

The Effectiveness on Mind Mapping Learning Model to Improve The Learning Achievements of Biology

(Quasi Experimental Study at State Senior High School 1 of Binjai City North Sumatera Indonesia)

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Abstract--- *This study aimed to determine the effectiveness of learning model to improve the learning achievements of biology. The subjects of this study were students in grade XI of State Senior High School 1 of Binjai. This study used the quasi experimental method of pretest-posttest and used the t-test analysis. The sample in this research consists of 2 classes, with cluster random sampling, first class with mind-mapping learning model and other class expository learning model. In this study that measured is the cognitive domain used test and non test instruments. Based on the analysis, the result in experimental group obtained that mind mapping learning model has highly significant positive influence in enhancing achievements learning of biology. The result in expository class has insignificant in enhancing achievements learning of biology.*

Keywords--- Learning achievement, learning model, mind mapping, expository

I. INTRODUCTION

National Education in Indonesia is an education in the culture of the Indonesian nation based on the achievement of Indonesia's National Development Goals. It is an integrated of all the hundreds educational activities that are interconnected to achieve the achievement of the National Education Goals. National Education System Law In 2003 defined education is a conscious and planned effort to create an atmosphere of learning and learning process so that learners actively develop their potential to have spiritual strength, self-control, personality, intelligence, noble character, and skills. The achievement of these national goals, the realities of educational activities implemented in educational institutions, especially schools (as the most conservative and static social institution in society) are often less able to follow and respond to the flow of dynamics now a days [1].

Learning is relatively permanent and does not only occur in behavior at present (immediate behavior) but also in behavior that may occur in the future (potential behavior). It is time for our learning system to pay more attention to the potentials and weaknesses of learners [2].

Learning is related to the process or way of learning. Everything planned should be related to what will be learned, how to learn and what competence or ability will be

achieved. The interaction between educators and learners in the learning process can be done through several channels including formal, nonformal, and informal. Formal education is education held in schools. This path is structured from basic education, secondary education, and higher education [3].

State Senior High School 1 of Binjai as a formal education unit in secondary education also requires good interaction between educators and learners. the interaction of educators and learners will produce quality learning to achieve the learning objectives in the maximum learning achievement.

To produce quality learning, it is necessary to optimize the factors that influence learning. There are several factors that influence learning. The factors that influence learning are divided into two internal factors, and external factors. Internal factors include: (a) physical factors (health, disability), (b) psychological factors (intelligence, attention, interest, talent, motive, maturity, readiness), (c) fatigue factors. Furthermore, external factors include: (a) family factors (how to educate people, relationships between family members, home atmosphere, family economic condition, cultural background, (b) school factors (teaching methods, curriculum, teacher relation with students, students' relation with student, disciplinary at school, learning tool, school time, standard of lesson, building condition, learning method, home task); and (c) community factor (student activity in society, mass media, condition of society) [4].

Learning model is a basic framework of learning that can be filled by a variety of content subjects, in accordance with the characteristics of the basic framework. So, between the model and teaching materials should be adjusted to be delivered to the students.

As a favorite school in Binjai, State Senior High School 1 of Binjai, has 31 classes and the most favorite majors in State Senior High School 1 of Binjai is majoring in natural science. Like most schools, science majors are indeed the favorite courses chosen by students. As other subjects of Natural Sciences consist of subjects with certain characteristics.

Natural Science is concerned with how to inquire (inquiry) about nature systematically, so that science is not

just as a mastery of a collection of knowledge in the form of facts, concepts or principles only, but also a process of discovery. As a part of science subjects, Biology provides a variety of learning experiences to understand the concepts and processes of science. Biology subjects are developed through the ability of analytical, inductive, and deductive thinking to solve problems related to natural events [5].

Based on data obtained from a survey of students of State Senior High School 1 of Binjai. Not a few students admitted that biology lessons has many difficulties. According to the teacher In 2015 there are still students of grade XI of State Senior High School 1 of Binjai who must follow remedial. This means that optimization of biology learning in the class is not optimal. This is happened because the biology material is quite a lot and have to deliver to the student while the time allocation is narrow, enabling teachers in the delivery of material is not maximized because it is pursued by the time that requires the completion of the material. The use of science learning model that happened was also not based on learning concepts. This is expressed by the teacher who states that most of the learning model used is expository or still emphasizes the teacher as the main information giver in learning. As a result, the learning process does not occur with the maximum because students are less actively involved in the acquisition of information subject matter.

One of the learning models that are popular now a day, is a mind mapping learning model. Mind mapping discovered by Tony Buzan in the 70s was used to facilitate classroom, office, discussion, and even personal use such as making notes, scientific papers, etc.

Mind mapping learning model is fun and creative based on how the actual work of the brain that allows us to remember information like images, symbols, sounds, shapes, and feelings. The use of mind map as a technique of recording as part of the learning model has the advantage such as saving time, easy to memorize, using both sides of your brain simultaneously, increasing student learning interest by engaging students actively constructing their understanding of the subject matter provided by the teacher.

Mind map itself is the easiest way to put information into the brain and take information out of the brain, the mind map is creative, effective, and literally mapping our thoughts. Mind map is a creative, effective, and literally creative way to "map" our thoughts. Modern compact, which involves colors and symbols that are very attractive, creative and fun [6].

Based on the observation and interviewing that teachers have never applied this learning model, because they do not know how to apply it to students. Especially how to applicate it in biology lessons. Meanwhile, in addition to mind mapping learning model there is also an expository learning model. This model is very often used by teachers in teaching. The expository learning model is the same as the direct instruction model because the instructional material is delivered directly by the teacher. The expository learning model emphasizes the process of

verbal material delivery from a teacher to a group of students so that they can master the subject matter optimally [7].

Based on the results of research before with the title "The Influence of Mind Mapping and Expository on Mathematics Learning Outcomes in primary school at Buleleng" concluded that mind mapping can improve learning outcomes compared to expository [8]. So that with the existence of some problems that have been mentioned above, and some research results that have been done before, then researchers want to research "The Effectiveness on Mind Mapping Learning Model to Improve The Learning Achievements of Biology."

II. METHOD

The method of This research is quasi-experimental design by experimenting in the classroom without changing the classroom situation and the learning schedule. The sample is a student of grade XI of State Senior High School 1 of Binjai which is drawn by cluster random sampling. The measured variable that is measured is test of learning achievement of Biology learning. The data obtained were tested using t- test.

III. LITERATURE REVIEW

A. Model of mind mapping learning

There are several steps of the mind mapping learning model. namely:

1. the teacher tell the student about their learning objectives
2. The teacher transfer the lesson as usual
3. the teacher can know the student's absorption, form a paired group of two people
4. one of the couple tell the newly received material from the teacher and his partner the make mind map, then switch student's roles.
5. All students in turns / scrambled transfer their interviews with others, until done to all the students
6. The teacher repeats / re-explains the material that the student has not understood
7. the teacher make conclusion [9].

B. Expository Learning Model

The steps of learning expository, as follows.

- 1) Preparation.
Preparatory steps relate to the preparation of students to receive lessons. Preparation is a very important step. The successful implementation of learning using expository strategies is highly dependent on preparatory steps. Some of the things that should be done in the preparation step of them is to provide motivation and start the lesson by putting forward the goals to be achieved.
- 2) Presentation.
The presentation step is the delivery of the subject matter in accordance with the preparation that has been done. What every teacher should think about in the

presentation is how to make the subject matter easily captured and understood by the students. Therefore, there are several things that must be considered in the implementation of this step, namely the use of language that is easily understood by students, accurate voice intonation, and maintain eye contact with students,

3) Correlation

The correlation step is the step of connecting the subject matter with the student's experience or with other things that enable the student to capture the interrelationship in the knowledge structure that the student already possesses.

4) Summing up

The concluding step is a step to understand the essence of the subject matter that has been presented. This step is very important because students will be able to take the essence of the learning process that has been done.

5) Implementation.

Step forward is to show students ability after the learning process takes place. Implementation is very important because through this step the teacher will be able to gather information about the mastery and understanding of subject matter by the students. The usual technique in this step is to make the task relevant to the material that has been presented and provide tests in accordance with the subject matter that has been presented. Teachers can also assign tasks in the form of projects or products according to the material [10]

C. The Nature of Biology Learning Results

Learning is knowledge obtained by study [11]. There are many the factors that influence learning are internal factors and external factors. Internal factors consist of physical factors, psychological factors and fatigue factors. The subsequent factors that influence learning are external factors that consist of: family factor, school factor, community factor [12]

IV. RESULT

The results of the study showed that the average value of students' Biology learning outcomes taught by mind mapping learning model is higher or better than the average value of students' Biology learning outcomes taught by expository learning model. This is also evidenced from $F_{obs} > F_{table}$ is $163,39 > 3,98$ so that the hypothesis is accepted and it is concluded that the students' Biology learning outcomes taught by mind mapping model is higher or better than expository learning model.

As predicted that mind mapping learning model will influence learning outcomes significantly compared with expository learning model. Theoretically, mind mapping learning model has an advantage in influencing student learning outcomes. The mind mapping learning model can provide a more realistic learning experience than the expository learning model, so that the achievement of student learning outcomes taught by mind mapping learning

model will be higher or better than the students taught by the expository learning model. This is relevant with the discussion on theoretical studies, the results of previous research and also on the frame of thinking. Thus it is proven that student learning outcomes that are taught with mind mapping learning model is higher than student learning outcomes taught with expository learning model.

V. DISCUSSION

Improvement of Biology learning outcomes that are learned by mind mapping model such as findings in this study is very possible. The reason is because the mind mapping model is one of the learning models that are the current trend and many have positive impact whether it is used in training, tutoring, and presentation.

The results of this study revealed that students who are taught with mind mapping learning models have higher learning outcomes than students taught with expository learning model.

Readiness of teachers in managing learning with both learning models is not less important in influencing student learning outcomes, because each teacher has a different style of teaching. Ideally, every teacher has the competence to bring learning with various models. But in reality, many teachers have insufficient readiness to bring each model of learning. Teachers bring more learning based on their tendency, so that the expected learning outcomes are not achieved maximally.

In the mind mapping learning model, there is a need for higher skills in managing it, for example, so that the students can show the activity of giving information and get the information well, the teacher must guide actively and can not submit all the preparation to the students because for the students, the activity of giving information and getting the information is not something easy to do because it must have readiness first. The management of expository learning model is not as complicated as management on mind mapping learning model. Teacher-centered activities as a source of information make student activity focus only on the teacher so that less activity and active in learning.

VI. CONCLUSION

Based on the description above, the authors need to put forward the conclusions and provide suggestions as follows; conclusion Biology learning result that is taught with mind mapping learning model is higher or better than Biology learning result which is taught with expository learning model in grade XI of State Senior High School 1 of Binjai.

Based on the results of research conducted and its implications, then there are some things that need to be suggested, namely:

1. Biology teachers are expected to be more creative and innovative in choosing or determining the learning model to be used.

2. Teacher must try to actively create a learning model that emphasizes student activities, and evaluate the effectiveness of the learning model.
3. Biology Lesson is a lesson that can not be separated from memorization, it is recommended for Biology teacher to master the core of the lesson first by making the design that inspires student activeness.
4. This research needs to be followed up for each higher level of education and in a wider sample and different research variables.

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