

### **III. METHOD**

This chapter concerns with setting of the research, research design, data collecting techniques, try out of data collecting techniques, research procedure, data analysis, and hypothesis testing.

#### **3.1. Setting of the Research**

The research took place at SMAN 15 Bandar Lampung, located on Jl. Turi Raya, Bandar Lampung. The researcher chose this school because there was no english education research yet conducted here previously and the topic for testing students' morphological awareness and reading comprehension were important remembering that this school is one that need improvements in many side. So, the researcher expected the results of this study will help the English teacher of SMAN 15 Bandar Lampung in improving the quality of learning English of students, especially in the field of reading and improving morphological awareness.

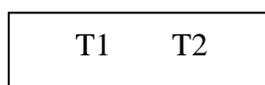
Furthermore, the research conducted in the second semester of second grade. The time of this research would greatly benefit students considering they will soon face the examination day.

### 3.2. Research Design

This research was a quantitative study since it was focused on the product (results of the test). In this research, the researcher uses *ex post facto* design related to the co-relational study. Ex post facto design is a non experimental research technique in which preexisting groups are compared on some dependent variables. It is a type of study that can masquerade as a genuine experiment. It is substitute for a true experimental research and can be used to test hypotheses about cause-and-effect or correlational relationship, where it is not practical or ethical to apply a true experimental or even a quasi-experimental design (Simon & Goes, 2013).

In this research, there was no treatment would be used because the reseacher only needed to gather the data related to morphological awareness and reading test from one class (one group) of students. After that, the data analyzed to find out the correlation.

The research design can be represented as follow:



(Hatch and Farhady, 1982: 27)

T1 : morphological awareness test

T2 : reading test

### 3.3. Population and Sample

The population of this research was the second year of the SMA Negeri 15 Bandar Lampung, and the sample was class XI IPA 1. There were 6 classes of second grade which contain of 30-40 students per class. Because this was a correlational

research, researcher used only one class as sample tested by the two data collecting instruments (T1 and T2), but researcher needed one more class for try-outing instruments. The sample will be taking by purposive sampling. The second grade of science 1 has chosen as the population by researcher and English teacher in that school. Purposive sampling is a form of non-probability sampling in which decisions concerning the individuals to be included in the sample are taken by the researcher, based upon a variety of criteria which may include specialist knowledge of the research issue, or capacity and willingness to participate in the research. Some types of research design necessitate researchers taking a decision about the individual participants who would be most likely to contribute appropriate data, both in terms of relevance and depth. This research involved two sections; the first one was where morphological awareness test is given, the second is reading comprehension test.

#### **3.4. Variables**

The data of this research are: the result of students' morphological awareness test score, and the result of students' reading test. The data will be taken by morphological awareness and reading test sheets.

#### **3.5. Data Collecting Techniques**

To collect the data, the researcher uses some technique as follows:

##### **1. Morphological Awareness Test**

The morphological awareness test was adapted from McBride-Chang (2005), and was used to test students' ability to reflect and manipulate morphemic units in

English. Some items were modified by the researcher to make it suits with Indonesian Senior High School students' English level. The modifications were according to words those were familiar with second grade of senior high school. The test was divided into two sections: Morpheme Identification Awareness and Morphological Structure Awareness. This test required students to make use of linguistic knowledge to derive new meaning. Skill in manipulating language, variously referred to as generativity, creativity, and productivity of language, may be important in learning new meaning within one's language (Chang, 2005).

#### **A. Morpheme Identification Test**

The Morpheme Identification test measured students' ability to analyze and breakdown complex word into smaller meanings and enabled them to recover meaning of complex word. It was compromised 20 items.

Example:

*Cycling to school has one..... It makes you feel hot and sweaty.*

*a. disadvantageous*

*c. advantage*

*b. disadvantage*

*d. advantageous*

The correct answer is *b. disadvantage*. The students can analyze meaning by breaking it down in to its meaningful components. Disadvantage can be recognized as *dis-advantage*. Prefix *dis-* gives negative meaning of word *advantage*. It is suitable word to fill the blank, because feeling hot and sweaty are one of disadvantage of cycling to school. In this study, the students' were given a set of complex word and were asked to segment into smaller meaning as they can identify in each word and with it students can guess the meaning of the word intended that appropriate with the sentence given.

## **B. Morphological Structure Test**

The Morphological Structure Test measured students' productivity, which is the ability to synthesize morphemes to create new meanings. The test consists of 20 items with 10 items of derivational affixes and 10 inflectional affixes.

The participants were presented with a frame sentence that contains the usage of the target morpheme, and then ask to complete the sentence. Each morpheme in a test item receives one point. Here examples for derivation and inflection items:

1. *Early in the morning, we can see the sun rising up. What we call this?*

The correct response for this item is *sunrise*. The word sunrise is the combination of word *sun* and *rise*.

2. *John is playing. Yesterday he did this. What that he do yesterday?*

The correct response for this item is *played*. The changing from playing to played shows that there is grammatical change/inflectional process from simple present progressive tense to past tense.

## **2. Reading Test**

Alderson (2000) states that there is no best method for testing reading. There are many kinds of reading assessment such as multiple choice items, written and oral recall, cloze, sentences completion items, open-ended question, true or false, matching activity, checklist and fill in the blank. It is important to note, that different assessment task may not test the same ability. Individual assessment task

provides limited representation of reading comprehension; however, many reading researchers continue to use only task to measure comprehension.

In this research, the writer used multiple-choice items in increasing students' reading comprehension. In addition, correct responses could not be determine by looking at the other question on the page. For each multiple-choice questions, there are five possible responses, one correct response and four distracters. All distracters in the multiple-choice question are possible, and multiple-choice question can not be answer correctly by the students without having read and understand relevant parts of the passages. Reading comprehension test is administered after morphological awareness test was given.

### **3.6. Try Out of data Research Instruments**

In order to construct a good research, the data collecting techniques should be try-out first. There are two aspects that must be considered to ensure eligibility of the two tests used in this study; validity and reliability. This section will explain the validity and reliability related to the tests.

#### **A. Validity**

Validity is the extent to which a concept, conclusion or measurement is well-founded and corresponds accurately to the real situation (Wikipedia.com).

##### **1. Validity of Morphological Awareness Test**

There are two important kinds of validity used to measure the validity of morphological awareness test use in this research, those are; content validity and construct validity.

### a. Construct Validity

Content validity is a non-statistical type of validity that involves the systematic examinations of the test content to determine whether it covers a representative sample of the behavior domain to be measured (Anastasi & Urbina, 1997 p. 114). Content validity was extended to which a test measures representative sample of the subject matter contents, the focus of content validity was on adequacy of the sample and simply on the appearance of the test (Hatch and Farhady, 1982). The items in the test of morphological awareness included three of the word types (inflected words, derived words and literal compound). Content validity can be examined from the table of specification below.

***Table 1. Table of Specification of Morphological Awareness Test.***

No.	Morphological Awareness	Number of Items	Total items (percentage)
1.	Morpheme identification (root words)	1-20	20 (50%)
2.	Morphological structure (inflected words, derived words and literal compound)	21-40	20 (50%)
<b>TOTAL</b>			40 items (100%)

### b. Content Validity

Construct validity is necessary for measurement instrument which has several indicators in measuring one aspect or construct (Setiyadi, 2006: 25). Construct validity of the morphological awareness test is the test suitable to check students'

skill in finding the root of complex words provide. Construct validity is concerned with whether the test is actually in line with theory (Schohamy, 1985). This can be found by relating the instruments with the theory of what it means to know certain language skills. In this case, the writer measured students' morphological awareness and their reading comprehension. Therefore the instruments for measure morphological awareness test which assess the ability to create literal compounds, inflected words, derived words and identifying root words from the complex ones.

## **2. Validity Reading Test**

There are two important kinds of validity used to measure the validity of reading comprehension test use in this research, those are; content validity and construct validity.

### **a. Construct 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 components of reading comprehension. Content validity is the extent to which a test measures a representative sample of the subject matter content, the focus of content validity is adequacy of the sample and simply on the appearance of the test (Hatch and Farhady, 1982).

The reading test consisted of five reading comprehension contents. To know whether the test has a good content validity, the items of the test would be discussed with the expert (advisors), the researchers' colleague, and the English

teacher of senior high school. The content validity can be seen from the table of specification below

**Table 2. Table of Specification of Reading Comprehension Test.**

No.	Objectives	Item Numbers	Total Items
1.	Identify the main idea	1, 13, 22	3
2.	Vocabulary	3, 7, 12, 14, 16, 29	7
3.	Specific Information	4, 6, 15, 18, 19, 20, 21, 25, 26, 27, 28, 30	12
4.	Inference	5, 9, 10, 11, 23, 24,	6
5.	Reference	2, 17	2
<b>Total</b>			<b>30</b>

### **b. Content Validity**

Nuttal (1985) states that the relation validity of the instrument refers to construct validity in which the question represents five of sort reading skills, i.e. determining main idea, finding the detail information, reference, inference and vocabulary mastery. In this research, the researcher used reading comprehension test that is supposed to be able to be comprehend by the grade XI students of senior high school. The materials are based on the curriculum that used in senior high school that is Curriculum 2006 (Kurikulum Tingkat Satuan Pendidikan).

### **B. Reliability of Two Tests**

Reliability is the overall consistency of a measure. A measure is said to have a high reliability if it produces similar results under consistent conditions.

The split-half method uses to find the reliability of the morphological awareness test and reading comprehension test by dividing the number of the tests items into two groups for each test, odd and even. Based on *Pearson Product Moment* formula, the formula can be seen as follows:

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

r = coefficient reliability between odd and even number

X = odd number

Y = even number

n = numbers of students who take part in the test

X<sup>2</sup> = square of X

Y<sup>2</sup> = square of Y

∑X = total score of odd items

∑Y = total score of even items

(Arikunto, 1997)

After the reliability of the half test is calculated, the researcher uses Spearman Brown's Prophecy formula to measure the reliability of the test as a whole as follows:

$$r_k = \frac{2r_{xy}}{1 + r_{xy}}$$

r<sub>k</sub> = the reliability of the whole test

r<sub>xy</sub> = the reliability of half test

(Hatch and Farhady, 1982: 247)

The criteria of the reliability are:

0.90 – 1.00 = high

0.50 – 0.89 = moderate

0.00 – 0.49 = low

### C. The Difficulty Level of the Test Items

Difficulty level 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 the items, which are too easy (that students get right) can tell us nothing about differences within the test population. To see the level difficulty, the research used the formula as follow:

$$LD = \frac{U+L}{N}$$

In which:

LD : level of difficulty

U : the number of upper group who answer correctly

L : the number of lower group who answer correctly

N : total number of students

The criteria are:

- Less than 0.30 = difficult
- 0.30-0.70 = middle (good item)
- More than 0.70-1.00 = easy

(Shohamy, 1985: 79)

Based on the statements above, it is clear that all the test item should based on the criteria above and the items which not fulfill the requirements should be omitted or revised.

#### **D. Discrimination Power**

Discrimination power refers to the extent to which the item differentiates between high and low level students on the test. A good item according to this criterion is “one in which good students did well, and bad students failed” (Shohamy, 1985: 81). To calculate the discrimination power (DP) of the test items, the researcher used the following formula:

$$DP = \frac{U - L}{\frac{1}{2} N}$$

In which,

DP: Discrimination Power

U: the total of correct answer of the higher group

L: the total of correct answer of the lower group

N: total number of students

(Shohamy, 1985)

The criteria are:

0.00- 0.20 = Poor

0.21- 0.40 = Satisfactory

0.41- 0.70 = Good

0.70- 1.00 = Excellent (should be omitted)

### **E. Scoring System**

In scoring the students' result of the tests, this research used Arikunto's formula.

The ideal scores of tests were calculated by using the following formula.

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

Where:

S : the score of the test

R : the total of the right answers

N : the total items

(Arikunto, 1997: 212)

### **3.7. Research Procedure**

Below was the procedure in conducting the research:

#### 1. Determining research problem

The problem of this research was determined in the chapter one related to relationship between morphological awareness and reading comprehension.

#### 2. Determining the research instruments

There were two tests used in this research. Each test represents the variables.

In morphological awareness there are 40 items, and 30 items in reading test.

The time allocation for the morphological awareness test and reading comprehension test were 2x60 minutes.

3. Selecting and determining the materials

The morphological awareness test was adapted from McBride-Chang (2005), and was used to test students' ability to reflect and manipulate morphemic units in English. Some items were modified by the researcher to make it suits with Indonesian Senior High School students' English level.

Another test was reading test, the material taken from internet in the form of passage that the topic is considering students' interest and in the accordance to recent curriculum (Curriculum 2006, Kurikulum Tingkat Satuan Pendidikan).

4. Trying out the instruments

Before the tests were administered to the experimental class, there were two try-out class in the research (XI IPA 2 for Morphological Awareness Try Out Test, XI IPA 3 for Reading Comprehension Try Out Test), both administered on April 2<sup>nd</sup> and 3<sup>rd</sup> 2015. Those classes were the first class to test before the real experimental class. The purpose of using try-out class was to strengthen the validity and reliability of the tests.

5. Analysing the result of the try-out test

The result of try-out tests were used to analyzed the validity and the reliability of the instruments, the difficulty level, and the discriminating power in order to create the good instruments for the real research.

6. Conducting morphological awareness test

The morphological awareness test took in the experimental class on Thursday, April 23<sup>rd</sup> 2015 (2x60 minutes). The students held the test directly without any treatment before.

7. Conducting reading comprehension test.

The reading comprehension test took in the experimental class on Friday, April 24<sup>th</sup> 2015 (2x60 minutes). The test administered without any treatment before.

8. Gathering the data

The data gathered from the results of the tests and then tabulated to analyze.

9. Analyzing the data

The researcher in this step analyzed the tabulated data. The analysis had done by using SPSS 17.0 computer program, is on the correlation of the students' morphological awareness and reading comprehension by means of *Pearson product-moment*.

10. Drawing conclusion

As the last step, conclusion was drawn up by carefully considering the result of the data analysis.

### 3.8. Data Analysis

The data of this study was statistically analyzed. The analysis had done by using SPSS (Statistical Package for the Social Sciences) 17.0 computer program, is on the correlation of the students' morphological awareness and reading comprehension by means of *Pearson Product Moment Correlation*.

This program used to analyze the relationship between students' morphological awareness and reading comprehension. And for the next data were analyzed using simple regression to see how far the independent variable (morphological awareness) influenced dependent variable (reading comprehension).

### 3.9. Hypothesis Testing

The following were the hypotheses taken:

$H_0$  is accepted if there is no correlation or relationship between two variables. ( $H_0 = r \text{ value} < r \text{ table}$ ).

$H_1$  is accepted if there is significant correlation between two variables. ( $H_1 = r \text{ value} > r \text{ table}$ ).

That was the method of this research included the explanations about the design, data, data source, instruments, procedure, data analysis, and hypothesis discussed in order to provide an insight to this research.