CHAPTER III

RESEARCH METHODOLOGY

A.Research Design

Research is the investigation of a subject matter for the purpose of adding to knowledge. Experimental design refers to conceptual framework within which the experiment is conduct. An experimental design serves two functions:

1.It establishes the conditions for comparisons required by the hypothesis of the experiment

2.It enables the experimenter through statistical analysis of the data to make a meaningful interpretation of the results of the study.

In this research, the researcher applied a pre-experimental design to prove the effectiveness Cooperative in Narrative text. According Cohen et al., (2000) stated the pre-experimental design is a single experimental group that is conducted between pre-test and post-test design in one group. The researcher used pre-experimental design by using "one group pre-test and post-test design" to find out the result of certain technique. The one-group design usually involves three steps:

1.Administrating a pre-test measuring the dependent variable

2.Applying the experimental treatment X to the subject.

3.Administrating a post-test again measuring the dependent variable.

In this form of research, the sample group observed using particular set of tools of data collecting called pre-test. Then the treatment conducted

to the sample group using the particular technique or strategy. Finally, the post test (the same test used in pre-test) administered. The research design is present in the following table:

The pre-test applied to find out the students basic acquisition of the students on understanding narrative text before doing the treatment. Pre-test did in order to know students' pre-condition in reading narrative paragraph by using Cooperative Script.

Table 1.3 the form of one group pre-test and post-test

Class	*Pre-test*	*Treatment*	*Post-test*
Experiment	Y_1	X	Y_2

Note: Y_1= Students' score before given the treatment
X = Treatment (independent variable)
Y_2= students' score after given the treatment

The treatment gave two times to the students. The treatments gave after the pre-test held. The post-test also considered as final evaluation of students' reading of narrative text by using Cooperative Script whether the test is effective or not. In addition, pre-experimental design has no a control group. The influence of experimental treatment can be seen by seeing the mean score between pre-test and post-test.

B.Research Participant

1.Population

Population is the subject whose research finding applied in this research. According to Marczyk (2005:18), population is all individuals of interest to research. The population of this research is

the eleventh grade of students of SMA Negeri 1 Kubu in Academic year 2015/2016. Which were consisting of XI IPA 1, XI IPA 2, XI IPS 1 and XI IPS 2.

Table 2.3 The Sample and Population

No	*Class*	*Number of Students*
1	XI IPA 1	34
2	XI IPA 2	38
3	XI IPS 1	35
4	XI IPS 2	37
	Total S	144

Source : Administration of SMA Negeri 1 Kubu

2.Sample

To conduct this research, the sample took by using cluster random sampling. McMillan (1996:90) states that "Cluster sampling involves the random selection of naturally occurring groups or areas and then the selection of individual elements from the chosen groups or areas." It's mean that the researcher chose a classroom randomly and that classroom presented as the sample of this research. According to Kothari (2004:82) "If the total area of interest happens to be a big one, a convenient way in which a sample can be taken is to divide the area into a number of smaller non-overlapping areas and then to randomly select a number of these smaller areas (usually called clusters), with the ultimate sample consisting of all (or samples of) units in these small areas or clusters".

From the explanation above, the researcher chose the sample randomly and decides which eleventh grade class served as the

sample of the research by putting a piece of paper with each eleventh grade class written on it into a box and then randomly pick one of the papers. Then, the researcher took one of them. The card that had been taken to be a sample. In this research the selected sample was XI IPA 1 that consisted of 38 students.

C.Technique and Tool of Data Collecting

1.Technique of Data Collection

Regarding to a technique of data collection, researcher conducted test administration in term of obtaining data. According to Singh (2006:212), ‘’the data collection is the accumulation of specific evidence that will enable the researcher to properly analyse the results of all activities by their research design and procedures. The main purpose of data collection is to verify the research hypotheses’’.

a.Pre-test

A pre-test is an assessment tool that is administered at the beginning of a course. Cresswell (2012:297) states that to equate the characteristics of the sample, an experimental researcher will use a pre-test. Assume that researcher interested in whether Cooperative Script affects students’ reading comprehension. A pre-test provides a measurement on some reading indicators that researcher will assess the students before giving the students

treatment. Pre-test contains 25 questions that represent the aspects of reading comprehension which will be measured.

b.Post-test

A post-test is an assessment tool that is administered at the end of a course. Cresswell (2012:297) states that "Post-test is a measure on some attribute or characteristic that is assessed for participants in an experiment after a treatment". A post-test is a test given to measure the outcome after the experimental manipulation is implemented. A post-test is preceded by a pre-test which is provided the same test as the post-test. This pre-test and post-test design allows the researcher to test what effect the experimental manipulation have by assessing the differences in the pre-test and post-test. In conducting this research, the researcher uses the measurement test to collect the data. Measurement is a process that describes the student's performance using a quantitative scale such that the quantitative nature of the student's performance is expressed by numbers. The measurement technique is uses to investigate the achievement of students in reading comprehension of narrative text through Cooperative Script strategy. Measurement technique means the students are given a post-test after teaching learning process or treatment. The teaching learning process, in the reading comprehension by gives

Cooperative Script strategy to the students to comprehend the text.

2.Tool of Data Collection

The tool is in this study is an objective test; it is because to know the achievement of students in reading comprehension after they are taught by Cooperative Script method. The procedures to organize the test in this research are:

a.The Analyse of Try Out Test

In order to measure the research instrument, it was necessary to try out the test item, to determine whether the instrument valid and reliable or not. The type of objective test item was multiple choices which consist of 25 items. The researcher used multiple choices because it was simple tool for collecting and recording information about the data. Multiple choices always have a definite purpose that is related to objectives of the research.

1)Validity

Validity refers to the appropriateness of the interpretations of test results (Kothari (2004:73). Every test, whether it is a short, informal classroom test, or a public examination, it should be as valid as the constructor can make it.

To check the validity of instruments, researcher checked the content validity by asking the validator to check the instruments relate to the blueprint. Beside of that, the researcher also conducted try-out test to make sure that the instrument was valid. In term of knowing the validity of each item of instrument, researcher used the formula of product moment that computed on the Microsoft excel and to know the reliability of try out test, researcher used the formula below to calculate the data.

Formula of product moment:

$$r_{xy} = \frac{N\sum XY - (\sum Y)(\sum Y)}{\sqrt{(N\sum X^2 - (\sum X)^2).(N\sum XY^2 - (\sum Y)^2}}$$

where :

r_{xy}: Questions correlation coefficient
N: Number of students
$\sum x$: The sum of score of each item
$\sum x^2$:The sum square score of each item
$\sum y$: The sum of score of each item
$\sum y^2$: The sum square score of each item

Questions	16	17	18	19	20	21	22	23	24	25
R Hitung	0,43349	0,58939	0,38689	0,46931	-0,0635	0,37033	0,34694	0,34443	0,50846	0,38689

Question	R Tabel 2		4	5	6	7	8	9	10	11	12	13	14	15
R Hitung	-0,301	0,495	0,155	0,42	0,484	0,502	0,403	0,38	0,499	0,458	0,37	-0,168	0,419	0,414	0,0224
R Tabel	0,339	0,339	0,339	0,339	0,339	0,339	0,339	0,339	0,339	0,339	0,339	0,339	0,339	0,339	0,339
Validation	Invalid	Valid	Invalid	Valid	Valid	Valid	Valid	Valid	Valid	Valid	Valid	Invalid	Valid	Valid	Invalid

Table 3.3 analysis of validity of the instrument

Validation	Valid	Valid	Valid	Valid	Invalid	Valid	Valid	Valid	Valid	Valid

To estimate the validity of each item, researcher conducted try out test that had been administrated to another class besides the treatment class. It conducted in class XI IPA 1 which consisted of 34 students. The performance of try out test computed into Microsoft Excel and used the formula product moment cofficient. Table 3.3 showed us that 20 questions were valid and 5 questions were invalid.

2)Reliability

Reliability refers to the consistency of test scores-that is, to how consistent they are from one measurement to another (Grunlond, 1977:138). Cohen, Manion and Morrison, (2007:146) define that reliable instrument for a piece of research will yield similar data from similar respondents over time. The formula to calculate the reliability of test according to Fraenkel and Wallen (1993:149):

$$KR21 = \left[\frac{K}{K-1}\right] 1 - \frac{M(K-M)}{K(SD^2)}$$

Notes:

KR21: Kuder Richarson 21
K: number of item in the test
M: mean score
SD: the students deviation of the test score

According to Golafshani (2003) reliability is an index that indicates the extent which a measuring instrument trustworthy or reliable. If a measuring device is used twice to measure the

same symptoms and the results of measurements obtained relatively consistent, then the measuring device is reliable. In other words, reliability shows the consistency of a gauge in measuring the same symptom.

Table 4.3 The Reliability Coefficient

Value	*Meaning*
>0.90	Very High Reliable
0.80 – 0.90	Highly Reliable
0,70 – 0.79	Reliable
0,60 – 0.69	Minimally Reliable
<0,60	Unacceptably low reliability

Adapted from Cohen, et al (2007:506)

3)Item Difficulty

According to Boopathiraj and Chellamani (2013), Item difficulty may be defined as the proportion of the examinees that marked the item correctly. Item difficulty is the percentage of students that correctly answered the item, also referred to as the p-value. The range is from 0% to 100%, the higher the value, the easier the item. P values above 0.90 are very easy items and might be a concept not worth testing. P-values below 0.20 indicate difficult items and should be reviewed for possible confusing language or the contents needs re-instruction. Optimum difficulty level is 0.50 for maximum discrimination between high and low achievers. For example an item answered correctly by 70%

examinees has a difficulty index of 0.70. If 90% of a standard group pass an item, it is easy; if only 10% pass, the item is hard or too difficult. Generally, items of moderate difficulty are to be preferred to those which are much easier or much harder. The following formula is used to find difficulty level.

$$DL = \frac{Ru+Ri}{Nu+Ni}$$

Where

Ru = the number students in the upper group who responded correctly
Rl = the number students in the lower group who responded correctly
Nu = Number of students in the upper group
Nl = Number of students in the lower group

Table 4.3 The Scale of Difficulty Item

P *value*	***Quality***
0,90 – 1,00	Easy
0,50 – 0,90	Moderate
0,20 – 0,50	Difficult
0,00 – 0,20	Very Difficult

D.Technique of Data Analysis

In this research, the researcher used a quantitative design. According to Creswell (2002), ‘‘Quantitative design is describing a research problem through a description of trends and in quantitative data analysis; you analyze the data using mathematical procedures, called *statistics.* To measure the data is valid the researcher used statistical design of experiment. According to Montgomery (2001:11) state that: ‘’the statistical approach to experimental design is necessary if we wish to draw meaningful conclusion from the data’’. The researcher analyzed

the effectiveness of Teaching Reading Comprehension by Using Cooperative Script at the Eleventh grade Students of SMA Negeri 1 Kubu. The technique of data analysis, used here is statistical analysis. The data has analyzed as follows:

1.Individual Score

After getting the students' individual score, the researcher calculated the average scores of students. The formula to got students' individual score using:

$$S=\frac{R}{K}X100$$

Where:

S: the students' individual score
R: the number of right answer on pre-test and post-test
K: the total number of test item

2.The Formula to Determine Mean Score:

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

Adopted from Singh, (2006:286)

Where:

∑X : stands of the sum of the score or value of items
N : the total numbers of item

Table 5.3 Mean Score Classifications

Test Score	*Classifications*
80.0 – 100.0	Excellent
70.0 – 79.0	Good
60.0 – 69.0	Average
50.0 – 59.0	Poor

0.0 – 49.0	Very Poor

(Adapted from Cohen et al, 2005:338)

3.The Students' Mean Score of Pre-Test and Post-Test.

The students' mean score of pre-test and post-test was calculated using the following formula:

$$M_1 = \frac{\sum X_1}{N} \qquad M_2 = \frac{\sum X_2}{N}$$

Where:

M_1= the students' mean score of pre test.
M_2 = the students mean score of post test.
$\sum X_1$ = the sum of individual score of pre test
$\sum X_2$ = the sum of individual score of post test
N= the total number of students

4.The Analysis on The Students Different Score of Pre-Test and Post-Test

MD = $M_2 - M_1$

Where:

MD = the different students mean score of pre-test and post test
M_2 = the students mean score of post test

M_1 = the students mean score of pre test

MD = $M_2 - M_1$

= 70, 13 – 55, 13

= 15

5.Standard Deviation

According to Kothari (2004:135), "Standard deviation is defined as the square-root of the average of squares of deviations, when such deviations for the values of individual items in a series are obtained from

the arithmetic average". The formula to calculate standard deviation of test:

$$SD = \sqrt{\frac{\sum_d 2}{N-1}}$$

Cohen, Manion and Morrison, (2007:512)

Where:

d^2: the deviation of the score from the mean (average), squared
∑: the sum of
N: the number cases

6.The Normality Test

Normality test is aim to know the distribution of data on the variables that has been acquired in the research. This data has been tested to know its either normal or not. This research, Kolmogorov-Smirnov was used to test it. It has been computed into SPSS 16. The data considered normal if the score of probability of normality test was p > 0,005.

7.The Significance Of The Interval Score of Pre-Test And Post-Test

T-Test is one of the statistical tests which is used to test the truth or falsity of hypotheses. In this reasearch, researcher used paired t-test. According to Siregar (2014:188) the paired t-test is appropriate for data which have two paired samples. Paired samples means a sample in the same subject but have in the differrent measurement. Means that, the of data of measurement to be analyzed in a paired; after and before the treatment or data of pretests and pos test. Researcher used SPSS to analize the data.

8.Effect Size

Effect Size was measured in order to know the effect of treatment toward the students. According to Muijs (2004:136) the formula of effect size is:

$$ES = \frac{M_2 - M_1}{pooled\ SD}$$

Note:

ES = Effect Size
M_2 = Mean score of Post-test
M_1 = Mean score of Pre-test

Pooled SD = (Standard deviation of pre-test + standard deviation of post-test) / 2.

The qualification to determining of effect size of treatment based on Muijs (2004:139) can be seen in the following table:

Table 6.3 Qualification of the Effect Size

Effect size	*Qualification*
0 – 0.20	weak effect
0.21 – 0.50	modest effect
0.51 – 1.00	moderate effect
>1.00	strong effect

$$ES = \frac{M_2 - M_1}{Pooled\ SD}$$

$$ES = \frac{70,13 - 55,13}{\frac{(16,664+11,180)}{2}}$$

$$ES = \frac{15}{\frac{27,84}{2}}$$

$$ES = \frac{11,71}{13,9}$$

ES = 0,84

Based on the result of the calculated above, the score of effect size was 0,84. With ES 0,51-1.00 is categorized as moderate strong effect. It means that teaching reading comprehension by using cooperative script gave significant effect in the student's reading comprehension.

E.Preparation and Implementation of Research

1.The Preparation of Research

The preparation of the research was started by the proposing of the research design which the approval to be conducted and discussed in a seminar. The seminar was held on March 21^{th} 2016. The research design contained what the entire researcher wanted to which then to be discussed more in the thesis. In conducting the research, the researcher used test to collect the data from the students that will be analysed.

2.The Implementation of Research

Based on pre-experiment method, the steps of this research included of:

a.The Implementation of Research

1)Try out test

In term of knowing the validity of instrument, the researcher administrated the try out test to the another class which is XI IPA 1 class. It instrument consist of 25 questions. Try out test was held on March 27th 2016.

2)Pre – Test

Pre-test (X1) was applied to know the students first reading comprehension. Pre-test was given at the beginning before treatment. The test is about reading test. The researcher asked the students to answer the test related to main idea, reference, vocabulary, inference and detail information. Pre-test take from 38 students of SMA Negeri 1 Kubu class XI IPA 2. The pre-test was held on March 28^{th} 2016.

3)Treatment

The treatment was given two times in two meetings. The treatment was teaching some materials by using Cooperative Script. The first treatment was held on May 3^{rd} 201 and the second treatment was held on May 4^{th} 2016.

4)Post – Test

The last step in pre-experiment research is post-test. Post test to measure the student's achievement after given the

treatment had been done by using cooperative script and to know the effectiveness of teaching reading comprehension by using cooperative script. The test is same in specification of pre-test. The post-test was held on April 9^{th} 2016.