

Application of Mind Map Active Learning Strategy in Biology Learning for Class VIII Students of Smpn 1 Salo Kampar Riau

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Abstract - The purpose of this study was to determine differences in the biology of learning outcomes using active learning strategies Mind Map with conventional learning in class VIII SMP N 1 Salo, Bangkinang - Riau. The population in this study were all eighth grade students of SMP N 1 Salo as much as 3 classes listed in the school year 2012/2013. Determination of sample classes conducted by purposive sampling, whereas to determine the experimental class and control class by way of random sampling. In this study, the experimental class is VIIIB class and control class is the class VIIC. At the end of the tests conducted found that the average value of the experimental class with a 77.67 percentage of student learning outcomes completeness of 85.7 % and the average value of the control class with a percentage of 70.92 completeness 59.2 % of student learning outcomes. Assessment of learning outcomes in the affective aspects of experimental class higher than the control class with an average of 87.47 affective in the experimental class while the average value of 83.4 in the control class as well as the average value of the experimental class psychomotor 83.51 more better than the control class 78.85. There are differences in student learning outcomes by using the application of active learning strategies in learning biology Mind Map in class VIII SMP N 1 Salo.

Keywords - Active Learning, Mind Map, Cognitive, Affective, Psychomotor.

I. INTRODUCTION

Natural science is a science that studies about nature. One of the lessons in natural science is biology. Biology is a science that learns about the life of living things. Therefore, biology is a very important lesson because it is directly related to life. Once the importance of biology, then biology is always taught at every level of education ranging from basic education to college. This is done so that students know that living things are present in their lives, so students can utilize the natural environment for useful activities.

There are still many students who are not interested in studying biology, because of the notion that biology is memorized. As stated by [1] that "biology material tends to

be presented in terms of terms that students must memorize, so students' perceptions and images emerge that biology is a science that emphasizes memorization". By using mind map, complex learning materials can be transformed into simple and easy ones. The material is used in the form of illustrations and attractive colors. Besides making it easier students in understanding the subject matter, mind map can stimulate the power of imagination and creativity and train students' thinking power during the learning process takes place.

Previous research on mind mapping has been studied by [2] which states that the use of mind map in physics teaching class II4 in SMP Negeri 12 Padang can improve

understanding and simultaneously develop student creativity. Besides that, [5] has also examined the research title "Differences in Student Learning Outcomes that Make Mind Maps and Using Mind Maps in Biological Learning at 12 Padang State Junior High School" states that students who make their own mind mapping have higher learning outcomes than in students who use mind mapping.

Based on the background description that has been disclosed, the authors conducted a study entitled "Application of Active Learning Strategy Mind Mapp in Biology Learning for Class VIII Students of SMPN 1 Salo, Kab. Kampar, Riau ". Based on the limitation of the problem above, the formulation of the problem in this study is "Are there differences in student biology learning outcomes in implementing the Mind Mapp strategy in class VIII at SMPN 1 Salo?". And the objectives of this study are:

1. To find out the difference in biology learning outcomes using Mind Mapp's active learning strategies with conventional learning in class VIII Salo Bangkinang-Riau.
2. To know the results of biology learning aspects of affective and psychomotor assessment.

II. RESEARCH METHODS

This research was conducted at SMPN 1 Salo District. Kampar, Riau in the 2012/2013 school year. The research design used in the design is Randomized Control Group Post-test Only Design. This study uses a group of research subjects from a particular population, and then randomly grouped into two groups or classes, namely the experimental class and the control class. In the experimental class treatment was given while in the control class without treatment, then both classes performed the same test.

The sample consists of the experimental class and the control class. The experimental class conducted Mind Map active learning strategies, while the control class used conventional methods. Determination of the sample is done by purposive sampling technique with certain characteristics in determining the sample group.

The steps in sampling are:

1. Take the value of the Final Examination Semester I Biology subjects all students who registered in class VIII of SMPN 1 Salo 2012/2013.
2. Calculate the average value of the Final Examination Semester I in Biology in each class.
3. Researchers designate 2 classes as sample classes; this is based on the average value of classes that are close to the same.

4. Determine the experiment class and control class, the researcher uses the Random Sampling method.
5. Obtained class VIII-b as Experiment class and class VIII-c as Control class.

2.1. Variable Research

1. Free variable is the difference in student biology learning outcomes in the use of Mind Mapping strategies in SMPN 1 Salo lesson 2012/2013.
2. The dependent variable is the results of biology learning for Grade VIII students of SMPN 1 Salo in the 2012/2013 academic year.

2.2. Data

The data used are primary data that is data directly obtained from students in the form of student learning outcomes in class A and class B.

2.3. Data Sources

The source of the data in this study was students of class VIII Semester II Academic Year 2012/2013 SMPN 1 Salo Kab. Kampar, Riau. Broadly speaking, the procedures adopted in the collection of research data consist of 3 stages:

1. Preparation stage research.
 - a) Arrange research material
 - b) Prepare material that is students will learn.
 - c) Determine the population and sample.
 - d) Prepare syllabus and plan for implementing learning.
 - e) Prepare research instruments.
 - f) Testing the instrument in the test class.
 - g) Analyze the questions that are tested by looking for validity, reliability, difficulty index, and different power problems.
 - h) Choose the appropriate questions as a measurement tool that will be used later for the post test in both classes.

2. Stage of implementation

In the experimental and control class the same stages were carried out, namely the preliminary stage, the stage of core activities and closing activities. The experimental class in its core activity is to make mind map, while in the control class there is only conventional learning.

3. Data Collection Phase

The evaluation phase is carried out to find out the learning outcomes that have been achieved in the implementation process. Learning outcomes assessed are from cognitive, psychomotor and affective aspects. This

data is obtained from student learning outcomes in the realm cognitive, psychomotor and affective domains. Cognitive domains were obtained after being given a test at the end of the study, affective domains were obtained from students' attitudes during learning, while the psychomotor domains were obtained from students' attitudes during carry out a trial practice.

The instrument used to collect data in this study was a test of student learning outcomes in the cognitive domain. To find out student learning outcomes during the learning process takes place observation sheets are filled in by one observer, a biology teacher grade VIII of SMPN 1 Salo. The observation sheet covers the affective and psychomotor domains given to the two sample classes in accordance with the subject matter on Plant Structure. In order to obtain truly valid, reliable and attentive tests different levels of difficulty and power, then first try the test.

III. RESULT AND DISCUSSION

3.1. Result

This research has been conducted on two groups of sample classes namely: the experimental class and the control class. Class VIII.B is an experimental class and class VIII.C is a control class. The number of experimental class students is 28 people and the number of control class students is 27 people.

The average value of students' biology in the experimental class, which is applied to the active learning of Map. Map, is higher than the learning outcomes of students in the control class who use conventional learning. The average value of the experimental class was 77.67 while the control class was 70.92.

The number of students who completed the experimental class was 85.7% and in the control class was 59.2%. This shows that in the active learning process of Mind Map students' completeness is higher compared to conventional learning. For normality tests, data from the experimental class and the control class are processed using the Liliefors test. Normality test for both classes of samples obtained L_0 and L_t at the real level ($\alpha : 0.05$) meaning that the error rate is only 5 %. the comparison of L_0 and L_{table} for the two sample classes obtained $L_0 < L_{table}$ can be concluded that the data of biology learning outcomes of the sample class students are normally distributed.

To determine whether the data of the two sample classes varies homogeneity or not, an F test is carried out. The results of the homogeneity calculation between the data of the two sample classes, the F_{count} price is obtained = 1.23

while $F_{table} = 1.90$ for the real level ($\alpha = 0.05$) with dk 28: 27 is 1.90. Thus $F_{count} < F_{table}$, means that both sample classes have homogeneous variance.

Both classes of samples originating from populations that are normally distributed and have homogeneous variances, are tested by using hypothesis testing t. The results of data analysis using the t test turned out to be $t = 2.52$, while $t_{table} = 1.67$. Thus $t_{count} > t_{table}$, which means that the hypothesis is accepted, that there are differences in biology learning outcomes of grade VIII students using the Mind Map active learning model and conventional learning in SMP Negeri 1 Salo.

During the learning process, the researcher also assessed the attitudes and skills of students assessed by biology teachers of grade VIII students who acted as observers affective and psychomotor assessment of students in the sample class for meetings 1,2,3. Affective assessment in the experimental class is higher than the control class with an average of 87.47% in the experimental class and 83.40% in the control class. Likewise, the psychomotor assessment in the experimental class was also higher than the control class, the average psychomotor value of the experimental class was 83.51% while in the control class 78.85%.

3.2. Discussion

Based on data analysis, the value of t_{count} is 2.52 and the table is 1.67. Thus $t_{count} > t_{table}$ which means the hypothesis can be accepted. The test means that Mind Map's active learning has a positive influence on biology learning outcomes of Grade VIII students of SMP Negeri 1 Salo. Based on data analysis, it can be seen that the experimental class students who were treated by applying Mind Map active learning had better learning outcomes (77.67) compared to the control class (70.92) who did not apply Mind Map active learning. Whereas [4] got a percentage of students who could work on story problems using the concept of fractions with mind mapping methods and chart props 87.5%.

The percentage of students who cannot work on story problems using fractions with mind mapping methods is 12.5%. Learning outcomes with active learning Mind Map is more satisfying because with this learning model students become active and directed readers and can stimulate student memory. This proves that the learning process by applying active learning Mind Map can improve student learning outcomes.

Improved student biology learning outcomes in the experimental class are influenced by several factors, among

others, because students can learn more passionately and more actively. Mind Map active learning has several advantages including the teacher knowing more about students' initial abilities and helping students learn to think based on the point of view of a subject matter by giving students freedom in the practice of thinking.

In addition, using mind map can help students in simplifying the concepts of the lesson, so that students more easily remember the subject matter because they are arranged in a variety of colors that attract students' attention. According to [3] states that through mind mapping can improve the ability of students to read reading carefully because it is fun to see, read, digest and remember. Reference [4] shows that mind maps are used to generalize, visualize, structure and classify as well as learning aids.

With mind map techniques, one can select what information needs to be received and store it more clearly. In addition, mind maps are tools that can help someone think and remember better, solve problems and act creatively. The results of research in the learning process of the control class of students more silent and only listen to the explanation from the teacher. So the learning process feels longer and boring. Students also often go in and out with the excuse of defecating and talking to their peers during the learning process. This is due to the lack of interaction between students and teachers, which results in learning behavior. Students are only silent when the teacher asks questions, this condition causes student biology learning outcomes to be low. In the learning process, a teacher must be able to vary the learning model.

Where the teacher is in charge of guiding and directing students, not as the only source and information center (teacher center). By varying the learning model it is hoped that it can increase interactions between students and teachers in the learning process, so that the learning outcomes are also expected to be better.

The affective assessment of the two sample classes also showed a difference where the average number of experimental class assessments was 87.47 and the control class 83.40. Likewise, the psychomotor grade average of the experimental class was higher, 83.51 and the control class 78.85. This shows that the attitudes and skills of students in receiving lessons in the experimental class are better and there are significant differences with the control class. Students in the experimental class are able to work together with the teacher and his friends. Students in the control class also received the lesson well and were able to appreciate

and respond to peers' opinions; they were also polite during the learning process.

IV. CONCLUSIONS AND SUGGESTIONS

4.1. Conclusion

Based on the results and discussion described, the following conclusions can be drawn:

1. There are differences in biology learning outcomes of Grade VIII students of SMPN 1 Salo, Kab. Kampar Riau Academic year 2012/2013 between learning by using a mind mapp strategy that is equal to 77.67 with conventional learning that is 70.92.
2. Affective assessment results in the experimental class that is 87.47 higher than the control class that is 83.40 and psychomotor assessment results in the experimental class that is 83.51 higher than the control class that is 78.85.

4.2. Suggestions

Starting from the conclusion above, several suggestions can be made as follows:

1. Mind Mapp's active learning model can be used as an alternative for teachers in learning biology.
2. It is hoped that the teacher is able to motivate students in learning, so students really learn actively.
3. For further researchers it is recommended that they can utilize the time as optimal as possible and be able to manage the class well in learning.

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