

### CHAPTER III

## RESEARCH METHODOLOGY

#### A. Research Design

Research is a way of observation and has the objective of finding the answer to problems or discovery process (Sukardi, 2003:3). This research used a quantitative approach. A quantitative research approach is an approach that primarily uses the postpositivist paradigm in developing knowledge (such as thinking about causation, reducing to variables, hypotheses, and specific questions using measurement and observation, as well as theory testing), using research strategies such as experiments and surveys that need statistical data. (Emzir, 2009:28).

In this research, the research design was experimental research. There are several types of experimental research design. Sugiyono(2006: 81) states that some types of experimental research design are pre experimental design, true experimental design, factorial design and quasiexperimental design. The type of the experimental research design used in this research is pre-experimental design (one group pre-test dan post-test), this design involved one group that is pre-test (O1), treatment (X) and post-test (O2). It aims to know whether there is significant development before and after using comic strips in teaching reading comprehension.

**Table 3.1. Pre-Experimental (One Group Pre-Test Post Test) Design**

Pre-Test	Treatment	Post-Test
O1	X	O2

Note:

O1 : Students' scores before given the treatment

X : Treatment (independent variable)

O2 : Students' scores after given the treatment

*Adapted From Cohen et al ( 2014: 57)*

In this research, the researcher will pre-test the sample group to measure the sample's reading ability before treatment, after that the researcher gives treatment to the sample group based on strategies and media. The treatment will be given twice to students. In this study, the treatment in question is the process of providing material to students using comic strips. Finally, the researcher will conduct a post-test on the sample group as a final test to measure the ability of the sample group after being given treatment. This influence can be seen from the comparison of individual student scores on the pre-test and post-test, whether there is an effect or not, besides that in this study only the experimental class and no control class were used.

## **B. Population, Sample and Sampling**

### **1. Population**

The population is the entire research subject (Arikunto, 2010: 173). It can be concluded that the population is defined as the whole object to be studied in the form of objects, people, events, or symptoms that will occur. The population that will be studied in this study are students of class X IPS I, X IPS II and class X IPA, totaling 57 people.

**Table 3.2. The Number of Population**

<b>No</b>	<b>Class</b>	<b>Total Number of Students'</b>
1.	X IPS 1	15
2.	X IPS II	20
3.	X IPA	22
<b>Total</b>		<b>57 People</b>

*Source: School Office of SMAN 01 Bunut Hulu*

### **2. Sample**

The sample is the part that represents the population to be studied (Arikunto, 2010: 174), in this study the selected sample was 22 students of class X IPA using the cluster sampling technique.

### **3. Sampling**

The sampling technique is a way to determine the number of samples in accordance with the sample size that will be the actual data source, taking into account the characteristics and distribution of the population to obtain a representative sample (Margono: 2004). while according to Sugiyono (2001), the sampling technique is a series of techniques that are usually used for sampling in a research sense. From the definition above, the researcher can conclude that the sampling technique is the process of determining the sample from the research population.

In this research, researchers used a probability sampling technique, namely cluster sampling, which means cluster sampling is a sampling technique to select samples from the population that are not based on individuals but based on groups. The cluster sampling technique is used to determine the sample whether the object to be studied or the data source is very broad. For example, the population of a country, province, and district. In this technique, the researcher chooses one representation from the entire population at random and assigns letters to each representation of the class. The class that gets the words "congratulations you have been chosen" is the class that will be used as a sample, while the representation of the class that received the sentence "try again" was the class that was not sampled in this study. The condition for using this technique is that all populations must be homogeneous.

## **C. Technique and Tool of Data Collection**

### **1. The Technique of Data Collection**

Techniques Data collection is done by using the test method. The test is a technique used to carry out measurement activities, in which there are various questions, or a series of tasks that must be done or answered by students to measure aspects of student behavior (Zainal Arifin, 2016: 118). Data collection techniques in this research used quantitative data. This

quantitative data was obtained from students' scores on the pre-test and post-test.

Data collection was carried out using an English reading skill test. The test used is an objective test with a total of 20 multiple-choice questions. The procedure used in this experimental research is as follows:

a. Pre-test

The Pre-test was carried out at the beginning before being given treatment. The test is given to students with a total of 20 multiple-choice questions. This is done to determine the score of the ability students' initial reading before being taught to use comic strips.

b. Treatment

The teacher conducts teaching and learning activities for students by using comic strips in improving students reading comprehension.

c. Post-test

The Post-test is a final test given to students after being given treatment using comic strips in improving students reading comprehension. In this post-test the researcher asked students to answer 20 multiple-choice questions which were the same as the questions at the beginning of the pre-test. The purpose of this test is to see the difference in student results after being given treatment.

## **2. Tools of Collecting the Data**

To conduct research, the measuring instrument used in this study is a multiple-choice test. according to Kunandar (2014: 183), which states that a multiple-choice test is a question whose answer must be chosen from several possible answers that have been provided. The researcher applies a multiple-choice test consisting of 30 items which will be validated by the researcher by conducting a tryout. The multiple choice score is 1 for each correct item and 0 for incorrect items. Students must answer the questions by choosing the letters a, b, c, d, or e. tests were conducted for pre-test and post-test.

The researcher conducted a multiple choice trial in class X IPS I which was not sampled in this study before the pre-test and post-test were applied, the researcher gave the same questions randomly for the pre-test and post-test.

A good test must have characteristics, in this study the researcher used validity and reliability tests to get a test that met the requirements.

#### **a. Validity Test**

A validity test is a measure that shows the level of validity or validity of an instrument to be measured. An instrument is said to be valid if it can reveal data from the variables studied appropriately. according to (Sugiyono, 2010), Validity test is a test tool used to test whether or not an instrument is valid. If valid, the instrument can be used to measure the sample that should be measured. The validity of the test in this study was used by researchers with the aim of measuring the accuracy of the multiple-choice used as a tool in this study. In this study the validity used is:

##### 1) Construct Validity

According to Sudjana (1991: 14) who says that construct validity is the ability of an assessment tool to measure the meanings contained in the material being measured. Meanwhile, according to Widoyoko (2009: 131) a test is said to have construct validity if the items that make up the test measure every aspect of thinking as stated in the learning objectives or measure something according to the definition used.

Based on the theory above, in the test, first, the researcher conducted a trial with 30 multiple-choice questions to the class that was not sampled in this study, namely class X IPS I which amounted to 15 students, then the last one after getting the results of the tryout the researcher calculated Tryout students using Statistical Package of Social Science (SPSS version 25) then the results of multiple-choice tests that are valid and reliable are given for pre-test and post-test to

class X IPA totaling 22 students who were selected by researcher as experimental samples. To determine the validity of an instrument that meets the requirements or not that is used as a data collection tool so that the data collected can be trusted. The researcher conducted a validity test using Pearson's product-moment from Ary et al (2010:130) below:

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

Information:

r : Pearson correlation coefficient

N : the number of paired X and Y scores (subjects)

$\sum XY$  : the sum of the products paired X and Y scores

$\sum X$  : sum of scores in the X distribution

$\sum Y$  : sum of scores in the Y distribution

$\sum X^2$  : the sum of the squares of the scores in the X distribution

$\sum Y^2$  : the sum of the squares of the scores in the Y distribution

The researcher used a score of  $r_{table}$  at 5% significant. The criteria to accept and reject the validity of the instrument are below:

**If r calculated > r table, the test item is valid.**

**If r calculated < r table, the item is not valid.**

*Adapted from Ary et al (2010:131)*

**Table 3.3 Blueprint item of the tryout**

Reading Comprehension indicator	The Item Number	Total	percentage
Identifying main idea	1,6,9,13,21,28	6	20%
Identifying Details	3,4,10,12,22,26	6	20%
Understanding Vocabulary	7,14,17,19,24,27	6	20%
Identifying Reference	5,8,18,20,23,30	6	20%
Making conclusion	2,11,15,16,25,29	6	20%

<b>Total</b>	<b>30</b>	<b>100%</b>
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**Table 3.4 Result of Validity Test Used SPSS Version 25**

<b>Reading Comprehension indicator</b>	<b>The Item Number</b>	<b>Total</b>
Identifying main idea	1,6,21,28	4
Identifying Details	2,4,26	3
Understanding Vocabulary	17,19,27	3
Identifying Reference	5,8,18,20,23,30	6
Making conclusion/inference	2,16,25,29	4
<b>Total</b>		<b>20</b>

#### **b. Reliability Test**

The reliability test is how much the degree of the test consistently measures the measured target (Sukadji, 2000). The goal of the researcher uses the reliability test to check the consistency if the test is tested many times. To determine the reliability of the test in this study, the researcher used the KR 21 formula (Kuder Ricardson 21), as follows:

$$KR_{21} = \frac{k}{k-1} \left[ \frac{M(K-M)}{K(SD^2)} \right]$$

Where:

K: number of the item on the test

M: mean of the set of test scores

SD: Standard deviation of the set of test scores

*Adapted from Fraenkel (2012:156)*

if a measuring device is used twice to measure the result of measurement obtained relatively consistent, then the measuring device is reliable. the criteria that were used to reject and accept the reliability of the instrument were:

**If a calculated  $> r$  table, the instrument is reliable.**

**If a calculated  $< r$  table, the instrument is not reliable.**

*Adapted from Fraenkel (2011:158)*

**Tabel 3.5. Tabel Reliability of Test**

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)*

**Table 3.6 Result of Reliability Test**

**Reliability Statistics**

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.895	.911	30

From the results of the reliability test using SPSS Version 25, it can be seen that the data reliability is 0.895 is included in the category Highly reliable in table 3.5.

**D. Technique of Data Analysis**

After all the data from the pre-test and post-test needed by the researcher were collected, the next stage was the researcher analyzing the data. The data analysis technique is a method or way to process data that has been collected into information so that the characteristics of the data become easy to understand and also useful for finding solutions to problems. The data analysis technique used in this study is a descriptive analysis technique that



serves to describe or provide an overview of the object under study through sample or population data (Sugiyono, 2007), It means that in this study descriptive statistics are used to conclude the data collected to determine whether the hypothesis is accepted or rejected, to analyze the research data using the SPSS version 25 while, the following is going to be used in a manual approach.

### 1. Analysis of the Students' individual Scores for Pre-Test and Post-Test

To analyze student scores, individual test, the researcher will used the formula as follows:

$$X = \frac{A}{N} \times 100$$

Where:

X = An individual scores

A = The student's correct answer

N = The number of test items

*Adapted from Cohen et al. (2007:423)*

### 2. Analysis of the Students' Mean Scores of Pre-Test and Post-Test

To analyze the students' mean scores of Pre-Test and Post-Test, the researcher used the formula as follows:

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

Where:

$\bar{X}$  = The students' mean scores of Pre-Test and Post-Test

N = The total number of students Pre-Test and Post-Test

$\sum X$  = The total scores of students Pre-Test and Post-Test

*Adapted from Ary et al (2010:108)*

**Tabel 3.7 Mean Score Classifications**

Test Score	Classification
80.0-100.0	Excellent
70.0-79.0	Good
60.0-69.0	Average

50.0-59.0	Poor
0.0-40.0	Very Poor

*Adapted from Cohen et al (2005: 338)*

### 3. Standard Deviation

To measure the degree to which the score group deviated from the mean, the researcher used the standard deviation formula as follows:

$$S_D \sqrt{\frac{\sum D^2 - \frac{(\sum D)^2}{N}}{N - 1}}$$

Where:

SD = Standard deviation

$\sum D^2$  = Sum of the squares of each scores

$(\sum D)^2$  = Sum of the scores squared

$N$  = The number of elements in a sample

*Adapted from Ary, et al. 2010:177)*

### 4. Normality Test

Normality test is used to test whether a variable is normally distributed or not. According to Cohen (2011:600), the data is said to be normal if the probability score of the normality test at a significance level of 5% (0,05) is greater than 0.05 ( $p > 0,05$ ) but if the probability score is less than 0,05 ( $p < 0,05$ ) means that the data in this study is not normal. The main reason for the normality test is that researchers need to know whether the population or data involved in the study are normally distributed. To test for normality, the researcher used the Shapiro-Wilk method because the sample of this study was less than 100 samples. data was calculated using SPSS Version 25.

### 5. T-Test

The t-test is a statistical test to test the truth of the hypothesis proposed by the researcher in distinguishing the mean in the two populations. according to Sugiyono (2018; 223) The t-test is a temporary

answer to the problem formulation, which asks the relationship between two or more variables. The t-test was used to determine whether the results of the treatment were effective or not. The researcher used SPSS version 25. The t-test formula in this study is as follows:

$$t = \frac{\bar{D}}{\sqrt{\frac{\Sigma D^2 - \frac{(\Sigma D)^2}{N}}{N(N-1)}}$$

- $t$  = t ratio  
 $\bar{D}$  = The average difference of *pre-test* and *post-test*  
 $\Sigma D^2$  = Difference scores squared, then summed  
 $(\Sigma D)^2$  = Difference scores summed, then squared  
 $N$  = The number of elements in a sample

*Adapted from Ary et al (2010: 177)*

## 6. Testing Hypotheses

The research hypothesis is a provisional statement that is still a presumption, this assumption is made by the author or researcher on the research problem. according to Sugiyono (2014:64), the hypothesis is a temporary answer to the formulation of the problem in the form of a question sentence. It is said to be temporary because the answers given are only based on relevant theories, not yet based on empirical facts obtained through data collection.

The results of the calculation of the data will be the conclusion to decide the hypothesis. To answer the first question, whether the use of comic strips is effective or not, the researcher will use the p-value of the t-test Ghozali, (2018:78). If the value of  $(p) < \alpha (0,05)$  means that the use of comic strips is effective, then  $H_0$  is rejected and  $H_a$  is accepted, meaning that there is a significant effect between one independent variable on the dependent variable. If the value of  $(p) > \alpha (0,05)$  means that the use of comic strips is not effective, then  $H_0$  is accepted and  $H_a$  is rejected, meaning that there is no significant effect between one independent variable on the dependent variable.

To find a hypothesis in this study was used the formula is as follows:

$$t = \frac{\bar{D}}{\sqrt{\frac{\sum D^2 - \frac{(\sum D)^2}{N}}{N(N-1)}}$$

Where:

- $t$  = The Students' significant score  
 $\bar{D}$  = The deviation score of *pre-test* and *post-test*  
 $\sum D^2$  = Difference scores squared, then summed  
 $(\sum D)^2$  = Difference scores summed, then squared  
 $N$  = Sample number (students')

*Adapted from Ary et al. (2010:177)*

## 7. The Effect Size

The second research question related to the effect of using comic strips was answered by using effect size on students reading comprehension. The formula to find effect size is as follows:

$$ES = \frac{\bar{X}_2 - \bar{X}_1}{SD}$$

Where:

- ES = Effect size  
 $\bar{X}_2$  = The students' mean score of Post-Test  
 $\bar{X}_1$  = The students' mean score on the Pre-Test  
SD = The average standard deviation of both test

*Adapted from Creswell (2012:195)*

**Table 3.8 Effect Size Category**

No.	Effect size	Category
1.	0 - 0.20	Weak effect
2.	0.21 - 0.50	Modest effect
3.	0.51 - 1.00	Moderate effect
4.	> 1.00	Strong effect

*Adapted from Cohen et al. (2011:617)*

## **E. Procedures of Research**

### **1. Pre-Field Stage**

At this stage the researcher first asked permission from the principal of SMA Negeri 01 Bunut Hulu to conduct research. after getting permission the researcher chose a sample from class X IPA and then contacted the teacher in charge of the class on July 11th 2022.

### **2. Stage of Fieldwork**

- In the first step, the researcher conducted a tryout to examine the test validity and reliability of other classes which is not a sample on July 12<sup>th</sup> 2022.
- In the second step, the researcher gave the sample pre-test in the first meeting to get the data on July 13<sup>th</sup> 2022.
- In the third step, the researcher gave treatment to students in teaching reading comprehension of narrative texts using comic strips. The first meeting was implemented on July 14<sup>th</sup> 2022, and the second meeting was implemented on July 15<sup>th</sup> 2022.
- In the last meeting, the researcher gave a post-test to the sample to get the data on July 16<sup>th</sup> 2022.

### **3. Data Analysis Stage**

- The last step was for the researcher to collect all data, analyze data and make a conclusion about the result of the study.
- The researcher completes the research report.