III. RESEARCH METHOD

This chapter describes the method applied in conducting this research. The content of this chapter deals with design of the research, population and sample, data collecting technique, scoring system, research procedure, and hypotheses testing.

3.1 Design of the Research

This research was quantitative research. The design used in this research was *ex post facto* design because there was no control group and no treatment. Hatch and Farhady (1982:26) state that ex post facto design is often used when the researcher does not have control over the selection and manipulation of the independent variables. There were two variables in this research, independent variable (vocabulary learning strategies) and dependent variable (vocabulary mastery).

Here, the researcher distributed questionnaire to know the strategies used by students in learning vocabulary, then she gave a vocabulary test. After that, the score gained from the test were analyzed to see whether vocabulary mastery was related to the use of vocabulary learning strategies or not. The research design can be presented as follows:

T1 T2

T1: Vocabulary learning strategies

T2: Vocabulary mastery

(Setiyadi, 2006:145)

3.2 Population and Sample

The population of this research was the second grade of SMA Muhammadiyah 2 Bandar Lampung in academic year 2014/2015. There were five classes of the second grade students that consisted of 30 to 33 students for each class. XI IPS 3 was chosen as try out class in order to find the validity, reliability, difficulty level, and discrimination power. After getting a good test items, by using random sampling where every individual in population had probability to be chosen, the researcher chose XI IPS 2 as the sample to collect the data. There were 30 students in class XI IPS 2.

3.3 Data Collecting Technique

In collecting the data, the researcher used the following techniques:

3.3.1 Questionnaire

The questionnaire given to the students was taken from Schmitt's (1997) Vocabulary Learning Strategies (VLS).Vocabulary Learning Strategies Questionnaire (VLSQ) was a list of statements to be answered by the students to identify students' strategies in learning vocabulary. It was done to classify the data by transferring the answers into score.

There were 58 items from 5 strategies in Schmitt's Taxonomy including determination, social, memory, cognitive, and metacognitive strategies, but the researcher omitted 26 strategies in the questionnaire on the assumption that the students were unfamiliar with them. The questions were translated from English to Indonesian, so as to ensure accurate responses. The researcher also paraphrased and made some changes to make the questionnaire more suitable for the students.. For instance, some original items, such as semantic feature grids, semantic map, scales for gradable adjectives, Peg Method, Loci Method, spatial grouping, and configuration, were deleted because they were too complicated for senior high school students to comprehend.

The result of questionnaire was scored based on Likert scale. The scores ranged from 1-5. The students were expected to give their response by choosing: (1) *never use it*, (2) *seldom use it*, (3) *sometimes use it*, (4) *usually use it*, or (5) *always use it*. The specification of the items of questionnaire can be seen below.

Vocabulary Learning Strategies	Item Number
Determination strategies	1-7
Social strategies	8-12
Memory strategies	13-24
Cognitive strategies	25-29
Metacognitive strategies	30-32

 Table 3.1 Specification of Questionnaire

Before distributing the questionnaire to the sample of the research, it was tried out to the other students in order to measure internal consistency of the items of questionnaire by using item-scale coefficient. Then the analysis was conducted by using *Cronbach Alpha Coefficient*. The alpha ranges between 0 and 1. The higher the alpha, the more reliable is the questionnaire (Setiyadi, 2006:190).

In addition, the scoring system of this questionnaire was based on the average of each strategy. To get the VLS preferences of each strategy, the following scales were used to indicate the frequency of the usage of each strategy. According to the five-point rating scale, the values in the level of using could be explained as follows:

Average value	Result
1.00-1.50	Never used
1.51-2.50	Seldom used
2.51-3.50	Sometimes used
3.51-4.50	Often used
4.51-5.00	Always used

Table 3.2 Average Value of Questionnaire

3.3.2 Vocabulary Test

In this research, to prove whether the test had good quality, it was tried out first. The test was said having a good quality if it had a good quality, reliability, level of difficulty, and discrimination power. The try out test was given to the students to know how the quality of the test which was used as the instrument of the research. It was given to another class that was not included in the sample. There were 50 questions in form of multiple choices. There were 40 questions in form of multiple choices, the options provides include *a*, *b*, *c*, and *d*. The time to do the test is 60 minutes. In selecting the vocabulary, the researcher used vocabulary of content words (noun, verb, adjective, and adverb) in accordance with the book used by students. Based on Hornby (1986:83), content words are great in number. They also have clear meanings and formal markers as well.

Vocabulary test was used to find out the data on students' vocabulary achievement. A test was said has a good quality if it had a good validity, reliability, level of difficulty and discrimination power.

1. Validity

A test can be said valid if the test measures the object to be measured and suitable with the criteria (Hatch & Farhady, 1982:250). To measure whether the test has a good validity, the researcher used content and construct validity.

a. Content Validity

Content validity is concerned with whether the test is sufficiently representative and comprehensive for the test. In the content validity, the materials given are suitable with the curriculum. In this case, the researcher used vocabulary that is supposed to be comprehended by grade XI students. To fulfil this validity, the researcher saw all the indicators of the instrument and analyzed them whether the measuring instrument had represented the material that was measured or not. In this research, the researcher made the instrument related to vocabulary which were content words (noun, verb, adjective, and adverb). She took the material from student's handbook (Real English for Senior High School Grade XI). The researcher used the table of specification to check validity of the test items. This table of specification was used to check on content validity. The percentage in the table indicated the relatives' degree of emphasis in each content area and each instructional objective is to be given in the test. In selecting the test, a table of specification can help us to determine which test is most relevant to our particular situation and is also necessary to check whether test items have a good content validity.

Content Words	Items	Total	Percentage
1. Noun	1,2,3,4,10,18,22,26,27,	13	26%
	28,30,31,32		
2. Verb	5,6,7,8,9,16,17,24,25,2	13	26%
	9,38,42,43		
3. Adjective	11,12,13,14,15,33,34,3	12	24%
	9,41,44,46		
4. Adverb	19,20,21,23,35,40,45,4	12	24%
	6,47,48,49,50		
Te	otal	50	100%

Table 3.3 Specification of Try Out Test

b. Construct Validity

Construct validity is concerned with whether the test is true reflection of the theory of the trait-in our case language- which is being measured. According to Setiyadi (2006:26), if the instrument just measures one aspect, for example vocabulary, the construct validity can be measured by evaluating all items in the test. If all items have measured vocabulary mastery, this instrument has fulfilled construct validity. In this research, the researcher measured the

students' vocabulary mastery by giving vocabulary test in the form of multiple choices. Mastering vocabulary involved mastering the meaning, use, and pronunciation. However, the writer only focused on the meaning of the word. Therefore, it can be said that the test fulfils the construct validity.

Then, in order to measure content validity and construct validity, the researcher uses *inter-rater analysis* to make the instrument more valid. The items of the test were discussed with the English teacher of SMA Muhammadiyah 2 Bandar Lampung and the colleagues (the writer's classmate).

2. Reliability

Reliability refers to extent to which the test is consistent in its score, and given an indication of how accurate the test scores are (Shohamy, 1985:70). It is called reliable if the score gained by the examinees is constant whenever and by whomever the test is conducted. A test will not be a good parameter unless the test is stable or constant. Therefore, the test was analyzed based on *split-half method*. Hatch and Farhady (1982:246) state that to use the split half method, we first must split the test into two similar parts. We correlate the scores of the students on two halves of the test just as if they are two separate tests. If the items are homogenous, all odd-numbered items become one half and even numbered items become the other half.

$$r = \frac{\sum XY - \frac{(\sum x) - (\sum y)}{n}}{\sqrt{\left[\sum x^2 - \frac{(\sum x)^2}{n}\right]}\sqrt{\left[\sum y^2 - \frac{(\sum y)^2}{n}\right]}}$$

Where:

- r : coefficient of reliability between odd numbers and even numbers item
- x : total numbers of odd numberps items
- y :total numbers of even numbers items
- n : number of students who take part in the test

X : square of x

- Y : square of y
- $\sum x$: total score of odd number items
- $\sum y$: total score of even number items

Therefore, after administering the result of the test, the writer gave two scores for each student. After correlating the two half scores of the students, it was known the reliability for half the test.

In order to determine the reliability of the full test, *Spearmen Brown Formula* was used. The formula was as follows:

$$r_k = \frac{2r_i}{1+r_i}$$

 r_k = the reliability of the full test

 r_i = the reliability of half of the test

The criteria of the test reliability are:

0.90-1.00 = high

0.50-0.89 = moderate

0.00-0.49 = low

(Hatch and Farhady, 1982:286)

3. Level of difficulty

Level of difficulty relates to "how easy or difficult the item is from the point of view of the students who take the test. It is important since test items which are too easy can tell us nothing about differences within the test population(Shohamy, 1985:79). Level of difficulty was calculated by using the following formula:

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

Where:

LD : level of difficulty

R : number of students who answer correctly

N : the total number of students who following the test

The criteria are:

< 0.30	:difficult

0.30-0.70 :average

>70 :easy

(Shohamy, 1985: 79)

4. Discrimination power of the test

Discrimination power refers to the extent to which the item differentiates between high and low level students on that test. A good item according to this criterion, is one in which good students did well, and bad students failed (Shohamy, 1985:81). The formula was used:

$$DP = \underline{Upper - Lower}$$

1⁄2 (N)

Where:

DP : discrimination power

Upper : proportion of upper group students getting the item correct

Lower : proportion of low group students getting the item correct

N : total number of students

The criteria are:

- a. If the value is positive, it means that more high level students get correct answer than low students.
- b. If the value is negative, it means that more low level students get correct answer than the high level students (it can be said that the test is bad, should be omitted).
- c. If the value is zero, it means that there is no discrimination.
- d. In general, the higher the discrimination index will be better. In classroom situation most items should be higher than 0.20 indexes.

(Shohamy, 1985: 82)

3.4 Scoring System

The form of the test which was used in this research was objective test in the form of multiple choice test. In scoring students' result on vocabulary test, the researcher used Arikunto's formula. The range of students' score will be 0-100. The formula as follows:

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

Where:

- S : The score of the students
- R : The right answers
- N : The total items

(Arikunto, 1989:271)

3.5 Research Procedure

The procedures that were used in conducting this research were (1) determining the population and sample of the research, (2)distributing the questionnaire, (3)administering the try out, (4) administering vocabulary test, (5) analyzing the data, (6) drawing findings and conclusions from the data.

The procedures were as follows:

1. Determining the sample of the research

The population of the research was the second year students of SMA Muhammadiyah 2 Bandar Lampung. The researcher used random sampling in choosing the sample. Class XI IPS 3 was taken as try out class and class XI IPS 2 was taken as the sample of the research.

2. Distributing the questionnaire

The questionnaire was used to identify students' strategies in learning vocabulary (determination, social, memory, cognitive, and metacognitive).

3. Administering the try out

It was conducted to measure the reliability of the test and to make sure whether the test was good or bad for students. The test was tried out to the students whose level was equal to the sample of the research. It was administered for 50 items. The aim of try out was to find out the quality of the test before it was used, whether the items were good or not in validity, reliability, level of difficulty, and the discrimination power.

4. Administering the vocabulary test

The vocabulary test was conducted for 40 items in multiple-choice test and each item has four options (a, b, c, or d) of answer. It was conducted in 60 minutes to measure students' vocabulary mastery.

5. Analyzing the data

This step was conducted to find out the students' vocabulary mastery and what strategies that students use. To see the relationship between students' vocabulary mastery and their vocabulary learning strategies, the researcher used *Pearson correlation product moment*. The relationship was counted by using SPSS (Statistic for Social Science Package).

6. Drawing findings and conclusions from the data

3.6 Hypotheses Testing

After collecting the data, the researcher analyzed them in order to find the relationship between vocabulary mastery and vocabulary learning strategies used by students.

To determine whether the hypotheses are accepted or rejected, the following criteria for acceptance are used:

 $H_0 = r_{value} < r_{table}$

In addition, the criteria H₁ is accepted if alpha level is lower than 0.05 (α < 0.05). Notes:

1. H_0 : There is no significant difference of vocabulary learning strategies between successful and poor students at the second year of SMA Muhammadiyah 2 Bandar Lampung.

H₁: There is significant difference of vocabulary learning strategies between successful and poor students at the second year of SMA Muhammadiyah 2 Bandar Lampung.

 H₀: There is no relationship between vocabulary mastery and vocabulary learning strategies at the second year of SMA Muhammadiyah 2 Bandar Lampung.

H₁: There is a relationship between vocabulary mastery and vocabulary learning strategies at the second year of SMA Muhammadiyah 2 Bandar Lampung.