
**COMPARISON OF STUDENT LEARNING ACHIEVEMENT AND ACTIVITY BETWEEN
CONCEPT ATTAINMENT MODEL WITH AND WITHOUT FLASHCARDS ON THE
TOPIC OF CELL DIVISION IN GRADE XII IPA SMA SWASTA RAKYAT
PANCURBATU ACADEMIC YEAR 2013/2014**

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Abstract

This study aims to investigate the comparison of student learning achievement and activity between concept attainment model with and without flashcards on the topic of cell division. A quasi experimental research with post test only control group design was used in this study. The population of this study was all of grade XII IPA students of SMA Swasta Rakyat Pancurbatu. There were 2 classes chosen as the sample by applying cluster random sampling technique. Experimental class was taught by concept attainment model with flashcards while control class was taught by concept attainment model without flashcards. The instruments used to obtain the data were observation sheet as non-test instrument and cognitive test in form of multiple choices and essay as test instrument. The result of hypothesis test for posttest showed that $t_{count} = 2.919 > t_{table} = 1.678$ at the level significance of 0.05, means that H_a was accepted and H_0 was rejected. It can be concluded that there is a significant difference of student learning achievement between concept attainment model with flashcards and without flashcards. Then, t-test of observation results showed that students' activity in both research classes is significantly different. The students in experiment class were more active than students in control class by the average percentage of 61.33% and 49.33% respectively. The result of hypothesis test for student activity showed that $t_{count} = 2.183 > t_{table} = 1.678$. It means that students' activity in experimental class is higher than students' activity in control class. On the whole, learning achievement in learning cell division topic that taught by concept attainment model with flashcards media is higher than student learning achievement that taught by concept attainment model without flashcards in SMA Swasta Rakyat Pancurbatu academic year 2013/2014.

Keywords : Concept Attainment Model, Flashcards Media, student' activity, learning achievement.

A. INTRODUCTION

Learning is a two-way communication process, teaching that conducted by the teacher as an educator, while the learning is done by the students. In this case, the role of teacher is not merely providing information, but also directing and facilitating the study process to be more appropriate to the learning process (as facilitator). Learning is a process of the study that builds teachers to enhance students' thinking skills, and increase

the ability of students to construct new knowledge as a good effort to improve the mastery of subject matter [1].

Biology is one of science which contains a lot of processes. Every process in biology contains many important concepts that relates to other process. Some topics in biology have a few stages of biological process which is needed to be separated each other. One of the topics is Cell Division. In studying Cell Division, students are asked to differentiate between mitosis and meiosis and to differentiate the characteristics of each stages of mitosis and meiosis. This condition can make students confused and causes misconception in their understanding. So, understanding the concepts is needed to avoid misconception in studying Cell Division topic. Develop an understanding for important concepts in its topic will be very useful to students in differentiating each stages of Cell Division.

The result of researcher's interview with biology teacher in SMA Swasta Rakyat Pancurbatu indicated that many students in SMA Swasta Rakyat Pancurbatu do not reach most of the concepts in studying cell division topic. Students can not answer the questions about the stages of Cell Division in examination well. It indicated there is a misconception among the students about the stages. These condition affects biology student learning achievement. Seen from *Daftar Kumpulan Nilai (DKN)*, that from 80 students of class XII Science, student achievement in Cell Division topic is about 65% below the value 70. While the *Kriteria Ketuntasan Minimum (KKM)* in the school is 70.

The teacher confirmed that a condition where the limitation of media to be used is the reason why students can not reach most of the concepts. Limitation of the using of learning media also causes student learning activity in those school occurred passively. Some students rely on the listening and taking notes only. This condition led student to forget most of the informations given easily. Because they did not actively ask question to develop their understanding.

Based on the above issues teacher needs to chose learning model and media that can improve student's understanding of important concepts in Cell Division topic. Concept teaching models can be solution in constructing student understanding of concepts. Concept teaching models is an approaches where teacher can arrange and chose the concepts that is needed to be taught to student According to Arends [1], concept teaching models have been developed primarily to teach key concepts that serve as foundations

for student higher-level thinking and to provide a basis for mutual understanding and communication.

One of the concept teaching models that can be selected to avoid misconceptions in understanding the material being taught is Concept Attainment model. Concept attainment is the process of defining concepts by finding those attributes or features that are absolutely essential to the meaning and disregarding those that are not. It involves learning to discriminate between what is and what is not an example of a concept. This model is a teacher-centered model which need the ability of teacher to chose the right and useful attributes that can construct the critical thinking of student to understand the concepts of topic given.

Research carried out by comparing concept attainment model with the traditional method by Ahmed [1] shows that concept attainment model is more effective to be used than traditional method. This is demonstrated by the significant difference in student achievement between the two methods.

Classroom action research that has done by Harahap [12] in the study of student activity states that concept attainment model trained student to be more effective in constructing concepts. It stimulated student to be more active in class.

Teachers should also be able to determine the correct media that can be combined with a teaching model selected and provokes student to be actively learn. This will greatly help to increase student understanding by stimulating student enthusiam. One of learning media that can be used is flashcards learning media. Windura [24] stated that instructional media flashcards to boost the enthusiasm of student in learning. Besides, he also stated that the media is in addition to the mini size, but are also adopting the principles of brain management. Flashcards media can function as cards that can allow students to learn to understand the material and observed images.

Flashcard is a small card that contains images, text, symbols or signs that can alert or lead students to something related to that image. It can help teachers to simplify or strengthen the ability of learners to understand the concepts given in a subject. Flashcards can also use to create cooperative situation in classroom when grouping student to use flashcards.

Purnamasari [16] stated that the media flashcards used in the learning process is able to provide insight to students about the concept of food on Human Digestive System.

Results of the t-test calculation showed post-test results of the students have reached KKM.

Classroom action research conducted by Inayah [10] shows that flashcards could reduce students' feeling of boredom, and stimulated students who have low motivation. It also motivates students to discuss in group when they are assigned to play the game with flashcard.

This study focuses on comparison of student's learning achievement and student's activity between concept attainment model with and without flashcards on the topic of cell division in grade XII IPA SMA Swasta Rakyat Pancurbatu academic year 2013/2014.

B. RESEARCH METHOD

The research was done in SMA Swasta Rakyat Pancurbatu Jl. Letjend Jamin Ginting Km 18,5 Pancurbatu 20353 Deli Serdang and was conducted in November - December 2013.

The population in this research was all students of class XII SMA Swasta Rakyat Pancurbatu which totaled 80 people, consisting of 3 classes. Samples in this study were drawn using a cluster random sampling technique. This was due to the whole class groups have the same opportunities for the research sample. Thus the sample in this study was a class XII IPA₁ with 25 people as the experimental class and class XII IPA₂ with 25 people as control class.

This research was quasi experimental study. Where researcher provided treatment of the sample, and then saw the comparison of the result of the treatment on student's learning achievement and student's learning activity.

As preparation stages were the arrangement of the location and time of research. Students' score of final semester examination was obtained to determine the samples with similar prior ability. The control and experimental class were selected by draw randomly in scope of classes with similar mean score, which are 55.8 and 55.6 respectively.

Researcher act as a teacher taught both of classes. The entire instruments like test, media and lesson plan was prepared by researcher based on syllabus. Implementation of teaching and learning process by using concept attainment model with flashcards was done in accordance with the lesson plan that has made before in experimental class, while concept attainment model without flashcards in control class. The implementation of lesson plan was conducted in four meeting of cell division topic.

C. RESULT DISCUSSION

Before tested in the research, first the validity of the test, reliability of test, difficulty level test, and discrimination index test must be tested. Form on cell division at class XII IPA as much as 15 multiple choices and 2 essay questions was categorized as valid and reliable questions.

1. Learning Achievement

The post test data as the data of students learning achievement was obtained after being given treatments with different learning media. Experimental class that taught using concept attainment model with flashcards has average score about 78.00 and deviation standard is 9.01, whereas control class that taught using concept attainment model without flashcards has average score about 71.00 and deviation standard is 7.90.

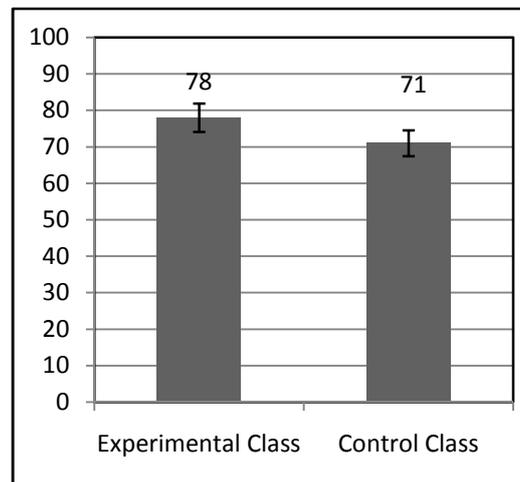


Figure. 1 The effect of flashcards on student learning achievement in Grade XII IPA SMA Swasta Rakyat Pancurbatu Academic Year 2013/2014.

Post test in experimental class showed better result than control class (Fig. 1). Statistical analysis indicates significant difference in learning achievement of students between experimental and control class on post test. Post test of experimental class has higher score than control class.

Only one student from experimental class did not pass KKM (70). This condition is lower than control class. There are ten students who did not pass KKM. It indicates that the number of students who reached KKM in experimental class is higher than control class.

2. Student Learning Activity

Students learning activity was observed by two observers and used observation sheet with some indicators include asking question, answering teacher's question, giving suggestion or argument, listening teacher explanation, and making conclusion.

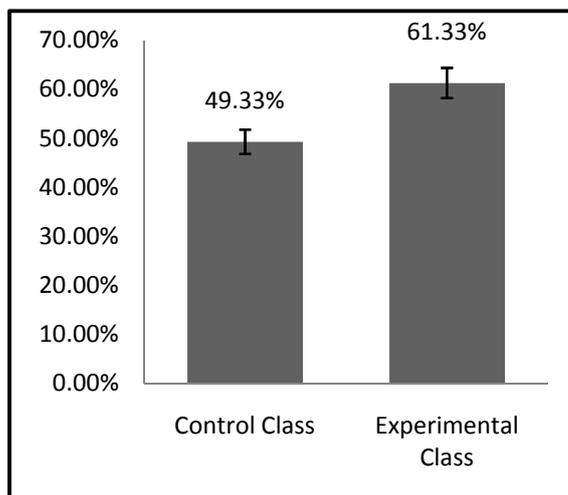


Figure 2. The effect of flashcards on student learning activity in Grade XII IPA SMA Swasta Rakyat Pancurbatu Academic Year 2013/2014.

The average of students' activity in experimental class that taught using concept attainment model with flashcards is 61.33% and students' activity in control class that taught using concept attainment model without flashcards is 49.33% (Fig. 2). It means that students' activity in experimental class is higher than students' activity in control class and it was obtained for each indicator. The highest one is indicator 4 which is students were listening teacher explanation during the learning process. Student was actively paying attention to find out the truth of flashcards which contain concepts that very helpful to understand the topic and fully engaged in the learning process. Whereas in control class, the students are less active because of learning process was dependent on teacher in delivering the concepts. Students were not fully engaged because they focus only on the concepts given by teacher.

Flashcards were helpfully constructing students understanding. Students become easier to understand the concepts given in accordance with the using of concept attainment model. Student's understanding of concepts is important to them to construct critical thinking ability. Combination of concept attainment model with flashcards media was giving positive impact in raising student achievement in cell division topic in grade XII IPA Swasta Rakyat Pancurbatu academic year 2013/2014.

D. CONCLUSIONS

Student learning achievement and activity taught using concept attainment model with flashcards is higher than using concept attainment model without flashcards. There is a significant difference on student learning achievement and activity between Concept Attainment Model with and without Flashcards.

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