

## Effect of Learning Mathematics with Model of Bamboo Dance and Think Pair Share Aided Interactive Multimedia on Islamic Junior High School

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**Abstract:** This study aims to determine whether there is an average difference between student learning outcomes are subject to a bamboo dance learning model and think phare share model with interactive multimedia and conventional models to determine which is better. Data collection methods used consisted of test methods and documentation. Preliminary data such as test scores were analyzed using normality test, homogeneity test and one-way ANOVA test so that the experimental groups 1, 2 experimental and control groups can be used as a sample. Final data in the form of evaluation tests analyzed using normality test, homogeneity, classical completeness of test, one-way ANOVA test and t test and the simple linear regression test. The results of the final analysis obtained  $F_{hitung} = 53.20$  and  $F_{table} = 3.24$ , so  $H_0$  is rejected which means that there are differences in the average learning outcomes of all three groups. In a test of hypothesis 3 is obtained  $t = 2.83$  and  $t_{table} = 1.65$ , so that  $H_0$  is rejected means experimental group 1 is better than the control class. In the 4th hypothesis test obtained  $t = 2.96$  and  $t_{table} = 1.65$  so that  $H_0$  is rejected means that the experimental group 2 was better than the control group. In a hypothesis test five experimental class 1 is  $R^2 = 18.91\%$  and in experimental class 2 is  $R^2 = 18.145\%$  which means there is a contribution to the liveliness of student learning outcomes in experimental class 1 and 2. the conclusion of this study is the learning outcomes of students who get the bamboo dance and learning model TPS-aided interactive multimedia better than conventional learning model.

**Key words:** Bamboo dance, think pair share, interactive multimedia, learning outcomes, Indonesia

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### INTRODUCTION

Nasima Islamic Junior High School is located in the district Semarang. Nasima Islamic Junior High School is the best Islamic Junior High School in Semarang that has a good student, good teacher, good facilities, curriculum combined Islamic and nationality curriculum. But, the mathematics courses are still considered a scourge for most students. On one occasion, the researcher had made some observations to some students think math is a subject that is very difficult, complicated, difficult to understand, confusing, frustrating and even boring. Plus the delivery of material that is still largely limited monotonous and conventional learning models and less utilize learning models and multimedia attract students to study mathematics. It can be known by the subject matter of algebra test results of students of class 8 Nasima Junior High School is still a lot that has not yet reached KKM 70. While the average value of the number of learners 60-65 with 35 participants. There are 8 students or 23% of students who get high scores are above 75, 17 students

or 49% of students gained grades being that is 65-70 and 10 students or 29% of students receive learning outcomes under minimum completeness criteria.

Trend in International Mathematics and Science Study (TIMMS) a study conducted oleh International Association for the Evaluation of Educational Achievement (IEA) in 2007 ranked eighth graders Indonesia on peringkat 36 of the 49 countries participating in the acquisition of the average scores of students are 397 whereas the international average score of 500. The scores obtained are significantly below international terata score. The conclusion of the TIMMS study report is not much different from the results of PISA 2009 survey studied mathematics achievement of students in Indonesia are on the PISA data from 61 of the 65 countries participating in the acquisition an average score of 371 while the international average score was 500 (Effendi, 2012).

Efforts should be made to improve the quality of education in Indonesia is to improve teaching and learning process. Various concepts and new insights

about the learning process in schools has emerged and grown rapidly with the development of science and technology (Buchori *et al.*, 2015). And one to improve the learning process, a learning model that is exciting and fun, where students can learn independently and more time to think an interesting learning students can ask fellow students and his opinion/thoughts and one of the efforts to improve student learning outcomes by applying the learning model Think Pair Share (TPS) and the bamboo Dance assisted learning model of interactive multimedia.

Think Pair Share (TPS) is a cooperative learning model designed affect student's interaction patterns. Think Pair Share (TPS) is an effective way to make variations of the atmosphere pattern untuk class discussion (Rega *et al.*, 2013). Assuming that the recitation or discussion needs settings for controlling the overall class and procedures used Think Pair Share (TPS) can give students more time to think, to help each other and responding (Sugiarto and Sumarsono, 2014). So, the individualist nature of the students can be reduced and the students can easily interact with their friends.

Learning to use Think Pair Share (TPS) has been carried out by educators in some countries in Japanese, Arabic, Malaysia, Australia, etc. Part of this has been done by Kitaoka *et al.* (2011), Khalid and Halten (2012) and Othman (2014). Think pair share (TPS) was chosen because it has many advantages. The advantage based on the Bowering (2007) and Kothiyal *et al.* (2013) are students are trained to learn in a group activity or kalaborasi of 4-5 students which was preceded by an individual and the response of individual learning in a group (think). To train students based on communicative abilities with their friends to get the right solution (in pairs). To train students dared to present his findings (share) both shared within the group or sharing in the classical model than that Asgari and Borzooi (2013) and Lom (2012) states that learning Think Pair Share (TPS) is one of a kind cooperative learning for active pembelajaran highly effective and widely used in higher education. Bamboo dance is a strategy that allows students to share information at the same time. The existence of a clear structure and allows students to briefly share information and regular as well as providing opportunities and improve communication skills. Learning cooperative learning model bamboo dance technique provides an opportunity for students to interact with other students to the maximum (Chotijah, 2014). So that, students more interest and are keen to follow the learning should also be given interactive multimedia. Multimedia can deliver low student ability to expand learning time before moving forward. Alternatively, the high-ability

students can develop ideas through modules and not in a linear manner limit or delay. Aspects of multimedia learning support center strategy which learners are students who provide feedback in their learning process. Freedom to move or reduce follow self pasing and and important aspects that enable learners to learn based on the speed of each individual (Teoh and Tes-Kian, 2007). However, the other side in use Interactive multimedia has several limitations, among others. The development requires the team professional and development require considerable time (Husain *et al.*, 2016).

**Bamboo dance learning model:** Bamboo dance learning model this model allows the child to share information at the same time with different partners on a regular class (Wahyunii and Endah, 2015). Thus, the model of the bamboo dance can improve children's ability to develop their oral language, children's creativity in communicating and sharing information.

**Think Pair Share (TPS):** Think Pair Share (TPS) is a type of cooperative learning that is designed in the form of a discussion that could improve thinking skills, communication skills of students to encourage their participation in class (Nurwati *et al.*, 2012). According to Sholitan cooperative learning Think Pair Share (TPS) has explicitly procedure is to give students more time to think, respond to and help each other and activate students in the discussion process.

**Instructional media:** Instructional media are tools or objects used dala teaching and learning activities with a view to convey the message of learning from the source (the teacher only other source) to the receiver in this case (in this case the students or learners).

**Multimedia:** Multimedia is a combination of text, images, sound animation and video delivered via computer or electronic and digital equipment. The use of multimedia together-just as images and animations are equipped with sound, video clips and text but able to give a clear sense that they need (Sutopo, 2011).

**Interactive multimedia:** Multimedia interactive multimedia is one that comes with a controller that dioperasikan by the user so the user can choose what is desired for further processing (Novana *et al.*, 2012). Interactive multimedia is a combination of various media (file format) in the form of text, images (vector or bitmap), graphics, sound, animation, video interaction, etc. that have been packaged into a digital file (computerization) is used to convey messages to the public and can be controlled by the user as pleasant as possible.

**Learning outcomes:** According to Anderson and Krathwhol (2010), there are three kinds of learning outcomes of the first is no learning activity (i.e., no learning activity is desirable) the second is rote learning (rote learning) and the third is a meaningful learning (meaningfull learning).

The learning result is the culmination of the learning activities that produce changes in knowledge (cognitive), attitudes (affective) and behavioral (psychomotor) is continuous and dynamic and can be measured or observed.

Based on the above, learning outcomes are changes in overall behavior is not just one aspect of human potential alone. That is the learning outcomes are categorized by education experts as it is not seen as separate but interconnected. Based on the understanding of learning outcomes according to these experts it can be concluded that the learning outcomes are the abilities of a person after experiencing a learning process in the form of a change in behavior in the form of three domains, namely cognitive, affective and psychomotor.

Study results are the culmination of the learning activities that produce changes in knowledge (cognitive) attitudes (affective) and behavioral (psychomotor) is continuous and dynamic and can be measured and understood. According to Kulsum and Hindarto (2011) is divided into three including the cognitive, affective, psychomotor domains.

## **MATERIALS AND METHODS**

The researcher of this research plan will be carried out for approximately 1 month. As for schools, researchers wanted mebuat research in NASIMA Islamic Junior High School in Semaran. Population is the subject of research (Agitha, 2015). The population in this study were students NASIMA Junior High School academic year 2015/2016. In fact the field at this school in particular, the class 8 there are still many students who have not been able to follow the activities of learning mathematics with good and unsatisfactory results.

The sample is part of the number and characteristics possessed by the population. Because researchers need three classes, namely to first grade and second grade control experiments, the researchers used a sample at a grade 8 in the school in question. Classes that will be taken endeavored have the ability evenly on each student.

Way clusterrandom sampling by randomly selected one class as a class experiment, one class as the control class and one more class as the class of test instruments. As for the determination of which class is used as the experimental class, control class or the class of the test

was determined by random technique assignment randomly. Random assignment subjects into groups such that for each placement, every member of the population has an equal chance of being placed in any group. Of the three classes to define the experimental class, grade control and testing instrument class is done by random assignment, elected class as a class test 8 A-C as the control class as a class experiment.

## **Collection techniques**

**Method interview:** Interviews were conducted to obtain data that is consultative. Interviews were conducted with teachers of mathematics in order to get information about the condition of the students, the class as a place of teaching and learning and the material being taught.

**Test methods:** The test is a tool or procedure used to determine or measure something in the atmosphere, in the manner and rules that have been determined. The test method used to obtain data on student learning outcomes. The test used was the type of objective tests and test essay (description).

**Methods documentation:** This documentation method used to collect data related to the research problem. The documentation required is data on the student's name and math test scores as well as the situation of the class at the time of learning and research.

## **RESULTS AND DISCUSSION**

### **Classical exhaustiveness**

**Learning outcomes using learning model bamboo dance aided interactive multimedia achieve complete:** Based on the results of research on hypothesis testing 1 stated that results for students by using model-assisted interactive multimedia bamboo dance reaches completion. It is based on the model of learning that interactive multimedia aided bamboo dance assigning students can share with other students subject. Students are given the opportunity to analyze the problem. So, kemempuan students in solving problems can be increased.

This is indicated by the value of  $t$  experiment 1 was 7.755 with a margin of error of 5% obtained  $t_{1-0.05} = t_{0.95}$ , then  $t_{0.95} = 1.70$ . In conclusion, if  $t = 7.755 = 1.70 H_0$ , the region of rejection and  $H_a$  in the reception area. So that, it can be concluded that the mastery learning the experimental class 1 is reached.

**Learning outcomes using learning model Think Pair Share (TPS) interactive multimedia aided reach completion:** Based on the results of research on hypothesis testing 1 states that the results of student

learning using learning model Think Pair Share (TPS) interactive multimedia aided reach completion. It is based on learning model Think Pair Share aided multimedia interactive used time thinking about improving the quality of student responses. This is shown by the experimental value of  $t_2$  is 9.4935 with an error rate of 5% obtained  $t_{1-0.05} = t_{0.95}$  then  $t_{0.95} = 1.70$ . In conclusion, if  $t = 9.4935 = 1.70$ ,  $H_0$  the region of rejection and  $H_a$  in the reception area. So that, it can be concluded that the experimental class learning completeness 2 is reached.

**Learning model with bamboo dance and Think Pair Share (TPS) assisted multimedia interactive learning and conventional:** Based on the hypothesis test 2 can be concluded that there are differences in the average learning outcomes among students in the experimental class 1 and 2 experimental and control class. The average difference in learning outcomes for the difference in treatment given to third-class research is the use of learning model dance bamboo aided multimedia interactive on experimental class 1, the learning model Think Pair Share (TPS) aided multimedia interactive at experimental class 2 and the conventional model in classroom control. The average student learning outcomes using model-assisted multimedia interactive bamboo dance is 7.90 which uses a learning model Think Pair Share (TPS) aided interactive multimedia is 8.03 and the use of conventional learning models is 6.38. The difference occurs because the student learning outcomes learning model bamboo dance aided interactive multimedia can assist students in improving student's creativity to solve problems. This is because the role of the teacher in the learning model bamboo dance aided interactive multimedia is building among the students thinking can help each other with ideas and opinions related subject. It can be seen from the learning process by using model-aided bamboo dance multimedia interactive where students be more creativity in solving the problems about the teacher. Presenting the results of group discussions appear creativity of students vary from one group to another group.

While, the model Think Pair Share (TPS) aided interactive multimedia has advantages where students do a task more critical thinking after mastering learning where students have the opportunity to discuss and think about the topic. It make students become more active research on the problems tied up in thinking. Besides learning outcomes also supported by interactive multimedia. Students can increase creativity in solving mathematical problems. Because in the interactive multimedia there are steps to resolve the matter with coherently. Based on ANOVA test there are differences in learning outcomes

between the experimental group 1, experiment 2 and control. This is shown in a test that hypothesis that  $F_{hitung} \geq F_{table}$   $53.20 \geq 3.24$ . From these results it can be concluded that the results obtained with the theory put forward there are differences in learning outcomes by using a model of interactive multimedia aided bamboo dance, model Think Pair Share (TPS) aided interactive multimedia and conventional learning models.

**Bamboo dance learning model interactive multimedia assisted learning and conventional:** Based on the results of research on the  $H_3$  states that the learning outcomes using model-assisted interactive multimedia bamboo dance better than student learning outcomes are subject to conventional learning models.

From the research, learning model learning models dance bamboo aided interactive multimedia better than the conventional learning model because the model dance bamboo is a learning model that enables students to share subject with other students or share their experiences which in this activity they will give and get an idea of the other student-related subjects. The role of teachers in the model bamboo dance is giving problems related to the linear program material then it was students who analyze these problems. So that, students can understand how to solve the problem of the problem set by the teacher.

In addition to the use of the learning model other support is interactive multimedia. With the help of interactive multimedia, students can increase creativity in solving mathematical problems. Because in the interactive multimedia there are steps to resolve the matter with coherently.

In the classroom using conventional teaching makes the teacher as a source of knowledge. In conventional teaching students become passive just sit down, take notes and listen to the explanations of the teacher. So, give depth to the learning process becomes bored and tired. This makes the student's ability not optimal in working on the problems set by the teacher.

It is shown that  $t_{hitung} \geq t_{table}$   $2.83 \geq 1.65$ , so that  $H_0$  refused so that learning with learning model bamboo dance aided interactive multimedia better than conventional learning. It shows that learning in experimental class 1 learning is more effective than the control class.

**Model learning Think Pair Share (TPS) multimedia assisted learning model and conventional:** Based on the results of research on the hypothesis testing 4 states that the results of student learning using learning model Think Pair Share (TPS) aided interactive multimedia better than student learning outcomes are subject to conventional learning models.

From the research, learning model Think Pair Share (TPS) aided interactive multimedia better than conventional learning models, since learning model Think Pair Share (TPS) provides time thinking about improving the quality of student responses. On learning model Think Pair Share (TPS) the students asked the teacher to share or pass on the idea with his group. Here students are trained to be active and creative in collecting information and solve problems.

In addition to the use of the learning model other support is interactive multimedia. With the help of interactive multimedia, students can increase creativity in solving mathematical problems. Because in the interactive multimedia there are steps to resolve the matter with coherently.

When compared to the control class that uses a conventional learning model of learning in which students learn centered on the teacher in this lesson the students will more quickly get bored and lead to lack of concentration of students to learn. At the time at home, they can only learn from the records obtained from the teacher's explanation.

This is shown  $t_{hitung} \geq t_{table}$ , i.e.,  $\geq 2.96$ ; 1.65, so that  $H_0$  refused, so that learning with learning model Think Pair Share (TPS) interactive multimedia aided more effective than conventional learning. These results indicate that learning in experimental class 2 is more effective than learning in classroom control.

#### **Effect of students against activeness learning outcomes using learning model dancing bamboo interactive multimedia assisted learning and Think Pair Share (TPS) assisted multimedia interactive**

**Experimentally class 1:** Based on the results of research on hypothesis testing 6 states that there is positive activity of students on student learning outcomes by using model-assisted interactive multimedia bamboo dance. It is based on a bamboo dance-assisted learning model that has the advantage of interactive multimedia improving social intelligence in terms of cooperation among students. Students can exchange pengalamann and knowledge with each other in the learning process.

This is indicated  $Y = 0.006683; 2.500654 + X_1$  which indicates that the activity has positive influence on student learning outcomes by using model-assisted interactive multimedia bamboo dance. With  $\alpha = 5\%$  and dk (1.28) obtained  $F_{table} = 4.20$ . Since  $F_{count} > F_{table}$  is  $6.532069 > 4.20$ , then  $H_0$  is rejected and  $H_a$  is accepted that the regression coefficient of direction means ( $b \neq 0$ ) with  $\alpha = 5\%$  and dk (8.20) obtained  $F_{table} = 2.45$ . Since,

$F_{count} > F_{table}$  is  $2.3405 < 2.45$ , then  $H_0$  is accepted, so the linear regression. With  $\alpha = 5\%$  and  $n = 30$  obtained  $r_{table} = 0.316$ . Because  $r_{count} > r_{table}$  is  $0.8479 > 0.316$ , then  $H_0$  is rejected and  $H_a$  is accepted. So, there is a connection between the activity and learning outcomes. With  $r^2 = 18.91\%$  then there is involvement of the student contribution to the learning outcomes amounted to 18.91% and the rest influenced other factors.

**Class experiment 2:** Based on the results of research on hypothesis testing 6 states that there is positive activity of students on learning outcomes of students by using learning model Think Pair Share (TPS) aided interactive multimedia. It is based on learning model Think Pair Share (TPS) aided interactive multimedia assigning students to think critically after mastering learning where students have the opportunity to discuss and think about a given topic. Here, students are trained to be active and creative in collecting information and solving problems. This is indicated  $Y = 2.2588; 2.2612 + X_2$  which shows the creativity of students affect the results of learning by using learning model Think Pair Share (TPS) aided interactive multimedia. With  $\alpha = 5\%$  and dk (1.28) obtained  $F_{table} = 4.20$ . Since,  $F_{count} > F_{table}$  is  $6.2070 > 4.20$  then  $H_0$  is rejected and  $H_a$  is accepted that the regression coefficient of direction means ( $b \neq 0$ ) with  $\alpha = 5\%$  and dk (7.21) obtained  $F_{table} = 2.49$ . Since  $F_{count} > F_{table}$  is  $1.0235 < 2.49$  then  $H_0$  is accepted, so the linear regression. With  $\alpha = 5\%$  and  $n = 30$  obtained  $r_{table} = 0.361$ . Because  $r_{count} > r_{table}$  is  $0.4259 > 0.361$  then  $H_0$  is rejected and  $H_a$  is accepted. So, there is a connection between the activity and learning outcomes. With  $r^2 = 18.145\%$  then there is involvement of the student contribution to the learning outcomes of 18.145% and the rest influenced by other factors.

Based on the research results, the problems that made the background of this research can be answered by the explanations above. Based on the formulation of the problem raised by the researchers that there is a difference in student learning outcomes by using model-assisted interactive multimedia bamboo dance, Think Pair Share (TPS) aided interactive multimedia and conventional learning models. Results learning teaching model of interactive multimedia aided bamboo dance better than conventional learning models. Results learning teaching model Think Pair Share (TPS) aided interactive multimedia better than conventional learning models. Liveliness positive effect on student learning outcomes by using model-assisted multimedia interaksi bamboo dance. Liveliness positive effect on student learning outcomes by using model Think Pair Share (TPS) aided interactive multimedia. Student learning outcomes by

using model-assisted bamboo dance interactive multimedia interactive multimedia aided reach completion. The results of student learning using learning model Think Pair Share (TPS) interactive multimedia aided reach completion. While looking at the hypothesis put forward researcher, then the first ( $H_{01}$ ) rejected which means the results of student learning using learning model dance bamboo and learning model Think Pair Share (TPS) aided interactive multimedia achieve complete ( $H_{02}$ ) rejected which means there is a difference in student learning outcomes among the bamboo dance-assisted learning model of interactive multimedia, learning model Think Pair Share (TPS) aided interactive multimedia and conventional. In the third hypothesis ( $H_{03}$ ) which means that student learning outcomes by using model-assisted interactive multimedia bamboo dance better than conventional learning models. In the fourth hypothesis ( $H_{04}$ ) rejected the results of student learning using learning model Think Pair Share (TPS) aided interactive multimedia better than conventional learning models. In the fifth hypothesis ( $H_{05}$ ) accepted meaning there is no difference between the learning outcomes of students learning model bamboo dance aided interactive multimedia learning model Think Pair Share (TPS) aided interactive multimedia. In the sixth hypothesis ( $H_{06}$ ) rejected which means liveliness effect on student learning outcomes using bamboo dance learning model and learning model Think Pair Share (TPS) aided interactive multimedia.

### CONCLUSION

Based on the results of experimental research has been carried out can be concluded that: student learning outcomes by using model-assisted bamboo dance and interactive multimedia learning model Think Pair Share (TPS) interactive multimedia aided reach completion. This is shown by the experimental value of  $t_2$  is 9.4935 with an error rate of 5% obtained  $t_1-0.05 = t_0.95$  then  $t_0.95 \geq 1.70$ . In conclusion, if  $t = 9.4935 \geq 1.70$   $H_0$  the region of rejection and  $H_a$  in the reception area. So that, it can be concluded that the experimental class learning completeness 2 is reached.

There are differences in learning outcomes between students who use bamboo dance-assisted learning model of interactive multimedia, learning model Think Pair Share (TPS) aided interactive multimedia and conventional learning models. Based on ANOVA test, there are differences in learning outcomes between the experimental group 1, experiment 2 and control. This is shown in a test that hypothesis that  $F_{hitung} \geq F_{table}$  53.20  $\geq$  3.24.

Learning outcomes of students who got the bamboo dance-assisted learning model is better than the interactive multimedia learning outcomes of students who received conventional. Hypothesis learning model is

shown  $t_h \geq t$ -table namely  $2.83 \geq 1.65$  so that  $H_0$  refused, so that learning with learning model dance bamboo aided interactive multimedia better than conventional learning. It shows that learning in experimental class 1 learning is more effective than the control class.

Learning outcomes of students who receive learning model Think Pair Share (TPS) aided interactive multimedia better than learning outcomes of students who received conventional. Hypothesis learning model is shown  $t_h \geq t$ -table namely  $2.96 \geq 1.65$  so that  $H_0$  refused, so that learning learning model Think Pair Share (TPS) interactive multimedia aided more effective than conventional learning. These results indicate that learning in experimental class 2 is more effective than learning in classroom control.

Activeness affect the learning outcomes of students who got the bamboo dance aided learning models and interactive multimedia learning model Think Pair Share (TPS) aided interactive multimedia. This is demonstrated by the experimental class 1 percentage of 18.91%. experiment 2 and grade of 18.145%.

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