

III. RESEARCH METHODS

This chapter deals with the design and procedures of the research. This refers to the research design, population and sample of the research, variables, data collecting technique, research instrument, research procedures, data analysis, data treatment and hypothesis testing.

3.1 Research Design

This research was intended to investigate whether there was effect of giving pre-questioning in students' reading comprehension achievement or not. The writer used a quantitative method because it was very useful for providing factors connected with second language development. Setiyadi (2006:5) cites that quantitative design aims to investigate a theory has been existed and the data should be looked for in attempt to support or reject it. In conducting the research, the writer used experimental research with one group pre test and post test design. In this research, the students were given pre test before treatment and in the end of the program the students were also given post test (Setiyadi, 2006). Pre test was given to the students in order to measure the students' competence before they were given the treatment and post test was given to measure how far the students' achievement after they were given the treatment.

The design of the research is illustrated as follow:

T1 X T2

Notes:

T1 : pre test

T2 : post test

X : treatment

(Hatch and Farhady, 1982:20)

The treatment conducted into three meetings of activities and each meeting took 2 x 40 minutes.

3.2 Population and Sample of the Research

A population could be defined as the whole subjects of the research. Setiyadi (2006:38) states research population is all individuals which are being target in research while research sample is individual who give the data. The population of this research was all the second grade students at SMPN 1 Seputih Banyak in the academic year of 2012/2013 which consist of 32 to 34 students each class. There were seven classes available at the second grade. From those members of students, the reseacher took one class as the try out class; it was VIII D and one class as the experimental class; it was VIII A. Both of classes were chosen randomly and lottery drawing was used to take the samples intended. The following were the steps:

1. Writing the seven classes' code in seven pieces of paper and to be rolled.
2. The rolled paper was entered into the box and shuffled.
3. The teacher is asked to take two rolled papers that became the sample and try out classes for the research.

3.3 Variables

Hatch and Farhady (1982:12) defined a variable as an attribute of a person or of an object which varies from person to person or from object to object. Besides, in order to assess the influence of the treatment in research, variables could be defined as dependent and independent variables. Hatch and Farhady (1982:15) states that the independent variable is the major variable that is expected to investigate and the dependent variable was the variable that the researcher observed and measured to determine the effect of the independent variable. The research consists of the following variables:

1. Students' reading comprehension achievement as dependent variable (Y).
2. Pre-questioning as independent variable (X).

3.4 Data Collecting Technique

In collecting the data, a pre test, treatments and pos test were administered. Then, she analyzed the result of those three activities which could be clarified as follows:

1. Pre Test

The pre test was administered in order to investigate the students' reading comprehension achievement before the treatments. The type of the test was multiple choice in which the students were asked to choose one correct answer from the options a, b, c, or d. In this pre test the students were given 30 items of reading comprehension and it was conducted within 60 minutes.

2. Treatment

The class was given treatments that was the using pre-questioning technique in teaching reading comprehension, specifically in narrative text. There were three times activities for the treatment.

3. Post Test

The aim of this test was to determine the effect of the treatments towards the students' reading comprehension achievement after being given the treatment. This test consists of 30 items of multiple choice for 60 minutes.

4. Questionnaire

The questionnaire was administered in order to investigate what problems were faced by the students in learning reading comprehension of narrative text and in applying pre-questioning. It was filter questions; that were questions which were given in order to determine if the respondents were qualified or experienced enough to answer a subsequent one. The questionnaire consists of 20 items including questions about reading comprehension and pre-questioning technique. It can be seen in this following table specification:

Table 1. Specification of Questionnaire

No	Aspects	Number of Items	Percentage
1	Reading Comprehension	1, 2, 3, 4, 5, 6, 7, 8, 9, 10	50%
2	Pre-questioning	11, 12, 13, 14, 15, 16, 17, 18, 19, 20	50%
Total		20 items	100%

3.5 Research Instrument

The students' reading comprehension achievement was checked by giving two reading tests to the students. The reading tests were pre test and post test. The aim of the pre test was to know the students' basic reading comprehension achievement before treatments. Then, the purpose of the post test was to know the result of the students' reading comprehension achievement after treatment. The instrument was objective test in multiple choice, while the total items of pre test and post test were 30 and each item had four options that were : a, b, c and d. In addition, the questionnaire was carried out in term of finding the problems faced by the students while they were learning reading comprehension of narrative text. The questionnaire belonged to filter questions consisting 20 items about reading comprehension and pre-questioning.

3.6 Research procedures

The procedures of the research were as follows:

1. Determining the population and sample

The population of this research was the second grade of SMPN 1 Seputih Banyak. The researcher chose two classes defined as try out class and as the sample class by lottery.

2. Arranging the materials to be taught

The materials were based on the students' handbook of junior high school. Besides, the materials were searched and added from network. The narrative text was chosen as the focus.

3. Administering the try out test

The aim of the test was to measure the level of difficulty (LD) and discrimination power (DP) as well as to find out the reliability and validity of the test. The instrument was tried out first to another class in the same grade before the pre test was administered. The total items of the test were 40 and it was allocated within 80 minutes.

4. Administering the pre test

The pre test was administered in order to find out the students' reading comprehension achievement before treatments. In this test, the students are asked to do multiple choice tests that consist of 30 items of narrative text in 60 minutes.

5. Conducting treatments

The treatments was conducted in three meetings which each meeting took 2 x 40 minutes. The materials was about narrative text. To be clearer, the treatments were conducted as follows:

- a. The first treatment deals with narrative text about The Legend of Nyi Roro Kidul by giving the students ten questions in multiple choice in order to check the their reading comprehension.
- b. The second treatments deals with narrative text entitle Why Cats and Dogs Always Fight, in order to find out the main ideas of the text, identify the specific details or information from the text, infer the information from the text, reveal the meaning of the words and determine the reference of words stated in the text.

c. The third treatment deals with narrative text of The Legend of Rawa Pening and the students are given some comprehension questions.

6. Administering the post test

The aim of this test was to measure the students' reading comprehension achievement after giving treatments. In this test, the students were asked to do multiple choice tests consist of 30 items of narrative text in 60 minutes.

7. Administering the questionnaire

The questionnaire was given for the students in order to investigate what problems were faced by the students in learning reading comprehension of narrative text and in applying pre-questioning technique. It was filter questions; that were questions which were given in order to determine if the respondents were qualified or experienced enough to answer a subsequent one. The questionnaire consists of 20 items including questions about the problems in reading comprehension and pre-questioning technique.

8. Analyzing the data and testing hypothesis

After scoring students' work, the result of pre test and post test were compared to see whether the score of post test was higher than the pre test.

3.7 Data Analysis

In order to know the students' progress in comprehending the text, the students' score were computed by doing three activities:

1. Scoring the pre test and post test

The formula was as follow:

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

Notes:

S = the score of the test

r = the total of the right answer

n = the total items

(Arikunto, 2005:236)

2. Tabulating the result of the test and finding the mean of the pre test and the post test.

The mean was calculated by applying the following formula:

$$M = \frac{\sum x}{N}$$

Notes:

M = (mean) average score

$\sum x$ = the total students' score

N = total number of students

(Hatch and Farhady, 1982:55)

3. Drawing conclusion from the tabulated results of the tests given, that was, by comparing the means of the pre test and the post test.

In order to know whether the students got any progress, the formula was as follow:

$$I = \overline{X}_2 - \overline{X}_1$$

Notes:

I = the increase of students' reading comprehension achievement

\overline{X}_2 = the average score of post test

\overline{X}_1 = the average score of pre test

After getting the means of pre test and post test, the data were analyzed by using Matched T-Test in order to know the significant of treatments effects. The formula is:

$$t = \frac{\bar{X}_1 - \bar{X}_2}{S_{\bar{D}}}$$

in which:

$$S_{\bar{D}} = \frac{SD}{\sqrt{n}}$$

$$SD = \frac{\sqrt{\sum D^2 - (1/n) - (\sum D)^2}}{n-1}$$

Notes:

t = hypothesis test

\bar{X}_1 = mean score of pre test

\bar{X}_2 = mean score of post test

$S_{\bar{D}}$ = standard error of differences between two means

SD = standard deviation

n = number of students

(Hatch and Farhady, 1982:116)

3.8 Data Treatment

After collecting the data, the data were treated by using following procedures:

3.8.1 Testing the try out

The aim of the test was to remove the bad items based on their level of difficulty (LD) and discrimination power (DP) and also to find the reliability and validity of the test.

3.8.1.1 Level of Difficulty

Level difficulty (LD) relates to how easy or difficult the item is from point of view of the students who took the test. According to Arikunto (1993:209), the test items are good if they are not too easy and not too difficult or in other words, the difficulty level is average. The students was divided into two group that were

upper and lower groups. The students' scores of try out test was listed from the highest score to the lowest score. Then, the researcher took 50% from the students who had the highest score to be the upper group and took 50% students who had the lowest score to be the lower group.

The formula of the difficulty level was as follow:

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

Where:

LD : level of difficulty

U : the number of upper group students who answer correctly

L : the number of lower group students who answer correctly

N : the total number of students who take the test

The criteria were as follows:

< 0.30 : difficult

0.30 – 0.70 : average

> 0.70 : easy

(Shohamy, 1985:79)

3.8.1.2 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 determine the discrimination power, the following formula was employed:

$$DP = \frac{Upper - Lower}{1/2N}$$

Notes:

DP : discrimination power

Upper : proportion of "high group" students getting the item correct

Lower : proportion of "low group" students getting the item correct

N : the total number of students

(Shohamy, 1985:82)

The criteria are:

0.00 – 0.20	= poor
0.21 – 0.40	= satisfactory
0.41 – 0.70	= good
0.71 – 1.00	= excellent
Negative	= bad items (should be omitted)

(Heaton, 1975:182)

3.8.1.3 Validity and Reliability

Validity and reliability of the test were investigated by giving the try out test in try out class. Test items which can be used to collect the data in this research should have good validity and reliability. The result of the validity and reliability of the try out test are presented as follows:

3.8.1.3.1 Validity

A test is considered valid if the test measures the object to be measured and suitable with the criteria (Hatch and Farhady, 1982:250). Heaton (1988:159) also states that validity of the test is the extent to which it measures what it is supposed to measure. A test must aim to provide true measure of the particular skill which it is intended to measure.

There are four types of validity that are: (1) face validity, concerns with the lay out of the test; (2) content validity, depends on a careful analysis of the language being stated; (3) construct validity; measures certain specific characteristic in accordance with a theory of language learning; (4) criterion-related validity, concerns with measuring the success in the future, as in replacement test.

Based on the types of validity above, content and construct validity were used because the other two were considered to be less needed. Both of them were explained as follows:

a. Content validity

This kind of validity depended on a careful analysis of the language being tested and of the particular course objectives. The test should be so constructed to contain a representative sample of the course, the relationship between the test items and the course objectives always being apparent (Heaton, 1988:160). To get the content validity of reading comprehension, the materials were arranged based on the standard competence in syllabus for second grade of junior high school students in second semester that is students are able to construct meaning of functional text and simple monolog of narrative and recount text to communicate with surroundings and the objectives of teaching those are the students are able to find out the main ideas, identify the specific details or information, infer the information, reveal the meaning of the words and determine the reference of words stated in the text. Moreover, the writer also made a table of specification in order to judge whether the content validity already good or not.

Table 2. Specification that was used to judge the content validity of the reading comprehension test concerning the narrative text.

No.	Reading Skills	Items Number	Percentage of Item
1.	Determining main idea	4, 5, 6, 14, 25, 29, 40	17,5 %
2.	Finding supporting details	1, 11, 12, 16, 20, 23, 33, 39	20%
3.	Finding inference meaning	7, 8, 9, 15, 18, 19, 22, 24, 30 34, 36, 37	27,5%
4.	Understanding vocabulary	2, 10, 13, 17, 28, 31, 32	17,5%
5.	Finding reference	3, 21, 26, 27, 35, 38	15%
Total		40 items	100%

In judging the content validity of the test, the items of the test were discussed with the researcher's partners and the English teacher of SMPN 1 Seputih Banyak as the raters. The number of the raters in this research was four consisting three researcher's partners and an English teacher of SMPN 1 Seputih Banyak. The raters checked the items whether the items had good content validity or not. The test items which included into good validity should be arranged based on the standard competence in syllabus for second grade of junior high school students in second semester that was students are able to construct meaning of functional text and simple monolog of narrative and recount text to communicate with surroundings and the objectives of teaching those are the students are able to find out the main ideas, identify the specific details or information, infer the information, reveal the meaning of the words and determine the reference of words stated in the text. All test items which had good validity were used to collect the data for this research and the bad one should be revised.

b. Construct validity

Construct validity concerns whether the tests are true reflection of the theory of the trait – in our case - language which is being measured. If a test has construct validity, it is capable of measuring certain specific characteristics in accordance with a theory of language behaviour and learning. This type of validity assumes the existence of certain learning theories or constructs underlying the acquisition of abilities and skills (Heaton, 1988:161). To find construct validity of the test, the tests were formulated by the concept of reading comprehension stated by Rasinski and Brassell (2008:17) that was there are three levels of comprehension: (1) Literal comprehension; the stated information, (2) Interpretative comprehension; the unstated information and (3) Critical comprehension; the personal reacting and analysing.

Table 3. Specification that was used to judge the content validity of the reading comprehension test, specifically in terms of literal, interpretative and critical comprehension concerning the narrative text.

No.	Level of Comprehension	Items Number	Percentage of Items
1.	Literal Comprehension	1, 2, 3, 5, 10, 11, 12, 13, 16, 17, 20, 21, 23, 26, 27, 28, 31, 32, 33, 35, 38, 39	55%
2.	Interpretative Comprehension	4, 6, 9, 14, 15, 18, 19, 22, 24, 25, 29, 34, 40	32,5%
3.	Critical Comprehension	7, 8, 30, 36, 37	12,5%
Total		40 items	100%

In order to judge the construct validity of the test, interraters were also used. The items of the test were discussed with the researcher's partners and the English teacher of SMPN 1 Seputih Banyak as the raters. The number of the raters in this research was four consisting three researcher's partners and an English teacher of SMPN 1 Seputih Banyak. The raters checked the items whether the items had

good construct validity or not. The test items which had good validity should be formulated based on the concept of reading comprehension stated by Rasinski and Brassell (2008:17) that there are three levels of comprehension: (1) Literal comprehension; the stated information, (2) Interpretative comprehension; the unstated information and (3) Critical comprehension; the personal reacting and analysing. All test items which had good validity were used to collect the data for this research and the bad one should be revised.

3.8.1.3.2 Reliability

Reliability refers to the extent 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). The test was determined by using Pearson Product Moment which measured the correlation coefficient of the reliability between odd and even number (reliability of half test) in the following formula:

$$r_{xy} = \frac{\sum xy}{\sqrt{(\sum x^2)(\sum y^2)}}$$

where:

r_{xy} : coefficient of reliability between odd and even numbers items

x : odd number

y : even number

$\sum x^2$: total score of odd number items

$\sum y^2$: total score of even number items

$\sum xy$: total score of odd and even number

After getting the reliability of half test, Spearman Brown was employed to determine the reliability of the whole tests, as follows:

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

where:

r_k : the reliability of the whole tests

r_{xy} : the reliability of half test

(Hatch and Farhady, 1982:247)

The criteria of reliability were as follows:

0.90 – 1.00 = high

0.50 – 0.89 = moderate

0.0 – 0.49 = low

3.8.2 Normality Testing

It was kind of test employed to know whether the data were normally distributed or not. The students' score of pre test and post test were analyzed to gain the normality test.

Hypothesis for the normality test were as follows:

H_0 = the data is distributed normally

H_1 = the data is not distributed normally

The criteria are as follows:

H_0 is accepted if significant value exceed level of significance at 0.05. Meanwhile,

H_0 is rejected if significant value does not exceeds level of significance at 0.05.

3.8.3 Random Test

Random test was used to make sure whether the data random or not. She used SPSS version 15.0. In this case, the mean was employed as the cut point run t-test.

The hypothesis for the random test was formulated as follows:

H_0 : The data are random

H_1 : The data are not random

In this research, the criterion for the hypothesis is:

H_0 is accepted if $\text{Sig.} > \alpha$. In this case, the level of significance 0.05 was used.

3.9 Hypothesis Testing

The pre test and post test were compared in order to know the gain. Repeated Measure T-Test was utilized towards the average score of pre test and post test since the aim of Repeated Measure T-Test was to compare two kinds of data or mean from the same sample. Moreover, the result of t-test was used to investigate the significance difference on students' reading comprehension achievement before and after giving pre-questioning and to prove whether the proposed hypothesis was accepted or rejected. In this case, significant level of 0.05 was used in which that the probability of error in the hypothesis was only about 5%.

The hypothesis are drawn as follows:

H_0 : There is no significant difference on students' reading comprehension achievement before and after giving pre-questioning.

H_1 : There is significant difference on students' reading comprehension achievement before and after giving pre-questioning.

The criteria for accepting the hypothesis are as follows:

1. H_0 is accepted if the t-table is higher than T-ratio.

It means that there is no significant difference on students' reading comprehension achievement before and after giving pre-questioning.

2. H_0 is rejected if the t-table is lower than T-ratio.

It means that there is significant difference on students' reading comprehension achievement before and after giving pre-questioning.

3.10 Research Schedule

This research was conducted based on sequenced schedule in order to make this research runs well. Before the research was carried out, pre observation was done on Monday, February 18th, 2013. This pre observation was conducted in order to investigate the students' problems in reading comprehension and whether the students' reading comprehension achievement had exceeded minimum completeness criteria of English subject in SMPN 1 Seputih Banyak or not. Then, try out test about reading comprehension of narrative text was administered on Thursday, March 5th, 2013 in VIII D as try out class to determine the content and construct validity of the text, also the level difficulty and the discrimination power of its. On Friday, March 8th, 2013 the pre test was carried out in VIII A in order to know the students' achievement of reading comprehension before giving treatments. For the first until the third treatment, VIII A class was taken as the experimental class. The first treatment was on Monday, March 11th, 2013; the second treatment was on Friday, March 15th, 2013; and the third treatment was on Monday, March 18th, 2013. After the treatments had been administered, the post test was given in that class on Friday, March 22th, 2013 in order to know the gain of the students' reading comprehension achievement of narrative text. The last, the questionnaire was delivered for the students in VIII A in order to find out the

students' problems in reading comprehension. the schedule of the research can be seen in the following table:

Table 4. Research Schedule in Conducting Research at SMPN 1 Seputih Banyak

No.	Day/Date	Activites	Place
1	Monday, February 18 th , 2013	Conducting pre observation	SMPN 1 Seputih Banyak
2	Thursday, March 5 th , 2013	Administering try out	VIII D
3	Friday, March 8 th , 2013	Administering pre test	VIII A
4	Monday, March 11 th , 2013	Conducting first treatment	VIII A
5	Friday, March 15 th , 2013	Conducting second treatment	VIII A
6	Monday, March 18 th , 2013	Conducting third treatment	VIII A
7	Friday, March 22 th , 2013	Administering post test	VIII A
8	Monday, March 25 th , 2013	Administering questionnaire	VIII A