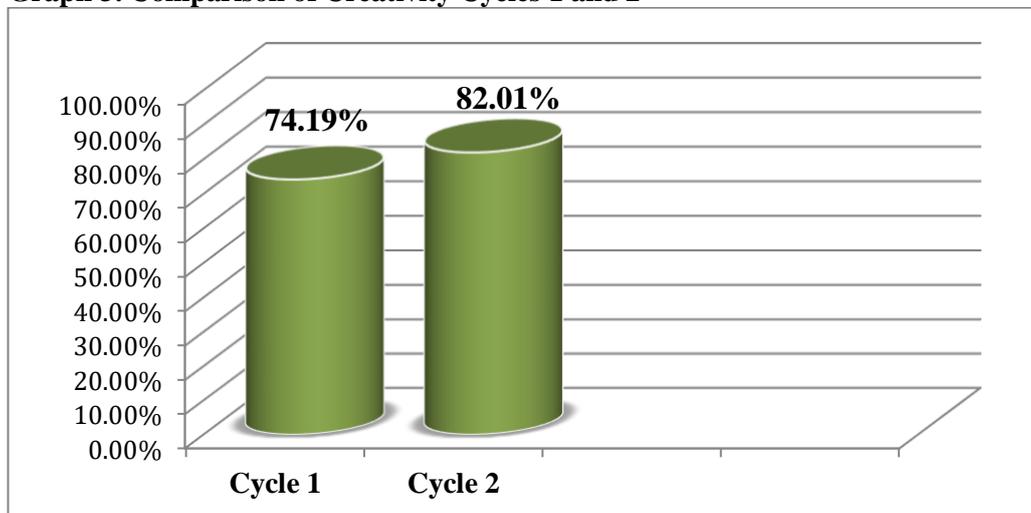
Table 6. Student Cycle 2 Creativity

Assesment of Mind Mapping Cycle 2			
Observer	Observer 1	Observer 2	Observer 3
Average	78.72	82.01	85.3
Average Total	82.01		

(Resource: Author, 2018)

Observation of students' creativity in making mind mapping was carried out by 3 observers, obtained a total average score of 82.01 where there were 5 students in sufficient categories, 13 students in good categories, and 1 student in the very good category. It can be concluded that the average creativity of students in making mind mapping belongs to the good category. Comparison of student creativity in making mind mapping can be seen through the graph below

Graph 3. Comparison of Creativity Cycles 1 and 2



(Resource: Author, 2018)

So according to the average results of the first cycle that is 74.19% while the average cycle 2 increases to 82.01%.

Data on learning outcomes were obtained from the pre-test and post-test held in Cycles 1 and 2. With the same provisions about the pre-test and post-test. The student learning outcomes can be seen in table 7 as follows.

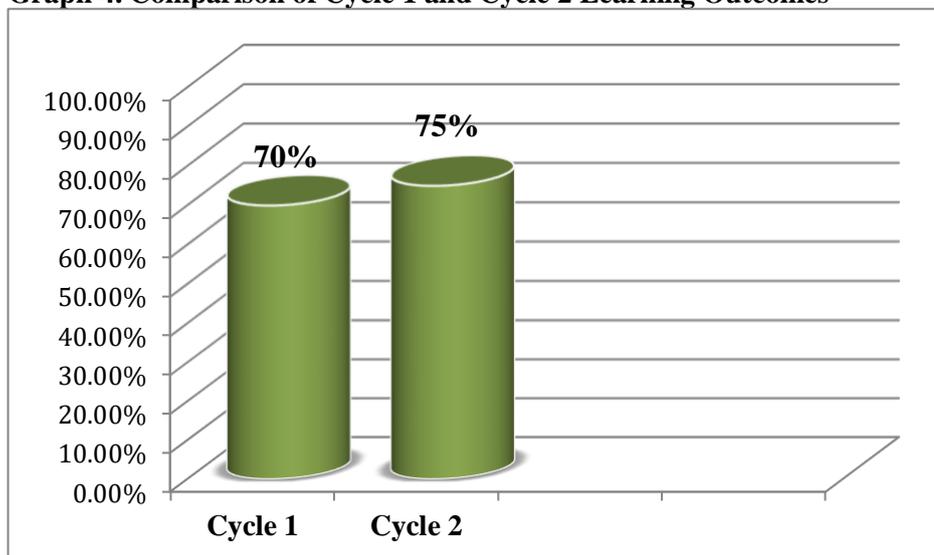
Table 7. Comparison of Cycle 1 and Cycle 2 Learning Outcomes

	Cycle 1		Cycle 2	
	<i>Pre test</i>	<i>Post test</i>	<i>Pre test</i>	<i>Post test</i>
Average	42.63	70	51.57	75

(Resource: Author, 2018)

Student learning outcomes, namely in the first cycle, the post-test value was seen as 70 with sufficient categories while the second cycle saw the post-test value as 75 with enough categories. Conclusions from cycles 1 and 2 that the value of student learning outcomes has increased which is illustrated by graph 4.4 as follows

Graph 4. Comparison of Cycle 1 and Cycle 2 Learning Outcomes



(Resource: Author, 2018)

Increased cycle 1 with sufficient category and cycle 2 with sufficient category of 5%. With this increase, it is proven that the Mind Mapping model can improve creativity and learning outcomes.

The stages of implementation of the Application of the Mind Mapping Model proposed by Anastasya (2014), which consists of four main components, namely learning material concepts, determining key ideas, making mind maps, and presentations. In this study, the implementation of the mind map includes students learning the concept of subject matter and understanding it as a whole so that it can foster perseverance in learning, while the teacher acts as a facilitator and mentor. Then students determine the main ideas, in this activity students actively find and choose keywords or important terms from a subject matter that has been studied so as to develop students' abilities in finding and solving problems. Next make or compile a mind map, after students find all the keywords or important terms of a subject matter that has been studied, then students arrange these keywords into a structure of mind maps that are most easily understood and understood by students. Presenting what is meant is the activity of students in explaining the material that

has been studied, as well as pouring the idea of a map of his mind in front of the class to communicate to other students and in the end, there is an opportunity for students to maintain an account for their opinions.

The application of Mind Mapping Learning Model which is applied in Lamongan State High School 2 in Class X can be said to be going well because there is a reciprocal process between teacher and student when the application of the Mind Mapping Model. The reciprocal process that occurs between teachers and students in learning is in the form of a response. This is evidenced by 1) Students were very enthusiastic about the Mind Mapping learning model even though at first they seemed to be very ordinary because they were not used to using the learning model, 2) The teacher tried to understand and learn about the Mind Mapping learning model including the stages and characteristics of the learning model compared to other learning models, 3) The existence of good cooperation between teachers and students to learn from each other and correct mistakes. As explained by Sunarto (2008: 232) that in the learning process there is also a reciprocal process between the teacher teaching and students who are learning. So that two-way communication is obtained, between teachers and students. Learning is a learning process that is built by teachers to improve students' thinking so they are more critical in responding to a problem and can solve it.

The increase is due to 1) The teacher tries to explain again the learning model that is applied so that students better understand. 2) Students are more enthusiastic in applying the learning model because students are getting used to the learning model. This is in accordance with the theory of Sunarto (2008: 232) that the learning process is a fundamental basis in self-adjustment because through this learning patterns will develop that will shape personality. So it can be concluded that the application of the Mind Mapping model on economic subjects in Class X has gone well and accordingly.

The subject of requests and offers can be learned through Mind Mapping can be proven by increasing creativity and student learning outcomes. Student creativity in making mind maps can be seen among them through 1) Fluency, releasing creative new ideas easily and quickly. 2) Flexibility, seeing things from another perspective and considering things from the opposite point of view. Using the important part of mind mapping is the central topic or central topic, main topic, branches, keywords, images, and colors. 3) Originality produces unique, unusual, and eccentric ideas (Buzan, 2013: 94). Whereas in this study creativity in making mind maps were proven by students who were more enthusiastic and enthusiastic in participating in learning, students could express creative and unique ideas, students were also more courageous in expressing their opinions through presentations in class.

At the beginning of learning, students look less enthusiastic. This is because students are not familiar with traditional oriented learning. The results of observing the first cycle are the creativity of students occupying enough categories with a percentage of 74.19%. However, improvements and improvements are still needed because there are some indicators of evaluation of creativity that are not satisfactory.

Improvement and improvement are carried out in cycle II. Cycle II shows that students have begun to be creative in making mind maps. This is characterized by the application of mind map models in the implementation of the class, namely students are formed groups to present the results of mind maps that students have made individually, this aims to train students mentally in expressing their opinions in front of people and to know how much students understand use mind map according to the mind map they have made. The results of the observation cycle II showed good categories with a percentage of 82.01%.

From the first cycle, which amounted to 74.19% to the second cycle of 82.01%, it was seen an increase of 7.82%. This increase occurs because teachers provide opportunities for students to learn and practice making mind maps because without training the creativity will not develop. This is in accordance with Juhariy (2012) the teacher always encourages

students to always try their best and produce good work, not emphasizing the results but the process. In addition, this study also supports previous research conducted by Wulandari (2014) through a study entitled "Application of Mind Mapping Learning Models to improve Student Creativity and Learning Outcomes in economic subjects in class X IPS 1 of SMAN 8 Malang". With conclusions, the application of mind mapping can improve students' creativity in learning. In his research entitled "The Application of Mind Mapping Learning Models in Increasing Creativity and Mastery of Materials in Integrated Social Studies Subjects in Class VIII-F of SMP Negeri 8 Kota Malang," it can be seen that the results of the mastery percentage increased by 40.7% seen from the cognitive domain.

Whereas for student learning outcomes, during the first cycle before starting the lesson the researcher gives a pre-test to students with the intention of knowing the students' initial abilities. This is in accordance with the opinion of Dimiyati and Mudjiono (2009: 3) that "learning outcomes are given in the form of values, and are usually influenced by students' abilities and how students' activities in learning". From the results of the pre-test, it can be seen that most students lack in preparing the material to be studied. Then after the post-test was held, the results of the post-test were in the sufficient category with a percentage of 70%. This is because students are still lacking in learning and understanding the material because they are still not familiar with the application of Mind Mapping learning methods in addition to the constraints of teacher students who are still lacking in learning activities. By looking at the shortcomings, improvements are made to cycle II.

During the second cycle, researchers emphasized being on time to collect assignments, encouraging students to try to work on their own abilities. It turns out that with these actions, can also affect students. This is in accordance with the opinion of Djamarah (2008: 144) that learning outcomes can be influenced by factors from within students (internal), factors that come from outside of students (external), and factors of learning approach (approach to learning). Internal factors, namely the physical and spiritual condition of students. External factors are environmental conditions around students. While the learning approach factors are the strategies and methods used by students to learn.

When the pre test was held, students worked earnestly, even though the material had not been taught. After the pre-test, the researcher continued by giving a post-test. After the material is taught, students work on the post-test for 15 minutes. From the results of the post-test, it is known that the value of students occupies a sufficient category with a percentage of 75%. This is in accordance with the opinions of Andjani, S. & Adam, HH. (2012: 2) that student learning outcomes are important factors in determining student success in the future.

From the results of the post-test held in the first cycle of 70% with sufficient categories and the second cycle of 75% with a fairly good category, it was proven that the Mind Mapping model can improve student learning outcomes. This was indicated by the post-test value which increased from cycle 1 to cycle 2 with an increase of 5%.

CONCLUSION

Based on the formulation of the problem, the results of observations and data analysis can be concluded that the application of learning with the Mind Mapping Model to Improve Creativity and Learning Outcomes of Class X Students of SMA 2 Lamongan can run well. Evidenced by the increase in the first cycle with enough categories to the second cycle with a fairly good category. This can be interpreted that all indicators contained in the Learning Implementation Plan are well implemented. This is because of the process of reciprocity between teacher and student. The subject of requests and offers can be learned through Mind Mapping in class X of SMAN 2 Lamongan. This is marked by increasing creativity and student learning outcomes.

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