

### **III. RESEARCH METHOD**

This chapter discusses some topics related to the research method which the researcher employed in his research. It covers research design, population and sample, data collecting technique, variables, research instruments; try out test, research procedure, data analysis and hypothesis testing.

#### **3.1 Research Design**

In this research, the researcher applied quantitative research, yet he applied qualitative method to find out the problems that may occurred during the process of teaching and learning process. According to Setiyadi (2006:5), quantitative design aims to investigate a theory that has been existed and the researcher should look for the data in order to support or reject it. In the process of research, the researcher utilized experimental research design with one group the pre test and the post test design. The sample of this research was only one class. The pre test was given to students in order to find out what students have been known about the research topic. This pre test was delivered before the students were taught by using PPP technique. The post test was assigned to the students after they are taught by using the PPP technique in the class. The post test showed whether there was a significant difference in the students' mastery of compound sentences after they were taught by using PPP technique.

The design of this research was as follows:

**T1    X    T2**

Where:

T1 : the pre test

T2 : the post test

X : treatments (PPP technique)

(Setiyadi, 2006: 131)

### **3.2 Population and Sample of the Research**

Population is all about people who become the object of the research while the sample is people who give the data (Setiyadi, 2006: 38). Based on the Setiyadi's theory, the subject of the research was the second grade of SMA Xaverius 1 Belitang in 2012/2013 academic year. The second grade of SMA Xaverius 1 Belitang consisted of 5 classes, 2 classes of Science class and 3 classes of Social and each class consists of 30 to 31 students. From 5 classes available, the researcher chooses one class which was the try out class and the other one class was the experimental class. The choosing process had done randomly. After two classes had been chosen, the lottery applied to decide which class was the tryout class and experimental class.

### **3.3 Data Collecting Technique**

In collecting the data needed to complete the research, the researcher used some techniques as mentioned in the following discussion:

### **3.3.1 Pre test**

This test was delivered to the students before the treatment by using PPP technique is conducted. The purpose of the pre test was to collect the data about students' ability in compound sentences. The pre test consisted of 20 items of multiple choices, 10 items of true or false, and 10 items of matching sentences; the researcher gave 60 minutes for the students to complete the pre test.

### **3.3.2 Conducting the Treatments**

The researcher gave three times treatments to the students in the English subject class; the treatments were about teaching compound sentences through PPP technique. The treatment was given about three meetings with three lessons plans consisting three different discussions.

### **3.3.3 The post test**

After having treatment in three meetings, students were given a post - test in order to get the final data. The result of the post test showed the researcher about all the result of his research. This post test contained three aspects of compound sentences and there 10 items for each aspect of a compound sentence.

### **3.3.4 Observation**

In order to collect the data during the process of teaching and learning, the researcher asked some help from the subject teacher to make an observation

by taking some notes about the students' problem during the teaching and learning process by using PPP technique. This observation provided the researcher the data about what problems emerged in teaching and learning by using PPP technique.

### **3.3.5 Questionnaire**

In order to collect more data about problems may emerge during the teaching and learning by using PPP technique, the researcher used a questionnaire. After the researcher finishes the treatments in the experimental class, the researcher distributed questionnaire sheet to the students.

## **3.4 Research Instrument**

To collect all the data needed to complete this research, the researcher conducted the pre test, the post test, observation sheet and questionnaire. The researcher managed pre test to collect the data about students' understanding about sentences, especially compound sentences. Students in experimental class had pre test before the researcher conducts the treatments. After the treatments had been given to the experimental class, the researcher delivered the post test. The purpose of the post test was to collect the data about whether there was a significant difference from the result of the pre test after students were taught through PPP technique.

Besides two tests above, with the intention of collecting data about the students' problem during the teaching and learning process through PPP technique, the researcher asked some help from the subject teacher to observe the students'

problem and also the researcher delivered a questionnaire to the students in experimental class.

### **3.5 Try out Test**

Before the test was given to experimental class, it was given first to the try out class in order to measure the quality of the test. A good test was a test which has a good validity, reliability, level of difficulty and discrimination power. This test composed in the form of 20 multiple choice items with four options (A, B, C, D, and E) and 10 items of true or false test, and 10 items of matching test; the total of the test was about 40 items. There were some elements were tested as follows:

#### **3.5.1 Validity**

Generally, validity shows us that the test really gives test to what should be tested. Validity determined whether the research truly measures that which it was intended to measure or how truthful the research results are. In other words, does the research instrument allow you to hit "the bull's eye" of your research object? The researchers generally determine the validity by asking a series of questions, and will often look for the answers in the research of others (Joppe, 2000:1). Validity can be defined as the degree to which a test measures what it is supposed to measure. There are three basic approaches to the validity of tests and measures as shown by Mason and Bramble (1989). These are content validity, construct validity, and criterion-related validity. In this research, the researcher an applied content validity and construct validity in order to get the valid data.

a. Content validity

Content validity is extended to which a test measures a representative sample of the subject matter contents, the focus of the content validity is the adequacy of the sample and simply on the appearance of the test (Hatch and Farhady, 1982: 251). From the statement above, the researcher assumed that content validity explains about the test that should correct and represent the materials that are taught such as compound sentences. In order to fulfill the content validity of the test, the researcher built the test by following the syllabus for second grade of senior high school.

In order to determine the content validity of test items, the researcher applied interater in this research. The researcher used three interater in this research. The raters were the English teacher in SMA Xaverius 1 Belitang and two researcher partners. The three raters checked the test based on the syllabus of SMA Xaverius Belitang. The good items which were appropriate with the syllabus were used, but the test items which were not in line with the syllabus should be revised in order to reach the good content validity.

The researcher also made the specification table below to judge whether the content validity of the test is good or not. It was shown in the following table:

**Table 3. The Specification that was used to Judge the Content Validity of the Compound Sentences Test.**

No.	Compound sentences mastery	Items Number	Percentage of Item
1.	Join two independent clauses to create compound sentences by using comma and coordinating conjunction	1, 3, 4, 6, 7, 9, 12, 15, 18, 20, 32, 34, 36, 37	35%
2.	Join two independent clauses to create compound sentences by using semicolon and conjunctive adverb	2, 5, 8, 10, 11, 13, 14, 16, 17, 19, 31, 33, 35, 38, 39	37,5%
3.	Join two independent clauses to create compound sentences by using semicolon or colon	21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 40.	27,5%
Total		40 items	100%

b. Construct validity

Construct validity means that the test is really do measure what the theory says to measure. In this case, the theory refers to Oshima and Hogue's thought (1998:155) who states that compound sentences contains two or more sentences joined into one. There are three ways to join the clauses, by the punctuation of semicolon, coordinate conjunction, and conjunction adverb. When such sentences are joined coordinately, they are called each independent clause. Based on the theory above, the researcher constructed the test based on the three ways of creating compound sentences according the Oshima's theory.

With the aim of judging the construct validity of the test, the researcher also used inter-raters. There were three raters used in this research; one English teacher of SMA Xaverius 1 Belitang and two researcher's partners. The raters checked the tryout test and decide which items were the good items and which were included in the bad items. The raters judging of good and bad items based on the Oshima and Hogue's theory, which was used in this research. A good item was the items which in line with the theory.

### 3.5.2 Reliability

In simple ways, reliability is defined as the consistency of the result of a test. A test has its reliability if the result of the test which is done by some students do not have big differences with the result of the test when it is tested to the same students with some periods after the first test has done. In other words, reliability is how far it can measure the same subject at separated time, but it shows the same result relatively (Setiyadi, 2006: 113). In this research, to estimate the reliability of the test, the researcher used split-half technique. In order to measure the coefficient of the reliability between odd and even group, the researcher applied "The Pearson Product Moment Formula" as follows:

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

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, the researcher used Spearman Brown 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)

Criteria of reliability are as follows:

0.90 – 1.00 = high  
 0.50 – 0.89 = moderate  
 0.0– 0.49 = low

### 3.5.3 Level of Difficulty

When a test maker wants to create a good test, he/she should consider about the level of difficulty. Level difficulty is simply defined as the items' difficulty. A good test is the one, which is not too easy or too difficult. The test items are good if they are not too easy and not too difficult or in other word, the difficulty level is average (Arikunto, 1993:209). The measurement of difficulty level, the researcher used the following formula:

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

Where:

LD : Level of difficulty.  
 U : The number of upper group who answer correctly.  
 L : the number of lower group who answer correctly.  
 N : The total number of the students.

The upper group was taken from 50% of the students who had the highest score and the lower group was taken from 50% of the students who had the lowest score.

The criteria are:

0.00 – 0.30	: difficult
0.31 – 0.70	: average
0.71 – 1.00	: easy

(Arikunto, 1993: 221)

### 3.5.4 Discrimination Power

Discrimination power is how the test can be made a difference between the students with lower score and the students with higher score. A good test made a real difference between the students with lower score and the students from higher score. To find out the discrimination power, this research utilized the following formula:

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

Where:

DP	: Discrimination power.
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 the students.

The criteria are:

0.00 – 0.20	: poor.
0.21 – 0.40	: satisfactory.
0.41 – 0.70	: good
0.71 – 1.00	: excellent.

(Arikunto, 1993: 221)

### 3.5.5 Scoring System

The researcher needs the score from each test to be able to complete the research. To calculate the score of each test in this research, the researcher employed Arikunto's formula. The ideal, highest score for each test was 100. The Arikunto's formula below was used in scoring the result of each test done by the students:

$$S = \frac{R}{N} 100$$

Where:

S : the score of the test  
R : the total of the right answer  
N : the total items

(Arikunto, 2005: 236)

### 3.6 Research Procedure

In the process of completing the research, the researcher operated some procedures as follows:

1. Chose and determine the population and sample in this research.

The researcher selected two classes from 5 classes at the second grade of SMA Xaverius 1 Belitang, in which one class was the tryout class and the other was the experimental class.

2. Delivered the try out test to the try out class.

The test included all items about compound sentences and it was delivered previously in the try out class. This phase was conducted in order to know the quality of the tryout test. The number of the items of the test was 40 items in the form of multiple choice tests (A, B, C, D, and E), true or false items and matching items. The researcher gave the students about 60 minutes to finish the test.

3. Administering pretest

The pre test was the tryout test which has been analyzed. The pre test consisted of 30 items from 40 items of tryout test. The pre test was delivered

to the experimental class to find out the class' ability in a compound sentence. The pre test took about 45 minutes to be finished.

4. Arranged the material for teaching compound sentences

The result of the pre test was a consideration as the basic judgment for arranging the material for teaching compound sentences in the experimental class. The materials of teaching were three materials: creating compound sentences by using semicolon, creating compound sentences by using a colon, and creating compound sentences by using coordinating conjunctions.

5. Administering the treatment

The experimental class received the treatments in three times with different topics in the circle of a compound sentence. The treatments used PPP technique which is one of the variables of this research.

6. Observing the teaching and learning process

While the teacher was giving treatment to the students in the experimental class, the English subject teacher observed the teaching and learning process by taking notes about students' difficulties in learning compound sentences through PPP technique. This observation result provided data about the problem appear while PPP was being applied in teaching in the class, especially the problem faced by the students.

7. Delivering the questionnaire

The questionnaire was delivered to get the students' idea about their problem during the teaching compound sentences through PPP process. The

questionnaire was another resource besides the teacher observation to find out the students' problem in teaching through PPP technique.

8. Administering the post test

The students had their time to do the post test after the treatments had been finished. The post test items were the same as the pre test items which consist of 30 item test of compound sentences. The researcher took about 45 minutes for students finishing the post test

9. Analyzing the data

The next step was analyzing the data have been collected. The data analysis used the data from the pre test and the post test result. Both of the data were compared in order to know whether there was a significant increasing in students' score after receiving the treatment by using PPP technique.

10. Reporting the result

The data had been analyzed reported in the researcher's paper systematically start from the data from the pre test and followed by the data from the post test. In the paper, the researcher knew the answer of his first research problem that was to know whether the PPP technique can give students significant increasing of a mastering the compound sentences.

### **3.7 Data Analysis**

The next step of this research was analyzing the data. Analyzing the data was administered to give the researcher a proof whether there was a significant

increase of students' mastery of compound sentences through PPP technique at the second grade students of SMA Xaverius 1 Belitang.

In analyzing the data, the researcher did some steps below:

1. Calculating the score from the pre test and the post test.
2. Tabulating the result of each test and measuring the mean of each test result.

In order to get the mean or the average score of each test, the researcher applied the following formula:

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

Where:

- M : (Mean) Average score  
 $\sum x$  : Total students' score  
 N : Total number of students

The average score of test was the result of total students' score divided by the total number of students.

(Hatch and Farhady, 1982: 55)

3. Making a conclusion from the tabulated result of the pre test and the post test which had been delivered. The researcher analyzed the data had been collected by applying the statistical computerization Repeated Measures t-test of SPSS 15 for Windows i.e.  $t = \frac{\bar{x}_1 - \bar{x}_2}{S_D}$  to test whether there was a significant difference between pretest and the post test or not, in which the significance was determined by  $p < 0.05$  (Hatch and Farhady, 1982:114). Whereas:

$$\bar{S}_D = \frac{SD}{\sqrt{n}}$$

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

Where:

$t$  = hypothesis test

$\bar{X}_1$  = mean score the pre test

$\bar{X}_2$  = mean score the post test

$\bar{S}_D$  = standard error of differences between two means

SD = standard deviation

$n$  = number of students

(Hatch and Farhady, 1982:116)

### 3.8 Research Schedule

In a research, a schedule was needed to make the research run well. The researcher also made a research schedule to make his research run well. The schedule contained the activities the researcher made during the period of research, the date when the activities were done and the place where the activities were done. In the schedule, the researcher puts all the activities needed to collect the data. The activities were pre-observation which was done to collect the data about the students before the research was conducted, administering tryout test, administering the pre test, administering three times treatments and observation, administering the post test and delivered the questionnaire.

In the following table, the researcher gives more detail about the researcher schedule that had been done in SMA Xaverius 1 Belitang.

**Table 4. Research Schedule**

No.	Dates	Activities	Place
1	March 15 <sup>th</sup> , 2013	Pre-observation	SMA Xaverius 1 Belitang
2	July 15 <sup>th</sup> , 2013	Administering Tryout	XI IPA 2

3	July 17 <sup>th</sup> , 2013	Delivered the The pre test	XI IPA 1
4	July 22 <sup>nd</sup> , 2013	Treatment 1, Observation 1	XI IPA 1
5	July 23 <sup>th</sup> , 2013	Treatment 2, Observation 2	XI IPA 1
6	July 24 <sup>th</sup> , 2013	Treatment 3, Observation 3	XI IPA 1
7	July 29 <sup>th</sup> , 2013	Administering the The post test	XI IPA 1
8	July 30 <sup>th</sup> , 2013	Administering Questionnaire	XI IPA 1