

III. METHODOLOGY

3.1. Research Design

In this research, the researcher intended to find out the significant increase of students' reading comprehension achievement in the implementation Contextual Teaching Language approach. The researcher only selected one class as experimental class which had got treatment through CTL. In the qualitative research, the researcher applied experiment design; one group pretest and posttest design. The design of the research consisted of one pretest and one posttest in order to know students' achievement in reading comprehension before and after using CTL. One group pretest-posttest design is represented as follows:

T1 X T2

Where:

T1 = Pretest

X = Treatments

T2 = Posttest

(Hatch and Farhady, 1982:22)

The pretest was conducted by using a reading test provided by the researcher in the research. Then, the posttest was given by the end of the treatment. The treatment was conducted three times in teaching learning process. While the result of the pretest was used to indicate students' reading comprehension, then the researcher analyzed and compared the result of posttest to see the increasing students' reading comprehension through CTL.

3.2 Population and Sample

The population of the research was the second grade students of SMP Krida Kartikatama Metro. There were six classes of the second grade student. Each class consisted of about 40 students. The researcher took the class as the sample of the research by using lottery drawing; it is experimental class, class that was given the treatment (teaching reading by using CTL). The materials were applied based on the curriculum.

3.3 Instrument

In this part, the researcher tried to compare the test with table specification to know whether the test was a good reflection of what had been taught. The table of

specification is an instrument that helps the test constructor plans the test. The table of specification is based on the theory of reading (Milan, 1988) and curriculum.

Table 1. The table of specification

No.	Objectives		Percentage	Try Out number
1.	Comprehension	Determining the main idea	20%	1., 5., 9., 14., 17., 19.,
2.		The supporting detail	38%	2., 3., 4., 6., 8., 10., 15., 18., 26., 27., 29.,
3.	Inferences	Inferences	15%	7., 16., 20., 21., 28., 30.,
4.	Critical thinking	Feature of the text	27%	11., 12., 13., 22., 23., 24., 25.,

Based on the table of specification (Milan: 1988), the researcher made the reading test e.g. pretest and posttest. The data was gained from the students' scores in pretest and posttest. In collecting the data the researcher used the following technique:

1. Pre test

The researcher administered the pretest before the treatment applied, in order to know how far competence of the students in reading comprehension ability before the treatment. The pretest was conducted before the treatment. The test was multiple choices that consist of 20 items. The pretest was conducted within 60 minutes. The materials of test were tested based on the curriculum.

2. Posttest

The posttest was administered to the students after the treatment applied in order to find out the result of students' reading comprehension after applying CTL approach in their reading. Every test consisted of reading text with 20 items of multiple choices test. The posttest was conducted within 60 minutes. The material of the test was taken based on the curriculum.

3.4 Research Procedures

The procedures in administering the research were as follows:

1. Determining the samples of the research

The first step to be made in this research was selecting the class as the sample. The researcher took the class as the experimental class.

2. Determining the research instrument

Both the reading test (pretest and posttest), the material was taken from the students' textbook based on curriculum.

3. Administering the try-out

The test was prepared (called try out test) and given to the students in order to know the quality of the test as instrument of the research. The writer prepared the materials of test and item number. The test was a multiple choice test consisting of

30 items. Try out test was conducted for 60 minutes. Try out test was conducted to know the Reliability, Level of difficulty, and Discrimination Power of the test. The result of the try out will be analyzed in order to know which items are good to be used in pretest.

4 Administering the pretest

This test was given to find out the students' basic reading comprehension. The good items from tryout test that had been analyzed before prepared to be given in the pretest. The researcher administered pretest before giving treatments by using reading texts and 20 items of multiple choices test. The scoring system was that the load of each correct answer was 5 points. Therefore, if one of participant tried to answer all the items correctly, she/he got 100 points. The pretest took 60 minutes. The material was prepared to the students related to the curriculum that were used in the school.

5. Conducting treatments

After the pretest, the treatment was conducted, the experimental class was taught through CTL with using picture text. The researcher used four elements of CTL; Constructivism, Inquiry, Questioning and Learning community. The class was given the materials based on school curriculum. The researcher taught the students and become an observer in the experimental class for three times.

6. Administering the posttest

The posttest was given for the last meeting. The researcher conducted the posttest in order to find out the students achievement toward reading comprehension. The researcher gave the administering test for students. The posttest took 60 minutes.

7. Analyzing the data (pretest and posttest)

In this step, the writer analyzed the data from pretest and posttest. Both of the pretest and posttest results of the class were treated using repeated measures T-Test (*Repeated Measures T-Test of SPSS (statistical package for social science) version 12.0 for windows*). The last point, the researcher made a reporting.

3.5 Scoring System

In the scoring the result of student's test, the researcher used Arikunto's formula (1989; 271). The ideal test highest score was 100. The researcher calculated the average of the pretest and posttest by using this formula:

$$S = \frac{R}{N} \times 100$$

Where:

S: the score of the test

R: the right answers

N: the total items

3.6 Tryout Test

The test given in tryout test was multiple choices consisting of thirty items with the option a, b, c, d. It will be given in order to know the level of difficulty and discrimination power of the test items before giving the pretest and posttest to the class. The test is said to have a good quality if it has a good validity, reliability, level of difficulty and discrimination power.

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3.6.1 Validity of the Test

To measure whether the test had a good validity, the researcher used content and construct validity since the other two were considered to be less needed. A test could be said valid if the test measures the object to be measured and suitable with the criteria (Hatch and Farhady, 1982; 250). According to Hatch and Farhady (1982; 251), there were two basic types of validity:

a. Content Validity

Content validity is the extent to which a test measures a representative sample of the subject matter content, the focus of content validity is adequacy of the sample and simply on the appearance of the test (Hatch and Farhady, 1982; 251).

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	Total		100%	30

b. Construct Validity

Construct validity is concerned with whether the test is actually in line with the theory of what it means to know the language (Shohamy, 1985; 74). Knowing the test is true reflection of the theory in reading comprehension, the researcher will examine whether the test questions actually reflect the means of reading comprehension or not. The test consisted of some reading skills, namely determining the main idea, vocabulary and specific information.

3.6.2 Reliability of the Test

Reliability refers to extend to which the test is consistent in its score and gives us an indication of how accurate the test score are (Hatch and Farhady, 1982; 244). The test can be determined by using the Pearson product moment formula (Arikunto, 1997) as follow:

$$r_{xy} = \frac{n \sum xy - (\sum x)(\sum y)}{\sqrt{(n \sum x^2 - (\sum x)^2)(n \sum y^2 - (\sum y)^2)}}$$

Where:

- r : coefficient of reliability between odd number items
- x : total number of odd number items
- y : total number of even number items
- n : number of student who take part in the test
- x² : the square of odd number items
- y² : the square of even number items
- $\sum x$: total score of odd number items
- $\sum y$: total score of even number items

(Lado (1961) in Hughes, 1991:32)

To measure the coefficient reliability between odd and even number of calculation,

the researcher used formula:

$$r_{xy} = \frac{n \sum xy - (\sum x)(\sum y)}{\sqrt{(n \sum x^2 - (\sum x)^2)(n \sum y^2 - (\sum y)^2)}}$$

$$r_{xy} = \frac{40.3499 - (406)(337)}{\sqrt{(40.4276 - (406)^2)(40.2957 - (337)^2)}}$$

$$= \frac{139960 - 136822}{\sqrt{((171040 - 164836)(118280 - 113569))}}$$

$$= \frac{3138}{\sqrt{29227044}}$$

$$r = \frac{3138}{5406.2}$$

$$r = 0.58$$

Then the researcher used “Spearman Brown’s Prophecy formula” (Hatch and

Farhady, 1982; 246) to determine the reliability of the test as follow:

$$Rk = \frac{2 \text{ rl}}{1 + \text{rl}}$$

Rk : the reliability of test
 rl : the reliability of half test

$$rk = \frac{2rl}{1 + rl}$$

$$rk = \frac{2 (0.58)}{1 + 0.58}$$

$$rk = \frac{1.16}{1.58}$$

$$rk = 0.7$$

The criteria of reliability are:

0.90-1.00 = high

0.50-0.89 = moderate

0.0 -0.49 = low

The result of the computation showed that rl was 0.58 (see Appendix 11). The result of the whole reliability showed that rk was 0.7 (see Appendix 11). Based on the criteria of reliability, it can be seen that the reliability of the test was moderate. It means that the classroom had good positive discrimination power because a large number or more knowledgeable students than poor students get the items correct.

3.6.3 Level of Difficulty

To see the level of difficulty, the researcher used the following formula:

$$LD = \frac{R}{N}$$

Where:

LD : level of difficulty

R : the total number of the students who answer correctly

N : the total of the number students

The criteria are:

< 0.30 = difficult

0.30-0.70 = average

> 0.70 = easy

(Shohamy, 1985; 79)

3.6.4 Discrimination Power

To see the discrimination power, the researcher used the following formula:

$$DP = \frac{\text{The proportion of upper SS} - \text{the proportion of lower SS}}{\frac{1}{2} \text{ total number student}}$$

(Shohamy, 1985; 81 and Arikunto 1993; 221)

The criteria are:

1. If the value is positive, it has discrimination because a larger number or more knowledgeable students than poor students get the item correct. If the value is zero, it means no discrimination.

2. If the value is negative, it has negative discrimination because more low-level students than high level students get the item correct.
3. In general, the higher discrimination index, the better, in the classroom situation most items should be higher than 0.20 indexes.

(Shohamy, 1985; 82)

The criteria are:

0.00 –0.20 = Poor

0.21 –0.40 =Satisfactory

0.41 – 0.70 =Good

0.71 –1.00 = Excellent

- (Negative) = bad items (should be omitted)

(Heaton, 1975: 182)

3.7 Data Analysis

In this research only used one class for experimental class and there was no control group so that repeated measured T-test is used. The researcher analyzed the data statistically using repeated measure T-test. T-test was probably the most widely used statistical test for the comparison of two means because it could be used with very small sample sizes (Hatch & Farhady, 1982:108). Repeated measure T-test was to analyze the data of students' increase in reading comprehension. It compared two kind data or mean from similar simple sample (Setiyadi, 2006:170). The steps of the data analysis of this research were:

3.7.1 Administering the Normality Test

Normality test is an idealized model which can be used to dealing with natural behavior (Hatch and Farhady, 1982: 64). The normal distribution has three distinct

properties that allow the researcher to make inferences about the population in general and our sample of the population in particular. That is:

1. The mean, median and mode in a normal distribution are all the same.
2. The first property result in the second characteristic the shape of the normal distribution is bell shaped and symmetric.
3. The normal distribution does not have a zero score; the tails never meet the straight line.

(Hatch and Farhady, 1982:64)

Normality test has been used to identify whether the data is normally distributed or not. The researcher uses Liliefors formula to test the normality of the data. The highest values $F(Z_i) - S(Z_i)$ on normal distribution will take as Liliefors ration. The test criteria are:

H_0 = L- ratio is lower than L- table (the distribution of the data is normal)

H_a = L- ratio is higher than L- table (the distribution of the data is not normal)

From the calculation, the distribution of the data is normal (L- ratio is smaller than L- table).

3.7.2. Testing the Homogeneity of Variance

This test has been used to determine whether the data fulfill the criteria of the quality of variance. This test has been used F-test. The formula is:

$$F = \frac{S^2}{S_2}$$

(Hatch and Farhady, 1982:153)

The test criteria are:

Ho = if F- ratio is lower than F- table the data is homogenous

Ha = if F- ratio is higher than F- table the data is not homogenous

3.7. 3. Hypothesis Testing

The data analyzed by using Repeated Measures T-test. It was used as the data came from the same sample or known as paired data (Hatch and Farhady, 1982:114). The hypothesis was statistically analyzed using Repeated Measures T- test that was used to draw the conclusion at the significant level of 0.05 in which the hypothesis was approved if Sig < α . It meant that the probability of error in the hypothesis is only about 5%. The result of pretest and posttest in experimental class (see Appendix 15) implied that CTL could increase the students' achievement in reading comprehension. It meant that H₁ is accepted and H₀ is rejected. The formula is as follows:

$$t = \frac{\overline{X}_1 - \overline{X}_2}{S_D} \quad \text{in which} \quad S_D = \frac{S_D}{\sqrt{n}}$$

\overline{X}_1 = Mean score of pretest

\overline{X}_2 = Mean score of posttest

S_D = Standard error of differences between two means

S_D = Standard Deviation

n = Number of students

(Hatch and Farhady, 1982:116)

Both of the pretest and posttest results of the class were treated using repeated measures T-Test (*Repeated Measures T-Test of SPSS (statistical package for social*

science) version 12.0 for windows). It was tested in order to find out whether there is an increase the students' reading comprehension through CTL or not. The hypotheses are:

Ho : There is no significant increase of student's reading comprehension through CTL.

Hi : There is significant increase of student's reading comprehension through CTL.

(Sudjiono, 2001; 382)

The criteria are:

1. If the t-value is higher than 0.05: Hi is accepted
2. If the t-value is lower than 0.05: Ho is accepted