Improve Student Learning Activities Through Out Application of Active Learning Model Using Card Sort Method in Biology Subject

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ABSTRACT
The purpose of this study was to determine the increase of student learning activities by applying an active learning model using card sort method in biology subjects. The type of this research is classroom action research conducted in two cycles. Each cycle consists of four stages, namely: plan, action, observe and reflect. The study was conducted in class XI MIA3 of SMA Negeri 3 Padang in the 2018/2019 school year. Research data were collected using student observation sheets. Student activities observed during the learning process include: paying attention to teacher explanations, proactively gathering information to complete group assignments, actively discussing in groups, paying attention to other group presentations, and being active in verbal activities (asking questions, answering and giving responses). Data is processed using a percentage formula. Based on the results of data processing, it was found that the learning activities of students by applying the active learning model using card sort method were classified as good because it was more than the target (56%). There was an increase in learning activities from 77.3% in the first cycle to 86.5% in the second cycle. It can be concluded that the application of active learning model using card sort method can increase the learning activities of students in biology subjects.
Keywords: *active learning models, learning activities, card sort.*
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1. INTRODUCTION

Learning is a process carried out by individuals to gain knowledge and experience through interaction with their environment or training. Learning really need activities called learning activities. Learning activities are all activities carried out by students during the learning process (Oemar Hamalik, 2009) [1]. Meanwhile, according to A. M. Sadirman (2006) [2], learning activities are activities that involve both physical and mental. In effective learning, teachers must be able to facilitate their students in order to carry out learning activities that can provide opportunities to increase their knowledge. Without learning activities, the learning process will not take place properly. Student activities during learning reflect the motivation or desire of these students to learn. Therefore student learning activities will determine the achievements or learning outcomes.

According to Paul B. Diedrich in Nanang Hanafiah & Cucu Suhana (2010) [3], learning activities are divided into eight groups: (1) Visual activities, namely reading, seeing pictures, observing experiments, demonstrations, exhibiting and observing other people working or playing, (2) Oral activities, namely expressing a fact or principle, linking an incident asking questions, giving advice, expressing opinions, discussing interviews and interruption, (3) Listening activities), namely listening to the presentation of material, listening to conversations or group discussions, or listening to the radio, (4) Writing activities, namely writing stories, writing reports, checking essays, copying materials, making outlines or summary, and do tests and fill out questionnaires, (5) Drawing activities, namely drawing, making graphics, diagrams, maps and patterns, (6) Motor activities, i.e. conducting experiments, selecting tools, conducting exhibitions, making models, organizing games, and dancing and gardening, (7) Mental activities, which are contemplating remembering, solving problems, analyzing factors, looking at relationships, and making decisions, and (8) Emotional activities, namely interests, differentiating, brave, calm, feeling bored and nervous.

The activeness of students in the learning process can stimulate and develop their talents, think critically and

solve problems in daily life (Martinis Yamin, 2007) [4]. There are many ways that teachers can do to improve student learning activities, including by applying active learning models. Active learning is intended to optimize the use of all the potential possessed by students, in this case students are required to use the brain in thinking so that all students can achieve satisfying learning outcomes in accordance with the personal characteristics they have (Melvin L. Silberman, 2009) [5]. In addition, active learning is also intended to keep students' attention focused on the learning process. In active learning, students get challenges that require hard work because they have to be more active and independent to raise, explain, and ask about the subject matter being taught.

One of the active learning models that is easy for teachers to apply is sorting or card sort. Card sort is a collaborative activity that can be used to teach concepts, process properties, facts about an object, or repeat information. This strategy also emphasizes physical movement, which can be prioritized to help energize the classroom atmosphere which is getting saturated because of very dense learning activities (Melvin L. Silberman, 2009) [5].

The eminence of active learning models using card sort according to Melvin L. Siberman in Miftakhul Huda (2007) [6] are: (1) the teacher is easy to master the class, (2), easy to implement, (3) easy to organize classes, (4) can be followed by students in large numbers, (5) the teacher is easy to explain well and students are easier to understand about the material being taught, (6) students are more enthusiastic in learning, (7) socialization between students is more awakened ie between students and students are more familiar. The weaknesses of the active learning model using card sort according to Hosnan in Miftakhul Huda (2007) [6] are: (1) there is a possibility of distortion of students' attention, especially if there are answers that attract their attention, even though they are not the desired target (goal) in the sense there is a deviation from the original problem, (2) students need more attention so that not all students can be considered well, (3) a lot of teacher time, especially in preparing cards.

The steps of the active learning model using card sort that have been modified from the opinions of some experts are as follows: (1) the teacher prepares a card containing the subject matter in accordance with the competency to be achieved with a note: estimate the number of cards equal to the number of students in class and content The card consists of a main card/main topic and a detail card, (2) all cards are randomized to mix, (3) distribute cards to students and make sure each student get one (can get two), (4) have each student move to find his mother card by matching it to their classmates, (5) after the master card and all the card details meet, order each group to form and paste the results on the board in sequence, (6) make corrections together after all groups attach the results, (7) ask one of the person in the group to explain the results of the card sorting, then ask the other groups to comment, and (8) give appreciation for each student work, (9) clarify, conclude and follow up.

Some previous researchers have revealed the results of applying active learning models using card sort in various subjects in schools. The results of Kartika Widiastuti's research (2010) [7] revealed that the application of motivation strategies in active learning of card sort can increase the questioning activities of students of SMAN 1 Surakarta in biology. Based on research by Muhammad Irham et al. (2016) [8], the application of the card sort and make a match learning model is in the good category and can increase learning activities in eighth grade Islamic Education subjects at SMP Negeri 3 of Galesong Selatan, Kab. Takalar.

Based on observations in class XI MIA 3 of SMA Negeri 3 Padang, several problems were found in the implementation of the biology learning process, namely: (1) lack of student motivation, (2) not all students were active in learning, only students who had above average scores only are active when learning takes place, (3) teachers are more likely to use the lecture and discussion methods so that they are less attractive to students, (4) learning activities are less leading to the formation of student attitudes, and (5) 45% of student learning outcomes are still in under the specified minimum completeness criteria. This condition is certainly a challenge for teachers to try to find a solution.

Basically learning requires student activity. Students who have high learning motivation tend to be active in learning, so their learning outcomes also increase. Therefore, a study was

carried out using an active learning model using card sort to determine the extent of the increase in student learning activities in class XI MIA 3 in SMA Negeri 3 Padang in biology.

2. METHODS

The The type of this research is classroom action research. The study was conducted at SMAN 3 Padang semester 2018/2019 school year. This study aimed to determine the effect of applying active learning models using card sort in biology subjects at SMA Negeri 3 Padang on increasing student learning activities. This class action research design uses the Kemmis and McTaggart model, which consists of four steps: plan, action, observe, reflect as shown in Fig. 1. This study was conducted in 2 cycles. Each meeting in each cycle consists of 2 hours (2 x 45

minutes). The subject matter presented during the study was KD 3.5 and 4.5: The Motion System (Skeletal System and Muscle System).

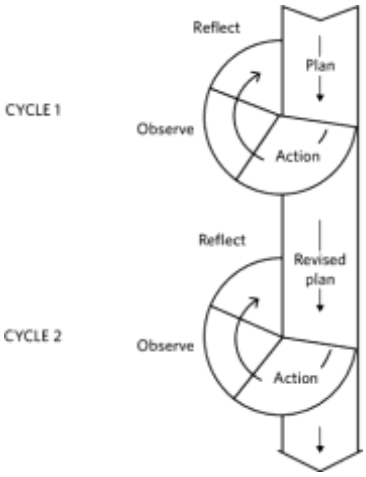

Fig. 1. Classroom action research design according to Kemmis & McTaggart's Model. Sources: W. Kusumah and D. Dwitagama (2009) [9]

The subjects in this study were students of class XI MIA 3 of SMA Negeri 3 Padang, consist of 36 people (17 men and 19 women). In this study there are two variables, namely the independent variable and the dependent variable. The independent variable in this study is the application of active learning models using card sort, while the dependent variable in this study is student learning activities during the learning process. The observed learning activities are: (1) pay attention to the teacher's explanation, (2) gather information to complete group assignments, (3) discuss in internal groups, (4) pay attention to the presentation of other groups, (5) carry out verbal activities (ask, answer and respond).

Research data including primary data obtained from observations notes (observations) of student learning activities during the learning process takes place using observation sheets. Observer consists of 2 biology teachers. Sources of data in this study were all students of class XI MIA 3 at SMA Negeri 3 Padang. Data obtained from observation sheets of student learning activities were analyzed using percentage techniques. To determine the percentage of student activity the following formula is used:

$$P = \frac{x}{N} \times 100\%$$

Information:

P = Percent of student activity

X = Number of active students

N = Number of all students (Arikunto, 2006) [10]

To get the average value of the percentage of activity the following formula is used:

$$\text{Average percentage of activities} = \frac{\sum \text{percentage of all activities}}{\text{number of activities observed}}$$

The average percentage of student activity obtained is then concluded using the following criteria according to Arikunto (2006) [10]:

81-100 : very good 61-80 : good

41-60 : enough

21-40 : less

0-20 : very less

Indicator of success for all learning activities observed was 56%.

3. RESULT AND DISCUSSION

Based on observations that have been carried out in cycle 1, after calculating the percentage of observed activities, the results can be seen in Table 1.

Table 1. Observation Results of Student Activities in Cycle1.

Number	Activities Observed	Activities (%)		
		Observer 1	Observer 2	Average
1	Pay attention to the teacher's explanation	86	87	86,5
2	Gather information to complete group assignments	73	73,5	73,25
3	Internal group discussions	77,5	77	77,25
4	Pay attention to other group presentations	73,5	73,5	73,5
5	Carry out verbal activities (asking, answering and responding)	76	75,5	75,75
Sum		386	386,5	386,25
Average		77,2	77,3	77,25
Criteria		good	good	good

As can be seen in Table 1, student learning activities observed by both observers reached an average of 77.25% (good criteria) and had exceeded the target of 56%. There is

one activity which is paying attention to the teacher's explanation with the highest average of 86.5% (very good category). Because of student activities have not yet reached an optimal level, reflection on the implementation of cycle 1 carried out. The results of reflection in cycle 1 are as follows:
(1) most of the students' answers are still not quite right, sometimes there are outside the context of the material, (2) there are still students who are lacking active when learning, (3) some groups are still confused using card sort in learning, and
(4) there are still many students who are less active during group discussions. Therefore, for cycle 2 the following action changes were implemented: (1) students were asked to read the next meeting material, (2) optimize the role of the teacher when directing students to answer questions, (3) maximize the use of instructional media, (4) provide rewards for active groups in the discussion, (5) improving the group work guide sheet by adding color information on card sort, (6) maximizing the teacher's role as a facilitator by going around giving help and reprimand during the discussion.
The results of observations in cycle 2, after calculating the percentage of observed activities can be seen in Table 2.

Table 2. Observation Results of Student Activities in Cycle 2.

Number	Activities Observed	Activities (%)		
		Observer 1	Observer 2	Average
1	Pay attention to the teacher's explanation	91	92	91,5
2	Gather information to complete group assignments	83	82,5	82,75
3	Internal group discussions	89	92,5	90,75
4	Pay attention to other group presentations	81,5	81,5	81,5
5	Carry out verbal activities (asking, answering and responding)	85,5	86,5	86
Sum		386	386	430
Average		77,2	77,2	86
Criteria		very good	very good	very good

From Table 2 it can be revealed that all observed activities showed an increase and all were in the very good category, where the average percentage of overall activity was 86.5 (very good). Thus it appears that the learning activities of students with active learning models using card sort are much better compared to cycle 1. Comparison of the average percentage of student learning activities in cycle 1 with cycle 2 can be seen in the following diagram (Fig. 2).

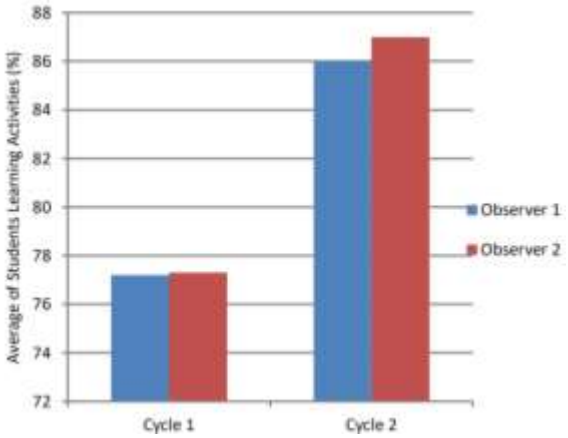

Fig. 2. Comparison of the average of students learning activities between cycle 1 and cycle 2

From the graph above it can be seen that there is an increase in the average percentage of student activity from cycle 1 to cycle 2. This is because students are familiar with the active learning model using card sort and are ready with preliminary knowledge because they are asked to read the material first. Aside from that, rewards and better guidance from teachers are also very important. This study revealed that there was an increase in student learning activities by applying active learning models using card sort in biology lessons in class XI MIA 3 of SMA Negeri 3 Padang in the Human Motion System material. This is consistent with the opinion of Warsono and Hariyanto (2012) [11] that active learning is a method of learning that actively involves students in learning. Melvin L. Silberman (2009) [5] also states that in active learning students will try something, find answers to questions, need information to solve problems, or investigate ways to do work. While Umi Machmudah (2008) [12] states that active learning is all forms of learning that enable students to play an active role in the learning process, both in the form of interaction between students and students, and between students and teachers.

4. CONCLUSION

Based on the results of research and discussion that have been stated above, we concluded that: The implementation of an active learning model using card sort can increase the learning activities of class XI MIA 3 students at SMA Negeri 3 Padang in biology subjects.

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