EFFECT OF CONTEXTUAL TEACHING LEARNING COMPACT DISK-BASED INTERACTIVE MEDIA LEARNING AND MOTIVATION AGAINST MATHEMATICS LEARNING OUTCOMES

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ABSTRACT

This study aims to determine the effect unttuk Contextual Teaching Learning (CTL) based Media CD Interaktif and Motivation towards learning outcomes in Mathematics. The research method used is a quasi-experimental design with factorial design 2 x 3. Learning to apply CTL CD-based and conventional learning, motivation to learn, while classified in High, Medium and Low. Data were analyzed using independent t-Tests, One Way ANOVA and Two Way Anova with SPSS version 16.
***Keywords**: CTL, CD Interactive, Learning Motivation, Learning Outcomes*

A. INTRODUCTION

Lack of mathematical ability of students will affect the quality of student learning, the impact on students' poor performance in school. As an illustration based on the report Trends in International Mathematics Science Study (TIMSS) math achievement Indonesia still ranks who do not meet expectations (Hafis, 2012: 1). From the report stated that in 1999 Indonesia was ranked 34 out of 38 participating countries, in 2003, ranked 35 out of 46 participating countries, and in 2007 the country ranked 36th out of 49 participants. Even the recent report TIMSS in 2011 (Kompas, 2012: 1) states that the average value of student mathematics Indonesia ranks 38th out of 42 countries. Which menyebabkkan embarrassed, turned out to neighboring countries, such as Malaysia, Thailand, and Singapore, are above Indonesia. Singapore even came second. While the first rank occupied Korea and the third is Taiwan. Accordingly, the results of PISA survey (OECD, 2015) Indonesia ranks 64th with an average score of students' mathematical abilities Indonesia amounted to 385.

One of the learning approach that is expected to be able to develop the mathematical abilities of students are learning with contextual approach. These lessons taken from the term Contextual Teaching and Learning (CTL). Approach with contextual learning by Sugiyanto (2010: 4) is the concept of learning that encourages teachers to connect a material that is taught with real-world situations students and encourage students to make connections between their knowledge and their application in their own lives.

CD is a medium that confirms a multimedia format can be packaged in a CD (Compact Interactive DISK) with the aim of interactive applications in it. CD ROM (Read Only Memory) is the only one of several possibilities that can unify voice, video, text, and programs on the CD.

Contextual Learning (Contextual Teaching and Learning / CTL) is an educational process that is holistic and aims to motivate students to understand the significance of the subject matter learned by relating material to the context of their day-to-day (personal context, social, and cultural) so that students have knowledge / skills that can flexibly be applied (transferred) from one problem / context to the issues / other contexts.In response to these conditions of teachers are always trying to improve learning with learning condition that makes it easy, fun, and fun for students by applying Contextual Teaching and Learning-based Media CD.Besides learning model, student characteristics also affect the quality of learning outcomes. One of the characteristics that affect the quality of student learning is the motivation to learn (MB). Motivation is a process of encouragement, direction, and persistence of behavior (Santrock, 2008). Motivation to learn plays an important role in the learning process, because it will have an impact on student achievement. Thus, there is a close relationship between learning motivation and student achievement.Based on the previous description, this study focuses on Learning Effects of Contextual Teaching and Learning (CTL) with CD-based media and learning motivation toward mathematics learning outcomes.Based on the above can be identified with the following issues:

1. The results of mathematics learning elementary school students still lacking

2. Not optimal mathematical ability of students also experienced elementary school students in District Lengkong. Students having difficulty in connecting material already obtained new material that will be studied.

3. Lack of media applied learning in mathematics

4. There is a shortage of learning resources are used to support mathematics courses

5. The absence of media to develop the potential and interest in learning thestudents to learn effectively and independently.

The problems of this study can be formulated as follows:

1. Are there differences in mathematics learning outcomes among students who were treated with CD-based learning CTLinteratif with Conventional?

2. Are there differences in mathematics learning motivation among students who were treated with CD-based learning CTLinteratif with Conventional?

3. Is there any interaction between the learning CD-based CTLinteratif and students' motivation to learn Maths results?

B. RESEARCH OBJECTIVES

Based on the formula above, the goal of researchers is:

1. Know the difference between the mathematics learning outcomes of students who were treated with CTL-based learning interatif with conventional CD.
2. Know the difference between students' motivation to learn math were treated with CTL-based learning interatif with conventional CD.
3. Knowing the interactions between CTL-based CD iterative learning and students' motivation to learn Maths results.

F. Benefits Research

a. Obtain alternative methods can be used in mathematics.

b. Knowing the influence of CTL-based learning CD media to increase mathematics achievement

c. CTL-based learning using CD media, students will gain experience of learning more varied, interesting, fun, and exciting and proficient in solving mathematical problems.

d. As input for teachers in implementing the learning are varied in order to maximize the ability of learners.

e. Motivating teachers of mathematics to further optimize the application of learning CTL CD-based media and students' motivation to improve learning outcomes more optimal.

f. As input for all parties involved in the world of education, especially math teachers in an effort to improve students' mathematics learning outcomes.

g. Increase the value of the average acquisition mathematics.

h. Improve student achievement in public schools.

LITERATURE REVIEW

A. Learning Math

1. Mathematics

Mathematics is the science of -bilangan numbers, relationships among numbers, and operational procedures used in solving problems concerning numbers. (Dictionary of Mathematics, 2010) Mathematical according Ruseffendi (1991) is a symbolic language, deductive science which does not receive proof inductively, the study of patterns of regularity, the science of the organized structure from the elements that are not defined to the element that is defined, to the axioms, or postulates and finally to the proposition.

Though mathematics is a deductive science and abstract so that there is a gap. To overcome this, it is necessary learning strategies, methods and media that are suitable for the learning of mathematics so that learners can understand the concepts that are presented. Primary Teachers must strive to reduce the abstract nature of mathematical objects so that learners more easily in capturing math. In a large dictionary of English, said Contextual (contextual) means the relationship, context, atmosphere, and circumstances. (Hasan, 2000: 481) Thus Contextual Teaching and Learning (CTL) can be interpreted as a learning associated with a particular atmosphere. Contextual learning is not a new concept in the world of education. Application of Contextual learning in classes jak se America has done in 1916 by John Dewey, who at that time propose a curriculum and teaching methodology that is associated with the development of students' interests and experiences (Suryanti, 2008: 2). This is in line with the statement in Suryanti Blanchard, that Contextual learning is learning that takes place in close relationship with the students' actual experiences (Suryanti, 2008: 2). More (Johnson, 2011: 19) describes the terms of CTL in the following quote: The CTL system is an educational process that aims to help student's see meaning in the academic material they are studying by connecting academic subjects with the context of Reviews their daily lives, that is, with the context of membuka, social, and cultural circumstance. Excess CTL (1) Learning becomes more meaningful and real (2) Learning more productive

b. Deficiency Required initiative and creativity in learning, including: insight adequate knowledge of each subject, a change in attitude in dealing with problems and have a high responsibility in completing tasks - tasks.

Media is part of the instructional system as a whole. To that end, according to AzharArsyad (2009: 75) and Arif S. Sadiman (2009: 83) there are several criteria that should be shown in selecting the media is as follows:

1) As the objectives to be achieved

2) Right to support learning content that are facts, concepts, principles or generation.

3) The availability of cost, manpower, and facilities.

4) Practical, flexible and survive

5) Lecturer skillful use it.

6) cost-effectiveness in the long term.

7) Grouping target.

8) Technical quality

CD comes from the two-term CD and Interactive. CD comes from the English is an abbreviation of Compact Disc, while interactive on KBBI interpreted as a dialogue between the computer and the terminal or computer to computer.

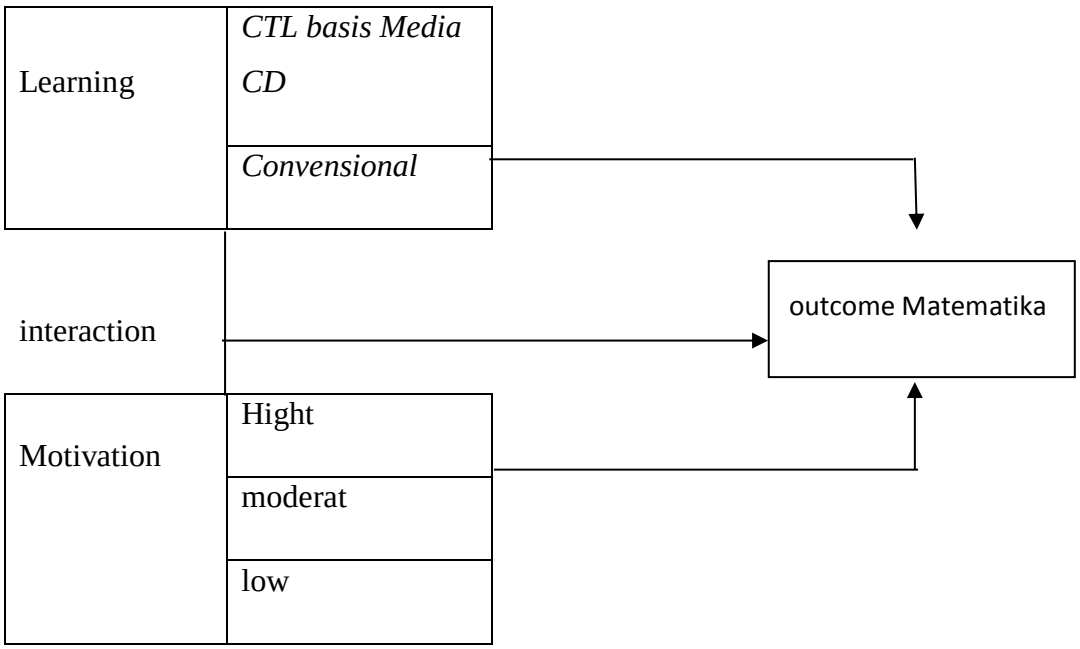
Arsyad (2002) states that Medialearning is a delivery system of teaching which presents video footage with computer control to the audience (students) who not only hear and see the video and sound, but also provide a response that is active, and the response was that determine the speed and the sequence of presentation.

Morgan et al. (In Marwansyah and Mukaram, 2002: 151) explains that: "The motivation is the driving force and move a person to perform actions or behavior directed at a specific purpose". Barton and Martin (in Marwansyah and Mukaram, 2000: 151) explains that: "The motivation is the force that drives the behavior that gives direction and behavior of an underlying tendency to continue to demonstrate the behavior."

Means the student with Need for Achievement great is the students who tried to do the maximum learning. For example, in completing the assignment of teachers, he was trying to do better with maximum results in comparison to other students.

Application of CTL-based CD media are also based on the idea that children learn more fun, more meaningful by working alone, find themselves and construct their own knowledge and skills. It will grow and increase motivation and student achievement.

The relationship between the variables of this quasi-experimental research can be described by the conceptual framework as follows:



Relationship Diagram Figure 2.1 Research Variables

Hypotheses

1. There is a difference between the mathematics learning outcomes of students who were treated with CTL-based learning interatif with conventional CD.
2. There is a difference between students' motivation to learn math were treated with CTL-based learning interatif with conventional CD.
3. There is an interaction between the learning CD-based CTLinteratif and students' motivation to learn Maths results.

C. RESEARCH METHODS

A. Design Research

The research design was Quasi Experiments using pattern pretest-posttest control group

design.Design of the control-group pretest-posttest

1. Variable Operational Research and Definitions

This study contains three variables: the CTL-based CD, motivation to learn, and learning outcomes. The three variables are composed of free variables (CTL-based CD, and motivation to learn) and the dependent variable (the learning outcomes). There are two learning strategies studied were CTL-based Media CD that is applied to the experimental group and conventionally applied in the control group. CTL-based Media CD (hereinafter abbreviated as CTL-CD), a learning strategy that combines learning CTL using Media CD .. While conventional in this case meant the regular learning is done with conventional (face-to-face). The type of data on learning strategies variables are nominal data, in which the figures given do not reflect the position or level one category to another category (Suharjo, 2013: 2). In this study, the experimental group who apply CTL-based Media CD given category number 1 and the control group were given conventional implement category number 2. The type of data on students' motivation variable category ordinal data depicting levels. Student motivation is divided into three categories: high level of learning motivation, learning motivation level moderate, and low learning motivation levels. Indicators of success of this study if the increased student motivation ≥75% of the total number of students using the following formula: Percentage of value =

1. Then, to determine the range of values that is by the highest score lowest is minus 80-20 = 60

2. To determine the category of student motivation using the formula:

$$I = \frac{NT - NR}{K}$$

(Soegyarto Mangkuatmodjo 1997: 37)

Note: I = Interval
NT = The highest variable
NR = lowest variable value
K = Category

Thus,

$$I = \frac{80 - 20}{3}$$

$$I = 20$$

So Scores of students' motivation can be categorized as the following table:

No	Range of Value	Category
1	≥ 60	High

2 40-59 Medium
3 20-39 Low

Student learning outcomes including data types ratios for student learning outcomes as indicated by a score describes the level of students' abilities, where the score achieved by students starting from zero truth.

2. Control Variables

Table 3.3 Control of internal variables

No. Factors that threaten Control Practices

1 History Providing treatment in the same period, the selection of similar subjects, the use of group worth.

2 Maturation (Maturity)
giving treatment in a period not too long, so the research subjects not to undergo physical and mental changes that can affect the outcome of treatment.

3 Testing
Devise a test for pre-test and post-test different but refer to the same indicator.

4 Instrumentation
using instruments that validasireliable and use the same instrument in groups of subjects.

5 Loss Keeping students are not subject to change schools

6 Locations
selection of schools / classes have the same qualifications, the class that has the facilities and learning conditions are the same and classes that have enabled students to match.

7 Regression Statistics
be careful in choosing a research subject and using reliable instruments valiDAN well on tests at the beginning or end of the test.

a. External validity

Table 3.4. Control of external variables

No factors that threaten the Control

1 Validity of the population of the research results can be generalized to other subjects that have the same characteristics. Other research subjects should apply the same treatment as in this study.

2 Validity of Ecological order memiiiki ecological validity investigator should fully describe the condition of the implementation of the experiment, so the reader can assess the extent to which hassil such experiments can be applied to other situations.

C. Subjects Research

Determining the subject of research using a model-based selection criterion is based on the assumption that the subject as an actor in the proposed research theme. This research was conducted in two groups of school SDN Northern Force as much as 4 Southern Cluster SDN schools and as many as four schools. Thus the characteristics of the two types of schools can be represented by two schools.

The study subjects chosen by category cluster primary schools in District Lengkong. Besides, both groups are supported schools means that allow performing experiments in the form of a computer so that it can apply a CTL-based CD.

Characteristics of the study subjects consisted of 4 classes each gugusnya namely Class IV student, each class consists of 20 to 30 students. Each class has a nearly equal gender

composition, average age 10 years.

D. Location Research

1. State Primary School District Area Lengkong, namely Cluster group North and South Cluster.

E. Technical Data and Research Instruments

Data collection techniques in this study there are two types of questionnaires and tests.

1. Questionnaires

Data collection is done by giving questionnaires to students to answer.Answer options provided are:Always, score = 4Often = 3Ever = 2Never = 1Beads of questions or statements amounted to 20 developed indicators for the motivation to learn are: diligent, tenacious, interested, independent, not bored, capable, confident and creative.

Preparation of technical instruments designed to follow the guidelines as follows:a) Typed on A4 size paper

b) Using the font Times New Roman size 12.

c) Using paper margin: 4 cm from the top edge and the left edge and 3 cm from the bottom edge and right edge.

d) options were provided written with symbols: 1,2,3, and 4

Classification of student motivation structured into three levels, namely:High motivation: score>= 60The motivation was: score 40-59Low motivation: a score of 20-392. Tests

The procedure should be taken to prepare test assessment tools,namely:a) determine the form of tests to be prepared,b) make a grating items,c) wrote items based on lattice problems with attention to language, does not contain a double interpretation, briefing items, and based on the rule of raw Mathematics, andd) organize the matter.Table 3.5. Types of tests usedNo. Aspects of assessment Number of Questions This type of question / task Scoring Weighting(%)

1 Knowledge 10 multiple choice with four options correct answer = 1100Answer wrong = 0The test is used to collect the data of student achievement. Multiple choice knowledge test, on each of the questions are provided four answer options, students choose one correct answer.

Table 3.5. Grating the knowledge test

No.	Aspects	sum	questions	skor	Persentase (%)
1	knowledge	10	multiple choice	true= 1 false= 0	100

E. Testing Instrument

1. Validity

Pearson Product Moment Correlation and Corrected - Item Correlation. This analysis by means of correlating each item score with the total score (the sum of all scores item). The formula to calculate it is:

Information:

The steps undertaken in testing the validity of are:

1) calculate the correlation of each item (item) with a total score (corrected item-total correlation).

2) comparing the correlation value with r table with a significance level α and degrees of freedom N-2.

3) decision o If the result r> r table, the item is valid
o If the result r <r table or r is negative, then the item is not valid

4) grains invalid removed from the process and the test is repeated for grain valid only.

2. Reliability

In this study the reliability test instrument using Alpha (Cronbach's). Alpha method is suitable for use in the form of a scale score (eg 1-4, 1-5) or a score range (eg, 0-20, 0-50). Alpha method can also be used on a dichotomous score (0 and 1). Significance test performed at a significance level of 0.05, meaning that the instrument can be said to be reliable if the alpha value is greater than the critical r product moment. Or it could use such restrictions as 0.6. According sekaran (in Duwi Consultant, 2012), the reliability of less than 0.6 is unfavorable, while 0.7 is acceptable and above 0.8 is good. Data Processing Techniques
Data processing techniques carried out to prove the hypothesis of the study, in this case using three forms of data processing techniques that test the independent sample t-test, Anova one lane, and Anova two lanes.

1. Test the independent sample t-test

Independent sample t-test is a test that is used to test whether there are differences between the two groups were independent. In this case the groups being compared is the average score of the group that implements CTL-based Media CDAN applying conventional strategy group

2. Anova One Way

One Way ANOVA (One Way ANOVA) is a type of parametric statistical test aims to determine the average difference between more than two groups of samples (Sarwono, 2009: 148). In this case the average scores were compared between groups who have learning motivation high, medium, and low.

3. Two-way ANOVA.

Two-Way ANOVA (Two Way ANOVA) aims to find out the average difference between more than two groups of samples. In this case the test conducted jointly differences between groups that implement CD-based CTL strategy and learning motivation level of students' learning outcomes. The processing of data for the purpose of hypothesis testing is done by assisted SPSS (Statistical Product and Service Solutions) v.16. According Sarwono (2009), the calculation results of different test followed by a series of activities in the form of:

1. The interpretation of the results of the analysis, which shows the results of data analysis that describes the differences or similarities of the groups tested data.
2. The determination of acceptance or rejection of the hypothesis with reference to the formulation of research hypotheses, test results, and benchmark decision.
3. The conclusions that refers to the formulation of research problems, based on the formulation of hypothesis verification conclusion is consistent with the hypothesis verification.

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