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The effect of the use of concept map on student learning outcomes in motion material physics lessons in class VII SMPN 1 kertasemaya Indramayu

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Abstract

It is easy for students to understand the lessons delivered by the teacher, so the teacher only needs to give the concept to students, the rest of the students seek and learn on their own, students are given the opportunity to actively seek, find and express their own ideas and opinions, in other words, students must directly involve in the learning process, of course, accompanied and supervised by the teacher, therefore the concept map method is very helpful and makes it easier for students to learn and the concept map method is also easy to combine with other learning methods if it is fun and in accordance with the theme of the material.

One of the advantages of the concept map method is: 1) It is easy to see the overall picture; 2) Helps the brain to remember, compare and make connections; 3) Facilitate the addition of new information; 4) Review can be faster; 5) Each map is unique and can be adapted to the theme to be discussed. Therefore, the author raised the title "The Effect of Using Concept Maps on Student Learning Outcomes in Physics Subjects in Motion Materials in Class VII SMPN 1 Kertasemaya Indramayu"

The method that will be used in this research is a quasi-experimental method. Quasi-experimental is a type of research that has a control group, but cannot function fully to control the influence of various other factors that are not included in the treatment (Sugiono, 2014: 114). This is because the class that is used as the object of research is difficult to control from other variables that are not measured in the study.

There is a significant relationship between the application of the concept map method and the learning outcomes of class VII students of SMPN 1 Kertasemaya in straight motion material, by looking at the results of the hypothesis test with 79 significance values less than 0.05 meaning t count is greater than t table, so it can be said that the relationship between the application of the concept map method and student learning outcomes has an influence, although the effect is low.

Keywords: Concept Map (Mind Map), Student Learning Outcomes, Motion Material

1. Introduction

In this modern era, humans are required to always be more advanced in the changes that occur in science. Knowledge can be obtained in formal or non-formal educational institutions, changes that occur in science can be done with an activity called learning. Learning is an activity that is usually done by students to be able to study. According to Daryanto (2010:2) learning is a business process carried out by a person to obtain a new change in behavior as a whole, as a result of his own experience in interaction with his environment. Meanwhile, according to Slameto (2010:2) learning is a process of change, namely changes in behavior as a result of interaction with the environment in meeting the needs of life. According to Hamalik (2011: 27) Learning is a process, an activity, and not an outcome or goal.

Moving on from the definition put forward, learning is a process of change within the individual as a result of interaction with the surrounding environment, both changes in knowledge, attitudes, or skills.

In the learning process, an educator is required to master various kinds of learning methods that can help students to better understand the content of a material. The learning methods commonly used are visual or visual-based, audio or hearing-based and audio-visual-based learning methods, namely learning methods that use the senses of sight and hearing. There are various forms of learning methods that can and are commonly used in the school environment (formal institutions) or non-formal institutions.

The use of monotonous learning methods can cause saturation in students, so that students do not focus on the lesson and sometimes students feel lazy to enter class because the teacher conveys the material in a rigid and slightly forced way, students

are not given the opportunity to express opinions and solve their own learning problems because the teacher is busy cramming and imposing the teacher's own ideas and thoughts on the students.

The selection of an inappropriate method can also kill the creativity of students, students who have above average intelligence are not given the opportunity to develop their abilities and also students who have below average intelligence are not noticed by the teacher because the teacher considers students to be just learning objects. which can only be indoctrinated by the teacher.

Things like this cause students to be lazy to learn, even at a certain level students do not want to take certain lessons and certain teachers or it can be said that students skip school because students feel bored and bored when in class, so that when students are faced with With questions, whether it's Semester Exam questions or National Examination questions, students feel stressed and unable to answer these questions which results in students' scores not reaching the KKM (the minimum criteria criteria that have been determined by the school and in the end students are declared to be repeat or fail in certain subsubjects.

Just imagine if the lessons are tested nationally, the teacher uses a monotonous method as above, how will it happen to students when they face the National Examination later.? Students find it difficult and feel stressed facing the National Examination questions because the teacher is not right in choosing the method, and in the end, it is the students who are blamed for not wanting to learn, not concentrating, not focusing and so on with sentences that corner students. Incidents like this happened at SMPN 1 Kertasemaya Indramayu in the subject of Natural Science (Natural Sciences) -Physics of straight motion material in class VII the teacher uses a monotonous method so that students feel bored and lazy to study in class, students underestimate and underestimate the lesson because the use of inappropriate methods by the teacher, in the end when students face semester exams or school exams students get a score less than the KKM that has been determined by the school and many students repeat the science-physics subject in straight motion material in class VII.

Based on this problem, the authors remind not to impose their doctrine on students and students are not considered as learning objects that can only be forced by the ideas and thoughts of the teacher, but students invited to interact and learn together, the task of the teacher is only to guide, supervise and as a learning partner of students in the learning process.

So that it is easy for students to understand the lessons delivered by the teacher, the teacher only needs to give the concept to students, the rest of the students seek and learn on their own, students are given the opportunity to actively seek, find and express their own ideas and opinions, in other words, students must be directly involved in the learning process, of course, accompanied and supervised by the teacher, therefore the concept map method is very helpful and makes it easier for students to learn and the concept map method is also easy to combine with other learning methods that are fun and in accordance with the theme of the material.

one of the advantages of the concept map method are: 1) Easy to see the overall picture; 2) Helps the brain to remember, compare and make connections; 3) Facilitate the addition of new information; 4) Review can be faster; 5) Each map is unique and can be adapted to the theme to be discussed.

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2. Literature review

2.1 Concept map

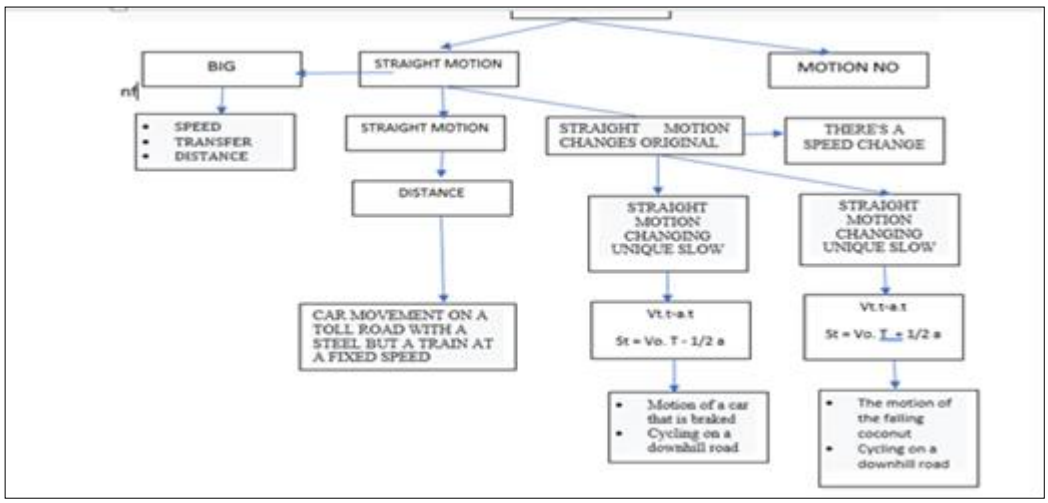
concept map is a concrete graphic illustration that can show how a concept relates or is related to other concepts belonging to the same category. A concept map can be a schema or a summary of learning outcomes. According to Yamin (2008: 147) "Concept maps are used to express meaningful relationships between concepts in the form of propositions. Propositions are two or more concepts connected by words in a semantic unit.

Concept map is a form of elaboration of a short material but is more focused on the content or content of the material. Usually, a concept map is composed of several sub-subjects that are linked to each other so as to form a unified whole. Concept maps are usually used to map a complex problem and then divide it into certain parts so that it can be mapped clearly.

2.2 Basic theory

2.2.1 Motion Matter Concept Map

The Form of a Concept Map for Physics Lessons in Motion Materials:



2.2.2 Strengths and Weaknesses of Concept Maps

Advantages of concept maps

In addition to the benefits and drawbacks there are also advantages of learning Mind maps (concept maps). Its advantages are as follows:

1. Easy to see the whole picture
2. Helps the brain to: organize, remember, compare and make connections.
3. Facilitate the addition of new information.
4. Review can be faster.
5. Each map is unique

Weaknesses of concept maps

Of course, in addition to the many benefits that we can get from learning Mind maps (concept maps). However, it does not rule out the possibility that there are weaknesses. The weaknesses of this Mind map learning (concept map) are;

- Time is wasted writing words that have nothing to do with memory.
- Time wasted rereading unnecessary words.

3. Methodology

The method that will be used in this research is a quasi-experimental method. Quasi-experimental is a type of research that has a control group, but cannot function fully to control the influence of various other factors that are not included in the treatment (Sugiono, 2014: 114). This is because the class that

is used as the object of research is difficult to control from other variables that are not measured in the study

The research design used was non-equivalent control experiment. This design was carried out in two groups, namely the experimental group and the control group which were not chosen randomly, (Emriz, 2014:114) The two groups were selected based on certain considerations so that the two groups had relatively the same homogeneity. Before being given treatment, in both groups a pretest was carried out to find out the extent to which the basic abilities of students in the concept in question were the concept of temperature and heat. Furthermore, both were given different treatments, namely the experimental group would be given learning treatment using the concept map media (Mind Map), and the control group would be given conventional learning treatment. After being given treatment, both groups will do a posttest to find out the extent to which students' learning outcomes in straight motion material. The design of this research can be seen in the following design:

Table1: Research Design

Groups		*Pretest*	Treatment	*Posttest*
Experiment		O_1	X_e	O_2
	Controll	O_1	X_k	O_2
Description:				
O_1	= Pretest (Pretest) before treatment			
O_2	= Pretest (posttest) after treatment			
X_e	= Treatment with used of Concept Mapping Method			
X_k	= Treatment with Conventional Method			

4. Research result and discussion

The results of the descriptive analysis of the experimental class data show that the results at the post-test are greater than the results at the pre-test, where at the time of the pre-test the mean value obtained is 35, while the mean value at the time of the post-test is 81. The Minimum Completeness Criteria (KKM) for science lessons for class VII GLBB material at SMPN 1 Kertasemaya is 70. The results of the pre-test scores in the experimental class are still far below the KKM even at the time of pre-test all scores obtained by students are still below the KKM. When compared with the post-test scores obtained, it is clear that the increase occurred where the average post-test score obtained was 81. Overall, the results of the experimental class post-test were not below the KKM. This shows that there is an increase in learning outcomes obtained after treatment with the Concept Map method (Mind Map) on the subject of Straight Motion.

The results of the descriptive analysis of the data for the control class also show that the results at the post-test are greater than the results at the pre-test, where at the time of the pre-test the mean value obtained is 35, while the mean value at the time of the post-test is 68. When viewed from the pre-test scores in the control class, the scores are far below the KKM even at the pre-test, all scores obtained by students are still below the KKM. This shows that the students' initial knowledge of the Straight Motion material is still low. When compared with the post test scores obtained, it is clearly seen that the improvement occurred where the average post-test score was 68. Overall, the results of the post-test control class were 36% who were still below the KKM and 64% had reached the KKM. This shows that there is an increase in learning outcomes obtained in the control class after learning with conventional methods on the subject of Straight Motion.

The magnitude of the increase that occurred in the experimental class can be seen from the N-Gain value, where 50% of students experienced a sufficient (moderate) increase and 50% of other students experienced a high increase. The increase that occurred in the control class can also be seen from the N-Gain value, where 3% of students experienced a low increase, 94% of students experienced a moderate (moderate) increase and 3% of other students experienced a high increase.

Based on the description above, it can be concluded that the learning outcomes of the experimental class using the Concept Map method (Mind Map) are better than the control class using the conventional method. This can be proven from the average test scores and the percentage of N-Gain obtained, where the control class dominantly obtained an increase in learning outcomes at the medium level by 94%, at the low level by 3%, and at the high level by 3%. The increase in the experimental class for the medium level was 50% and 50% at the high level.

Such learning can clearly spur students to always participate actively in learning and can also directly deepen the concepts, understandings and facts that students learn. Because in essence the students themselves are looking for and discover the concept. Thus, proving that the application of the Concept Map method (Mind Map) has a major impact in improving student learning outcomes.

The difference in learning outcomes of experimental class students who use the application of the Concept Map method (Mind Map) with the control class using conventional methods can be seen through the N-Gain data obtained. To find out whether there is a significant difference in learning outcomes in the experimental class

and the control class, a hypothesis test is carried out with the N-Gain value obtained by the students.

The results of hypothesis testing with Independent Sample T Test obtained p-value or sig.(2-tailed) is 0.02. Because value significance is less than 0.05, then Ho is rejected and Ha is accepted, meaning that there is a significant difference in learning outcomes between the experimental class using the application of the Concept Map method (Mind Map) and the control class using conventional learning.

Based on the results of the research, descriptive analysis, and statistical analysis, it can be concluded that there are significant differences in learning outcomes between the experimental class using the application of the Concept Map method (Mind Map) and the control class using the conventional method on the subject of Straight Motion.

Based on the results of the study, it shows that in the learning process a method is needed that makes students directly and actively involved in learning, so that students can develop or show their abilities. Active learning that involves students in the process allows students not to be easily bored and bored, thus facilitating the transfer of knowledge. If the knowledge transfer process runs smoothly or well, the learning outcomes obtained by students will also increase.

5. Conclusions

1. The learning outcomes of class VII students of SMPN 1 Kertasemaya in the science subject of Straight Motion Material before taking part in learning using the concept map method the learning outcomes are still lacking because the value obtained is still below the KKM that has been determined by the school, this can be seen from the N-Gain value which states that 90% of students experience a low increase from 34 to 50 with an average value of 67.
2. The learning outcomes of class VII students of SMPN 1 Kertasemaya in the science subject of Straight Motion Materials after participating in learning using the concept map method, their learning outcomes increase because the value obtained is above the KKM that has been determined by the school, this can be seen from the N-Gain value which states 50% of students experienced a moderate increase and 50% of other students experienced a high increase, which originally had a value of 40 changed to 77 with an average value of 89.

   This means that using the concept map method can improve student learning outcomes on the subject of straight motion
3. There is a significant relationship between the application of the concept map method and the learning outcomes of class VII students of SMPN 1 Kertasemaya on the material of straight motion, by looking at the results of hypothesis testing with the significance value is less than 0.05, meaning that t count is greater than t table, so it can be said that the relationship between the application of the concept map method and student learning outcomes has an influence, although the effect is low.

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