III. RESEARCH METHODS

This chapter presents the explanation about procedures which are taken in this research in order to find out the answer to the research question. This chapter includes research design, population and sample, instruments, research procedure, data analysis, and hypothesis testing.

3.1 Research Design

The design of this research was an inferential statistic analysis, a quantitative study. In collecting the data, the researcher did not apply any treatment or any experiment to subjects. In conducting this research, the researcher used a causal comparative design of ex post facto designs.

In accordance with Setiyadi (2006), there are two types of ex post facto research design, “co-relational study involves one group and causal comparative study involves two groups.” Since two groups which were still orientated to cause-effect relationship between the variable compared in this research, causal-comparative study was used by the following formula:

\[ Y_1 = \frac{X_1 - X_2}{X_3} \]

\[ Y_2 \]
X1 : Cognitive Strategies  
X2 : Metacognitive Strategies  
X3 : Social Strategies  
Y1 : Successful learners  
Y2 : Unsuccessful learners  

To collect the research data, a reading text had been given to the students in order to see the students’ reading comprehension achievement. After that, the researcher gave a questionnaire in order to know which learning strategy was employed by the students in comprehending a reading text. Henceforth, the output from questionnaire was correlated with the score of students’ reading test.

3.2 Population and Sample of the Research

The population of this research was the first grade of senior high school students at SMA Al-Kautsar Bandar Lampung in 2014/2015 academic year. There were 8 classes consisting of 28 to 40 students in each class at the first grade. The sample of this research was two classes that were taken by the researcher by using theoretical sampling (purposive sampling).

The reason of choosing the first year students as the sample because the researcher wanted to know how far the first year students had mastered reading skill after graduating from junior high school and it was assumed that they had better performance compared with when they were in junior high school.
3.3 Variable

In this research, the writer organized two variables; they were learning strategies and reading comprehension. The dependent variable was the variable which the researcher observed and measured to determine the effect of independent variable. On the other hand, the independent variable was the major variable which the researcher wanted to investigate. It is the variable which is selected; manipulated and measured by the writer (Hatch& farhady, 1982:15).

From the explanation above, the writer determined the variable as follows:

1. Learning strategies as independent variable

2. Learners reading achievement as dependent variable

3.4 Research Procedure

The procedures of collecting the data were as follows:

1. Selecting instrument materials

The instruments in this research were reading test and questionnaire. The instrument materials (a reading test) were chosen from the students’ textbook and authentic materials. The selection process considered materials that had been taught to the students and the students’ interest. For the questionnaire, the researcher considered the classification of learning strategy and used Language Learning Strategy Questionnaire (LLSQ).
2. Determining the sample of the research

The sample of the research was determined through purposive sampling technique with the assumption that every class represented of the aim of the research.

3. Determining research instruments

In this research, the researcher used LLSQ (Language Learning Strategy Questionnaire) as an instrument to collect data. For LLSQ, it was administered as the means to gain data of the learners’ frequency of using learning strategy since LLSQ categorized learning strategy into three main classifications, i.e. cognitive strategies, metacognitive strategies, and social strategies. LLSQ had been specified into four language skills. However, LLSQ in reading was used in this research since the concern of this research was reading skill.

4. Administering the reading test

The researcher conducted try out test in order to find out whether the test items that used in the research were good or not, based on the validity, reliability, level of difficulty, and discriminating power. Moreover, the reading test is as a consideration to divide the learners into two groups that were successful learners and unsuccessful learners.

5. Analyzing the data

This step was to find out the students’ reading comprehension achievement and gather output students’ questionnaire. The data had been computed through the statistical package for social sciences (SPSS).
6. Making the report of the findings

3.5 Instruments

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

1. Questionnaire

   It was a list of some statements that will be answered by the learners to find out which learners’ learning strategies were used. The research used close-ended questionnaire where the answer is limited (Setiyadi, 2006: 54).

   In accordance with Setiyadi (2011), the questionnaire that was given to the students was adapted from “Language Learning Strategy Questionnaire” which was modeled to discover of learning strategies employed by the learners. Further, the researcher used Language Learning Strategy Questionnaire for reading skill only.

   In order to know the learners’ learning strategies in studying English especially in reading skill, the researcher gave a set of questionnaire to it. The researcher used Setiyadi’s questionnaire (2011) because it had been arranged into three classifications of learning strategies, namely, cognitive strategies, metacognitive strategies, and social strategies. Each strategy has a numerical value, for example:

   1 = Never or almost never true of me

   2 = Usually not true of me
3 = Somewhat true of me

4 = Usually true of me

5 = Always or almost always true of me

The learners’ preferences or choices on the item selected indicated their group, whether they belong to cognitive, metacognitive, or social groups. For example: items 1 – 11 refer to cognitive, and then the total scores on the group will be divided into 11. Items 12 – 17 refer to metacognitive, and then the total scores on the group will be divided into 6. Items 18 – 20 refer to social, then the total scores on the group will be divided into 3. The data accumulated from the questionnaire are used to analyze the most frequent strategies employed by the learners.

Furthermore, the researcher analyzed the comparison between successful and unsuccessful learners by using the questionnaire of learning strategies, students’ reading comprehension test, and Pearson product moment.

2. Reading Test

It was a designated of question of objective test to measure the students’ reading comprehension. Reading test had been given in order to know the students’ reading achievement in comprehending text and see how many students who passed the standard scoring criteria. As Hatch and Farhady (1982: 250) cite that a test can be said valid if it measures the object to be measured and it is suitable with the criteria. The researcher will use multiple choices in reading text.
The result of the reading test was used to determine the successful learners and unsuccessful learners in which the category in specifying them was based on “score averages” in reading test (Taylor & Russel, 1939 in Allen & Yen, 2001). Taylor and Russel develop a technique the effectiveness of a test used for admitting students. The technique assumes that the test scores, X, are used to criterion scores like grade-point averages and then criterion can be dichotomized into successful or unsuccessful categories. So, according to the theory, reading test scores were used to dichotomize learners into successful and unsuccessful category. The successful learners were represented by the learners who got score above the averages. Meanwhile, the unsuccessful learners were represented by the learners who got score under the averages of reading test scores.

3.5.1 Criteria of Good Test for Reading and Questionnaire

The research instruments were applied to measure the quality in terms of validity, reliability, level of difficulty, and discrimination power. Here were some elements tested:

1. Validity of the test

A test is valid if it measures what its purpose to measure (Anderson: 1975 in Arikunto, 2007:65). According to Hatch and Farhady (1982: 251), there are four basic types of validity: face validity, content validity, construct validity, and empirical or criterion-related validity. To measure whether the test had good validity or not, the researcher analyzed its content validity and construct validity since the other two were considered to be less needed. Face validity only
concerned with the layout of the test. Meanwhile, criterion-related validity concerned with measuring the success in the future, as in replacement test.

Content validity was obtained by choosing the texts relevant with curriculum for the first grade of senior high school while construct validity focused on the relationship between indicators in curriculum within the test. The focus of content validity is on adequacy of the sample and not simply on the appearance of the text (Hatch & Farhady, 1982:251). Content validity was proposed to know how the test items were good reflection of what would be covered.

The construct validity measures whether the construction has already in line with the objective of learning (Hatch and Farhady, 1982:251). It was a representative of the material from the subject. Nuttal (1985) in Sari (2010) states that the relation validity of the instrument refers to construct validity in which the question represents five of sort of reading skills, i.e. determining main idea, finding the detail information, reference, inference, and vocabulary. Skills of reading in the test were a part of the construct validity and the item numbers are a part of content validity.

Table 2. Specification of Try-out Reading Test

<table>
<thead>
<tr>
<th>No.</th>
<th>Reading Skills</th>
<th>Items Number</th>
<th>Percentage of Items</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Determining main idea</td>
<td>1, 8, 13, 22, 32, 39</td>
<td>15%</td>
</tr>
<tr>
<td>2</td>
<td>Finding specific information</td>
<td>3, 4, 16, 17, 19, 24, 28, 29, 33, 34, 37</td>
<td>27.5%</td>
</tr>
<tr>
<td>3</td>
<td>Inference</td>
<td>2, 6, 10, 11, 14, 15, 25, 27, 30, 31, 40</td>
<td>27.5%</td>
</tr>
<tr>
<td>4</td>
<td>Reference</td>
<td>5, 9, 18, 20, 23, 35, 38</td>
<td>17.5%</td>
</tr>
<tr>
<td>5</td>
<td>Vocabulary</td>
<td>7, 12, 21, 26, 36</td>
<td>12.5%</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>40 items</td>
<td>100%</td>
</tr>
</tbody>
</table>

2. Reliability of the Test
Reliability refers to the consistency of the scores obtained and how consistent they are for each individual from one administration of the instrument to another. As Anderson (1975) in Arikunto (2007) cites that a reliable measures in one that provides consistent and stable indication of characteristic being investigated. A test would not be a good parameter if the test were not reliable or constant.

Obviously, there were three basic methods for calculating reliability from an examination of consistency of the test. They were split-half method, Kuder-Richardson Formula 20, and Kuder Richardson Formula 21.

In this research, the researcher used split-half method to estimate the reliability of the test to make sure whether the test was appropriate for testing or not. In using the split-half method, the researcher classified the test items into two similar parts (usually the odd-numbered items and the even-numbered items). By splitting the test into two similar parts, it was supposed as if the whole tests had been taken twice. The correlation between those two parts encountered the reliability of the half test by using Pearson Product Moment (Hatch & Farhady, 1982:246). After the researcher has obtained the reliability of the half test, the researcher will use Spearman Brown’s Prophecy Formula (Hatch & Farhady, 1982:246) to find out the reliability of the test.

To measure the correlation coefficient of the reliability between odd and even number, the researcher will use Pearson Product Moment (Hatch & Farhady, 1982:246) in the following formula:

\[
 r_1 = \frac{\Sigma xy}{\sqrt{\Sigma x^2 \Sigma y^2}}
\]
The correlation coefficient of reliability between odd and even number

\( r_1 \): the total number of odd number items

\( y \): the total number of even number items

\( x^2 \): the square of X

\( y^2 \): the square of Y

The criteria of reliability are:

- 0.80 – 1.00: high
- 0.50 – 0.79: moderate
- 0.00 – 0.49: low

(Hatch & Farhady, 1982:247)

After getting the reliability of half test, the researcher used Spearman Brown’s Prophecy formula (Hatch & Farhady, 1982: 246) to find out the reliability of the whole test as follows:

\[
 rk = \frac{2r_1}{1+r_1}
\]

(Hatch & Farhady, 1982:247)

\( rk \) = The reliability of the test

\( r_1 \) = The reliability of half the test

The criteria area:

- 0.00 – 0.19: Very low reliability
- 0.20 – 0.39: Low reliability
- 0.40 – 0.59: Average reliability
- 0.60 – 0.79: High reliability
0.80 – 1.00  Very high reliability

<table>
<thead>
<tr>
<th>No.</th>
<th>Reading Skills</th>
<th>Items Number</th>
<th>Percentage of Items</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Determining main idea</td>
<td>1, 6, 11, 19, 26, 31</td>
<td>18.75%</td>
</tr>
<tr>
<td>2.</td>
<td>Finding specific information</td>
<td>3, 15, 17, 22, 23, 27, 28, 32</td>
<td>28.125%</td>
</tr>
<tr>
<td>3.</td>
<td>Inference</td>
<td>2, 4, 8, 9, 12, 13, 14, 24, 25,</td>
<td>28.125%</td>
</tr>
<tr>
<td>4.</td>
<td>Reference</td>
<td>7, 16, 20, 29, 30</td>
<td>15.625%</td>
</tr>
<tr>
<td>5.</td>
<td>Vocabulary</td>
<td>5, 10, 18, 21</td>
<td>12.5%</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>32 items</td>
<td>100%</td>
</tr>
</tbody>
</table>

3. The Validity of the Questionnaire

Validity refers to the extent to which the test measure what is intended to measure. According to Hatch and Farhady (1982), there are least two validity should be fulfilled; content and construct validity. Since the questionnaire was adopted from LLSQ constructed by Setiyadi, the researcher considered that the construct validity of the questionnaire had been standardized. Therefore, the researcher measured the content validity only. The following table described the aspects of learning strategies used by the L2 students based in reading skill developed by Setiyadi.

<table>
<thead>
<tr>
<th>Aspects of Questionnaire</th>
<th>Number of items</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cognitive strategies</td>
<td>1-11</td>
</tr>
<tr>
<td>Metacognitive strategies</td>
<td>12-17</td>
</tr>
<tr>
<td>Social strategies</td>
<td>18-20</td>
</tr>
</tbody>
</table>

It could be seen from the table above that all the aspect of learning strategies in reading skill relate to the theories of learning strategies classification (cognitive, metacognitive, and social strategies).
4. Reliability of the Questionnaire

To know the reliability of the questionnaire, the researcher applied Cronbach’s alpha reliability which was counted based on the correlation between each item of learning strategy scale and range of 0 to 1. According to Setiyadi (2006: 190-191), the higher alpha is, the more reliable the questionnaire will be. The researcher considered the reliability of the questionnaire with the alpha \( \geq 0.70 \).

5. Level of Difficulty

Level of difficulty might be defined as the proportion of the examinees that marked the item correctly. Generally, level of difficulty was the percentage of students that correctly answer the item. It was calculated by the following formula:

\[
LD = \frac{U + L}{N}
\]

Notes:

LD : the level of difficulty
U : the number of upper group who answer correctly
L : the number of lower group who answer correctly
N : the total number of students in upper and lower groups

(Arikunto, 2007)

The criteria of the difficulty lever are:
< 0.30 = difficult
0.30 – 0.70 = average
> 0.70 = easy

6. The Discrimination Power

Discrimination power was the ability of the item to differentiate between the students who had high ability and those who had low ability. To find out the discrimination power, the researcher used the following formula. The formula of the discrimination power was:

\[
D = \frac{U - L}{\frac{1}{2}N}
\]

Notes:

D : discrimination power
U : the number of students from the upper who answer correctly
L : the number of students from the lower who answer correctly
N : the number of the students

The criteria are:

DP = 0.00 – 0.19 = poor
DP = 0.20 – 0.39 = satisfactory
DP = 0.40 – 0.69 = good
DP = 0.70 – 1.00 = excellent
DP = negative / minus (-), all is poor

(Arikunto, 2007: 221)

7. Scoring System

In scoring the students’ result of the test, the researcher used Arikunto’s formula (2007: 271). And then, the highest score was 100.

\[ S = 100 \times \frac{R}{N} \]

Where:

- \( S \) = the score of the test
- \( R \) = the right answer
- \( N \) = the total of the items

3.6 Data Analysis

The data of the research were statistically analyzed. Causal comparative study used to analyze the data of the students’ frequency of using learning strategies in relation to reading comprehension, i.e. questionnaire. Moreover, this research used Language Learning Strategy Questionnaire (Setiyadi, 1999) and was counted on Likert Scale (Setiyadi, 2006). Meanwhile, independent group t-test was also used to examine the result of reading comprehension. The data are computed through the Stastical Package for Social Sciences (SPSS).
3.7 Hypothesis Testing

H1: Cognitive learning strategies are more frequently used by successful learners in reading comprehension.

H2: Cognitive learning strategies are not more frequently used by unsuccessful learners in reading comprehension.

Statistical Testing

Independent-samples T-Test

The hypothesis was analyzed at the significant level of 0.05 in which the hypothesis is approved if Sig. < α.

3.8 The Schedule of Research

The research was conducted based on sequenced schedule in order to make this research runs well. Before the research was carried out, the try-out test was conducted on Wednesday, April 1st, 2015 in X.3 and X.5. This try-out test was about reading comprehension to determine the content and construct validity of the text, also the level of difficulty and discrimination power of its. Furthermore, On Monday and Wednesday, April 6th and 8th, 2015 pretest was carried out in X.1 and X.5. In the same time, questionnaire was given in order to know learners’ learning strategies. After administering pre test, two weeks later (on Monday and Wednesday, April 27th and 29th, 2015), the post test was conducted in those classes in order to know the gain of the learners’ reading comprehension. The schedule of the research could be seen in the following table:
<table>
<thead>
<tr>
<th>No.</th>
<th>Activities</th>
<th>Time</th>
<th>Day</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Pre-Observation</td>
<td>12.00 pm</td>
<td>Monday</td>
<td>23 - 24 March 2015</td>
</tr>
<tr>
<td>2.</td>
<td>Conducted Try-out of reading test at X.3</td>
<td>10.30 am – 12.00 pm</td>
<td>Tuesday</td>
<td>1 April 2015</td>
</tr>
<tr>
<td>3.</td>
<td>Conducted Try Out of reading test at X.6</td>
<td>01.15 pm – 02.00 pm</td>
<td>Tuesday</td>
<td>1 April 2015</td>
</tr>
<tr>
<td>4.</td>
<td>Distributing Questionnaire and administering reading test (pre test) at X.1</td>
<td>09.00 am - 10.30 am</td>
<td>Monday</td>
<td>6 April 2015</td>
</tr>
<tr>
<td>5.</td>
<td>Distributing Questionnaire and administering reading test (pre test) at X.5</td>
<td>10.30 am – 12.00 pm</td>
<td>Wednesday</td>
<td>8 April 2015</td>
</tr>
<tr>
<td>6.</td>
<td>Administering Post test at X.1</td>
<td>09.00 am - 10.30 am</td>
<td>Monday</td>
<td>27 April 2015</td>
</tr>
<tr>
<td>7.</td>
<td>Administering Post test at X.5</td>
<td>10.30 am – 12.00 pm</td>
<td>Wednesday</td>
<td>29 April 2015</td>
</tr>
</tbody>
</table>