IMPLEMENTATION OF QUESTION CARD ASSISTED TAPPS ON STUDENT LEARNING OUTCOMES AND ACTIVITY

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Abstract

This study aims to determine the effectiveness of the application of the TAPPS model assisted by Question Cards on student learning outcomes and activeness. The population in this study were students of class XI-IPA at SMA Negeri 1 Karanganyar, Demak. Determination of the sample using the purposive sampling system obtained two classes to be sampled, namely class XI-IPA2 as the experimental class which was treated using the TAPPS model assisted with Question Cards while XI-IPA1 as the control group which received treatment using the lecture method assisted by Question Cards. The research data were obtained by means of test and observation. Based on the results of the study, the average value for the experimental group was 83.16 while for the control group an average value of 77 was obtained.Based on the analysis based on the learning outcomes, the experimental group's results were better than the control group as indicated by the t_{count} (3.59)> t_{table} (1.98). As for student activeness, it was found that the experimental group was better than the control group with the results of data analysis t_{count} (4.23)> t_{table} (1.98). solubility subject matter and solubility product, with the magnitude of the influence on student learning outcomes is 20.48% and the magnitude of the influence on student activeness is 27.04%.

Keyword : Question Card; TAPPS; Learning outcomes; student activity.

1. INTRODUCTION

Education is very important in determining individual development and community development. One of the efforts to improve the quality of education in Indonesia is the implementation of the Education Unit Level Curriculum. In KTSP, learning in the science and technology subject matter group aims to develop students' logic, thinking skills, and analysis (Mulyasa, 2007). This implies that students are no longer passive recipients of information, but become students who are always active and creative.

Along with the change in the learning paradigm, the success of teaching and learning activities is not only determined by the teacher / teacher factor, but is strongly influenced by student activity. The main task of the teacher is actually to teach students, namely to condition students to learn actively so that their potential (cognitive, affective, and conative) can develop optimally.

Based on an interview with a chemistry teacher at SMA N 1 Karanganyar, Demak, the learning applied by the teacher is still conventional because it still uses the lecture method. Learning is only dominated by teachers, while students do not get the opportunity to actualize their potential so that in the learning process students are still passive in following lessons. Many students of SMA Negeri 1 Karanganyar, Demak have difficulty understanding chemical materials, especially solubility and solubility products. In addition, in problem solving activities students in the learning process can be said to be low, this is because the teacher rarely provides practice questions at a higher level to students, the questions given by the teacher are still at a low level so that students are less trained to do the questions. questions with a higher level. Based on the average score of class XI IPA 1 semester 1 students is 77.05, while class XI IPA 2 students are 76.60 and class XI IPA 3 students are 76.40 with KKM 70.

Problem-based learning aims to form independent individuals, because in the learning process, student participation is prioritized and highly emphasized, besides that activity both cognitively, effectively and psychomotor with full student involvement in the learning process will manifest skills, both intellectual and social skills. and physically useful later in real life (Apriyanto, 2017). The TAPPS Learning Model is a problem-based learning model consisting of two students working together where one student acts as a problem solver while the other student acts as a listener. Problem Solver is tasked as a problem solver by expressing the results of solving the problem verbally by expressing all ideas or opinions and explaining what, why and how the solution is taken so that the listener can understand the solving steps of the problem solver. The listener's job is as a listener so that the listener is asked to understand every step or error that results from the problem solver. According to Safitri (2019) the TAPPS learning model can provide opportunities for students to control and be able to

produce and filter various problem solutions in learning material. According to Michael (2011) the TAPPS learning model is a way to facilitate collaborative learning or as a way for teachers to identify student misunderstandings in mastery of the material. Simpol (2017) suggests that using the TAPPS model improves problem solving by improving problem solving where after intervention some student responses are more organized. TAPPS is a good strategy to teach because it is simple, immediately approaches the problem and sounds right (Suhendro, 2020). In the implementation of the TAPPS learning model it allows the occurrence of various student activities not only as listeners but also actively involved in solving problems, asking questions, expressing opinions, and providing explanations to other students. The involvement of students in various learning activities makes it possible to develop student character. Anita (2007) explains that TAPPS is a learning model that involves two to four students working together to solve a problem. Each student has their respective assignments and teachers are encouraged to direct students according to predetermined procedures.

All stages of TAPPS learning can be described as follows: 1) The teacher shares different problems with problem solvers (PS) and listeners (L); 2) Every single problem was done by 2 different groups; 3) PS and L Study the problems each for 5 minutes; 4) PS starts reading the questions and then resolves the problems while explaining to L; 5) L observes the problem solving process, asks if there are things that are not understood, or provides directions and guidance if the study program finds it difficult; 6) • The teacher goes around the class observing and helping smooth the discussion; 7) After the problem is solved the teacher asks 2 groups that have the same problem to present the results of solving the problem in front of the class; 8) Give awards for the best PS and the best L and the best Team.

In learning in the current era, the role of students is very much needed, especially in their interactions, both student-teacher interactions and student-student interactions. Student activeness is needed so that learning runs smoothly so that student interest in the learning process becomes great. Activeness is an activity that is both physical and mental, namely acting and thinking as an inseparable series (Asiah at al. 2017). Involving students actively in chemistry learning is very important, because in chemistry there are many problem-solving activities that require active student creativity. The hypothesis of this research is that the use of the TAPPS learning method assisted by Question Card media is effective on learning outcomes and activity of SMA 1 Karanganyar students on solubility material and solubility product.

2. RESEARCH METHOD

The population in this study was class XI-IPA which consisted of three classes in SMA N 1 Karanganyar, Demak. Sampling was carried out using purposive sampling, namely the sampling of research not based on strata, random or regional but based on the existence of certain objectives (Arikunto, 2006). The class that acts as the experimental class is the class that has a lower class average, which acts as an experimental class, namely class XI IPA 2, while the control class is the class that has a higher class average, which acts as a class. control, namely class XI IPA 1.

The independent variable in this study is the use of the TAPPS learning strategy with the help of Question Cards and the lecture learning model assisted by the Question Card, while the dependent variable is the learning outcomes and activeness of the students of SMA N 1 Karanganyar, Demak on the solubility material and the results of the solubility products are expressed by post-test scores. at the end of the learning process.

True experimental research design, with control group pre test-post test design was used in this study. Data analysis used normality test, homogeneity test. Furthermore, to determine the magnitude of the influence of the application of the TAPPS model assisted by Question Cards on learning outcomes and student activeness of solubility material and solubility product, the biserial correlation coefficient analysis was used followed by the calculation of the coefficient of termination.

3. RESEARCH FINDINGS AND DISCUSSION

Early stage data analysis was based on the average value of class XI IPA SMA Negeri 1 Karanganyar, Demak. The data used were the odd semester chemical test scores. Based on initial data obtained based on Table 1.

Table 1 Baseline population data

Class	Rata-rata	Group
XI IPA 1	77,05	Control
XI IPA 2	76,60	Experiment
XI IPA 3	76,40	-

The pre test is used to determine whether the class taken by purposive sampling technique departs from the same initial conditions. Seeing the students' initial conditions, both the experimental class and the control class had relatively the same initial ability as seen from the average pre-test scores. The mean of the initial test for both classes was 31.39 for the experimental class and 35.19 for the control class. The normality test, the two-variant similarity test and the two-mean difference test were carried out to find out that the control group and the experimental group departed from the same class. The results can be seen in the table.

Table 2 Normalitis Test Results Data Pre Test

Data	Control	Experiment
χ^2_{hitung}	5,7701	4,7645
χ^2_{tabel}	7,81	7,81
Criteria	normal	normal

Table 3 Homogeneity Test Results

Data	Varians (s^2)		F_{hitung}	F_{tabel}	Criteria
	Control	Experiment			
Nilai pre test	100,8964	84,6733	1,192	1,84	Homogen

Table 4 Difference Test Results of Two Pre-Test Data Average

Data	t_{hitung}	t_{tabel}	Criteria
Pre Test	1,832	1,988	No difference

The research was conducted for 5 face-to-face meetings consisting of four meetings in class and one meeting in the laboratory in the learning process and one meeting for the implementation of the final test (post test) in the two classes of research objects. In learning in the experimental class, students were given the questions listed on several cards then solved together with their peers. At the end of the learning process students are guided to answer the questions that have been given completely. This will train students to think hard in solving these problems.

The post test at the fifth meeting contained the results used for hypothesis analysis, normality test and similarity test for two variance data on the posttest scores in the two groups. The results of the calculation of the normality test can be concluded that the data of the experimental group and the control group are normally distributed. So that what is used is parametric statistics. The two-variance similarity test shows that both classes have the same variance. Based on the post-test data, it is known that the average cognitive learning outcomes of the experimental class are greater than the control class, namely 77 and 83.16, respectively.

Based on the data from the post test results, the analysis of the homogeneity test and the normality test was carried out as presented in the Table

Table 5. Post test homogeneity results

Data	Varians (s^2)		F_{hitung}	F_{tabel}	Criteria
	Control	Experiment			
Post test	71,14	62,14	1,1449	1,84	Homogen

Table 6. Post-Test Data Normalitis Test Results

Data	Control	Experiment
χ^2_{hitung}	5,57	4,855
χ^2_{tabel}	7,81	7,81
Criteria	Normal	Normal

The learning outcomes using the TAPPS model assisted by the Question Card in the experimental class are said to be better than the control class. The two mean difference test for the right side uses the t test formula. This is because the experimental group and the control group have the same variance. Based on the calculation results, the t-count price is 3.597 while the t-value (0.95) (85) is 1.988 because t-count is greater than t-table so that H0 is rejected, which means that the experimental group is better than the control group.

Hypothesis testing is used to determine the influence and magnitude of the effect of learning with TAPPS assisted by Question Cards on the chemical learning outcomes of solubility metrics and the product of solubility using the biserial correlation coefficient (rb) and the coefficient of determination (KD). From the calculation results obtained the biserial correlation coefficient of student learning outcomes (rb) of 0.45. If it is adjusted to the guidelines for giving interpretations to the correlation coefficient (Sugiyono, 2006), it can be said that the effect of the TAPPS Model assisted by Question Cards has a moderate effect on chemistry learning outcomes. Based on the calculation, the coefficient of determination (KD) for learning outcomes is 20.48%.

Based on the data on the results of student activity, the analysis of the homogeneity test and the normality test was carried out in the table.

Table 7.Student homogeneity test results

Data	Varians (s^2)		F_{hitung}	F_{tabel}	Criteria
	Control	Experiment			
Post test	24,88	27,20	1,139	1,84	Homogen

Table 8. The results of the Student's Activity Normalitis Test

Data	Control	Experiment
χ^2_{hitung}	4,66	4,98
χ^2_{tabel}	5,99	5,99
Criteria	Normal	Normal

The activeness of students using the TAPPS Model assisted by the Question Card in the experimental class is said to be better than the control class using the two-right mean difference test using the t test formula. This is because the experimental group and the control group have the same variance. Based on the calculation results, the t-count price is 4.238 while the t-value (0.95) (85) is 1.988 because t-count is greater than t-table so that H0 is rejected, which means that the experimental group is better than the control group. With the price of the determination coefficient (KD) of student activeness of 27.04%.

Based on the results of the analysis above, which explains that the application of the TAPPS Model assisted by the Question Card affects student learning outcomes and activeness. This is in accordance with the theory (Mulyasa, 2007), so that students can learn actively the teacher needs to create appropriate strategies in such a way that students have high motivation to learn. Motivation like this will be created if the teacher can create an atmosphere of learning that always looks interesting, not boring. In this case, the strategy used is to apply the TAPPS model assisted by the Question Card. With the TAPPS model assisted with Question Cards, students are not only taught to think harder, but students are also invited to be more active in the learning process, so that students will be happier in taking part in learning.

The advantages of using this method can be seen from several things, including: (1) maximum student involvement in learning, (2) cooperation and team dynamics are quite good, especially in answering given cases, (3) the presence of questions and answers makes students are active in critical thinking and increase student learning activities, (4) practice solving cases often makes students have skills and dexterity in solving problems, (5) solving

cases can provide opportunities for students to apply the knowledge they have in the real world. However, even so there are also some obstacles from the application of the Combinatorial Chem-chard-assisted TAPPS Model, including: (1) lack of teacher preparation in developing learning strategies, (2) insufficient time to discuss cases, so there are several cases that must be solved independently by students (3) Students do not prepare material to be discussed in the learning process. Thus, efforts are made to reduce the weaknesses that become obstacles by carefully preparing the concepts that will be carried out in the learning process. Students are encouraged to study the material to be studied at the next meeting so that learning will run more conducive.

4. CONCLUSION

Based on the results of research and discussion, it can be concluded that the application of the TAPPS method assisted with the Question Card has an effect on learning outcomes and student activeness in the subject matter of solubility and solubility product. The magnitude of the influence of the application of the Question Card-assisted TAPPS model on student learning outcomes on the solubility subject matter and the solubility product was 20.48%, while the influence on student activeness was 27.04%.

Based on the results of the research that has been done, the researchers suggest that teachers in teaching should actively involve students so that students feel more valued and cared for so that it will increase good learning behavior. It is hoped that teachers can take advantage of this method in learning to increase student interest in learning chemistry. For further research, it is necessary to pay attention to some of the obstacles that occur at the time of research in order to find solutions.

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