COMPARISON OF JIGSAW TYPE COOPERATIVE LEARNING MODELS AND DISCOVERY LEARNING MODELS IN ACTIVATING STUDENTS DURING THE LEARNING PROCESS

Burhanuddin[1*], Lalu Rudyat Telly Savalas[1], Baiq Istira Ariani[3]

[1]Chemistry Education Study Program, FKIP, University of Mataram

*Corresponding author: burhan.kimia@unram.ac.id

Abstract

Students' active learning during the learning process is an important factor that teachers need to consider. Student learning activeness is a condition, behavior or activity that occurs in students during the learning process which is characterized by student involvement such as asking questions, offering opinions, doing assignments, being able to answer teacher questions and being able to work together with other students and being responsible for assignments. which are given. It is assumed that the higher the student's activity, the higher the success of the learning process should be. The Jigsaw Cooperative Learning Model and the Discovery Learning Model were tested to determine the level of student learning activity during the learning process. Indicators in determining student learning activeness in the application of the two learning models, namely by paying attention to the learning syntax. Student learning outcomes are a further indicator for determining the level of success of the student activation process. This research is the quasi-experimental research with a nonequivalent control group design on students in class XI MIPA of SMA Negeri 1 Sukamulia - East Lombok. The learning material chosen is Salt hydrolysis. All 2 class XI MIPA students are the research population, which is also the research sample or saturated sampling. Collecting data on student activity used observation sheets while learning outcomes were determined using pre-test and post-test on sample classes using multiple choice test instruments. Hypothesis testing using the t-test produces tcount of 3.48 and ttable with a value of 2.01. This data shows that the Jigsaw Cooperative Learning Model has a better effect than the Discovery Learning Model. The results of the analysis of student learning outcomes show that t_{count} (3.48) is greater than t_{table} (2.01).

Keywords: Jigsaw type cooperative learning model, discovery learning model, learning activeness, learning results.

1 INTRODUCTION

The learning process carried out by the chemistry teacher at SMA Negeri 1 Sukamulia uses the discovery learning model. This learning model has stages consisting of stimulus, problem identification, data collection, data processing, verification and generalization. The results of classroom observations show that the use of the discovery learning model has not increased the level of student involvement in the learning process. It is possible that this happens because when teachers using the same learning model repeatedly means that students do not show enthusiastic activity. The learning process turns into a process that makes students passive when the same learning model is used consistently or repeatedly [1].

One aspect of the school environment that has an impact on student learning achievement is the selection of learning models used in classroom learning [2]. The choice of learning model applied by teachers has an impact on students' learning abilities [3]. Application of the jigsaw type cooperative learning model is an alternative solution. The jigsaw type cooperative learning model is a teaching and learning model that can

encourage the emergence of potential by previous research in students [4] so that they can be actively involved when learning process. The jigsaw type cooperative learning model has stages including: (1) conveying learning objectives and giving students motivation; (2) conveying the topics to be studied to students; (3) form home groups with 4-6 people in each group and each group member is given a different sub-topic to study and discuss; (4) students who are given the same sub-topic are instructed to gather to form an expert group to discuss; (5) the sub-topics that have been studied are explained when students return to their home group; (6) students are given an evaluation to determine how much they understand the topics [5].

Based on previous research [6], it is known that student learning outcomes have a good impact with the jigsaw type cooperative model assisted by LKPD. This view is reinforced who state that the jigsaw type has an impact on learning outcomes because it changes the learning system where students are required to participate in the teaching and learning process [7].

Student learning activeness is a condition, behavior or activity that occurs in students during the learning process which is characterized by student involvement such as asking questions, offering opinions, doing assignments, being able to answer teacher questions and being able to work together with other students, as well as responsibility for assigned job. Student learning activity is the most important element in learning, because activity will have a big influence on the success of the learning process. The higher the student's activity, the higher the success of the learning process should be.

2 METHODOLOGY

Experimental research is carried out by providing treatment and observing how students behave to see how the treatment influences their behaviour. This research uses a quasi-experimental or quasi-experimental design. Research that uses a quasi-experimental design does not fully control all external and internal variables or influences that influence research activities [8]. The research design used a non-equivalent control group design. This research was carried out in two different classes which functioned as the experimental class and the control class. The non-probability sampling method with saturated sampling was used to take samples. The sample determined was class XI MIPA 1 as the experimental class and class XI MIPA 2 as the control class. The jigsaw type cooperative learning model was applied to the experimental class while the control class received treatment using discovery learning. Students' activities and activeness in the two experimental and control classes were observed using observation sheets and during the learning process they were observed by observers. The research design can be seen in Table 1.

Table 1. Research design

Group	Pre-test	Treatment	Post-test
Experiment	$T_{1(E)}$	$X_{(E)}$	$T_{2(E)}$
Control	$T_{1(C)}$	$X_{(C)}$	$T_{2(C)}$

3 RESULTS

Six meetings were used to carry out the teaching and learning process in both classes, which also included pre-test and post-test activities. Learning uses a jigsaw type cooperative model that emphasizes teamwork. Each group member is responsible for understanding and being able to explain it back to the group [9]. Student worksheets are resources or instructions that contain summaries and instructions to support teaching and learning activities. LKPD is a tool to assist teaching and learning tasks so that productive interactions can be formed between students and teachers [10]. Apart from that, LKPD can encourage the emergence of students' potential in the learning process, teach students to identify and improve abilities, and help students in developing concepts [11].

Based on the results of observations, learning in the experimental class tends to be active, while in the control class it tends to be passive. Each student in the experimental class was given a different sub-topic to study and students shared information with each other during discussions in expert groups, the

discussion activities became lively. In addition, students are tasked with explaining to other members of their group. Previous research found that all students participated actively in discussions when the jigsaw type was applied to thermochemical topics because each student was given the responsibility to master different sub-topics [7]. This stage is done in order students in the experimental class are motivated to participate actively in their learning. Another advantage of the Jigsaw type Cooperative Learning Model is the provision of awards to students. Giving awards can inspire them to work harder and cause learning outcomes to improve. Furthermore, rewarding students for good deeds can increase their motivation to learn [12].

Students' cognitive abilities are evaluated using the questions that have been given. Multiple choice questions are questions on the test. The expert validity test value using the Aiken's V formula varies from 0.72 to 0.83. The results of data analysis show that the instrument is considered very good. The validated instrument was then tested on class XI MIPA 1 SMA Negeri 1 Sukamulia students.

The test criteria state that H_0 is rejected while Ha is accepted if $t_{count} > t_{table}$ at the 5% significance level, and vice versa. The results of data analysis showed that t_{count} (3.48) > t_{table} (2.01) (with df = 46 at a significance level of 5%). This figure shows that H0 is rejected while H_a is approved. These findings show that the jigsaw type cooperative learning model assisted by LKPD has a significant effect on student learning outcomes. This is in accordance with the findings of previous research [6], which shows that the use of LKPD in jigsaw type cooperative learning can improve student learning outcomes.

4   CONCLUSIONS

Based on research findings, the jigsaw type cooperative model has a significant effect both on student activeness during the learning process and on student learning outcomes in salt hydrolysis material in class XI MIPA SMA Negeri 1 Sukamulia. In contrast to the control class which used the Discovery Learning Model, the average post-test score was 69.04 and classical completeness was 37.5%, experimental class students who used the Jigsaw Cooperative Learning Model obtained an average post-test score of 80.5 and classical completeness 75%. The average increase in the experimental class was 47.54, while the average in the control class was 35 with a difference of 12.54 points.

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