

### III. RESEARCH METHOD

#### A. Research Design

In conducting the research, the writer found out the difference of students' grammar past tense ability through inductive method and deductive method. The writer applied true experimental pre-test and post-test control group design (Hatch and Farhady, 1982:22). The writer selected two classes, one was as a control class and the other was as the experimental class. The research design can be presented as follows:

G1 (random) = T1 X T2

G2 (random) = T1 O T2

where:

G1 : experimental class

G2 : control class

T1 : pretest

T2 : posttest

X : treatment (applying an inductive method)

O : taught regularly (applying a deductive method)

(Setiyadi, 2006:135)

In the research, the pre-test was conducted to know the students' basic skill in past tense by using material provided by the writer. The post-test was given after all treatments had been undergone to know whether the students' skill in past tense has improved. The treatments themselves were conducted three times.

The writer used the following t-test formula to find out whether or not there was a significant difference in the students' Past Tense mastery between those in control class group and experimental class group:

$$t = \frac{\bar{X}_T - \bar{X}_C}{\sqrt{\frac{\text{var}_T}{n_T} + \frac{\text{var}_C}{n_C}}}$$

Where:

**t** = the t-value

**$\bar{X}_T$**  = the mean / average of the experimental class

**$\bar{X}_C$**  = the mean / average of the control class

**var<sub>T</sub>** = the variance of the experimental class

**var<sub>C</sub>** = the variance of the control class

**n<sub>T</sub>** = the number of the students in the experimental class

**n<sub>C</sub>** = the number of the students in the control class

## **B. Population and Sample**

The population of the research was the first grade students of SMPN 3 Bandar Lampung in the first term of the academic year of 2011/2012. The research took one class as the sample of the research, one class as the control class, and one class as the try-out class. In choosing the experimental class the writer used simple random probability sampling since the students' ability was homogenous. The classes were chosen randomly using lottery drawing.

## **C. Data Collecting Technique**

The writer used materials with narrative texts in the tests as the instruments to collect data. The tests consisted of a pretest and a posttest in essay forms.

### **1. Pretest**

The pretest was given before the students got the treatments in order to measure the students' Past Tense mastery. The test consisted of 20 items of an essay form provided with narrative texts. The test took 30 minutes.

### **2. Posttest**

The writer administered the posttest after the treatments. The purpose of conducting the posttest was to find out whether the method of teaching Past Tense through inductive method really makes some differences in the

students' mastery or not. The test consisted of 20 essay items. The posttest took 30 minutes.

#### **D. Research Procedures**

The procedures of the research are as follows:

1. Determining the samples of the research

The first step in the research is selecting the class as the sample. The sample was chosen using simple probability sampling. The writer took three classes; a tryout class, a control class and an experimental class.

2. Determining the research instrument

The materials which were used for the tests (pretest and posttest) were authentic materials.

3. Administering the try out test

The writer conducted a tryout test in order to find out whether or not the test items that were used in the research were good enough in validity, reliability, level of difficulty, and discrimination power.

In this test, the writer provided 50 essay items. As for the scoring system is each correct answer has got 2 points. Therefore, the perfect score is 100 (if all questions are answered correctly). The test took 90 minutes.

#### 4. Administering the pretest

This test is designed to find out students' basic ability in Past Tense. The writer conducted a pretest before treatments by using material with essay items which consisted of 20 items. The scoring system is each correct answer has 5 points. If all items are answered correctly, then the score is 100. The test took 30 minutes.

#### 5. Conducting Treatment

After giving the pretest to the students, the writer taught the students Past Tense through inductive method by means of narrative texts for the experimental class and deductive method for the control class. The writer conducted the treatments three times for three meetings which took 90 minutes in each meeting.

#### 6. Administering the posttest

The writer administered a posttest after giving treatments. This test consists of 20 essay items. The scoring system is each correct answer has 5 points which will result 100 points if all questions are answered correctly. This posttest took 30 minutes.

#### 7. Analyzing the data (pretest and posttest)

This step was conducted to find out the students' achievement in understanding Past Tense. Independent group t-test formula is used to compare the means of the pretest and posttest of both groups. The data was

computed through the Statistical Package for Social Sciences (SPSS) version 12.0.

#### 8. Testing Hypothesis

The hypothesis is based on the comparison of the posttest results of both groups. If the posttest result of the experimental class is higher than that of the control class, it can be said that the hypothesis is acceptable and it means that teaching Past Tense through inductive method makes some difference in the students' Past Tense mastery.

#### **E. Scoring System**

##### 1. Try out

The writer scored the try out test which consisted of 50 questions by using the following formula:

$$S = T \times 2$$

Where:

S = score

T = The number of the correct answers that the students make

##### 2. Pretest and posttest

The writer scored the pretest and posttest that consisted of 20 questions each by using the following formula:

$$S = T \times 5$$

Where:

S = score

T = The number of the correct answers that the students make

## **F. Try Out**

A test is said to have a good quality if it has a good validity, reliability, level of difficulty and discrimination power.

### **1. Validity**

A test is said to be valid if it measures accurately what is intended to measure (Hugher, 1991: 22). There are four kinds of validity, namely face validity, content validity, construct validity, and empirical or criterion-related validity. To measure whether the test has a good validity, the writer used content and construct validity.

#### **1.1. Content Validity**

Content validity is the extent to which the test measures a representative sample of the subject matter content. The focus of the content validity is adequacy of the sample and not simply on the appearance of the test (Hatch and Farhady, 1982: 251).

#### **1.2. Construct Validity**

The purpose of construct validity is to examine whether the test is a good representation of the material that needs to be tested (Shohamy, 1985: 75). It

means that the test is a good reflection of what has been taught and of the knowledge which the writer wants the students to know.

A test, a part of a test, or a testing technique is said to have construct validity if it can be demonstrated that it measures just the ability which is supposed to be measured. The word ‘construct’ refers to any underlying ability (or trait) which is hypothesized in a theory of language ability (Hughes, 1991: 26).

## **2. Reliability**

Reliability refers to the extent to which the test is consistent in its score, and it gives an indicator of how accurate the test scores are (Shohamy, 1985: 70).

To estimate the reliability of the test, the writer used the split-half method. To measure the coefficient of the reliability between the first and the second half group, the writer used the following formula:

$$r_1 = \frac{\sum x y}{[\sum x^2][\sum y^2]}$$

Where:

$r_1$  = coefficient of reliability between the first half and the second half groups

X = total number of the first half group

Y = total number of the second half group

$x^2$  = square of x

$y^2$  = square of y

Then the writer used “Spearman Brown’s Prophecy Formula” (Hatch and Farhady, 1982: 286) to know the coefficient correlation of whole items.

The formula is as follows:

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

Where:

$r_k$  = the reliability of the test

$r_l$  = the reliability of half test

The criteria of reliability are:

0.90 – 1.00 : high

0.50 – 0.89 : moderate

0.00 – 0.49 : low

### 3. Level of Difficulty

To see the level of difficulty, the writer used the following formula:

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

Where:

LD : level of difficulty

U : the number of upper students who have given correct answers

L : the number of lower students who have given correct answers

N : the total number of the students who have taken part in the test

The criteria are;

< 0.30 : difficult

0.30 – 0.70 : average

> 0.70 : easy

(Shohamy, 1985: 79)

#### 4. Discrimination Power

To see the discrimination power, the writer used the following formula:

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

Where:

DP : discrimination power

U : the proportion of the upper group students

L : the proportion of the lower group students

N : total number of the students

The criteria are:

1. If the result is positive, it means the number of high students who have given correct answers is more than the number of low students who have given correct answers. But if the result is zero, it means there is no discrimination.
2. If the result is negative, it means there are more low students who have given correct answers than high students.

3. In general, the higher the discrimination index, the better. In classroom situation most items should be higher than 0.20 indexes.

(Shohamy, 1985; 81)

### **G. Data Analysis**

To know whether there is a difference in the students' Past Tense mastery or not, the data of the study was examined using *Independent Group t-test*. Independent t-test was used since in this research two means of two different groups (experimental and control groups) would be compared. The data is statistically computed through the Statistical Package for Social Sciences (SPSS) version 12.0.

### **H. Data Treatment**

The writer conducted the treatment three times in this research and applied descriptive grammar with inductive and deductive methods. According to Setiyadi (2006: 168-169), using t-test for hypothesis testing has three basic assumptions, namely:

- The data is interval or ratio
- The data is taken from random sample in population
- The data is distributed normally

Therefore, the writer used these following procedures in the data treatment:

## 1. Normality Test

The writer used normality test to know whether or not the data in the experimental and control class was normally distributed. The hypothesis for the normality test is as follows:

Ho : the data is distributed normally

H1 : the data is not distributed normally

In this proposal, the criteria for the hypothesis will be:

Ho is accepted if the sign  $> \alpha$ .

## 2. Hypothesis Testing

The hypotheses of this research are:

Ho : There is no significant difference in the students' grammar past tense ability between the students taught through inductive method and those taught through deductive method.

H1 : There is a significant difference in the students' grammar past tense ability between the students taught through inductive method and those taught through deductive method.

The hypothesis was statistically tested using independent group t-test.