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Effects of TASC Learning Model (Thinking Actively In A Social Context) on Ability Problem-solving in Natural Resource Management Materials

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Abstrak

Penelitian ini bertujuan untuk menganalisis pengaruh model pembelajaran TASC pada kemampuan siswa untuk memecahkan masalah dalam materi manajemen sumber daya alam. Penelitian ini menggunakan metode eksperimen dengan desain *Non-equivalent Pretest-Postest Control Group Design*. Hasil penelitian ini menunjukan bahwa model pembelajaran TASC memiliki efek pada kemampuan pemecahan masalah siswa dalam materi manajemen sumber daya alam, di mana siswa kelas eksperimen yang menggunakan model pembelajaran TASC memiliki keterampilan pemecahan masalah yang lebih baik daripada kelas kontrol yang menggunakan model diskusi kelas. dalam materi manajemen sumber daya alam. Berdasarkan hasil pengujian hipotesis, disimpulkan bahwa ada perbedaan yang signifikan antara siswa yang belajar menggunakan model pembelajaran TASC (Berpikir Aktif Dalam Konteks Sosial) dengan siswa yang belajar menggunakan model pembelajaran diskusi kelas tipe kooperatif untuk menyelesaikan masalah.
Kata Kunci: Kata kunci terdiri dari 3-5 kata dipisahkan dengan koma

Abstract

This study aims to analyze the effect of the TASC learning model on students' ability to solve problems in natural resource management material. This study uses an experimental method with the design of Non-equivalent Pretest-Postest Control Group Design. The results of this study indicate that the TASC learning model has an effect on students' problem solving abilities in natural resource management materials, where experimental class students who use the TASC learning model have better problem solving skills than the control class that uses the class discussion model. in natural resource management material. Based on the results of hypothesis testing, it was concluded that there were significant differences between students learning using the TASC learning model (Active Thinking in Social Context) with students learning to use cooperative type class discussion learning models to solve problems.
***Keywords**: TASC learning model, problem-solving ability, students, natural resource management.*

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INTRODUCTION

Increasing the ability to solve complex problems is needed by students in real life (Nur, 2010). The ability to solve problems in the 2013 curriculum is one of the abilities students must possess in a variety of learning. 2013 curriculum has a basic viewpoint that knowledge cannot be transferred spontaneously from teacher to student. This is because students are subjects who have the ability to be active in finding, processing, constructing, and using knowledge (Ariandi, 2016). The problem-solving ability is a level of thinking that lies at the highest level among 8 (eight) types of learning (Bell, 1978). The eight types of learning are learning signals, learning stimulus-response, learning to assemble, learning verbal associations, learning discrimination, learning concepts, learning rules, and learning to solve problems. The ability to solve problems is an activity that is quite complicated and requires visualization, imagination, manipulation, analysis, abstraction, and unification of ideas (Johnson and Rising, 1972), so that it requires steps that can be understood by students.

Students must understand the stages of solving problems. The first step in solving a problem is defining the problem. The first step is considered quite creative and very important. This is because having an understanding of the definition of a problem can lead to unexpected solutions (Bigelow, 2004). Someone who has a way of defining problems creatively is believed to be more influential in the success of solving problems (Runco, 1994). The problem-solving principle provides an understanding of the component regarding the problem itself.

The basic principle of problem-solving ability is to provide opportunities for students to define problems and conduct research to solve them (Nasution, 2015). Social studies learning, in this case, is expected to be able to help students develop competencies in solving various problems that occur in society. In a classroom learning to bring up students' problem-solving skills there is a need for appropriate learning methods and models. This is because the learning model used influences the quality of the teaching and learning process that is carried out at each level, one of which is the level of junior high school education. With the selection of innovative learning models, students can be actively involved and not merely become an object. The process of learning activities is not only teacher-centered but is student-centered. Learning that focuses on students by improving problem-solving skills can be taught through TASC learning (Faulkner, 2008).

TASC is a type of learning model that uses problem-solving in general and to promote different learning experiences (Wallace & Bernardelli & Molyneux and Farrel, 2012). TASC has four important elements, namely: (1) Thinking, where thinking is something that is not static. Through activity thinking also learners will grow and develop into a human. (2) Actively, is a trait that is able to foster feelings and willingness of students to learn and see the purpose of the learning activities undertaken. (3) Social,an element that is a summary of the important elements in social life, namely interaction (interaction) ,dividing (sharing) ,and collaboration (cooperation). (4) Context can be interpreted as a class, not only within the boundaries of space but also a collection of individuals, class/group characters and special or specific situations or needs for that class. The context in learning with the TASC model must contain three main elements, namely having relevance to the needs and experiences of students (relevant), relating to the reality of the lives of students (linked with real life), and cultural significance (culturally meaningful). Learning that builds thinking skills must be rooted and derives from the experience and social context in which students live (Kawuryan, 2008). Furthermore (Maltby, 1993) said that TASC is a multiphase problem-solving model that combines cognitive abilities and cognitive strategies. TASC aims to teach students to learn to think analytically in solving problems both on their own and together and are able to teach other students what they have learned in context.

Natural Resource Management material in social studies learning using the TASC learning model is considered very possible to apply. This is related to the management of natural resources closely related to the socio-cultural aspects of society, not least from students. Management of natural resources cannot be separated from social changes in the community. In terms of the social context, the management of natural resources found in traditional communities focuses more on conformity with the environment. Whereas in modern society there are many elements related to overcoming or changing environmental constraints. Without being balanced with environmental awareness and sustainable management of natural resources, it is not impossible that environmental issues are increasingly complex. This is what underlies the use of the TASC learning model on natural resource management material to improve the ability to solve problems that occur in the social environment of students. Because, in a survey in 2007 in the United Kingdom, the use of the TASC learning model was able to improve problem-solving skills for students (Wallace, 2015)

Contextually the conditions of students in MTS Asy-Syakur Nglingi Bojonegoro tended to lack the ability to solve problems. This is evidenced that most students of class VIII complain about various problems when they are late for school. Some of these complaints are the difficulty of getting clean water during the dry season because they have to travel far enough or have to stand in line with many people to get clean water. This makes learning and teaching activities no longer conducive. As reflected when students take social studies to seem unenthusiastic in asking questions and answering questions from the teacher. Students tend to look passive in participating in learning activities. So it is necessary to make an effort to create conditions intentionally so that the learning objectives can be achieved. In this case, students are expected to be able to have the ability to solve each problem contextually.

Contextual learning is greatly needed by students with the help of the teacher. Basically, in the learning process, the position of a teacher teaching in a learning perspective is the teacher as a provider of learning facilities for students to learn about (Suprijono, 2012). Based on this statement, the learning process should be student-centered (rather than teacher-centered (teacher center teacher center).

Various experts have conducted research related to learning with the TASC type cooperative model, there is an influence of the TASC model on active and effective thinking skills (Wallace Belle & Harvey B Adams, 1991) primarily aimed at meta-cognitive aspects in solving problems that include specific training in thinking and solving skills problem. A study states that TASC is a very powerful tool for reaching and expanding all learners in the classroom (Layland, 2009). In some of the presentations, the students made it seemed very interesting for teachers who had tried this method. Besides that, TASC also trains creative thinking for students because basically every individual has a unique character and strong curiosity to ask questions in finding out about the world in which they live, so that teachers and parents should play an important role in fostering questions and developing the mind curious and investigating all the potential of children for wise discovery (Rani, Susanti & Rahayu, 2015), (Rosidi, Ibrahim & Tjandarkirana, 2013), (Wallace, Bernardelli, Molyneux & Farrel, 2012). Other research shows that TASC influences students' critical thinking skills (Alkusaeri, 2013), (Belle Wallace, 2008), ability to create (Haryandi, 2015), improvement in learning outcomes (Masita, Nuur, Mahanal & Suwono, 2016) and problem solving abilities (Wallace, Bernardelli, Molyneux & Farrel, 2012).

Based on the description stated above, it can be concluded that the initial idea in the study was based on the desire to improve students' problem-solving skills through social studies learning with the TASC learning model, especially in the MTS Asy-syakur Nglingi Bojonegoro. Therefore, the focus of the problem in this study is the understanding of the influence of the TASC learning model in improving students' problem-solving skills with planned learning objectives.

METHOD

This study uses Quasi-Experimental Design, which is like experimental research but the research subjects are not completely randomly selected (Tuckman, 1972). The type used in this study is the Non-equivalent Pretest-Postest Control Group Design. The groups used in the design of this study were two groups, namely the experimental group treated with the TASC learning model and the control group (the group with the class discussion method). The population in this study were eighth-grade students of MTs Asyur-Syakur Nglingi Ngasem Bojonegoro academic year 2018/2019. There are 3 class VIII MTs Asyur-Syakur Nglingi students with a total of 66 students consisting of 36 women and 30 men with different academic abilities. Sampling in this study was conducted using cluster random sampling technique (Nazir, 2009). In selecting samples using separate samples, namely the experimental group and the control group. The method used in collecting Dalat is a written test in the form of a pre-test and post-test which was tested first and foremost by validity and reliability. The collected data is then analyzed using the normality test, homogeneity test, independent t-test, and N-gain test. Artikel hasil kajian kepustakaan memiliki ketentuan pada perumusan masalah harus muncul secara eksplisit dan metode/cara mengkajinya harus dituliskan dibagian ini. Urutan yang dipaparkan pada bagian metode, harus sesuai dengan urutan pada bagian hasil penelitian.

RESULT AND DISCUSSION

Validity and Reliability test

Before the learning outcomes test is carried out by using the pre-test at the beginning of the meeting, the items in the test are validity and reliability tests. This is done to find out whether the instrument is valid or not and quite reliable. The results of the validity and reliability test are as follows.

Tabel 1. Instrument Validity

No. Item	Sig. (2 tailed)	r_{ecount}	Conclusion
1	0.020	0.515	Valid, Fairly High
2	0,000	0.812	Valid, Very High
3	0.025	0.536	Valid, Enough High
4	0,000	0.847	Valid, Very High
5	0,000	0.793	Valid, High
6	0.001	0.690	Valid, High
7	0,000	0.812	Valid, Very High
8	0.034	0.476	Valid, Fairly High
9	0,000	0.847	Valid, Very High
10	0,000	0.793	Valid, High
11	0,000	0.819	Valid, Very High
12	0.003	0.623	Valid, High
13	0,000	0.819	Valid, Very High
14	0,000	0.847	Valid, Very High
15	0,000	0.793	Valid, High

While the calculation of reliability of the observation sheet solved the problem using the formula Cronbach Alpha SPSS 22.0 program obtained Cronbach's Alpha value was 0.906. Based on the value Cronbach Alpha and after being matched with the available criteria in the table above, the written test instrument for problem-solving ability is included in very high reliable criteria.

Test Requirements for Data Analysis

To find out the differences in the initial learning outcomes of the study and the final learning outcomes of the study on students in problem-solving skills used a multiple choice written test called the pre-test. As for knowing the differences between students who use the TASC learning model and students who use cooperative type class discussion learning models, the test are used independent sample t-test and N-gain. But before the hypothesis testing is carried out, the requirements test first includes the distribution normality test and variance homogeneity test. The following is explained the test requirements for the initial learning outcomes of the test of students' problem-solving skills in the material principles of Natural Resource management.

Tests are conducted to test whether the data generated from the study are normally distributed or not. The normality test in this study used the formula Kolmogorov-Smirnov and in the calculation using the SPSS 22.00 program. The value of the normality of the initial data of the study through the test of problem-solving ability (pre-test) of the experimental class and the control class can be seen in the table as follows.

Table 2. Pre-test Normality Test Results

Test *Kolmogorov-Smirnov*	**Group**	
	Class Control	**Class Experimental**
Statistics	0.172	0.162
Sig.	0091	0138
Conclusion	Normal	Normal

Source: Primary Data Processed

The value of normality end of the study through a problem-solving skills test (post-test) experimental class and control class can be seen in the following table.

Table 3. Post-Test Normality Test Results

Test *Kolmogorov-Smirnov*	**Group**	
	Class Control	**Class Experimental**
Statistic	0.172	0.175
Sig.	0.091	0.076
Conclusion of	Normal	Normal

Source: Primary Data Processed

Homogeneity test was used to determine the level of similarity of variance between two groups of data namely the experimental group and the control group. To be able to accept or reject the hypothesis is done by comparing the significance value of the Levene's statistic results with a confidence level of 0.05. If the value is sig. > 0.05 then the data is homogeneous and if the value is sig. <0.05 can be said that the data is not homogeneous. The value of the initial homogeneity of the research data through the problem-solving ability test (pre-test) of the experimental class and the control class can be seen in the table as follows.

Table 4. Homogenity Test Results

Test	**Levene Statistics**	**Sig.**	**Conclusion**
Pre	0.07	0.79	Homogeneous
Post	0.99	0.32	Homogeneous

Source: Primary Data Processed

Tests Testing of the effect of the TASC learning model on problem solving skills in Alama Resource management material using inferential analysis of t-test through the help of SPSS 22 program and using N-gain test with the help of excel program to know the general picture of the increase in results between before and after the implementation of the TASC learning model in the experimental class and cooperative type class discussion models in the control class.

Hypothesis Test

This hypothesis test was carried out before students got treatment, where the experimental class received treatment with the TASC learning model and the control class using a cooperative type class discussion model. The calculation results of the t-test hypothesis test using the SPSS 22 program are presented in the following table.

Table 4. Homogenity Test Results

Test	Mean		T-Value	P Value
	Control	Experiments		
Pre	43.68	46.86	-1.028	0,310
Post	53.32	66.91	-2.523	0,016

Based on SPSS output 22 in the table is known that the values of -1.028 and ttable with a significance level (5%) 0, 05, degree of freedom (db) = (n-2) then obtained t(0.05) (42) table = -2,018. Then the results of the value of tcount<ttable, which shows the results -1,028 <-2,018. The significance level of 5% (0.05) has a significance value of α> 0.05, that is (2-tailed) 0.310> 0.05. So that it can be concluded that there is no significant difference in problem-solving ability between the experimental class and the control class before being given treatment, meaning that between the experimental class and the control class the ability to solve the same problem when done the pretest.

Based on SPSS 22 output in the table it is known that the value of tcount is -2.523 and ttable with a significance level (5%) 0, 05, degree of freedom (db) = (n-2) then obtained t(0.05) (42) table = -2,018. Then the results of the value of tcount> ttable, which shows the results of -2.523> -2.018. The significance level of 5% (0.05) has a significance value of α <0.05, which is sig (2-tailed) 0.016 <0.05. So that it can be concluded that there is a significant difference in the ability to solve problems between the experimental class and the control class after being given treatment, meaning the results of the experimental class problem-solving ability after being treated with the TASC learning model are better than the control class using cooperative type discussion class learning models.

N-gain Analysis

The results of the N-Gain test achievement of the value of the pre-test and post-test problem-solving ability of the experimental class and control class can be seen in the appendix and in the following table.

Table 5. Test Results N-gain Problem-Solving Ability

Group Class	Value Average *Pre-test*	Value avrage *Post-test*	Results of N-gain	Criteria
Experiment Class	46.9	66.9	0.38	Moderate
Control Class	43.7	58.3	0.26	Low

Source: *Primary Data Processed*

Effect of TASC Learning Model on Students' Ability to Solve Problems in Material Management of Natural Resources. Results of descriptive statistical data analysis the beginning of the written test is the ability to solve students' problems (pre-test) in natural resource management material in the experimental class and the control class shows the difference is not too far. Where the average pre-test value of the class experimentalis 46.9 and in the control class is 43.7. While the mean value post-test is the experimental class66.9 and in the control class is 58.3. The description of the results of the pre-test and posttest in the experimental class and the control class can be seen in the table below.

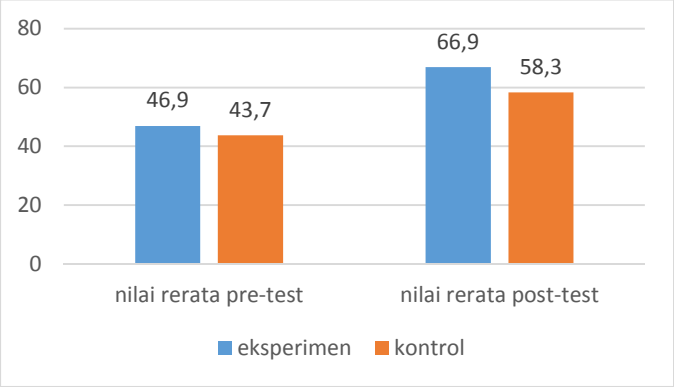

Figure 1, Mean Bar Diagram of Pre-test and Post-Test

Based on the presentation of the diagram above, it shows that the two research classes, both experimental and control classes have a pre-test value that is not too far away. The value obtained during the pre-test was caused by students not yet fully knowledgeable about the material to be studied. Students are able to work on several questions but the answer is wrong. While it was different at the time of the post-test when the students had obtained the material given by the teacher, both classes had an increase in the average value of the post-test. The difference is the number of increases in the average post-test value is different between the experimental class and the control class, where the experimental class has a higher average value than the control class.

The results of this study found that the t-test test aimed at knowing differences between students' problem-solving skills before the TASC learning model was applied in the experimental class and cooperative type discussion class learning models in the control class obtained tcount<ttable, namely - 1.028 <-2.018 and the significant value of α> 0.05, ie (2-tailed) 0.310> 0.05, then H0 is received and H1 rejected. So there was no difference between the experimental class and the control class before the treatment was given. That is, the two experimental classes were no better than the control class in problem-solving skills and students from both classes had the same ability in problem-solving skills.

Whereas after being given treatment, where the experimental class was given TASC model learning and the control class was given cooperative type class discussion model learning obtained the value of tcount> table, namely -2,523> -2,018 and significance value α <0.05, namely sig (2-tailed) 0.016 <0.05, then there is a significant difference in the ability to solve problems between the experimental class and the control class after being given treatment. This means that the results of the ability to solve the problem of the experimental class after being treated with the TASC learning model are better than the control class using cooperative type class discussion learning models.

These results are also in accordance with previous research, as done by Masita, Putri Nuur & Susriyati Mahanal & Hadi Suwono (2016) showing that learning with the TASC model is able to improve students' thinking skills, so that students are easier to solve existing problems by providing various alternative answers, so that the learning outcomes of students become maximal and students achieve learning completeness.

The difference in the results of the problem-solving ability test scores between experimental class students using the TASC model and the control class using cooperative type class discussion models is possible because each treatment has a characteristic in its application. The TASC learning model is designed to solve problems that include the stages of gather / organize, generate, decide, implement, evaluate, communicate and learn from experience so that students are looking for their own experiences based on natural resource management problems in the community. In learning TASC students were asked to collect information on the stage of gather /organize, identify the cause of a problem at this stage of identity,produce some solutions to problems on stage generated, making decisions in determining solving on stage decide, implement at this stage of the implement,evaluate the results of implementation at the stage evaluate, communicate the findings and evaluation results to get more further advice on the stage of communication, and get valuable learning at the stage of learn from experience.

Every stage in TASC learning is very important to do and systematically arranged. As for the main stages in problem-solving, the implement stage is the determining stage of the previous stages. So that students are able to evaluate the shortcomings and strengths of the results of the implementation of the solution from a chosen problem. However, not all students have the ability to solve the same problem. The results of the study showed that some students had low scores. This is possible because step by step is not passed carefully. Moreover, the stage implementation of students is required to have broad insight and quite high creativity. However, if students have narrow insights and less honed creativity, this certainly becomes an obstacle for students.

Through the stages contained in the TASC learning model, problems in learning materials that are adapted to learning material are problems that stimulate students to think and find solutions to problem-solving. Students are asked as much as possible to find a solution to a problem then make a decision about the most appropriate solution to be applied. This, of course, requires students to think and find solutions to a problem and make students experience learning in real life. If students are active in finding their own information, concepts, and generalizations then what has been directly determined will always be remembered and understood by the students. The decision is made jointly with the group members.

The results of this study are reinforced by Vygotsky's theory which states that the stages in student learning start from the assistance provided in stages, where at the beginning of learning students get a large amount of assistance then in the next learning the amount of assistance is getting smaller until finally the students are able to take charge of themselves independently. The assistance in question is in the form of instructions, warnings, encouragement, as well as explanations in describing the problem. The assistance can be obtained from teachers, parents, and peers. This is intended to develop the level of development of students. where the TASC learning model is a problem-solving strategy in learning requires a brain framework "mental scaffolding" to develop the potential or ability of each student (Alkusaeri, 2013).

CONCLUSION

Based on the results of hypothesis testing, it was concluded that there were significant differences between students who learned using the TASC learning model (Thinking Actively In A Social Context) with students who learned using cooperative type classroom discussion learning models

to solve problems. Where students who use the TASC learning model are better than cooperative type class discussion learning models. This is because in the TASC learning model there is a clear and systematic flow of steps in solving problems.

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