CHAPTER III
RESEARCH METHODOLOGY

This chapter presents how the research was conducted. Moreover, it tries to examine which strategy between contextual redefinition and word list that gives significant impact in helping EFL learners' reading comprehension and how the students' responses toward both strategies were. This chapter consists of research design, population and sample, data collection which includes research instruments, data collection procedures, and data analysis.

3.1 Research Design

This study employed mix method which involved both quantitative and qualitative method. The quantitative method was used to examine which strategy that is considered to be more effective. Meanwhile qualitative method was used to find out how students' responses toward the use of contextual redefinition and word list in helping their reading comprehension. The research method used in this study was experimental research in form of counterbalanced or rotation design. Counterbalance design which is called repeated measured design is a kind of experimental research design where the subjects in the study are exposed to all treatments (http://explorable.com/counterbalanced-measures-design).

The reason for using counterbalanced design in this study because it is designed to get more accurate data and is often used to reduce chances of the order of treatments or other factors negatively influencing the result of the study (www.explorable.com/counterbalanced-measures-design). Moreover, this kind of experimental design is more sensitive in detecting the effect of independent variable (www.psychmet.com/id16.html). As a result, the researcher applied both strategies (contextual redefinition and word list) to both groups (group A and B). Hence, both groups belong to experimental group in this study and there is no term of control group because both groups gained equal treatments (Arikunto, 2010).

The research design used in this study can be formulated as follow:

Table 3.1
Counterbalance design

Group	Pre-test	Treatment	Posttest	Treatment	Posttest
Group A	**O**	**XaT1**	**O**	**XbT2**	**O**
Group B	**O**	**XbT2**	**O**	**XaT1**	**O**

Where:

XaT1 = Contextual redefinition treatment

XbT2 = Word list treatment

3.1.1 Variable

Hatch and Farhady (1982) state that variable is attributed to a person or an object which varies from person to person or object to object. There are two kinds of variable that can be classified; they are independent variable and dependent variable. Independent variable is the treatment or manipulated variables, while dependent one is the criterion or outcome variable which depend on what the independent variable affects it (Fraenkel and Wallen, 1993). There were two independent variables which were used in this study; they were contextual redefinition and word list strategy. Meanwhile, the dependent variable used was students' reading comprehension.

3.1.2 Hypothesis

In addition to determining the variable, stating one or more hypothesis is also required in any experimental study. Hypothesis is a prediction of several kinds of possible result of the research (Fraenkel & Wallen, 1993). The hypothesis that scientist wants to support or to prove is known as research hypothesis which is symbolized as H_1, while the "everything else" hypothesis is called null hypothesis which is symbolized as Ho (Kranzler & Moursund, 1999). The primary use of inferential statistic is that of attempting to reject Ho.

In this study, the hypothesis was stated as follows:

H_0: there is no difference of post-test scores in reading text by using contextual redefinition and using word list as strategy in helping students' reading comprehension.

3.2 Population and Sample

Population is a group which is intended to apply in a research, while sample is a group in a study which aimed to collect information (Fraenkel and Wallen, 1993). The sample in this study consisted of 77 second-grade students of one junior high school in Bandung who were divided into two groups, they are group A and B. The basis for choosing the sample is the students' mean score in pre-test.

3.3 Data Collection

In gathering the data, several instruments were employed in this study, namely pre-test, post-tests, questionnaires, and interviews. Administered to both groups, the two tests diverged in their administering time as pre-test was given prior to the treatment and post-test after the treatment. On the other hand, questionnaires and interviews were administered to some students from both groups.

3.3.1 Research Instruments

In this study, four kinds of research instruments were used, namely pre-test posttest, questionnaire, and interview. The pre-test was conducted to three classes

that randomly chosen and it was aimed at deciding the classroom that would be used in the study. The post-test was conducted to know how far the treatments worked. The questionnaire was distributed twice. First, it was distributed before doing treatment and it aimed to know how the students' responses to their reading skill. Second, the questionnaire was distributed after post-test to both groups (group A and B). It aimed to know how the students' responses to the use of contextual redefinition and word list in their reading comprehension.

Questionnaire is a number of written questions used to gain information from the respondents in the form of statements from themselves or things that they know (Arikunto, 2010). In addition, the use of questionnaire has advantages and disadvantages (Creswell, 2008). The advantage is that they can be mailed or given to a large numbers of people at the same time. Meanwhile the disadvantages are that the unclear or seemingly ambiguous question cannot be clarified and respondent has no chance to expand on, or react verbally to a question of particular interest or importance. The questionnaire in this study included ten closed question to avoid students' inappropriate answer.

After distributing the questionnaire, interview was administered to give further information about how they gave their responses toward the use of contextual redefinition and word list in reading activity.

3.4 Data Collection Procedure

3.4.1 Organizing Teaching Procedure

In organizing teaching procedure, the researcher became a teacher and also a facilitator for group A and B. The teaching procedure was organized through two steps. The first step was preparing suitable material for teaching and learning process during the treatment and the second step was organizing teaching procedure in both groups. The teaching procedure in group A used word list and in group B used contextual redefinition.

3.4.2 Administering Pilot Test

Before giving the treatments, the researcher administered pilot test. Pilot-test aims to measure the validity and reliability of the instrument. The pilot test was administered in another class which was not involved in the study as experimental group. The pilot test was administered on Friday, January 11th 2013 in class VIII F.

3.4.3 Administering Pre-test

Pre-test in this study was administered to decide what classroom would be used as the participants of the study (Mustafa, personal communication, March 1st, 2013). It was also conducted to determine whether or not the classrooms that had been chosen have comparable ability in reading comprehension. Three classrooms had been chosen in the pre-test. Afterward, their mean score of the pre-test were

calculated to know which classrooms that had similar score. Then, it was selected to be the participants in this study.

3.4.4 Conducting the Treatments

In this study, two treatments were conducted to both groups (group A and B). There were two conditions in this study. In the first condition, group A received word list and group B received contextual redefinition strategy. Later, after 4 sessions, it was rotated so that group A received contextual redefinition and group B received word list. Although the methods were different, the learning materials were approximately similar as can be seen in the following teaching schedule:

Table 3.2
Schedule of Study in the First Condition

No.	Date	Learning Material in Group A	Learning Material in Group B
1	January 16th, 2013	Introducing the descriptive text, the generic feature: simple present, the generic structure, and introduction word list strategy.	Introducing the descriptive text, the generic feature: simple present, the generic structure, and introduction contextual redefinition strategy.
2	January 18th, 2013	Descriptive text: San Francisco using word list strategy and explaining the purpose of the text.	Descriptive text: San Francisco using contextual redefinition strategy and explaining the purpose of the text.
3	January 23th, 2013	Descriptive text about fish using word list strategy and explaining about the purpose of the text.	Descriptive text about fish using contextual redefinition strategy and explaining about the purpose of the text.
4	January 25th, 2013	Descriptive text about Bali using word list strategy and explaining about the purpose of the text.	Descriptive text about Bali using contextual redefinition strategy and explaining about the purpose of the text.
5	January 30th, 2013	Posttest	Posttest

Table 3.3

Schedule of Study in the Second Condition

No.	Date	Learning Material in Group A	Learning Material in Group B
1	February 1st, 2013	Descriptive text about Borobudur temple using contextual redefinition strategy.	Descriptive text about Borobudur temple using word list.
2.	February 6th, 2013	Descriptive text about summer in Madrid using contextual redefinition strategy.	Descriptive text about summer in Madrid temple using word list strategy.
3.	February 8th, 2013	Descriptive text about France temple using contextual redefinition strategy.	Descriptive text about France temple using word list strategy.
4	February 13th, 2013	Descriptive text about Ottawa using contextual redefinition strategy.	Descriptive text about Ottawa using word list strategy.
5	February 15th, 2013	Posttest	Posttest

3.4.5 Administering Post-test

In this study the post-test was administered twice and it aimed to get the valid data of the use contextual redefinition and word list in teaching reading. Post-test was administered after the samples received the treatments in each condition. The first post-test was administered to both groups after receiving word list and contextual redefinition. Next, the second post-test was given after the treatments were rotated to both groups, so group A received word list strategy while group B received contextual redefinition.

3.5.6 Distribution the Questionnaire

In this study, questionnaires were distributed twice. The first questionnaire (preliminary observation) was distributed before the treatment and the second was distributed after whole treatments and post-tests. The first questionnaire (preliminary observation) was aimed at finding out what kinds of problem about reading comprehension (Fox, 2008). Meanwhile, the second questionnaire (post-treatment)

was aimed at finding out how students' responses toward the use of contextual redefinition and word list in teaching reading activity.

The students in both groups were given five closed questions in the preliminary observation questionnaire and ten closed questions in post-treatment questionnaire. It aimed to avoid inappropriate reasons that are usually found in the open-ended questionnaire (Arikunto, 2010). The questionnaire is aimed at supporting the data to gather more information about the students' responses to the use of contextual redefinition and word list based on students' point of view (Arikunto, 2010). The preliminary observation and post-treatment questionnaires in this study can be seen in appendix B.

3.4.7 Conducting Interview

Cohen *et al.* (2007) proposes that interview is a tool for collecting data which is very flexible; interviewer's control over the order of the interview can be maintained while spontaneity is still given the space, and the interviewers can persuade their interviewees to give response to complex and deep issues beside the complete answers. Interview was conducted to 12 representative students after filling the questionnaires. In the preliminary observation interview, the six representative students from both groups who had positive responses toward English text were selected to be interviewees. Meanwhile six others were the representative students who had negative response toward English text.

After having treatment in two different conditions, the students in the preliminary observation interview were assigned into three categories. First, three participants from group A and B who liked more contextual redefinition and three participants who liked more word list respectively. Second, the three participants from group A and B who had obstacle in contextual redefinition and three participants who had obstacle in word list. The last, three participants from group A and B who saw the advantages of using contextual redefinition and three participants who saw the advantages of using word list.

The interview employed open-ended question which required students' explanation about their ideas related to their own ability in reading text after having treatment (contextual redefinition and word list). Furthermore, the students' answer in the interview will become a basis in determining students' responses toward the use of contextual redefinition and word list in reading activity.

3.5 Data Analysis

3.5.1 Scoring

The instrument used in this study was in the form of multiple-choice questions. After the data were collected, then the data would be analyzed by using scoring technique formula. The formula proposed in the study by Arikunto (2002) is as follows:

S = R

where,

S=Score

R=Right

3.5.2 Data Analysis in the Pilot test

The data that were obtained from the pilot test were analyzed to measure the validity, the level of difficulty, and the reliability (Anwar, 2004).

3.4.2.1 Validity test

Validity as stated by Coolidge (2000) is the extent of which the result of procedure serves the uses for which they intended. It also was administered to prevent the researcher makes inaccurate conclusion or inference about the object of the study.

One of the ways in analyzing validity of the instrument is by looking at discrimination of each item. Discrimination of each item (item discrimination) is a method which is more effective to be applied in every kind of tests (Anwar, 2004). In this study, *Coefficient Correlation Biserial Point* was used to see discrimination of each item in the test by seeing item-total correlation. The item-total correlation is consistency between score item which can be seen from the highest correlation coefficient between each item with a whole score in the test. *Coefficient Correlation Biserial Point* can also be used to the dichotomous test instrument (correct/incorrect

or true/false) and the data which belongs to nominal data (Guilford, 1979 & Friedenberg, 1995). Nominal data is the data that has no numerical meaning and has characteristic such as there is no level in the options of instruments. It means that the number that given in the option of the instrument just becomes the label (Suharto, 2008).

In measuring the validity of the instruments which are consisted of nominal data, *Coefficient Correlation Biserial Point* was used in this study. The data was calculated by using Microsoft Office Excel 2007 for Windows. The formula of the coefficient biserial point is as follows:

$$r_{PB} = \left(\frac{X_i - \overline{X}}{SD_X} \right) \sqrt{\frac{p}{1-p}}$$

Wh

$\overline{X}$ nts

X_i = An average score only to students who has right answer to the i item

p = Quantity/proportion to the students who has right answer to the i-item

$1-p$ = Quantity/proportion from the students who has false answer to the i-item

SD_X = Standard deviation of a whole student

Table 3.4
r Coefficient Correlation (Validity)

Raw score	Interpretation
0.00 - 0.299	Invalid
0.300 - 1.000	Valid

Friedenberg (1995)

3.5.2.2 The Level of Difficulty

The study adopted the formula of Heaton who states that the index of difficulty or facility value of an item shows how easy or difficult the certain item established in the test is. In test construction, it is mentioned that the level of difficulty of question is very important because it can influence the characteristic of score distribution and it is related to reliability. According to *Coefficient Alfa Clan KR-20*, the more correlation between the questions, so the more level of reliability will be (Nunnally, 1981: 270-271)

The following formula was used by the researcher to calculate the index of difficulty of an item. The formula used is as follows:

$$FV = R/N$$

FV = Facility or index difficulty

R = Number of correct answer

N = Number of the students taking the test

Table 3.5
Criteria of difficulty index

Index of difficulty	Difficulty degree
0.00-0.30	Difficulty item
0.30-0.70	Moderate item
0.7-1.00	Easy item

3.5.2.3 Reliability

In the study, the reliable instrument is used to get the valid data. Therefore, reliability of the instrument used has to be held. It is supported by Sugiyono (2003) who argued if the researcher uses the valid and reliable instrument in collecting data, so it is expected that the result of the study will be valid and reliable too. Besides, he argued that reliability of the instrument is a requirement to do a validity test of the instrument.

In this study the researcher tried to measure the reliability by using *Kuder-Richardson (KR-20)* formula in Microsoft Office Excel for Windows. This method can draw the variation of items for the right or false answer which is given the range score that started from 0 until 1 (Guilford and Benjamin, 1978).

The formula of Kuder Richardson (KR-20) is:

$$KR-20=\left(\frac{n}{n-1}\right)\left(\frac{S_t^2-\sum pq}{S_t^2}\right)$$

Where:

n = number of item

S^2 = total of Variance

p = the number or students who has right answer in I item

$1-p$ = the number of students who has false answer in q item

Table 3.6

The Criteria of Reliability

Raw score	Interpretation
< 0.20	The relationship is very low and can be ignored
0.20 - < 0.40	The relationship is low
0.40 - < 0.70	The relationship is quite reliable
0.70 – < 0.90	The relationship is reliable
0.90 - < 1.00	The relationship is very reliable
1.00	The relationship is perfect

Guilford (1956 as cited in Guilford 1979)

3.5.3 Analysis on the Post-test Scores Data

In this study, post-test was conducted twice. Because this study belongs to separated groups, each group has equal level in gaining treatments, so the *t*-test for a difference between two independent means can be calculated after doing treatment. It also was given to prove Ha and reject Ho. Beforehand, hypothesis was stated with the alpha level at 0.05.

The *t*-test can be calculated if the data is normally distributed and the variances are equal (Ibrahim, 2012). The normality test was analyzed by using *Kolmogorov-Smirnov,* while the homogeneity of variances was analyzed by using *Levene test* formula in SPSS 19.0. Independent sample *t*-test was also used to analyze post-test scores of students in both groups to compare mean of both groups. The calculation of effect size was conducted by using t_{obt} from the independent sample *t*-test posttest.

3.5.3.1 The Normal Distribution test

In this study, the normal distribution test was analyzed by using *Kolmogorov-Smirnov test.* This test compares the scores in the sample to normally distributed set

of scores with the same mean and standard deviation (Field, 2005 as cited in Ibrahim, 2012). Moreover, *Kolomogorov Smirnov test* can be used to analyze the data in small or large samples. Since the study used a small number of samples, this test was used to analyze whether the data in this study was normally distributed or not. In addition, the test was calculated by using SPSS 19.0 for Windows.

There are three steps in conducting the normality distribution test, they are: stating hypothesis and setting alpha level, analyzing the groups of scores using *Kolmogorov-Smirnov* formula, and interpreting the output data. For the first step, the alpha level set is at 0.05 (two tailed test) and the hypothesis is as follows:

Ho = the scores of both groups (group A and B) are normally distributed.

Ha = the scores of both groups (group A and B) are not normally distributed.

The output of the data is interpreted by this way: if the result is not significant ($p < 0.05$) it tells us that the distribution of the sample is significantly different from normal distribution. On the other hand, if the result is significant ($p > 0.05$) then the distribution is not significantly different from normal distribution (Field, 2005 as cited in Ibrahim, 2012).

3.5.3.2 The Homogeneity of Variance test

In order to analyze the homogeneity of variance of the scores, the researcher employed Levene test in this study. The Levene test's hypothesis is that the variance of groups are equal; the difference of variances is zero (Field, 2005 as cited in Ibrahim, 2012). The test was employed through SPSS 19.0 for Windows.

There are three steps in conducting Levene's test. First step is stating the hypothesis and setting the alpha level. The null hypothesis is that variances of both groups are homogenous and for alternative hypothesis the variance both groups are not homogenous. The alpha level set is at 0.05 as this is maximum point that can be tolerated. Second step is analyzing the test by using SPSS 19.0 for Windows. Third step is interpreting the output data. If the result of the test is interpreted to be significant at $p \leq .05$, it is concluded that the null hypothesis is incorrect and the variances are significantly difference. On the other hand, the result is interpreted to be not significant if $p > .05$ and it means that the null hypothesis is accepted and the variances are approximately equal (Field, 2005 as cited in Ibrahim, 2012).

3.5.3.3 The Independent t-test

The independent group *t*-test is used to analyze a causative relationship between the independent variable or treatment and the dependent variable or response variable that is measured on both groups and calculated statistically in the experimental design (Coolidge, 2000: 141). Coolidge also stated that if there is a large difference between mean of the two groups, it means that the independent variable really works well. Conducting the independent *t*-test also includes three steps, they are: stating the

hypothesis and setting the alpha level, analyzing the group scores using the independent group *t*-test in SPSS 19.0 for Windows which results in the *t* value or t_{obt} and comparing the t_{obt} with the level of significance for testing the hypothesis. And the hypothesis set is as follow:

Ho = the two samples are from the same population; there is no significant differences between both samples.

Ha = the two samples are from the same population; there is significant differences between both samples.

For the third step, if the t_{obt} is equal to or greater the level of significance (t_{crit}), the null hypothesis is rejected; two groups are significantly different.

3.5.3.4 Index Gain

Index gain was calculated to know how effective the uses of contextual redefinition or word list in improving students' reading comprehension were. Normalized gain scores were obtained from the calculation by using the formula:

$$\textit{Normalized gain} = \frac{\textit{Posttest score} - \textit{pre-test score}}{\textit{Max score} - \textit{pre-test score}}$$

3.5.4 Analysis on the Questionnaire Data

According to the previous explanation, questionnaire is a number of written questions to obtain information from respondents in the form of statement about themselves or things that they know (Arikunto, 2010). In this study the researcher used multiple choices questionnaire so the result is in presentation form. The formula used in analyzing the questionnaire is described as follows:

$$\frac{Fo}{n} x100\%$$

Where:

% = Percentage

F = Frequency

N = Number of respondent

Table 3.7
The Interpretation of Percentage

Percentage	Interpretation
0 %	None
1% - 25 %	Small number of
26% - 49 %	Nearly half of
50 %	Half of
51 % - 75%	More than half of
76% - 100%	Almost all of
100%	All of

(Kunjaraningrat cited in Mega, 2011 and Ibrahim, 2012)

The interpretation of percentage is used to analyze the result of questionnaire. It is aimed at finding out the percentage of students' responses toward the use of

contextual redefinition and word list strategy in EFL learners' reading comprehension.

3.5.5 Analysis from the Interview Data

The interviews which were administered to the students of both groups are all recorded. The recording is then transcribed, labeled, and coded based on the students' answer. After that, the answers are classified into several categories and also analyzed until the trends are recognized. Finally, it becomes the basis for explanation in answering the second and third research questions. The data transcription can be seen in appendix D.

3.6 Concluding Remark

This chapter has reviewed the research design, data collection, research procedure, and data analysis technique. Further, the findings and discussion of the study is going to be explained in the next chapter.