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The Effect of Using Mind Mapping Strategy towards Students' Learning Activities

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ABSTRACT

This research was purposed to investigate the effect of using Mind mapping towards Students' learning activities on Economic at State Senior High School 1 Kampar. Grade X1, which consisted of 34 students, was selected as sample and was assigned as the experimental group that received treatment while X2, which consisted of 33 students, was assigned as control group. The data of this experimental research were collected through observation and documentation. Further, those data were analysed whit T-test. Based on the results, there was a significant effect of using Mind mapping strategy towards students' learning activities on economic with higher percentage than control group.

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1. INTRODUCTION

Over the past few years, education institutions in Indonesia have put many efforts in order to provide meaningful and organized activities in learning to ensure the realization of the active learning. This is due to the fact that active learning gives significant contribution to development of learners' experiences and knowledge (Bachelor, 2012). In addition, teachers are also expected to improve their teaching skills and to be creative to ensure the success of active learning. As the result, active learning will impact teachers' teaching competency and students' knowledge and skills developments.

One of the learning techniques that can be used to train creativity is the Mind mapping of note-taking technique. Note-taking is a learning technique that helps most people to remember something

information. The form of notes that are often made is notes that are linear and ineffective or called traditional notes. Not even a little bit make notes by copying directly all the information contained in books or oral explanations from teacher. They are not able to identify the important ideas in the information. Same situation too observed in Biology education students who take the Research Methodology course, so it is necessary to introduce a creative and effective note-taking technique

(Mas'adah & Supriyono, 2014). Other supported study carried out related to Mind Mapping application done by Dewantara showed that there was an increase between the initial learning outcomes and the final learning outcomes of students after applying the Mind Mapping Learning method using the MindMeister application. Based on the results of this study, it is recommended that you can try to use the mind mapping method using the MindMeister application in learning to improve student learning outcomes in direct current circuit material (Dewantara, 2019).

The preliminary study that was conducted at one of the senior high schools in Kampar revealed that students' learning activity is one of the crucial aspects in order to achieve the expected learning objective of that school. Based on that fact, teachers were expected to make many efforts to support the improvement of students' learning activities. Teachers' contributions were indicated by many learning strategies that they had applied in learning such as the lecturing method, the discussion method, and the assignment method. However, many students still faced problems in their learning, especially in learning of the Economics. Those problems were indicated by the phenomena including students' passive attitude throughout the learning process, students' hesitation to ask for the explanation of the incomprehensible lesson, and students' unwillingness to take note of the lesson.

Those problems may be due to several factors, such as students' motivation, minimum exposure to lesson outside the classroom, the amount of learning time, classroom facilities, teacher's competency, or the applied teaching strategies. However, main concern was addressed to inefficient teaching strategies that are applied in the classroom. Those strategies failed to assist students' learning activities improvement and to encourage students to be more active. This issue could inevitably be hindrance for the success of not only Economics learning, but also the others subjects learning. Moreover, students' learning activities are generally used in measuring their achievement in learning. As the results, they will definitely fail to complete the course and to access the knowledge and information in learning.

In response to that problem, this study was designed to find out the effect of using Mind Mapping strategy on students' learning activities at Senior High School 1 Kampar. This study relies on quantitative data as well as classroom observations. By examining the application of Mind Mapping as well as the learning activities that take place in the classroom, essential information will be obtained which later on assist the teachers in solving the problems on students' learning activities of Economics. Therefore, further investigation on its potential will provide crucial information contributing to the development Economic teaching and learning.

Literature Review

1.1. Learning Activities

The student's learning activity is the students' efforts in constructing the knowledge inside them in the learning process. Through the learning process, changes and improvements of student's ability and quality take place such as questioning confidently, expressing the opinion, paying careful attention to the teacher, and completing the tasks on time (Yamin, 2007). In addition, learning activity is stimulated by the teachers' performance in a learning process. That stimulation aimed at creating the active classroom, in which the students ask, question, and express opinion actively (Hartono, 2008). Further, Sardiman (20120 elaborated that student's activity in learning is shown through how many actions that they do because principally learning is doing in order to change behaviour from passive to active. Therefore, there is no learning without activities. Moreover, students' activities in learning can stimulate and develop their talent, critical thinking, and problem solving in real life situation.

1.2. Mind Mapping

One strategy that has attracted many attentions due to its ability to support the improvement of students' learning activities is Mind Mapping strategy. It is a strategy that can stimulate students' actions in the learning. For the teachers, it is a very good choice of strategy to be applied in the classroom. Trianto explained that Mind Mapping is the concrete graphical illustration that indicates how a concept is combined with the other related concepts. *It*s visual form elaborates an overview of a concept and its complex information, as a result it assist the students in unlocking their cognitive

potential in order to comprehend, create new ideas and connect concepts. Thus, the comprehended concepts stay longer in their memories (Trianto, 2020).

Mind Mapping is the concept that is based on how the brain stores information. Research explained the brain has the ability to store information into its each branch. Buzan[12] stated that Mind mapping is a system to store, to draw, and to access the data of the huge library inside the human brain. It store information easily into the inside and outside of the human brain. In addition, it is a creative and effective note-taking technique that eases the storing of information into the brain. Human brain received information faster with the help of visual and sensory patterns. That patterns map the ideas and related information into the parts of the memory.

Mind Mapping is a visual record that helps a person to distinguish words or ideas, often with colours and symbols. It generally takes a hierarchical or tree branch format, with branching into their subsections. Mind Mapping allows greater creativity when recording ideas and information, as well as enabling a note taker words related to visual representation. Mind Mapping has the method to facilitate someone to write and recall information that has been stored. It is an effort to develop the activity of thinking in all directions, capturing thoughts in different angles and develop divergent thinking and creative thinking.

1.3. The Correlation between Mind Mapping and Learning Activity

Mind mapping is one type of cooperative learning that can cultivate positive attitudes and self-directed student learning. Evidence pointed out that Mind mapping has positive correlation with the learning activities in the classroom. Evrekli stated that Mind mapping facilitate the production of active students. This is due to the fact that it can enhance students' mental activities and creativity. It can generate and stimulate processes of recalling information in the memory (Evrekli, 2010). In addition, Rosciano found out that Mind mapping assists the students to dig deeply the concept and its related information through an organized, colourful, vibrant, and logical manner (Rosciano, 2010).

Budd stated that applying Mind mapping as exercise for the learning can help integrate variety of learning styles into economics courses and can reenergize a course (Budd, 2004). This is due to the fact that Mind mapping is another example of an active and collaborative learning tool that instructors can use. Jones (2012) found out that Mind mapping affected learners' motivation although those effects were different among learners depending on their Mind mapping activity types.

2. METHODS

This research was conducted at State Senior High School 1 Kampar, one of the regencies of Riau province in Indonesia, from October to November 2014. This experimental research aimed to examine the truth of a statistical hypothesis relating to previously proposed research problem. Based on the consideration that it was impossible to randomly assign students to groups, quasi-experimental with pre-test and post-test non-equivalent group design was applied. Non-equivalent group, as its name implies, indicates that the sample in both groups were not identical due to the fact that the sample of this research was not randomly assigned.

In fact, to ensure groups' equivalence, the samples were selected based on their similar characteristics from the population which were four groups of X grade students. Based on the investigation on the population, two groups of students were selected and assigned into the experimental group and the control group. Those selected two groups were considered similar based on their ability levels, the teacher whom they learned with, the subject that they studied, their number in each classroom including the portion of male and female, their classrooms facilities, and their learning schedule.

In this study, Mind Mapping (the treatment), the independent variable, was manipulated and then the effect on students' learning activity improvement, the dependent variable, were measured. Students' learning activity information is obtained from the test results of both groups. Further, those results were compared by applying the statistical analyses before and after the treatment.

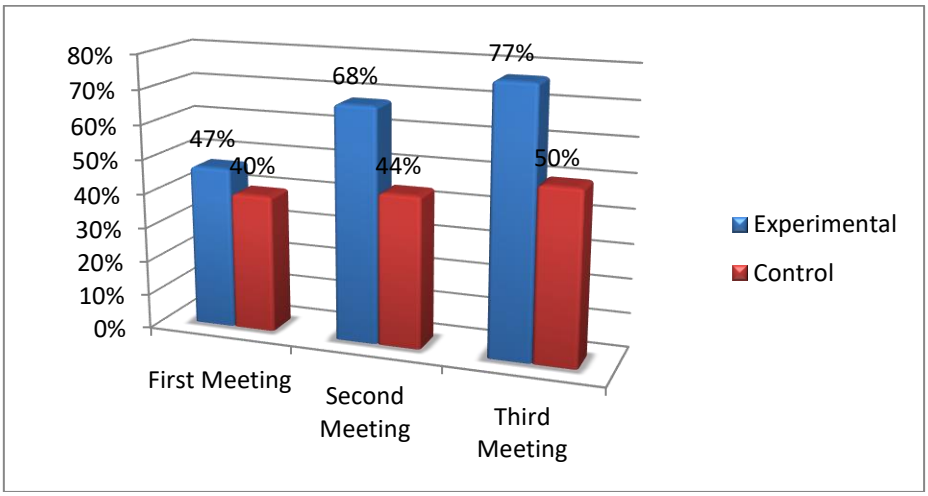
Before the treatment, the pre-tests were administered to both groups in order to determine the learning activity level as well as to ensure groups equivalence. Furthermore, the treatment was applied for the experimental group, while no treatment or the usual teaching method was applied for the control group. Finally, after the treatment, in order to determine the effect of the treatment, the post-tests results of the two groups were compared by using statistical analyses that include ordinal to interval data conversion, data normality test, data homogeneity test, and hypotheses test. The data of this research were collected by using documentation, observation, and assessment. Observations and assessments were administered to observe students' learning activities, to gather the data on how learning activities were affected by the treatment, and to observe whether the treatment procedures were applied correctly.

3. FINDINGS AND DISCUSSION

4.1 Findings

The differences of activity percentages between the students of the experimental and the control group affected the learning of the X grade students at SMA 1 Kampar. The data pointed out that with the application of Mind Mapping the percentage of learning activities in the experimental group from meeting I to IV was increasing (62%, 63%, 64%, and 70%). Those percentages were higher than the control group (58%, 61%, 60% and 57%). In addition, the data also displayed that the students' learning activities in the control group was decreasing at fourth meeting. The following were differences between both groups learning activities:

Picture 1. The difference of learning activities means between the students of the experimental and the control group



To find out the significant effect of the treatment on students learning activities, the analysis of t-test was run on SPSS. It was used to analyse the difference of means between both groups' scores.

Table 1. The Result of Learning Activities Mean Differences Analysis

No	Groups	Means	Std. Dev	n	t obtained	t table	Conclusion
1	Experimental	57.13	6.15	34	8.58	2.00	There was a significant effect
2	Control	42.65	7.58	33			

The table demonstrated that $t_{obtained}$ (8.58) was higher than t_{table} (2.00) with significant level of 0.05. In other words, the result indicated that the means difference between both groups was not equal to zero. As a result, Ho was rejected. Thus, the result pointed out that there was a significant difference of means between the experimental group and the control group learning activities.

4.2 Discussion

From the above findings, the table displayed that $t_{obtained}$ (8.58) was higher than t_{table} (2.00) with significant level of 0.05. The result if this study indicated that the means difference between both groups was not equal to zero. Finally it was concluded that Ho was rejected. Thus, the result pointed out that there was a significant difference of means between the experimental group with Mind Mapping and the control group with conventional learning activities.

Results demonstrated that by applying Mind mapping in the learning, the experimental group had significantly higher learning activities (mean: 57.13) than the control group (mean: 42.65) that was taught by using non-Mind Mapping Strategy. It was indicated by the comparison of both groups learning activities observation results from the meeting 1 until the meeting 4. In addition, based on the analysis result of the learning activity mean differences, it was obtained that $t_{obtained}$ (8.58) was higher than t_{table} (7.58). Those values indicated that the two means were statistically different. In other words, there was a significant difference of learning activities means between the experimental group that was taught the Economics by using Mind Mapping and the control group that was not taught by using Mind Mapping. Thus, it indicated that applying Mind mapping in the learning of the Economics had a positive effect on the students' learning activities. This finding was in line with finding of Budd (2004). He stated that applying Mind mapping as exercise for the learning can help integrate variety of learning styles into economics courses and can reenergize a course. This is due to the fact that Mind mapping is another example of an active and collaborative learning tool that instructors can use.

The above discussion highlighted that the mean difference between both groups was considered as the effect of the treatment. On the account of that students learning activities level of both groups were similar before the treatment, and activity percentages improvement was only indicated by the experimental group. Moreover, the learning activities of the control group did not improve because they were not exposed to the treatment. Therefore, it was inferred that Mind mapping had a significant effect on students learning activities. This was according to Jones (2012), he found out that Mind mapping affected learners' motivation although those effects were different among learners depending on their Mind mapping activity types. Thus, Mind Mapping can be an alternative for improving the students' learning activities, especially for the teacher who always applied the non-Mind Mapping strategy.

4. CONCLUSION

The research showed that the differences of activity percentages between the students of the experimental and the control group affected the learning. The data pointed out that with the application of Mind Mapping the percentage of learning activities in the experimental group from 1st to 4th meeting was increasing. Those percentages were higher than the control group. Beside it, the data also exposed that the students' learning activities in the control group was decreasing at fourth meeting.

From the findings of research results displayed that students' learning activities in the experimental group was better than the control group. Based on the fact that the experimental group was taught by using Mind Mapping, their learning activity superiority was inferred as the effect of the treatment because students of the control group were not exposed to the similar treatment. Thus, it was concluded that the use of Mind Mapping had a significant effect on students' learning activities.

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