

CHAPTER III

RESEARCH METHODOLOGY

This chapter explains the research methodology which includes explicit description on research method, population and sample, technique in collecting data and analyzing data that have been briefly introduced in Chapter I.

3.1 Research Method

Since the main objectives of this research are to investigate the existence and the degree of the correlation between students' motivation indexes and students' achievement scores in English class, this research employs the correlational method.

Gay (1982) as quoted by Sukardi (2004, p.166) notes that, "Correlational research is a research study that involves collecting data in order to determine whether and to what degree a relationship exists between two or more quantifiable variables." He adds that correlational research is part of ex-postfacto research. In this type of research, a researcher doesn't give any treatment or manipulation to the observed variables because when the researcher begins the observation, the variables (X and Y) have already occurred in natural setting.

On the other hand, Nazir (1999) as cited by Sukardi (2004) claims that correlational research is part of descriptive research because however this type of

research tries to describe a phenomenon or a present condition in quantitative context that is reflected into variable.

As mentioned before, in this correlational research, there are two variables. The first is students' motivation indexes in learning English as X variable and the second one is students' achievement scores as Y variable.

The research is stated as follows:

X → Y

3.2 Population and Sample

A research needs sources to collect data. In other words, to answer the research questions, this research needs samples of population where the information exists.

Because of the researcher's access, this research is conducted in SMP Negeri 1 Pacet, Cianjur. The population of this research is the ninth graders. The population consists of 80 students.

The samples of this research are chosen randomly by the researcher. To determine number of the samples, this research uses Taro Yamane formula. The formula is $n = \frac{N}{N.d^2 + 1}$, where n is number of samples, d^2 is standardized precision (10%), and N is number of population (Rakhmat, 2002).

After the calculation, the number of samples to be involved in this research is 44 students.

Gardner (2004) states, "The test battery can be administered to groups of students. In order to minimize disruption caused by questions and questionnaire

distribution, it is recommended that the group not exceed 50 at the upper grade levels and 25 at the lower grade levels....”

3.3 Data Collection

This research uses several instruments in collecting data. The first instrument is questionnaire, and the last one is students' achievement record.

3.3.1 Questionnaire

Questionnaire is a list of statements that is used to identify attitude, opinion, or perception of subjects (Alwasilah, 2002).

To investigate the students' motivation indexes (X variable), this research uses a closed-questionnaire which is arranged by using form of modified Likert scale. There are only four options to be chosen one of them. They are strongly agree, agree, disagree, and strongly disagree. The purpose of modifying the options is to make an ease in scoring, calculating and interpreting the result.

There are 45 items of statement served in the questionnaire and tried out to gain 30 valid and reliable items of statement. They are adapted from three subtests of the Attitude/Motivation Test Battery by Gardner (2004). They are motivational intensity, desire to learn English, and attitudes toward learning English. Twenty three of them are positive items of statement and the rest are negative items of statement. Below is the framework of the questionnaire.

Table 3.1 The Framework of Questionnaire

No.	Aspect	Item Number	Total
1	Attitudes toward learning	(+) 1, 2, 3, 4, 5	5
	English	(-) 6, 7, 8, 9, 10	5
2	Desire to learn English,	(+) 11, 12, 13, 14, 15, 16, 17, 18, 19	9
		(-) 20, 21, 22, 23, 24, 25, 26, 27	8
3	Motivational intensity	(+) 28, 29, 30, 31, 32, 33, 34, 35, 36	9
		(-) 37, 38, 39, 40, 41, 42, 43, 44, 45	9
Total			45

3.3.2 Students' Achievement Record

The achievement record is analyzed to collect the students' summative test scores in their English subject (Y variable).

3.4 Data Analysis

There are several steps in analyzing the data. The first step is scoring students' responses in the questionnaires. The second is testing validity and reliability of the questionnaire. The third is calculating the frequency and percentage of each response per item. The fourth is determining the classification of students' motivation indexes. The next is testing the normality of data distribution. After that, calculating the correlation coefficient is conducted. The last step is making interpretation from research findings.

3.4.1 Scoring the Students' Response

The responses for positive and negative item are scored differently. The scored given can be seen in the following table.

Table 3.2 The Score for Each Item

		Strongly Agree	Agree	Disagree	Strongly Disagree
Score	(+) Item	4	3	2	1
	(-) Item	1	2	3	4

3.4.2 Testing the Validity and the Reliability of the Questionnaire

Testing the instrument validity and reliability are important because the quality of the research findings depend on the validity and reliability of the instrument used. The validity and reliability are calculated after the questionnaire tried out.

3.4.2.1 The Validity

A valid instrument is an instrument that can measure what a researcher wants to measure (Sartono, 2001). In this research testing validity is conducted to determine which items of questionnaire deserve to be used for further analysis.

Pearson product moment correlation coefficient formula is applied to test the validity of each item. The formula is as follows:

$$r = \frac{N \sum XY - (\sum X)(\sum Y)}{\sqrt{[N \sum X^2 - (\sum X)^2] \cdot [N \sum Y^2 - (\sum Y)^2]}}$$

Where :

r = the correlation coefficient

N = the number of pairs of measurements

X = students' motivation indexes

Y = students' achievement scores

(Adopted from Sartono, 2001)

Sugiyono (2001) as cited by Sanjaya (2005) argues that an item is valid if the $r_{counted}$ is higher than $r_{critical}$ (0,30). The example for item validity calculation can be seen in appendix 1.

3.4.2.2 The Reliability

Trochim as quoted by Sartono (2001) states that, "In research, the term reliability means 'repeatability' or 'consistency'. A measure is considered reliable if it would give us the same result over and over again (assuming that what we are measuring is not changing!)"

Cronbach's Alpha formula is employed to test the reliability of the questionnaire. The formula is as follows:

$$r_{11} = \frac{k}{k-1} \left[1 - \frac{\sum S^2}{S_T^2} \right]$$

Where:

r_{11} = the reliability of the instrument

k = total number of statement

S^2 = variance score of item (i)

S_T^2 = the total variance

(Adopted from Sartono, 2001)

3.4.3 Calculating the Frequency and Percentage of Each Response per Item

To investigate the trend of the responses, this research uses following formula in calculating percentage of each response per item:

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

Where:

P = percentage

f = frequency of answer

n = total respondents

The result of percentage calculation can be classified into following categories:

3.3 The Percentage Category

Percentage	Category
00,00%	None
00,01% - 24,99%	A few of
25% - 49,99%	Nearly half of
50%	Half of
50,01 - 74,99%	Best part of
75% - 99,99%	Nearly all of
100%	All of

(Adopted from Suryadi, 1987 in Sanjaya, 2005)

3.4.4 Determining the Classification of Students' Motivation Indexes

To determine the classification of students' motivation indexes, the first step done is determining range score by using following formula:

$$R_s = P * n * \left(\frac{m-1}{m} \right)$$

$$R_s = 30 * 1 * \left(\frac{4-1}{4} \right)$$

$$R_s = 30 \left(\frac{3}{4} \right)$$

$$R_s = 30(0,75)$$

$$R_s = 22,5 \approx 23$$

Where:

R_s = range scale

P = number of items

n = number of sample

m = number of alternative responses

(Adapted from Sugiyono cited in Soemantri, 2004 cited in Wiyaningsih, 2006)

After that, the lowest score of class interval must be considered that is if a respondent respond 1 (the lowest score of Likert scale) to the all items (30 items). Below is the table of student's motivation index classification.

Table 3.4 The Student's Motivation Index Classification

Student's Motivation Index (X)	Classification
30 – 52	Very Low
53 – 75	Low
76 – 98	High
99 – 121	Very High

3.4.5 Testing the Normality of Data Distribution

The normality of data distribution should be predicted. If the data is normally distributed, it means that the samples represent the whole population so the result of the research can be generalized for the whole population. In contrast, if it is not, the result of the research only works at the samples. It is also used to determine the appropriate further statistic analysis. As stated by Sugiyono (2003) in Resmawati (2007), if the data are normally distributed, parametric statistical technique can be used but if the data are not normally distributed, it needs nonparametric statistical technique to analyze the data.

The formula applied to calculate the normal distribution of both variables is chi-square formula as follows:

$$X^2 = \frac{\sum(f_o - f_e)^2}{f_e}$$

Where:

X^2 = chi-square

f_e = expected frequency

f_o = observed frequency

(Adopted from Kranzler and Moursund, 1998)

3.4.6 Calculating the Correlation Coefficient

Correlation is the relationship between two or more variables. To calculate the correlation coefficient, this research uses the Spearman correlation for ranked data since the normality of data distribution is violated. The distribution of Y

variable (students' achievement scores) is not normal (see appendix 5). The calculation of the correlation coefficient is conducted by using SPSS 16.0.1.

3.4.7 Calculating the Coefficient of Determination

Calculating the coefficient of determination is also important to determine the percentage of students' motivation indexes contribution to students' achievement scores. The coefficient of determination is investigated by using the following formula:

$$CD = r_{xy}^2 \times 100\%$$

Where:

CD = coefficient of determination

r_{xy}^2 = correlation coefficient

(Adopted from Resmawati, 2007)