# III. RESEARCH METHODS

This part discusses the research design and the way collect the data from those sample. The researcher enclosed the data collecting technique, the instrument and also the procedure of the research. The researcher also gave the scoring system and how the data were analyzed.

## 3.1 Research Design

This research is quantitative research. Hatch and Farhady (1982:22), quantitative was a kind of research in which the data used to tend to use statistic as measurement in deciding the conclusion.

To invistigate if there is a significant difference of of students' reading comprehension ability in narrative text between before and after being taught through serial pictures and if there is an increase of students' reading comprehension ability in narrative text after being taught through serial pictures. The researcher used *One Group Pretest Posttest Design*. The writer used pre-test and post-test, the pre-test was used to measure the students' reading comprehension ability in narrative text before the students getting the treatment from the researcher through serial pictures. After the students had given the treatment from the researcher, they got post-test and the researcher could find the

students' improvement by comparing the average score between pre-test and post-test. It was used to find out the progress before and after the treatment using serial pictures. The researcher used one class as the experimental class where the students were given a pre-test before the treatment and post-test after the treatment. The design of this research is described as follows:

**T1 x T2**

T1      : Pre-test

T2      : Post-test

X       : Treatment                                                                    (Setyadi, 2006:132)

The researcher used *One Group Pretest and Posttest Design* since the researcher used one group as the experimental class and it was intended to know whether this treatment can increase the students' reading comprehension ability, the scores of pre-test were compare with the score from post-test. If the average score of the pre-test higher than the average score of the post-test, it means that using serial pictures can not be used to increase students' reading comprehension ability in narrative text. However, if the average score of the post-test were higher than the average score of the pre-test, it means that using serial pictures could be used to increase students' reading comprehension ability in narrative text.

**3.2 Population and Sample**

The population of this research was all tenth grade students of SMA Negeri 8 Bandar Lampung period of 2012/2013. The researcher chose the tenth grade because reading material of the tenth grade were normally complicated.

There are six classes in the tenth grade of SMA N 8 Bandar Lampung which

devided in $X_1$, $X_2$, $X_3$, $X_4$, $X_5$, $X_6$ and consist of 35 up to 38 students in each class.

Those classes have same level, there was no higher and lower class . It was known

from the observation and ask to the English teacher there.  That was why in

choosing the experimental class the researcher selected randomly by using lottery.

The experimental class got pre-test, three treatments, and post-test. And for testing

the reliability of the test, the other class was be used as try out class.


## 3.3 Research Procedure

In conducting the research, the procedures of this research were as follows:

1. Identifying the problem

There are some problems in English teaching learning process which is faced by

the students, one of the problem is reading comprehension. The researcher found

the problem when practised teaching at SMA PIRI Jatiagung and from the

observation to SMA Negeri 8 Bandar Lampung.

2. Determining the population and sample

The population of this research was all tenth grade students of SMA Negeri 8

Bandar Lampung consisting of six classes. Those classes were chosen randomly

by using lottery as experimental class and as try out class because those classes

have same level, there was not higer or lower clas there. The sample of this

research was $X_4$


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3. Administering try out to know the quality of the reading test

Try out was given in multiple choice with four options A, B, C, and D. This test was administered in order to measure the level of difficulty (LD) and descrimination power (DP) as well as find out reliability and validity of the test.

4. Preparing the materials which will be taught

The researcher took the material based on English book of tenth grade student and improve the material to make the student more attractive to learn reading.

5. Administering the pre-test and finding the result

In this research, there was one pre-test that was proper to the tenth grade students of SMA Negeri 8 Bandar Lampung. The researcher administered the pre-test in order to find out the sudents' basic ability before treatment. In this term the researcher asked the student to do multiple choice test which consist of 25 items and the student should choose the correct answer from four options A, B, C, or D. The pre-test take 60 minutes.

6. Giving treatment

There were three times treatments that was conducted in this term. It was require ninety minutes or it was two hours of teaching learning process.

7. Administering the post-test

Post-test was used in order to check the students' reading comprehension ability after they were taught using serial pictures, to know whether the students' reading comprehension improve or not. The post-test took 60 minutes which consist of 25 items and divided in four option A, B, C, and D. Those items consist of five aspects of reading.

8. Analyzing the test result

After conducting the pre-test and post-test, the researcher analyzed the data. The data was analyze by using T-test. It was used in order to know whether serial pictures was able to increase sudents' reading comprehension ability in narrative text.The data were computed through SPSS Program version 17.

**3.4 Research Instrument**

The instrument of this research was a set of reading comprehension test that was used for try out, pre-test, and post-test. Those tests were in the form of multiple choices. The multiple choices test was used since its marking is rapid, simple, and most importantly reliable , not subjective or influenced by themarker's judgement (Heaton, 1975).

**1. Try Out**

Try out was used to know the quality of the test in order to take the data. The try out was conducted in the first meeting. This test was administered to know the quality of the test as the instrument of the research. The class that was used for the try out test was the class which is not selected for the experimental class. The number of the test item were 40 items contain four options of answer (A, B, C, D) and time allocation was 90 minutes.The researcher took the story and the pictures from book story and developed the test based on the syllabus of first grade of senior high school. The test could be said has a good quality if it had good reliability and good validity, and the test was not too easy or difficult. The composition of the test items was presented in table below.

**Table 1. Specification of Try Out Test**

| No | Skills of Reading | Item Numbers | Precentage of Items |
|----|-------------------|--------------|---------------------|
| 1. | Determining main idea | 1, 6, 9, 14, 17,23, 25, 30, 33, 36 | 25% |
| 2. | Finding Specific Information | 2, 8, 10, 18, 24,26, 31 | 17.5% |
| 3. | Inference | 3, 11, 19, 20, 27, 32, 34, 35, 37 | 22.5% |
| 4. | Reference | 4, 5, 15, 20, 28, 39 | 15% |
| 5. | Vocabulary | 7, 12, 13, 16, 22, 29, 38, 40 | 20% |

The precentage of determining main idea, inference and vocabulary took bigger part than finding specific information and reference, it was caused identifying main ideas is a basic aspects of reading comprehension, identifying the main idea points of a communication is fundamental to successful reading comprehension (Williams, 1988). Meanwhile inference that is categorized from context skill was one of important word attack skill which was needed by the respondents to deal with new or difficult vocabularies (Divinia, 2009), and vocabulary refers to words and their meanings. Research of National Reading Panel (NRP) (2000) has shown that vocabulary knowledge is an important predictor of reading comprehension ability. That was why the determining main idea, inference and vocabulary took big part than finding specific information and reference.

The result of try out showed in Appendix 6 that the lowest score was 20 and the highest score was 87.5 from 35 students. The specification of tabulating correct answer can be seen Appendix 7 and 8 that was used to know the reliability, level of difficulty, and discrimination power of each items.

**1. Validity**

The test could be said valid if the test measure the object to be measured and it was suitable with the criteria (Hatch and Farhady, 1982:250). To measure whether the test has a good validity, this research used content and construct validity.

**A. Content Validity**

It is concerned with whether the test is sufficiently representative and comprehensive for the test. Content validity means that the test was good reflection of what has been taught and the knowledge which the teacher wanted the students to know (Sohamy 1985:74). It means that the items of the test should present the material that appropriate with the material in the English curriculum, so the test that can be said have content validity since the test is good representation of material studied in the classroom.

Furthermore, the researcher compared the instrument to the material with students' hand book. The test was based on English curriculum, and the syllabus of first year SMA and represent of the materials that have been taught by the teacher. It means that the test was valid.

**B. Construct Validity**

Construct validity was concerned with if the test was actually in line with the theory of what it means to know the language (Shohamy, 1985;74). It means that the test items should really test the students or the test items should really measure the students' ability in reading comprehension. Regarding the construct validity, it measures whether the construction had already referred to the theory, meaning that the test construction had already in line with the objective of the learning

(Hatch and Farhady, 1982: 251). In line with Nuttal (1982) the relation validity of the instrument refers to construct validity in which the question represents to one of aspect in reading skill.

To know the test is true reflection of the theory in reading comprehension, the researcher examines whether the test questions actually reflect the means of reading comprehension. For the construct validity, the reading test which was developed in research through using serial pictures had covered aspects of reading, i.e.: determining main idea, finding specific information, inference, reference, and vocabulary as stated in table of specification. It means that the test was valid.

## 2. Reliability

Reliability refers to extend to which the test is consistent in its score and gives us an indication of how accurate the test score are (Hatch and Farhady, 1982; 244). To measure the coefficient of the reliability between odd and even group, this research used the Pearson Product Moment formula as follow:

$$\mathbf{rl} = \frac{\sum xy}{\sqrt{[\sum x^2][\sum y^2]}}$$

where:

rl : coefficient of reliability between odd and even number items

x : odd number

y : even number

$x^2$ : total square of odd number items

$y^2$ : total square of even number items

xy : total score of odd and even number items

(Huges, 1991:32)

The formula above had been applied to find the coefficient of the reliability.

$$rl = \frac{\sum xy}{\sqrt{(\sum x2)\,(\sum y2)}}$$

$$rl = \frac{6302}{\sqrt{(6502)(6304)}}$$

$$rl = \frac{6302}{\sqrt{40988608}}$$

$$rl = \frac{6302}{6402.234}$$

$$rl = 0.98$$

The result showed that the test was high in reliability (rl=0.98), since the criteria of reliability are:

0.80 – 1.00     : very high

0.50 – 0.79     : moderate

0.00 – 0.49     : low

(Hatch and Farhady, 1985:247)

**3.5 Technique of Collecting Data**

In collecting the data, the researcher used  pre-test and post-test score. Then, the data were analyzed the result of those activities which could be clarified as follows:

**1. Pretest**

The pre-test was conducted before treatments, it was used to know how far the students' reading comprehension ability before treatment was given. The pre-test

which was used by the researcher was an objective test in the form of multiple choices.

The type of the test was multiple choice in which the students were asked to choose one correct answer from four options (A, B, C, D). In this pre-test the students were given 25 items of reading comprehension which consist of five aspects of reading with time allocation was 60 minutes.

**Table 2. Specification of Pre-Test**

| No | Aspects | Number | Precentage |
|----|---------|--------|------------|
| 1. | Main Idea | 1,3,8,11,16,20 | 24% |
| 2. | Specific Information | 5,12,17 | 12% |
| 3. | Inference | 2,4,6,13,14,18,21,22 | 32% |
| 4. | Reference | 9,15,24 | 12% |
| 5. | Vocabulary | 7,10,19,23,25 | 20% |
| **Total** | | **25** | 100% |

**2. Post-test**

The post-test was conducted after the treatments. It was used to know how the students' reading comprehension ability after they were given the treatments using serial pictures media. Similar to the pre-test, in the post-test the researcher used of the multiple choices. The questions had similar difficulty with the pre-test, and each item of the test related to the material that the students have learnt. The post-test consist of random picture and the students should arrange them based on the story, 25 items with four options and the scoring system and degree of difficulty of the pre-test similar to the post-test because both items were used to measure the students' reading comprehension ability in narrative text through serial pictures in treatment.

**Table 3. Specification of Post-Test**

| No | Aspects | Number | Precentage |
|---|---|---|---|
| 1. | Main Idea | 1,7,8,17,19,21 | 24% |
| 2. | Specific Information | 2,9,22 | 12% |
| 3. | Inference | 3,10,11,13,18,20,23,24 | 32% |
| 4. | Reference | 4,15,25 | 12% |
| 5. | Vocabulary | 5,6,12,14,16 | 20% |
| **Total** | | **25** | **100%** |

**3.6 Scoring System**

In scoring the students' result of the test, the researcher used Arikunto's formula. The ideal highest score is 100. The scores of pre-test was calculated by using this formula below:

$$S = \frac{r}{n} \times 100$$

Where:

S      = The score of the test

r      = The total of the right answer

n      = The total items                  (Arikunto; 1997)

**3.7 Result of the Try Out**

The reading test was tried out with the purpose was to make the test qualified, valid and reliable. The tests were tried out to the students in class $X_3$ SMA Negeri 8 Bandar Lampung. The total number of students of the class was 36. The result of the try out test is presented as follows:

**1. Reading Test Score**

The try out test was intended to find a good test for the pre-test and post-test for the experimental class. Five narrative text with eight questions in the form of multiple choices were used as the try out test. After finding that maximum score was 87.5 where only one student gained 87.5, while the minimum score for the try out was 20 score was also only one. The mean score of the test was 60.625 out of 36 students (see Appendix 6).

**2. Level of Difficulty**

Difficulty level is related to how easy or difficult the item is from point of view of the students who take the test. The level of difficulty is generally expressed as the fraction (or precentage) of the students who answered tthe item correctly (Heaton, 1975:178). To see the level of difficulty, this research used the following formula:

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

Where:      LD      : Level of difficulty

R       : the number of students who answer correctly

N       : the total number of students following the test

The criteria are:

<0.30          = difficult

0.30 – 0.70    = average

<0.70          = easy

After analyzing the data, the writer got 27 items had average (1, 3, 6, 8, 10, 11, 13, 14, 15, 16, 17, 18, 19, 20, 21, 25, 26, 27, 29, 30, 32, 34, 36, 37, 38, 39, 40), 11

items were easy (2, 4, 5, 7, 9, 12, 23, 24, 28, 31, 33), 2 items were difficult (22, 35) (see Appendix 9).

**4. Discrimination Power**

The discrimination power (DP) refers to the extent to which the item discriminates between high and low level students on the test. It tells us whether those students who performed well on the whole test tended to do well or badly on each item in the test (Heaton, 1975:179). A good item according to this criterion is one which good students to do well on and bad students fail.

To know the discrimination power of the test, the researcher used the following formula:

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

Where:       DP       : discrimination power

              U        : the proportion of upper group students

              L        : the proportion of lower group students

              N        : total number of students

The criteria are:       0.00-0.20       = poor

                        0.21-0.40       = satisfied

                        0.41-0.70       = good

                        0.71-1.00       = excellent

(Negative)= bad items (should be omitted)              (Heaton, 1975:182)

After analyzing the data, the writer got 1 items was excellent that is item number 11, 14 items were good (1, 3, 10, 14, 17, 20, 25, 26, 27, 30, 32, 38, 39, 40), 13

items were satisfied (6, 8, 13, 15, 16, 18, 19, 21, 29, 31, 33, 34, 36), 9 items were poor (2, 4, 5, 9, 12, 23, 24, 28, 35), 2 items were bad items (7, 37).

**3.8 Data Analysis**

After conducting pre-test and post-test, the researcher analyzed the data. It was used to find whether there is a significant difference of students' reading comprehension ability in narrative text between before and after being taught through serial pictures and to find if there is an increase of students' reading comprehension ability in narrative text after being taught through serial pictures. The researcher examined the students' score using the following steps:

- Scoring pre-test and post-test

- Finding the result of random test, normality test, and homogenity test.

- Tabulating the score of students' reading test results and calculating the score of pre-test and post-test

- Drawing conclusion from the tabulated result of the pre-test and post-test that statistically analyzed using Reapeted Measure T- Test computed through Statistical Program for Social Sciences (SPSS) version 17.

**3.9 Homogeneity Test**

The researcher used the results of pre-test and post-test in experimental class. The homogeneity test itself was intended to see the homogenity of the experimental class, whether or not the class were homogeneous. The hypothesis for the homogeinety test was formullated as follows:

$H_0$ : data of the experimental class are not homogeneous

$H_1$ : data of the experimental class are homogeneous

In this case, the criterion for the hypotheses was:

$H_0$ is accepted if sig. $> \alpha$. Here, the level of significance 0.05 was used. The results of the homogeneity test can be seen in Appendix 11. From the results, can be seen that sig. $< \alpha$ (.00 $<$ 0.05). It proves that $H_1$ is accepted. In other words, the experimental class were homogeneous.

## 3. 10 Data Treatment

According to Setiyadi (2006:168 - 169), using t-test for hypothesis testing has three basic assumptions that should be fulfilled, they are:

1. The data is interval ratio

2. The data is taken from random sample in population

3. The data is distributed normally

Those assumptions should be fulfilled by the data to measure the parameter and to know whether the data is come from different population or not. The researcher used these following procedures in the data treatment:

### 1. Random Test

Random test was used to make sure whether the data was random or not. SPSS version 17 was used by the researcher to calculate it. In this case, the researcher used mean as cit point run test. The hypothesis for the random test was formulated as follows:

$H_o$ : The data is random

$H_1$ : The data is not random

In this research, the criteria was Ho is accepted if Sig. > α. The researcher used the level of significant 0.05.

From the result of random test, see Appendix 12, it can be determined that sig.>α (1.00 > 0.05) in pre-test and sig.>α (0.56 > 0.05) in post-test of experimental class. It proved that $H_0$ was accepted. In other words $H_o$ was accepted and the data were random.

## 2. Normality Test

Normality test was used to know whether the test in the experimental class were distributed normally or not. SPSS version 17 was used by the researcher to calculate it. In this case, the researcher used One Sample Kolmogorov Smirnov Test. The hypothesis for the normality test was formulated as follows:

Ho : The test is distributed normally

H1 : The test is not distributed normally

In this research, the criteria was Ho is accepted if Sig. > α. The researcher used the level of significant 0.05.

From the result of normality test, see Appendix 13, it can be determined that sig.>α (0.89 > 0.05) in pre-test and sig.>α (0.16 > 0.05) in post-test of experimental class. It proved that $H_0$ was accepted. In other words, the data were distributed normally.

## 3.11 Hypotesis Testing

The hypotesis testing was used to prove whether the hypotesis proposed in this research would be accepted or not. The hypotesis analyzed by using Reapeted Measure T-Test through computing with Statistical Package for Social Science (SPSS) version 17 for window, it could use to draw the conclusion at significance level of 0.05 (p<0.05).

The formulation are:

$$SD = \frac{\sqrt{\sum d^2 - (1/n)(\sum d)^2}}{n-1} \qquad Sd = \frac{SD}{\sqrt{n}} \qquad r = \frac{T_1 - T_2}{Sd} \qquad df = n-1$$

Notes:

r : Ratio

$T_1$ : Mean score of pre-test

$T_2$ : Mean score of post-test

$S_d$ : Standard error of differences between means

d : Error of differences between mean

n : Subjects on sample

SD : Standard Deviation

df : Degree of freedom (Hatch and Farhady, 1982)

The hypotheses are:

$H_o$ : There is no significant difference of students' reading comprehension ability in narrative text between before and after being taught through serial pictures

$H_1$ : There is a significant difference of students' reading comprehension ability in narrative text between before and after being taught through serial pictures

To determine whether the first hypothesis is accepted or rejected, the following criteria acceptance is used:

1. If t-ratio is higher than t-table: $H_1$ is accepted

2. If t-ratio is lower than t-table: $H_0$ is accepted

**1. Standard Deviation**

$$SD = \frac{\sqrt{7968 - \left(1/35\right)(448)^2}}{35 - 1}$$

$$SD = \frac{\sqrt{7968 - (0.02857)\,(200704)}}{34}$$

$$SD = \frac{\sqrt{7968 - (0.02857)\,(200704)}}{34}$$

$$SD = \frac{\sqrt{2233.8867}}{34}$$

$$SD = \sqrt{65.70255}$$

$$SD = 8.105$$

**2. Standard Error**

$$Sd = \frac{8.105}{\sqrt{35}}$$

$$Sd = \frac{8.105}{5.916}$$

$$Sd = 1.370$$

**3. t-ratio**

$$r = \frac{66.97 - 79.77}{1.370}$$

$$r = \frac{-12.8}{1.370}$$

$$r = -9.343$$

**4. Degree of Freedom (t-table)**

**Df** = 35 − 1

**Df = 34 or 2.032** (from table of distribution critical value)