

Application of Model *Quantum Learning Teaching Techniques Crosswords* Premises *Puzzle* in Improving Results of Student Learning Outcomes in Integers

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Abstract— *Quantum Teaching is real life learning strategy with relevance social nuances. Quantum Teaching consists of four steps, namely Grow (Motivate), Natural (Do), Name (Symbolize), Demonstrate (Demonstrate), Repeat (Repeat) (TANDUR, for short). The research purpose is to analyze the student learning achievement and activities . The research design is Classroom Action Research (CAR). It Consist s of four stages . Plan , implementation , observation, and reflection. Research was done in two cycles . The result shows that t he percentage of student learning achievement and activities respectively increase is from cycle I to cycle II items, namely 75% to 83.33% and. 70 , 27 % to 83.5 5 %. I can conclude that the application of Quantum Teaching with Crosswords is a puzzle technique can effectively improve student learning achievement as well as their activities .*

Keywords— *Quantum Teaching , Student learning achievement t , and activities.*

I. INTRODUCTION

Education is an element that cannot be separated from human beings, education is like a light that tries to guide humans in determining the direction, purpose, and meaning of life. Humans really need education through a process of awareness that seeks to explore and develop their potential through various ways that have been recognized by society. Education is a conscious and planned effort to create a learning atmosphere and learning process so that students actively develop their potential to have religious spiritual strength, self-control, personality, intelligence, noble character, and skills needed by themselves, society, nation and country.

School mathematics is a part of mathematics as a science chosen on the basis of the importance of developing students' thinking and personality abilities and

the interests of the development of science and technology, must be in line with the demands of students' interests to face the challenges and demands of future developments. Mathematics is one of the subjects that is considered difficult by some students because the objects learned in school mathematics are abstract objects.

Quantum Teaching is one learning model that can help students understand a material optimally. which in turn can significantly improve student learning achievement, this learning method can create a comfortable atmosphere during the learning process that can increase student learning motivation (DePorter, 2000: 5). To increase student learning motivation, active learning is needed which can create meaningful and enjoyable learning. The *puzzle* learning technique is a modification of the *mind mapping* method developed by Tony Buzan. This *puzzle* learning technique can increase the active role of students in the learning process because in *puzzle* techniques there are challenges to be solved by students in addition to *puzzle* techniques can reduce student tension during the learning process.

Interest d nature of this study is to u ntuk examine the application of learning models *Quantum Teaching* techniques *Crosswords puzzle* in improving student learning outcomes subject matrix of class X program accounting expertise SMK Negeri 1 Jember, u ntuk clicking examine activism f itas current students applied learning models *Quantum Teaching* with *Crosswords puzzle* techniques in improving student learning outcomes. The subject matter of class X matrix accounting skills program at SMK Negeri 1 Jember, to study *Quantum Teaching* learning models with *Crosswords puzzle* techniques can improve student learning outcomes. Jember.

II. RESEARCH METHODS

This research subject is grade 3 students SDN Pakis 01 academic year 18/2019 . The class consists of 15 male students and 25 female students. Selection of grade 3 as the subject of research, because students experience learning difficulties . In addition, the learning methods used by subject matter teachers make students experience learning saturation, so a new learning experience is needed.

The type of research used in this study is class action research (CAR) in English term *Classroom Action Research* (CAR) . Penelitian class action is a form of scrutiny on an action learning activities, which deliberately raised and occur within a class together. The action is given by the teacher or by the direction of the teacher conducted by the student.

The researcher used the Kemmis and McTaggart model action procedures. There were several experts who suggested that the action research model with a chart was different, but in general there were four stages that were commonly passed, namely:

Planning (*planning*) , at the planning stage carried out is the initial observation of the state of the school, subject teachers and students. More specifically is setting standards and basic competencies that will be used for research, planning learning methods will be applied in teaching and learning, preparing learning resources, develop lesson plans, developed the Student Worksheet (LKS), develop relevant format evaluation, and develop formats field observation.

Implementation (*Acting*), Phase 2 of PTK include procedures and actions to be carried out according to the plan that has been made previously, as well as process improvements that will be done.

Observation (*observing*) , the third stage of the PTK includes procedures for recording data about the process and the results of the implementation of the actions taken.

Reflection (*reflecting*), describes the analysis of the results of the monitoring procedures and the reflection on the process and impact of corrective actions taken, as well as the criteria and action plans in the next cycle.

The spiral cycle of the stages of classroom action research can be seen in Figure 1.

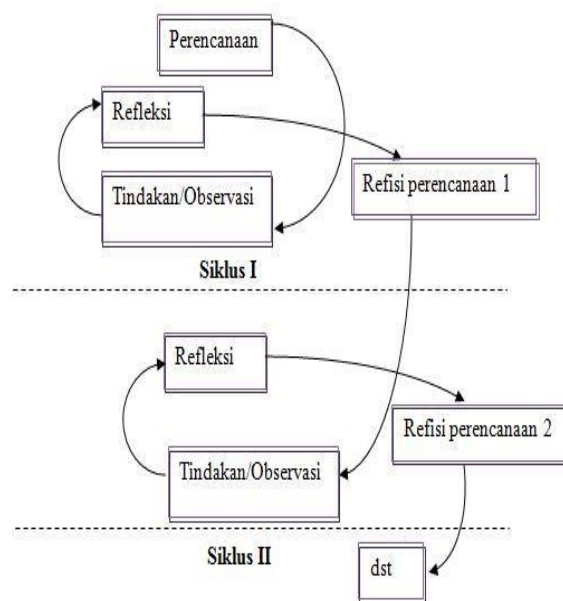


Fig.1: Classroom Action Research Cycle Model Kemmis and McTaggart (Pudjiono, 2008)

In this study, researchers plan to carry out classroom action research until the second cycle. If in the first cycle it has reached the desired target, the second cycle will still be carried out to strengthen the results of the study.

Data analysis was carried out after the data was collected while the references used in descriptive quantitative data analysis were final tests , Student Worksheets (LKS), and daily tests .

The data analyzed in this research are as follows :

1. Teacher and student activities during the application of *quantum* learning models. The percentage formula for the activity of teachers and students in learning is as follows:

$$a_i = \frac{Q}{R} \times 100\% ; i = 1, 2$$

Information:

a_i = percentage of activity

1 = teacher

2 = students

Q = the number of scores achieved

R = maximum number of scores

From the formula above, the calculation results will be obtained in the form of percentages by matching the following categories:

Table.1: Activity Criteria

| Percentage | Criteria |
|----------------------------|-------------|
| $73,3\% \leq a_i < 100\%$ | Very active |
| $53,3\% \leq a_i < 73,3\%$ | Active |
| $33,3\% \leq a_i < 53,3\%$ | Not active |
| $a_i < 33,3\%$ | Not active |

Source: Ministry of National Education (2004)

2. The learning result, a analysis data from these test results are used to determine the value obtained by each student so that it can be determined which students were categorized as complete or incomplete with $SKM \geq 75$. Having in mind the number of students who completed or incomplete, so the new can be calculated percentage classical completeness with a target of 80% of students scored ≥ 70 in one class. Student learning completeness after learning takes place, sought by the formula:

$$P = \frac{n}{N} \times 100\%$$

Information:

P : Percentage of learning completeness

n = Number of students who complete study

N = Total of all students

Ministry of National Education (in Zahro, 2012)

3. Performance indicators

A cycle PTK is said to have succeeded or has not been successfully measured from the achievement of a predetermined target, in the form of success criteria. If the achievement of results is the same as targeted, then cycle it has been successful, if it is not on target, the strategy must be revised to be used on the cycle next. So is on cycle second, and so on. The measure of success is measured by comparing the learning outcomes and activities that have been achieved with the targeted success criteria. The indicators of cycle success are measured by the criteria for active category activities ($53,3\% \leq a_i < 73,3\%$) and classical completeness with the target $\geq 80\%$ of students were declared complete in one class.

III. RESULTS AND DISCUSSION

This research is a classroom action research (CAR) carried out using two cycles. This research is a classroom action research (PTK) which aims to find out the application of *Quantum teaching* with technique *Crosswords puzzle* to improve the learning outcomes and activities of students Sub-chapter of this study were grade 3 students of SDN Pakis 01, totaling 40 students.

In Quantum environmental teaching is a very important aspect. Environment is a teacher's way of

organizing classrooms. Figure 2 is a Class design designed for teaching and learning processes in this study.

Information:

1 - 5 : Affirmation posters

6 : Teacher's chair and bench

7-14 : Student chairs and benches

12, 13 : Sound system

14 : Doorprize box

15 : Whiteboard

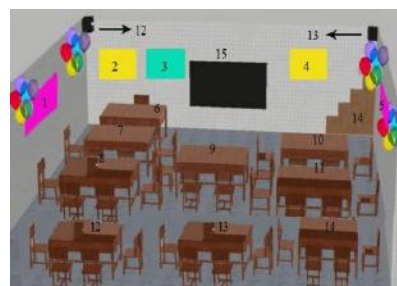


Fig.2: Design class

Crosswords puzzle is chosen because the type of puzzle is more familiar to the community. Usually the puzzle is often used in quiz questions in magazines and newspapers. These puzzles are also often used in TTS books (Crossword Puzzles). So that students can better understand how to solve the questions presented in the form of *Crosswords puzzle*. The way to fill in the blank columns in the *Crosswords puzzle* is to change the results in the form of numbers into letters. Wrong one Form *The crosswords puzzle* is presented in sheet work students could seen on Figure 3.

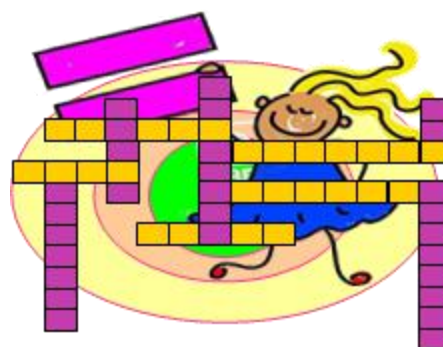


Fig.3: Form Crosswords puzzle

Application *Quantum teaching* composed on 6 frames design teaching shortened with acronym **TANDUR**, that is **T** umbuhkan, **A** lami, **N** Amai, **D** emonstrasikan, **U** langi, and **R** sieve. Stage grow it that is emancipating students to learn the material matrix to give a small gift to those who raised a hand sign to agree to follow a math lesson with a matrix material, as well as the teacher presents the objectives pembelajaran. Namely natural AHAP T m enceritakan some daily activities

related to the matrix material and provides examples of problems experienced by students to diesel esaikan with the concept of matrix. T AHAP frontage, m emberikan opportunities for students to read the material to be studied. After students read the material to be studied, the teacher gives questions related to the material students have read. T AHAP demonstrate that m embacakan clues to solve the problems in the student worksheet and provide an opportunity for the group that successfully complete the student worksheet prior to downloading explain the results of their discussion. T AHAP repeat, m engulangi material that has been conveyed by asking questions about the material that has been described to determine the extent of student understanding, and the last stage to celebrate ie, m emberikan praise, applause, to give an opportunity to students who have the best value to open the box *door prize* in front of the class that already contains a prize.

Teacher activity is all activities carried out during the learning process. The activity observed in the learning teacher's siklus I and II cycle of learning. Based on the results observations made by the observer obtained percentage data activity teacher as the following :

Table.2: Percentage of Teacher Activities

| Teacher activities | CYCLE I | CYCLE I I |
|-----------------------------|---------|-----------|
| Grow it | 16.67% | 16.67% |
| Natural | 11.11% | 11.11% |
| Name it | 16.67% | 16.67% |
| Demonstrate | 11.11% | 16.67% |
| Repeat | 11.11% | 16.67% |
| Celebrate | 16.67% | 16.67% |
| Percentage teacher activity | 83.3% | 89.89% |

The percentage of teacher activities in cycle I and cycle II will be presented in Figure 4 .

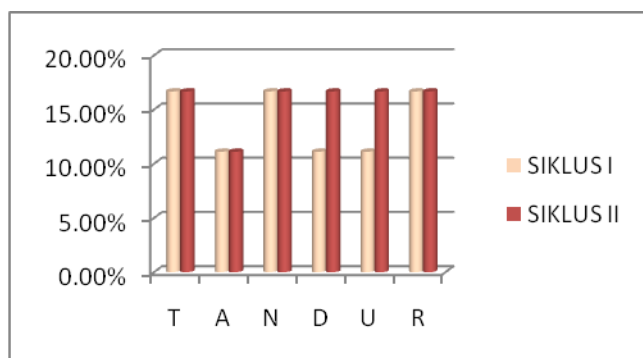


Fig.4: Graph of Teacher Activity Percentage

Information: T : Grow , A : Natural , N : Name , D : Demonstrate , U : Repeat , and R : Celebrate

Based on the results of observations of students on the implementation of learning with *Quantum teaching*

conducted by observers obtained data on student activities in the class at each meeting in the first cycle and second cycle, which is shown in Table 3 .

Table.3: Percentage of Student Activities

| Student Activities | CYCLE I | CYCLE I I |
|--|---------|-----------|
| Pay attention | 78,37% | 88,28% |
| Take notes | 81,98% | 82,88% |
| Asking | 58,55% | 81,98% |
| Express opinions | 62,61% | 81,08% |
| The average student activity each learning | 70,27% | 83,55% |

Next, the results of the percentage of student activities in cycle I and cycle II will be presented in the form of tables,

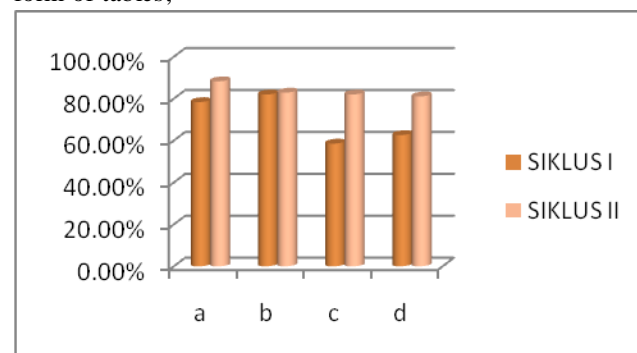


Fig.5: Graph of Percentage of Student Activities

Information: a : pay attention c : asking
b : take notes d : Express opinion

IV. CONCLUSION

Based on the results of the research and discussion that has been described, conclusions can be drawn as follows: (1) Application of *Quantum teaching* with *puzzle* techniques in improving student learning outcomes in grade 3 integers Pakis 01 Elementary School runs well and smoothly. ; (2) Activities students experience enhancement from 70.27% on the first cycle while in the second cycle the percentage of student activities was 83.55% ; (3) Results learn students experience enhancement in the first cycle the percentage of student learning outcomes was 75% while in the second cycle the percentage of student learning outcomes was 83.3% . The s aran to diberika n by researchers, namely: (1) Learning

mathematics with *Quantum teaching* techniques *Crosswords puzzle* can be used as an alternative learning in the classroom so that students do not get bored with the usual lesson, but keep in mind the selection of appropriate materials in order to learning can work well; (2) Management of the time when applying the learning method must be considered so that it does not exceed the predetermined time.

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