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Application of Cooperative Problem Posing and Prior Motivation Towards Students Learning Outcomes

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Abstract

The students' physics learning achievement at UIN STS Jambi was still low. It was caused by teaching learning process which was still dominated by lecturer (Lecterer Centered) and the students lack of prior motivation to learn Physics Statistic. One of the solutions to solve those problems was that applying the cooperative problem possing model. This research was aimed at investigating the interaction of cooperative problem posing model and prior motivation towards students' learning achievement of physic statistic. The Population of this research was 41 students and sample was 20 students. It was taken by using total sampling technique. This research was conducted in two classes namely experiment and control class. In experiment class, the students were taught by using cooperative problem posing model while students in control class were taught by using conventional model. Every class had two classifications of students, high motivated students and low motivated students. The data were taken from questionnaire and test which were conducted before and after treatment. Furthermore, the data were analyzed by using t-test and two ways anova for different number of sample. The results of data analysis showed that there was no interaction between cooperative problem posing model and prior motivation towards students' learning achievement in cognitive domain.

Keywords: *Cooperative Learning, Problem Posing, Prior Motivation, Learning Outcomes*

1. Introduction

Statistics Physics is one of the sciences that are in direct contact with developing technologies and very useful for people's lives, so it takes a solid mindset also in other words there is a big opportunity for students to be able to ask questions or formulate problems (problem possing) that indeed it is considered very necessary to be resolved or solved (Chotimah, H and Dwitasari, Y. 2009). Teaching materials of Physics Statistics is expected to be able to increase one's love to Allah, can foster scientific attitudes, increase scientific experience, and also be able to improve the ability to think through several natural events - natural events. This makes it easy for students to master the concepts and principles in statistic physics so that they can spur the development of science and technology.

The two factors that can cause low learning outcomes are External factors from inside of the students and internal factors from outside of the students. The external or external factors that influence physics learning outcomes are the learning model used and the subject matter taught, while the internal factors are the intelligence abilities, backgrounds, thinking styles, interests and also talents, and learning motivation of the students. In order to make the learning process runs smoothly, there must be a correlation between internal and external factors so that the teaching materials given by the lecturer can be understood by the students.

Through learning physics statistics, asking questions or direct problems (problem posing) felt by students in the form of conflict with the aim is to indirectly

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accustom the students to identify, analyze, and provide opportunities for students to acquire skills in problem solving which can stimulate Students' critical thinking skills (Chotimah, H and Dwitasari, Y. 2009 and Redhana, IW 2003). Therefore, in order to make a meaningful knowledge, lecturers need to be emphasized about the importance of efforts to develop activities, critical, creativity, and students motivation in the learning process (Uno, H.B. 2007)

Cooperative learning derives from the word cooperative which means to help one another as a work group. In small group, the number of the students can be 4 or 6 people collaboratively to stimulate the students to be more passionate in the learning process in order to achieve a goal (Slavin, R.E. 1995 and Johnson. 1994). Based on the description above, it can be interpreted that cooperative learning is working together to achieve successful learning based on individual self-ability and contributions from other group members during group learning together. It has been proven in various subject matter (Isjoni. 2009 and Mahanal, S. 2007 Cooperative learning model problem posing type was conducted by Silver and Cai in 1996 and developed in 1997 by Lyn D, English, and initially applied in mathematics, then this model was also developed in several other subjects. problem posing type cooperative learning is a learning process that requires students to ask their own questions through practice questions independently. The process of the problem posing type cooperative learning model is students share the problems they make and solve these problems in the forum. elas. (Chotimah, H and Dwitasari, Y. 2009).

The problem posing type of cooperative learning model is one of the learning models that can activate students, increase the ability to think critically and creatively so that it can be developed which is expected to later be able to build a positive attitude from students, thus bringing up qualified human resources to face the future of the industrial era 4.0 which certainly has more challenges going forward. Information that can be processed in the mind, after we know students can make questions (questions), these activities will make students actively construct learning outcomes in physics, especially in physics courses, even though motivation cannot be denied has an important role in improving learning achievement.

Motivation comes from the word "motive" which can be interpreted as a driving force that exists in humans by being driven by other elements in achieving goals. (Mc. Donald, F. 1959 and Sardiman, A.M. 2009). This, it seems very clear that a motivation can function both as a driver and director as well as a driver of one's behavior to achieve a maximum goal. The existence of a good motivation in learning will bring up the maximum results of course. In other words, a maximum effort, perseverance and mainly based on the existence of motivation, then someone who learns will bring about good achievement. The intensity of a student's motivation will greatly determine the level of achievement of his motivation to learn and again the lecturer is an important factor to ensure the implementation of the elements in the learning process in an appropriate, accurate, and efficient manner especially in terms of meeting the needs of today's students. Student motivation in cooperative learning mainly lies in how the structure of achieving learning objectives when students carry out teaching and learning activities carried out in the classroom.

2. Research Method

The populations of this study were all students of the sixth semester of Physics Education Study Program at State Islamic University Sulthan Thaha Saifuddin Jambi in 2018/2019 academic year. Data collection techniques in this study began by providing a prior motivation questionnaire for students to learn before the learning process was carried out and conducted tests of cognitive domain learning outcomes. After the statistical physics learning process was completed for one Semester or sixteen meetings, the researcher conducting interaction analysis by using 2-way anova. Data analysis was aimed at analyzing how the prior motivation value and the average score of learning outcomes in statistic physics courses between the experimental and control class.

The research design used to measure the interaction of problem posing cooperative learning models and Prior Motivation on students' physics learning outcomes in statistic physics course was *treatment by blocks 2x2*.

In accordance with the formulation of the problem, to test the hypothesis used previously, the researcher used t-*test* because it compares the two sample groups on the learning outcomes namely the monitor domain and also see the results of prior student motivation both high prior motivation and low prior motivation. After the data was ready, the Hypothesis test by using two-way variation (Anava) was used with the *unweighted means method* can be conducted. The *unweighted means method* was used because researcher wanted to see the interactions. According to Furguson (1976: 256), the *unweighted means method* is caused by the experimental class and the control class having n different samples. Overall, the hypothesis to be tested is as follows.

Hypothesis

H_o : there is no interaction between the learning model and Prior motivation in influencing student physics learning outcomes

H_1: There is an interaction between the learning model

and the prior motivation to learn in influencing student learning outcomes in physics

3. Result and Discussion

Based on this research method, A*NAVA*with a 2 x 2 was used to test hypothesis in this study. value of Fcount is 0,000311 and F_{table} is3,28 where $F_{count}<F_{tabel}$. his shows that the null hypothesis is accepted while the working hypothesis is rejected. This means that there is no interaction between learning using problem posing and conventional type of cooperative learning with high and low prior motivation towards learning physics in statistics physics.

. The occurrence of statistically significant differences in learning outcomes between learning models and prior motivationis one of the causes of no interaction, where the learning model using cooperative problem posing type is seen both from high and low motivation, better than conventional learning, in conventional learning does not mean learning by lecturing but learning is done with many models in a manner that takes place continuously, but in accordance with reality in the field the results obtained are always unsatisfactory. Whereas the use of problem posing cooperative learning models can significantly improve student learning outcomes. Differences in cognitive physics learning outcomes of students taught cooperatively with problem posing type with high and low prior motivation of 83,97(97,2–70,75), whereas for students taught with conventional models have differences in learning outcomes of 70,62 (84–70,62). Thus, it can be concluded that the two groups have significant differences in statistics physics learning outcomes.

From the recapitulation of the average value of the ability to learn statistics physics in Table 5, if a straight line is drawn from the low prior motivation and high prior motivation, it will form an ordinal line because the two lines do not intersect. This becomes one of the indications that to improve student learning outcomes in statistics physics, one of which can be done by applying the model of problem posing cooperative models. In other words, the cooperative model of problem posing type is effective for improving learning outcomes in statistical physics courses.

Based on the results of the analysis of hypothesis testing, there was no interaction between the problem posing cooperative model and the prior motivation towards the cognitive learning outcomes of students. The absence of this interaction is due to the cooperative problem type possession model which has significantly been able to improve student learning outcomes.

In accordance with the results of research conducted by Suroso (2006) that the cooperative learning model problem posing type can increase student motivation by 85% and Alhidayat research (2009) where student learning outcomes increase by 90% from the KKM level 75 without variables that can affect student learning outcomes. This shows that the cooperative model of the problem posing type can be used in various situations in learning without considering the students' prior learning motivation.

4. Conclusion

From the results of the research and the results of data analysis that have been shown, the following conclusions can be drawn: The statistics physics learning outcomes of students who use problem posing cooperative learning models are better than students who use conventional learning. The statistics physics learning outcomes of students who have high prior motivation and used the problem posing type of cooperative learning model are better than the students who have high prior motivation and use conventional learning. The statistics physics learning outcomes of students with low prior motivation and use problem posing cooperative learning models are better than students who have low prior motivation and use conventional learning. There is no interaction between the learning model and prior motivation in influencing students of statistics physics learning outcomes.

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