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The Effect of Using Quantum Teaching and Motivation in Learning Toward Students Achievement

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Abstract: This research is conducted based on low learning outcomes of students especially on science subjects.The low learning outcomes of studentcan not be separated from the learning process that lasted for this.One effort to overcome these problems is by to reveal the influence of Quantum Teaching strategy and usingthe Quantum Teaching strategy in learning.The purpose of this study is students'motivation to increase the learning outcomes of science.This research used Quasi Experiment with 2x2 factorial design.The population in this study were students of class V at Gugus 1 District of Padang Barat Kota Padang.The sample of this research was chosen by simple random sampling technique.Research data obtained from the results of test and questionnaire about students'motivation.Data analysis was done by using t-test technique.The results showed that the science outcomes of students who were taught with Quantum Teaching strategies were better than the students who were taught by using conventional strategy. Learning outcomes of students with high motivation who were taught with Quantum Teaching strategies are better than highly motivated learners taught by conventional strategy. The same thing shown that low-motivated learners who taught with Quantum Teaching strategies are better than low-motivated learners taught by conventional learning strategy.

Keywords: Quantum Teaching Learning Strategies, Conventional Approach, Motivation, Student Learning Achievement

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Introduction

Education is the most important thing in a person's life. Through education, a person can be considered honorable, have a good career and can act according to the norms that apply. Education is a conscious and planned effort in an ethical, systematic and creative way in which learners develop self potential, intelligence, self-control and skills to make themselves useful in society.Attention in the field of education quality improvement is done at every level. One level of education that is the focus of thought in terms of curriculum improvement is the level of primary school education (Majid, 2014 : 64). One of the curriculum that is currently still used and used in the learning process in schools is the KTSP. KTSP is a curriculum developed by schools and committees with guidance on graduate competency standards and

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content standards as well as guidelines for curriculum preparation made by the National Education Standards Agency (BSNP) (Depdiknas, 2006: 6). This means that the school committee and all the authorities as well as practitioners or observers of education are entitled to develop curricula in accordance with the characteristics of their respective regions. However, it should be made clear that the development needs to refer to some curriculum development principles.

Implementation covering all subject competencies, improvements, enrichment and acceleration in accordance with the potential and stages of development, using multistrategy and multimedia, and utilize the potential of natural, social, and cultural and local wealth is also the principle of the implementation of KTSP in all levels of school. Improving the quality of learning done through education reform that has been done has not fully get the maximum results. The success of the process of teaching and learning activities on science lessons can also be measured from the success of learners who follow the learning activities, which include the level of understanding, mastery of materials, and learning achievement of learners. The higher of understanding and determination of the material and achievement of learners, the higher the success rate. In learning science, there are many possible approaches used such as conventional learning and Quantum Teaching learning model. Learning with conventional approach is less effective, because the learning is teacher centered and the learners are not given the opportunity to actively develop various abilities Science Process Skill or basic scientific ability of students. While learning science should activate the process of learning and children serve as a subject of learning. Some of the reasons students have difficulties in learning including limited students in recording information, memorize the concept of the material being studied, and difficulty when faced with the question of the story. Students limited to solve the problems exemplified by teachers in learning, so that communication skills have not developed.

Based on preliminary study through observation as well as some document analysis of student learning outcomes that the author did in SDN 22 Ujung Gurun Padang, on May 20, 2016 obtained some problems in learning science. The problem we have found is derived from two principals, namely the problems posed by the teacher, and the problems of students. The problems that arise from the teacher is the teacher is less varied in presenting learning materials, learning is still centered on the book and walking one direction only (teacher centered), the arrangement of seats are rarely changed, less provide learning experiences for students such as observation activities, the deposition of knowledge through keywords or a unique formula , as well as not yet using the media concrete for learners. As a result of these problems, then there are also new problems posed by the students as the following, still their learners like out of the classroom so indirectly interfere with the learning process, less active learners in the learning process where here children are more likely to silent. No desire to ask, embarrassed to express opinions or ideas, and less concentration in learning. In addition to the data described above, there are some students who are less motivated to follow each lesson, tend to put their heads on the table, disturb friends at the time of study, and many reflective when the teacher asks.

The problems found above require a solution to solve the problem One solution is the use of appropriate learning strategies that can make all students involved in the learning environment. One of the alternatives that can be done by a student to activate and generate student's motivation in class is using Quantum Teaching learning strategy, that combines every component of emotional learning with students so that the relationship between teacher and student emotional condition that can make learning more meaningful and permanent (Goleman 1995 in DePorter 2007: 22). In addition in Quantum Teaching learning strategies all aspects related to learning are required to send messages about learning so that messages and information can be received well by each learner. This is where the uniqueness of learning strategies of Quantum Teaching, which transforms the various interactions that are in and around the moment of learning into something that is beneficial for themselves and others. In other words, the advantages of this learning strategy are more to the aspect of cheerfulness, flexible communication, challenges in the form of puzzles or games that make students more enthusiastic in following the learning, as well as the use of a variety of interesting props that are able to provide a learning experience active and fun. To further ensure the results and focusing learners in terms of finding and receive lessons from teachers, the use of slogans and ice breaking as one aid that can be incorporated in the classroom makes its own advantages, given that Quantum Teaching is one learning strategy who take advantage of the role of ice breaking as a means of teaching messages that are believed to involve a full focus, interest, and uniqueness for learners in the learning process in the classroom. Based on the phenomenon mentioned above, we did a further examined in this study how "The Effect of Using Quantum Teaching and Motivation in Learning Toward Students Achievement in Science Subject for Fifth Grade Student Gugus I Kecamatan Padang Barat ".

Method

This research was a Quasi experiment which aims to reveal the relationship causation by engaging with the control group in addition to the experimental group (Ibnu et al, 2003). The design of this research using 2x2 factorial design. This research was conducted on the students of class V SDN 22 Ujung Gurun Kota Padang in the academic year 2016/2017. The subjects were 60 students divided into 30 experimental class and 30 control class students. Instruments used there are two namely motivation questionnaire and science learning outcome test. The instrument in the form of questionnaires was used to obtain data about the level of student learning motivation and instruments in the form of student learning outcomes used to obtain data about cognitive learning outcomes. The data in this study were collected through questionnaires of learning motivation and science learning outcomes in the experimental class and control class. The science-learning test result includes a set of science knowledge consisting of 30 objective items, and a motivation study questionnaire of 45 items.

Data analysis technique used is with t-test and variance analysis of two way. Before the test t-test and two ways analysis of variance to test the hypothesis, first we tested the normality and homogeny test with SPSS 17.0. If the data is distributed normal and variants between homogeneous groups, then the hypothesis test can be accepted. As an independent variable is a Quantum Teaching strategy and the moderator variable in this study is learning motivation, and as a dependent variable is the learning outcome of science.

Results and Discussion

The implementation of this research was conducted in seven times. The material taught is about the light and its properties. In the learning process the two classes received different treatment. Experimental class used the Quantum learning strategies, whereas the control class used the conventional learning. Therefore, changes will occur after the treatment is given. At the end of the learning the two classes are given the same final test to know which classes have higher learning outcomes. In this case the results of learning in the form of science learning outcomes students.

Based on the results of data analysis on the score of science learning outcomes the students of grade V SDN 22 Ujung Gurun studied showed that both of students whose were taught by Quantum Teaching models have high learning motivation as well as groups of students who have low learning motivation. This empirically proven by result of hypothesis test which have been done. Based on the results of hypothesis testing, we conduct discussion. In this discussion, four main points of study are related to relevant theoretical references, namely: (a) the science learning outcomes of students are taught with learning strategies Quantum Teaching and unconventional learning, (b) Science learning outcomes of students who have high motivation taught by learning strategies Quantum Teaching and conventional approaches, and (c) science learning outcomes students who have low motivation with learning strategies Quantum Teaching and conventional approaches.

This research used class V B SDN 22 Ujung Gurun Kota Padang as control class by obtaining conventional learning and class V A SDN 22 Ujung Gurun as experiment class with Quantum Teaching learning strategy . Number of subjects in the control class as much 30 students and in experiment class as many as 30 students . The results of research in the form of the average results of IPA learning outcomes in each group is presented in table 1, as follows.

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Table1.Average Comparison of Test Results Students' Learning Outcomes

Class Experimental	Learning Motivation	Average Score	N
Cognitive			
QuantumTeaching	Low	70.41	12
	High	77.61	18
	Total	74.63	30
Conventional	Low	55.94	18
	High	60.58	12
	Total	59.13	30
Affective			
Quantum Teaching	Low	13.25	12
	High	13.67	18
	Total	13.53	30
Conventional	Low	11.83	18
	High	12.42	12
	Total	12.07	30
Psychomotor			
Quantum Teaching	Low	9.08	12
	High	9.28	18
	Total	8.77	30
Conventional	Low	7.17	18
	High	7.00	12
	Total	7.00	30

The table above describes that average science achievement test results on cognitive, affective, and psychomotor of students taught using learning strategies Quantum Teaching is higher than average science learning outcomes (cognitive, affective, and psychomotor) students taught using a conventional approach . This is reinforced by hypothesis test using t-test and two ways variance analysis with 5% confidence level (α = 0,005), to the result data is presented in table 2 below.

Table 2. Hypothesis Test Results

Sample Class	N	Average	Sign.
HYPOTHESES 1			
KOGNITIF			
Experiment	30	74.63	0,000
Control	30	59.13	
AFFECTIVE			
Experiment	30	13.37	0.0065
Control	30	12.07	
PSYCHOMOTOR			
Experiment	30	8.47	0.00015
Control	30	7.47	
HYPOTHESES II			
KOGNITIF			
Experiment	18	77.61	0.0035
Control	12	60.58	
AFFECTIVE			
Experiment	18	13.39	0.0042
Control	12	12.42	
PSYCHOMOTOR			
Experiment	18	8.89	0.0011
Control	12	7.00	
HYPOTHESES III			

KOGNITIF			
Experiment	12	70.42	0.007
Control	18	55.94	
AFFECTIVE			
Experiment	12	13.25	0.045
Control	18	11.83	
PSYCHOMOTOR			
Experiment	12	8.00	0.015
Control	18	7.94	

The table above shows that science achievement test of students in experiment class and control class has a value Sign. <significance level $\alpha = 0.05$. It means reject H_0 and accept H_1, so that it can be concluded that the study results of science both on the cognitive, affective, and psychomotor aspects of students who were taught by using the strategy of learning Quantum Teaching were higher than using a conventional approach. Science learning outcomes (cognitive, affective, and psychomotor) student experiment class and control class for students who have high motivation to have the Sign. Significance level ($\alpha = 0.05$) means reject H_0 and accept H_1. So it can be concluded that the test results of learners who have high motivation using the strategy of learning Quantum Teaching is higher than the test results of learners who have motivation using a conventional approach.

Science learning outcomes (cognitive, affective, and psychomotor) of learner in experimental class and control class for students who have low motivation to have the Sign. Significance level ($\alpha = 0.05$) means reject H_0 and accept H_1. so we can conclude that the test results of students who have low motivation to use learning strategies Quantum teaching is higher than the results of tests that have motivated learners who taught byconventional approach.

Based on the results of the first hypothesis calculation obtained in each in learning outcomes is cognitive, affective, and psychomotor sequentially have a sign value . 0,000 , 0,0065, 0,00015 . In the second hypothesis second sign is obtained. 0.003 5 , 0.0042, and 0.00011. . Next there is the third hypothesis obtained sign 0.0 07 , 0.045, and 0.015 . So it can be concluded first, on the first hypothesis of science learning outcomes (cognitive, affective, and psychomotor) students taught by Quantum Teaching strategy is better than the science-learning outcomes of students taught by conventional learning approach. Second, In the second hypothesis of science learning outcomes (cognitive, affective, and psychomotor) students who have high motivation which is taught with Quantum Teaching learning strategies was better than the learning outcomes of science students who have high learning motivation taught by conventional approach.Third, there is a third hypothesis that science learning outcomes (cognitive, affective, and psychomotor) of students with low motivation who are taught with Quantum Teaching learning strategies were better than science learning outcomes students with low learning motivation are taught by conventional approach .

Based on the results of research, it can be seen that the average value of science learning outcomes and motivation of student learning on experimental class using learning strategy Quantum Teaching is higher than the average value of control classes that use conventional learning. This can be seen in table 1 and table 2.

Different things are shown in the interaction test results with a two-way anova associated with the interaction between the strategy used and the motivations that affect the learning outcomes. This is shown in table 3 below.

Table 3. Interaction Test of Anova Two Directions

Source Variance	Sum of Squares	df	Mean Square	F	Sig.
Class	3572.100	1	3572.100	16471	0.743
Motivation	504.100	1	504.100	2.324	
Classroom * Motivation	23.511	1	23.511	0.108	
Total	280450.000	60			

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Discussion

The table above shows that the calculation of Anova Two Direction test in the above table, obtained Sign value. 0.743. Therefore, the value of significance is greater than the real level ($\alpha = 0.05$), then H_0 is accepted and H_1 is rejected. That is, there is no interaction between learning strategies Quantum Teaching and motivation to learners learn outcomes. In the absence of this interaction shows that the learning strategy of Quantum Teaching can improve learners' learning outcomes. This means that students with high and low motivation can improve their learning outcomes.

This study has revealed that Quantum Teaching learning strategy gives a positive influence on the results of science learning, be it in cognitive, affective, and psychomotor . Use of Quantum Teaching learning strategies in science lessons, real researchers see students more courageous in expressing ideas and more daring in expressing opinions, look more enjoy and always passed with full of joy. Implementation of Quantum Teaching learning strategies managed to influence students' learning outcomes. In fact, the learning outcome of the science subject of learners who are treated by using a Quantum Teaching learning strategy showed significant improvement compared with non-treated students. Therefore, the advantages of learning strategy Quantum Teaching can be found and berman faat in the learning process.

This proves the statement as revealed by the results of the research about Quantum Teaching learning strategies which mentions that Quantum Teaching can improve some of the results of the learning process as follows 68 % increase students' learning motivation, 73 % improve student achievement, 81% increase student self-confidence, 98 % continue the use of skills (DePorter, 2000: 10). Another thing is also expressed by DePorter associated with the advantages possessed by learning strategies Quantum Teaching suggests that the use of Quantum Teaching learning strategies allows many students to be more maximized in interacting with the environment, as this is a way to dig deeper into the information they gain, so that students are brave in actualizing themselves. So, the advantage lies in all the components in the class that have a learning message as well as a new way of learning is more interesting by suggesting things close to the students . So, students feel learning is exciting and is concrete because it deals with everyday activities.

On Quantum Teaching learning strategy each student has a responsibility to name and demonstrate all of their activities, whether experiments or discussions. The "giving a name" activity actually guides the students in remembering the keyword of the lesson, so that students can easily remember when the things learned are included in the questions or questions given by the teacher. In addition, repetition activities also have their own roles, by repeating and informing them around, indirectly providing understanding to the students themselves and other students. At the end of the lesson, celebrating activities are of interest to students. this is because, their work is acknowledged and appreciated by the teacher, so they continue to be passionate in following the lesson. From the description is interpreted that the learning strategy Quantum Teaching placing students as learning subjects that place students as active recipients and informers.

In contrast to learning strategies Quantum Teaching, conventional approach use the control class puts students on the learning object that acts as a receiving information passively. In general, the delivery of learning is done by using lecture method, question and answer, and assignment. Teachers always dominating the learning activities, so very few students have the opportunity to express themselves, students are getting and receiving information from the teacher. This is in accordance with the opinion of Djaafar (2001: 13) which states that the conventional learning method is a teacher-oriented method, almost all activities are controlled by the teacher. There is no opportunity for students to contribute to their knowledge, skills and attitudes in the learning process. Students taught by conventional approach tend not to be confident and embarrassed to reveal their knowledge, students are just waiting for information from teachers and are not accustomed to giving and finding their own answers to the problems the teacher gives.

In conventional learning, students do not have the ability to find the key words of each learning. This approach tend to memorize than to find yourself. So the problem in the question given by the teacher did not get the right answer. Control class students tend to be able to memorize only what teachers and existing resource books provide, so when given a slightly different matter they tend to be both incompetent and wrong in answering. Based on the explanation, it can be said that the characteristics of learning strategy Quantum Teaching and conventional approaches are the key that leads to learning outcomes of science and students' learning motivation taught by a learning strategy Quantum Teaching is higher than the students taught by conventional approach.

It can be seen at the time of the research, students taught by conventional model showed a passive attitude. Students only explain teacher explanations, take notes, and answer questions if the teacher asks. Do not have the initiative to ask or interact with a classmate to discuss matters relating to the material

being studied. Then do the teacher-assigned exercises. That is because the role of the teacher's discussion is dominating in learning, as Nasution (1995: 209) said, which suggests that the role of teachers in student learning resulting in less conventional and more active role of the teacher rather than listen to the explanations find their own knowledge, attitudes, and skills which is needed, because student learning acts as a passive learning object, whose activities listen to the teacher's description, learn according to the speed of teacher teaching and take the test of the material being studied.

Based on the above description, from the findings of research and data analysis can be concluded that the learning strategy Quantum Teaching gives influence to the students' science learning outcomes. This is evidenced by the average difference of experimental class test result that is taught by learning strategy Quantum Teaching is higher than the control class taught by conventional approach. But it does not provide the interaction between Quantum Teaching learning strategy and motivation in influencing learners' learning outcomes. This is because both of them have their own influence toward students's achievement.

Conclusion

Results of science learning students who follow

1. The learning by using Quantum Teaching learning strategy better than the students who follow the teaching approach sional Convent.
2. Science learning outcomes of students who have high motivation that follows learning with Quantum Teachin learning strategy is better than the results of science learning students who have high motivation that follows learning with conventional approach.
3. Science learning outcomes of students who have low motivation that follows learning with learning strategies Quantum Teaching is better than low motivated students taught by conventional approaches.
4. There is no interaction between learning strategy of Quantum Teaching and Learning Motivation which influences students' learning outcomes (cognitive, affective, and psychomotor).

References

DePorter, B. (2000). Quantum Teaching: Practicing Quantum Learning in the Classroom. Bandung: Kaifa

_____.2005. Quantum Teaching: Practicing Quantum Learning in the Classroom. Bandung : Kaifa

Keller, JM & Thomas W. K. (1987).An application of the ARCS model of motivational design, in Charles M. Reigeluth (ed), Instructional theories inaction , 289-319. Hillsdale, NJ: Lawrence Erlbaum Associates.

Khamsah, DL. (2016). ImprovingScienceLessonby UsingLearning StrategyQuantum TeachinginClass VIB SDN 11 Kurao PagangKecamatan Nanggalo Kota Padang. Thesis: State University of Padang. Not published.

Sandra K. A, Ken, A. & Deborah L. H. (2010). Designing and Teaching the Elementary Science Methods Course. New York And London: Routledge Taylor & Francis Group. Page 25-31

Sarah, M., Andrew W. S, and Heidi A. S. (2010).Ready, Set, Science: Putting Research to Work in K-8 Science Classrooms. The National Academies Pres.National Research Council. Page 154-156

Sugiyono.(2009).Education Education Research Methods Quantitative, Qualitative, and R & D. Bandung: Alfabeta.