CHAPTER III

RESEARCH METHODOLOGY

This chapter presents the research design to be used in conducting this study. More specifically, it describes the method of investigation, the research site, data collection, and data analysis.

3.1 Objectives of the Study

The core of the study was to convey the implementation of project approach (PA) in English teaching and learning in an elementary school, especially for fifth graders. It hence became the focus of the study which was conducted to:

1. identify and describe the effect of the project approach in encouraging students' reading comprehension; and
2. investigate the students' responses towards the project approach.

3.2 Hypothesis

Aforementioned in chapter 1, hypothesis is a tentative statement or prediction about the outcome of a study (Hatch & Farhady, 1982; Fraenkle & Wallen, 2007). Moreover, there are two kinds of hypotheses: null and alternative hypothesis. However, the null hypothesis is preferred for this study. Accordingly, Hatch and Farhady (1982) claims that, in the most common case, the null hypothesis is used since "we do not usually bother to ask the question if we are

already sure which way it will turn out" (ibid: 4). Thus, the hypothesis stated for this study was:

Ho: there is no significant difference in students' post-test scores between the experimental and control groups.

3.3 Method of Investigation

In terms of research method, the quantitative method was used to investigate the implementation of project approach in facilitating students in improving their reading comprehension and the students' response toward the method. Furthermore, this study could be categorized as a quasi-experimental study, which included experimental and control groups without random sampling (Nunan, 1992; Hatch and Farhady, 1982). Thus, this study involved two fifth grades that exist in the school site. The experimental group received the special treatment—in this case, the project approach—and the control group was not—they received instructions like they got in their previous meetings, teacher-centered.

Furthermore, the research was stated as follows:

G1 T1 X T2

G2 T1 T2

Where :
G1 = experimental group
G2 = control group
T1 = pre-test
T2 = post-test
X = treatment (the project approach)

3.4 Variables

There were two variables involved in this study; they were independent variable and dependent variable. Independent variable is the major variable which is selected, manipulated, and measured by the researchers in order to investigate the effect(s) on the other variables (Hatch & Farhady, 1982; Fraenkel & Wallen, 2007). On the other hand, dependent variable is the variable which is observed and measured to determine the effect of the independent variable (Hatch & Farhady, 1982; Fraenkel & Wallen, 2007). Furthermore, in this study, the independent variable was the project approach and the dependent variable was the students' reading comprehension.

3.5 Research Site

The subjects of the research were the fifth graders of one of the elementary schools in Parongpong. There were two classes of fifth grade in the school; one class would be the experimental and the other one would be the control group by randomly chosen.

The classes were chosen because of various reasons. The first reason was the writer is one of the English teachers in the school; thus, she hoped she can get access easily to the research site. Moreover, the researcher's "familiarity with the situation in the research site, let alone with the participants, was expected to lead to a more natural conduct of research, in the context that normally occurs" (Emilia, 2005).

3.6 Data Collection and Instrumentations

To answer the research questions, the data was collected from various instrumentations: tests, participant observation, interviews, and questionnaires.

3.6.1 Tests (Pre- and Post-Test)

There were two tests, pre-test and post-test (see the appendix 6), that were given to both experimental and control group. The pre-test was given before the observation was conducted. This could help to know the initial differences between groups (Hatch and Farhady, 1982). Furthermore, after the observation toward the both groups, the post-test was given to the students to see the effects toward the approaches given.

Both pre- and post-test items were in form of multiple choices. It was because of some reasons: the scoring is easier, faster, and more objective than other form of tests; it is very efficient when the number of the students is large while the allotted time is very short; the reliability of this type of test is higher than the essay test (Supranata in Fitriyani, 2006). Moreover, this kind of test is able to "provide a useful means of teaching and testing in various learning situation," especially at the lower levels (Heaton, 1995: 27).

Nevertheless, there are some disadvantages in using this kind of tests. It needs quite a long time to construct this test; in other words, it is a time-consuming type of item to construct. Furthermore, it can give the students chance to guess the right answer. However, the problems were prevented by: (1) spending some times to construct the test and using the standardized text books; and (2)

giving four options which are consists three distractors of incorrect answer that are attractive and plausible (Heaton, 1995).

The items of both tests were carefully selected and some were modified from some standardized text books. Those with ISBN serial numbers: "*Grow with English Book 5"*; *"English Hooray: For Elementary School Students Grade 5"; "Let's Make Friends with English, Class 5"*. Moreover, after the tests were made, a tried-out tests were conducted to get the valid and reliable tests. The tests were tried-out to the students in different school which has similar characteristics with the research site. Both schools were categorized as National Standard School (*Sekolah Standard Nasional*/ SNN). Furthermore, the try-out test analysis is available in appendix 4.

3.6.2 Participant observation

Another source of data collection was from participant observation where the researcher became the teacher in the classroom being observed. The observation in this study was conducted to investigate the students' learning activities and the implementation of PA in the classroom.

Being the teacher in the class, the researcher was not only able to analyze their academic progress, but also to notice their reaction to the projects given, through observing their activities in the class. Besides, the teaching and learning process was noted in a teacher's journal immediately after each session. The purpose of noting the observation was to "increase the researcher's sensitivity to

her own classroom behavior and its effects and influence on students" (Allwright in Emilia, 2005: 79).

Furthermore, this research was held in five meetings (excluded the pre-test), and it took two hours lesson per meeting, with 35 minutes per one hour lesson. In this research, the students got a project: making a bulletin board.

Additionally, the schedule of the observation is able to be seen in the following table.

No	Date	Material
1	June 18, 2011	Pre-test
2	June 20, 2011	Discussing the bulletin board
3	June 22, 2011	Discussing the content of the project
4	June 24, 2011	Conducting the project in groups (part 1)
5	June 27, 2011	Conducting the project in groups (part 2)
6	June 28, 2011	Presenting the project
7	June 28, 2011	Post-test

Table 3.1 The schedule of the observation

From the table above, it can be noticed that the pre-test was conducted before the treatment given, June 18. Moreover, the treatment was started by conducted the first phase (no. 2 and 3) which was held to make the students ready to do the project. On June 24 and 27, 2011, the students were conducting the project, made a bulletin board (phase 2). On June 28, the students presented their works in front of the class (phase 3) and put their bulletin boards outside their classroom. Finally, after presenting their projects, they did the post-test.

3.6.3 Interviews

The purpose of the interview is to understand the meaning of what the interviewees say (Kvale in Valenzuela & Shrivastava: n. d.). In addition, Alwasilah (2002) argues that interview can be used to gain the data, which possibly cannot be covered through observation. Furthermore, interviews in this study were "an important means of helping students to bring to consciousness their knowledge gained in the teaching program, what aspects they thought had developed, and which aspects of the teaching program were responsible for the development or changes observed in this study." (Emilia, 2005: 80). Moreover, the interview type that was used was semi-structured interviews. It is one type of interviews that needs a list some specific questions as the guided questions, but may be followed by some other questions during the interview (Dawson: 2009).

For this study, the interview was addressed to the students to find out their opinion about their learning of English through project approach. The interview was conducted after the project approach was given. The interview was conducted to six students as the representatives, to the students that got good, medium, and low achievement in the English lesson.

3.6.4 Questionnaires

Questionnaire is a set of questions used to gain information about learners' attitudes toward language learning (Dörnyei in Gass and Selinker: 2008). In this study, the aim was to find out the students' responses of the use of PA.

In this study, close-ended questionnaires would be administered to the students. These questionnaires usually take a multiple-choice form for the questions. Each student should choose one of the options given (yes, in between, no). This form of questionnaires consists of 9 statements with the framework as follows:

No	Aspects	Item Number	Total
1.	Response to the implementation of the project approach.	1, 2, 4, and 5	4
2.	Response to the importance of learning English using the project approach.	3 and 6	2
3.	Response to the role of the teacher in teaching and learning English using the project approach.	7, 8, and 9	3
Total			**9**

Table 3.2 The framework of the questionnaires for the students

Moreover, the statements of the questionnaires are shown in the following table.

No	***Statements***
1.	*Saya senang belajar bahasa inggris, apalagi sambil membuat sesuatu seperti yang dilakukan lima pertemuan kemarin*
2.	*Pelajaran bahasa inggrisnya menarik*
3.	*Pelajaran bahasa inggrisnya membuat bahasa inggris saya jadi lebih bagus*
4.	*Pelajaran bahasa inggrisnya sama saja seperti pelajaran bahasa inggris sebelumnya*
5.	*Pelajaran bahasa inggrisnya membosankan*
6.	*Saya jadi ingin belajar bahasa inggris terus*
7.	*Guru mengajar bahasa inggris dengan bagus*
8.	*Saya mengerti dengan materi yang dijelaskan guru*
9.	*Guru bisa membantu saya mengerjakan tugas bahasa inggris di kelas*

Table 3.3 The close-ended questionnaires statements

The questionnaires were administered after the post-test. For further information about the questionnaires see appendix 2.

3.7 Collecting Data Procedures

There were some steps that were applied in collecting the data. The steps were:

1. Finding out some theories and concepts related to the study: project approach; teaching and testing reading to children; and general characteristics of fifth grade of elementary school students and children development.
2. Conducting the try-out tests (June 6, 2011) to make sure that the tests were reliable and valid. The tests try-out was conducted in a school, still in Parongpong, that has the same predicate with the school site, *Sekolah Standar National*/SSN (National Standard School).
3. Conducting the pre-test to both groups (June 18, 2011) to find out the initial skill of the students of both groups.
4. Conducting the observation, first to fifth meeting (June 20-28, 2011). The experimental group was taught by the writer by using the project approach; and the control group was taught by the teacher of the fifth grade by using her own ways.
5. Conducting the post-test (June 28, 2011) to investigate the effect of project approach towards students' reading comprehension.
6. Administering the questionnaires to the students after holding the observation and giving the post-test.

7. Carrying out the interview with six students, as the representative of the class after administering the questionnaires.
8. Organizing and analyzing the data obtained which afterwards they would be presented and discussed to draw some conclusions.

The theoretical foundation of this study can be found in the Chapter Two. Moreover, the findings and discussion of the observation can be seen in Chapter Four. Finally, the conclusion and the recommendation of the study will be displayed in the last chapter, Chapter Five.

3.8 Validity and Reliability of Tests

The validity and the reliability of the tests are needed in a study to make sure that tests used in the study are appropriate and will result in a good conclusion. The following will elaborate the validity and the reliability of both tests.

3.8.1 Validity

Testing the validity is important to test out the trustworthiness of the data. According to Alwasilah (2002), validity is the truth of a description, conclusion, interpretation and other kinds of reports. Moreover, it is the extent to which the results of the procedure serve the uses for which they were intended (Hatch and Farhady, 1982). It means that a test can be judged valid if it measures what becomes the aim of the test itself. Therefore, it becomes necessary to try out the test and then compute the result with certain validity formula.

In analyzing the validity test, the correlation product moment formula (*r*) was represented by Pearson was applied (Hatch and Lazaraton, 1991). In this case, every score item test was correlated with the total score. The computation of this validity test was done by ANATES V4.

The result of the computation shows that 0.73 for pre-test and 0.66 for post-test, which means the tests were valid since *r* table with α 0.01 and *df* 32 was 0.4451 (Appendix 4.2 and 5.2). In other words, pre- and post-test validity for the reading comprehension was fulfilled.

3.8.2 Reliability

Reliability, according to Hatch and Farhady, is the extent to which a test produces consistent result when administered under similar conditions (Hatch and Farhady, 1982). Since the type of the test (pre- and post-test) was in multiple choices form, the Spearman-Brown Formula was used to test the reliability of the tests (Hatch and Lazaraton, 1991). The computation of the reliability was done by ANATES V4.

From the computation (appendix 4.1 and 5.1), it is seen that the reliability index for pre-test was 0.84 and for post-test was 0.80. According to Hatch and Farhady (1982), the reliability of a test will be between 0 - 1, as a result it can be interpreted that the tests are reliable.

3.8.3 Pre-test and Post-test Items Difficulty

It is important to test the items difficulty of the tests to make sure that the instruments used are appropriate for the subjects. To know the difficulty of each item of the tests, the formula from Gronlund (in Fitriani, 2008; Bajracharya, 2010) would be applied.

$$P = \frac{R}{T} X\ 100\%$$

Where:
P : The percentage who answered the item correctly
R : The number who answered the item correctly
T : The total number who tried the item

The calculation shows that from 25 items of pre-test try-out (see appendix 4.4), 2 items are considered as difficult items, 17 items are medium and 6 items are easy. Moreover, from the post-test try-out (see appendix 5.4), 3 items are difficult, 12 items are medium, and 10 items are easy. The items, then, were determined whether it would be used or not for the tests of this study based on the discriminating power.

3.8.4 Pre-test and Post-test Items Discriminating Power

The discriminating power of a test item is "the degree to which success or failure of an item indicates possession of the ability being measured" Bajracharya (2010: 4). In other words, it can indicate the possession of the achievement being measured (Marshall Hales as cited in Brajracharya, 2010). The indexes of items discriminating power was also calculated by using Gronlund, too

(Fitriani, 2008; Bajracharya, 2010). However, it was adapted by multiplied it by 100% (which was done by ANATES V4). Thus, the formula is as follows:

$$D = \frac{RU - RL}{\frac{1}{2}T} \; X \; 100\%$$

Where:
D : The index of item discriminating power
RU : The number in the upper group who answered the item correctly
RL : The number in the lower group who answered the item correctly
1/2T : One half of the total of the students who tried the item

From the calculation in appendix 4.3, it can be seen that 6 items are categorized as good; 7 items are good; 7 items are medium; 4 items are bad; and 1 item is very bad. Thus, 5 items (item no. 4, 5, 11, 20, and 24), which are bad and very bad were deleted, and 20 items were used for the pretest of the research site. Furthermore, from the post-test discriminating power analysis (appendix 5.3), it can be noticed that 4 items are considered as very good; 14 items are good; 5 items are medium; 1 item is bad; and 1 item is very bad. However, to make the total same with the pre-test, 5 items would be deleted (4, 5, 11, 20, and 23) by considering also the difficulty items and the correlation.

3.9 Data Analysis

After collecting the data from the tests, the observation, the interviews, and the questionnaires, the data collected would be analyzed as follows:

3.9.1 Tests

To investigate the difference between both means (post-test of experimental and control group), the independent t-test formula was used in this study (Hatch & Farhady, 1982; Hatch & Lazaraton, 1991). The test was calculated by the assistance of SPSS 17. The steps of the t-test computation are as follows:

1. Stating the Null hypothesis (H_o: X1 = X2)
2. Setting the alpha level at 0.05
3. Finding the t value with independent t-test formula which was done by SPSS 17.
4. Comparing the result of the test. According to Hatch and Farhady (1982), the level of significance that is used in independent t-test, especially for social studies, is $\alpha = 0.05$. The criterion to determine t-test stated that if the significant value is higher than 0.05 ($p>0.05$), Ho is accepted; While, if the significant value is lower than 0.05 ($p<0.05$), the result is statistically significant, then Ho is rejected.

Previously, there were two other steps that were needed to be considered and calculated: the Normality Test and Homogeneity Test. The two are covered as follow:

3.9.1.1 The Normality Test

This test aimed at finding out whether the distribution of pre-test and post-test scores in experimental group and control group were normally distributed or not. The Kolmogorov-Smirnov test was used to analyze this

normality test. In this study, the normality test was done by using SPSS 17.0. When the Asym. Sig (2-tailed) value is higher than 0.05, it can be concluded that the data is normally distributed (Santoso, 2004). In relation to that, the results of testing normality distribution experimental and control groups for the pre- and post-test are displayed in the following sections.

3.9.1.1.1 The Normality Test for the Pre-Test

The results of testing normality distribution experimental and control groups for pre-test can be observed in Appendix 7.3. Based on the tables in Appendix 7.3, it can be seen that the significant value of the experimental and the control group were 0.148 and 0.746. Since the significant value of the experimental group and the control group were higher than 0.05; thus, it can be concluded that the distribution of pre-test score in both groups were normally distributed. So, the independent t-test (parametric t-test) could be used (Hatch and Farhady, 1982; Hatch and Lazaraton, 1991).

3.9.1.1.2 The Normality Test for the Post-Test

According to the tables in Appendix 8.3, it can be observed that the significant value of the experimental and control group were 0.141 and 0.128. Since the significant value of the experimental group and control group were higher than 0.05; thus, Ho was accepted. Consequently, it can be concluded that the distribution of post-test score in both groups were normally distributed.

3.9.1.2 Homogeneity Test

This test was intended to determine whether the variance of pre-test and post-test scores in experimental and control groups were the same or not. The Levene's test for equality of variance was used to analyze the homogeneity, which was also done by SPSS 17. The hypothesis is:

Ho : The distribution of pretest score in experimental and control group are homogeneous.

In addition, the level significance of homogeneity test was determined in the level $\alpha = 0.05$. The level significance criterion for homogeneity test stated that if the probability > 0.05, the Ho was accepted. Whereas, if the probability <0.05, then Ho is rejected (Hatch and Farhady, 1982:88).

3.9.1.2.1 The Homogeneity Test for the Pre-test

The result of homogeneity test of both groups in the pre-test scores, which were calculated using Levene's test for equality of variance test in SPSS 17.0, is presented in the following table 3. 1:

Test of Homogeneity of Variances

		Levene's Test for Equality of Variances	
pretest	Equal variances assumed	F	Sig.
		.697	.407

Table 3.4 The result of homogeneity of variances on pre-test

From the table above, it can be noticed that the significant value was 0.407, and it was higher than 0.05. Thus, H_o was accepted. It means that variances of the experimental group and the control group pre-test were homogenous.

In conclusion, because both groups in pre-test analysis were normally distributed and homogenous, then the independent t-test could be applied in testing the similarities between two means of pre-test scores. The calculation of the t-test in investigating the students' initial skills can be observed in the Chapter Four, Section 4.1.1.

3.9.1.2.2 The Homogeneity Test for the Post-test

The result of homogeneity test of both groups in the post-test scores is presented in the table below:

Levene's Test for Equality of Variances	
F	Sig.
1.036	.312

Table 3.5 The result of homogeneity of variances on post-test

From the table above, it can be observed that the significant value was 0.312. Since 0.312 was higher than 0.05, Ho was accepted. It means that variances of the experimental and the control groups post-test were homogenous.

To sum up, the tests above show that both groups in the post-test analysis were normally distributed and homogenous, then the independent t-test could be applied in testing the difference between two means of the post-test scores of both groups. The calculation of the t-test (compare means) for the post-test can be seen in Chapter Four, section 4.1.2.2.

3.9.1.3 Students' Improvement in Reading Comprehension

After knowing the difference between the two means of the tests, the study would analyze how much of the improvement in students' reading comprehension of the experimental group could be accounted for by the implementation of PA by using a test of strength of association (η^2). The formula of this test is as follows:

$$\eta^2 = \frac{t^2}{t^2 + df}$$

Where :
η^2 : the strength of association
t : the t value
df : the degrees of freedom

To go further, in finding out each student's improvement before and after the treatment, the index gain was calculated. The formula used to calculate the index gain is:

$$g = \frac{\text{post test score} - \text{pre test score}}{\text{maximum score} - \text{pre test score}}$$

(Hake, 1998)

Afterward, the result of index gain was interpreted using the following criteria:

Index gain < 0,3	= low
0,3 < Index gain < 0,7	= medium
Index gain > 0,7	= high

(Hake, 1998)

3.9.2 Participant Observation Analysis

The data from the observation in the class was recorded in the teacher's journal (appendix 12). The journal would be analyzed to find out the implementation of PA and the student's response toward the approach. The data collected would be classified into two categories: the implementation of PA and the students' response toward project approach.

3.9.3 Interview Analysis

The data from the interview was recorded through a tape recorder, so it was easier to capture and learn what happened during the interview. Then, the transcript of the interview was made by using pseudonyms of the students (Silverman, 1985, 1993, cited in Exley, 2002). The data subsequently categorized and interpreted to answer the research questions, especially in answering the students' response toward the implementation of project approach question.

3.9.4 Questionnaire Analysis

After all the data from the questionnaire have been collected, the students' answer from close-ended questionnaires was calculated by using the formula below:

$$\text{Percentage} = \frac{\text{Total participants who answer an item (fo)}}{\text{Total participants (n)}} \times 100\%$$

In interpreting the result percentage, a reference noted in Suryadi as cited in Resmiati (2007, p. 40) would be used. The following are the interpretations for each percentage:

00.00%	= none
00.15 – 24.99%	= a few students
25.00 – 49.99%	= nearly half of the students
50%	= half of the students
50.01% - 74.99%	= more than half of the students
75%.00 – 99.99%	= nearly all of the students
100%	= all of the students

After the data from the tests, interviews and questionnaires were analyzed, and then some conclusions would be drawn. Furthermore, the recommendations for further research would be given.

3.10 Concluding Remarks of Chapter Three

This chapter has discussed the research method of the study. It included the research questions; how this study was carried out; the selection of research site and the subjects; the method of data collection; and data analysis. Furthermore, the findings and the discussion of this study would be explored in the following section, Chapter Four.