

## **CHAPTER III**

### **RESEARCH METHODOLOGY**

In this chapter, the researcher illustrated how this study is conducted with the subject of research designing. It consist of research design, population and sample, research variables, research instrument, research procedure, technique of data collection, validity and reliability test, and technique of data analysis.

#### **3.1 Research Design**

Research design is the specific procedures involved in the research process: data collection, data analysis, and report writing (Creswell,2012:20). Research design used of this study is quantitative method which related to quasi experimental design. According to Ary (2010:265) experimental research is the research method that the researcher manipulates one or more independent variables, controls any other relevant variables, and observes the effect of the manipulations on the dependent variable(s). Generally experimental design is quantitative research that linked with numerical research. According to Creswell (2002:3) the quantitative research have many characteristic, one of them is analyzing trends, comparing groups, or relating variables using statistical analysis, and interpreting results. Between the experimental research and quantitative have related with each other. It's like Creswell stated that experimental design is the traditional approach to conducting quantitative research (2002:294)

In this study, the researcher is using quantitative methods to know whether the method “effective” and also to answer the statements of the problems. Here, the writer uses this method to describe the systematic procedures and the data analyzed in the form of words in extended text to explain the result of finding and discussion. This research is included in quasi experiments which one is the experimental design part. Creswell stated that Quasi Experiments include assignment, but not random assignment of participants to groups (2002:311).. This is because the researcher cannot artificially creating own groups for the

experiment. there are two groups in this experimental research, first is experimental group and second is control group. Both of the groups are administered a pretest and a posttest with given same pretest and given same posttest too. The experimental group given a treatment after the pretest while the control group will not be given any treatment. The scorers of the posttest from both groups are the results of this research. The design of this research can be seen on the table below:

Table 3.1 The Design of Experimental and Control Group

Group	Pre Test	Treatment	Post Test
Select Experimental group	Y1	✓	Y2
Select control group	Y1	X	Y2

Where:

VII.1 : The experimental group that is used the media of Duolingo

VII.2 : The control group that is not used the media of Duolingo

✓ : the treatment (Duolingo)

X : Not using treatment (Duolingo)

Y1 : The pretest before the treatment

Y2 : the posttest after the treatment

## **3.2 Population and Sample**

### **3.2.1 Population**

Ary states that population is all the subjects of the research such as people, events and things (2010:148). It means that the population of this study is the seventh grader of Taruna Jaya 1 Junior High School in the years of 2016/2017. Whereas, the total numbers of them are 120 students consists of four classes of students from VII.A, VII.B, VII.C, and VII.D.

### **3.2.2 Sampling**

According to Ary "sampling is a portion of a population (2010:148). Based on the population, the research takes of 2 classes as sample. In this study the researcher is using Snowball Sampling as an alternative to choose a sample. Creswell (2002:146) siad that in Snowball Sampling the researcher asks participants to identify other participants to become memembers of the sample. It means that the sample of this research is choosen by English teacher in Taruna Jaya 1. The researcher asks the teacher to choose which is class as the experiment and the control class. Then the English teacher of seventh graders suggest to choose the A class of the 7<sup>th</sup> semester was chosen for the class that get the treatment about teaching grammar on personal pronoun using Duolingo as the media, while VII.B class did not get the treatment, and just taught grammar on personal pronoun with LCD power point as the media. It means that the VII.A class as the experimental group, while 7B class as the control group. The teacher said both of two classes have the equal basic competence in English subject.

## **3.3 Research Variables**

According to Ary (2010:37) Research variables is a construct or a characteristic the research that can take on different values or scores. It means that variable is a form that arranged by the researcher it's self for this study so that can be found some information and make a conclusion. The variable in this study refer to the object becomes the researcher to focus in the study.

There are two variables in this study those are Dependent and Independent variables.

### **3.3.1 Independent Variable (X)**

Independent variable is the variable that can't stand alone without a media or the method for the research. Ary stated Independent variable is a variable that precede the dependent variable which influence the outcomes of the research (2010:37). So, the independent variable of this study is the application of Duolingo game as the media in teaching grammar on personal pronoun.

### **3.3.2 Dependent Variable (Y)**

According to Ary (2010:37) the outcome of the research is dependent variable that looked from the exam scores follow. It is same that dependent variable is variable that can stand alone without depends on another problem. In this research, the dependent variable used is the student's grammar ability on personal pronoun.

## **3.4 Research Instrument**

According to Arikunto (2009:134) research instrument is a tool or device that can make the researcher to get the data easily. There are many kinds of the research instrument such as the test, interview, documentation, questioners. In this research, the researcher is using a test for instrument those are testing are pre-test and post-test.

### **3.4.1 Try Out**

Try out test given in the beginning of the research before the pretest, treatment, and posttest are held. The researcher are conducting try out test before conducting pretest. The try out was conducted in another class of experimental class and control class that was VII C class of Taruna Jaya which have same ability with both of class the researcher taken in this study. In this test, the students were asked to answer 30 questions were multiple choices in part I and 10 questions were fill in the blank in part B.

There are aims why the tryout should be conducted. The first he purposed of this test is decided whether the test got validity and reliability or not. Second, the instrument of test is appropriated for students as the tools for testing experimental class and control class

#### **3.4.2 Pre-test**

Pretest is testing that carry out in the beginning of the research before the students of experimental group get the treatment. pretest have functions that to measure how far students understand about the teacher explanation the lesson's in the previous meet before. In this case, pretest also used to choose which one the group as the experimental or control group based on their score of test. Creswell said pretest usually uses to measure the participants ability in en experiment before they will receive a treatment (2002:297). So, in this study the researcher will give a pretest about grammar on personal pronoun. The pretest was given for VII.A class and VII.B class with the same materials.

#### **3.4.3 Post-test**

Posttest is a test is a test for the control group and experimental group to get a data as for the result in this research which given after the experimental group get the treatment. Posttest was done after the students get different treatments that VII.A class is taught by using Duolingo as the media and VII.B is taught without Duolingo game that only using LCD Slide power point as the media. In this test students asked for playing Duolingo game a get the lessons from that. From the score of this test, the researcher wants to find out the effectiveness of Duolingo game to increase students' grammar ability on personal pronoun.

### 3.5 Research Procedure

The procedure of this research were done in both of two groups. As seen in this table below:

Time : April 18<sup>th</sup>, 2017 - Mei, 18<sup>th</sup>, 2017

Location : at Taruna Jaya 1 Junior High School of Surabaya

Table 3.2 Research procedure

Pre Research	
Time	Schedule
March 9 <sup>th</sup> , 2017	Send permission letter to Taruna Jaya 1 Junior High School of Surabaya
March 16 <sup>th</sup> , 2017	Pre observation about the way the teachers' of English subject teach in this school.
March 21 <sup>th</sup> , 2017 - April 3 <sup>th</sup> , 2017	Prepare lesson plan, teaching material and grammar assessment rubric
April 16 <sup>th</sup> , 2017	Try out test for class VII C, to know the material was valid
Research Process	
Experimental Class	Control Class
April 18 <sup>th</sup> , 2017	April 20 <sup>th</sup> , 2017
<ul style="list-style-type: none"> <li>) Review personal pronoun</li> <li>) The researcher is giving the pretest about personal pronoun</li> </ul>	<ul style="list-style-type: none"> <li>) Review about grammar on personal pronoun</li> <li>) The researcher is giving the test about personal pronoun</li> </ul>
April 19 <sup>th</sup> , 2017 - April 25 <sup>nd</sup> , 2017 (Treatment)	April 21, 2017 (Non treatment)

<ul style="list-style-type: none"> <li>) The researcher ask the students to play Duolingo game in the class</li> <li>) The students can finish the level of the game in their home</li> <li>) Teacher is monitoring students work in the class group Duolingo</li> </ul>	<ul style="list-style-type: none"> <li>) Teacher give the materials of personal pronoun without use Duolingo game as media</li> <li>) Teacher use lecturing method of her teaching</li> </ul>
April 26 <sup>th</sup> , 2017 (Posttest)	April 27 <sup>st</sup> , 2017 (Post-test)
<ul style="list-style-type: none"> <li>) The research asks the students to get the test.</li> </ul>	<ul style="list-style-type: none"> <li>) The research ask the students to get the test</li> </ul>
Data analysis	
<p>April 27<sup>th</sup>, 2017</p> <p>April 28<sup>th</sup>, 2017- Done</p>	<p>Get the letter of research conduct from Taruna jaya 1 Junior High School of Surabaya</p> <p>The researcher analysis the data that was collecting</p>

### 3.6 Data collection Technique

To know the treatment of Duolingo as the media is effective in teaching grammar on personal pronoun or not. The researcher is using the data collection technique test. It has the function to get the results with started by pre-test and ended post-test.

- a. Firstly, the researcher comes in the school for doing observation. It is for knowing the students ability before the researcher do a test for the students. Then the researcher was taking two classes are VII.A and VII.B of the students in Taruna Jaya 1 of Surabaya. Means that VII.A class as the experimental group and VII.B as the control group.
- b. Before do the pretest for both class experimental and control, the researcher do the try out test in VII C class which is to know the material is valid effective for testing class treatment.
- c. Conducting a pretest for experimental group class and control group class. The pretest instruction is “Choose the right personal pronoun “. The test

has the purpose to know the student's grammar ability on personal pronoun before the researcher give the treatment.

- d. The second meeting, the researcher did the implementation of the treatment by given Duolingo as the media for teaching. The students can be completed this game in their home because the researcher can be monitored them in the group class Duolingo. The treatment aims to know student progress of grammar ability on personal pronoun during the treatment.
- e. The treatment is only for experimental class. The researcher gave an explanation about the definition and form of personal pronoun. Then, the researcher introduce about Duolingo game and explanation about how the way to play this game. Next, all the students try to play this game. If the students are not finishing the level of this game, they can play in their home. Teacher was monitored student work in class group Duolingo.
- f. For the control class, it were given material of grammar on personal pronoun without Duolingo as media. The researcher was using LCD slide power point as the media of her teaching to explain the material of personal pronoun.
- g. After the treatment was given, whole students were given posttest. The title of the test is "choose the right personal pronoun". It is the same title as the pretest before. Posttest was done by two classes, both of experimental and control class. The researcher will be collected scorers for bot students pretest and posttest in control and experimental class. The result of this study will be compared between student scores in pretest and posttest which is the students get the increase ability or not.



### **3.7 Validity and Reliability Test**

#### **3.7.1 Validity**

According to Creswell (2002:133) Validity is an important key to effective research, if a piece of research is invalid then it is worthless. So, the validity that use in this research was content validity. The content is validity if the test gets appropriated scores and students understood more about the content was given. The test was arranging based on curriculum that used by school, it is curriculum of 2013. The material of the test should be appropriating with the material that the English teacher. The validity instrument is taken from the seventh grader syllabus of 2013 curriculum on second semester.

**3.10** Understanding the social function, the structure of the text, and language elements of descriptive text by stating and inquire about the description of people, animals, and objects, short and simple sentence, related to the context of use.

#### **Sub KD**

) Understanding Language elements on personal pronoun in short and simple sentence, related to the context of use.

So, it is suitable with the basic competence of curriculum 2013. Then the test is valid because of that to conduct a testing of content is validity, the researcher collect the questions for testing on the book with the title “ bright an English course for junior high school student to seventh grades by Nurzaidah and kursus singkat bahasa inggris by N.S. Bramadi. The researcher also held a consultation with the expert judgments. They were Gusti Nur Hafifah, S.Pd, M.Pd as supervisor, Waode Hamsiah, S.Pd, M.Pd as a structure lecturer and Yuni Dwi Pangestu, S.Pd as an English teacher in Taruna Jaya junior high school of surabaya.

Table 3.3 The Validity of Worksheets and Lesson Plan

No.	Name	Validity of the test		Date of Validation
		Yes	No	
1.	Gusti Nur Hafifah, M.Pd	√	-	April, 16 <sup>th</sup> 2017
2.	Waode Hamsiah, S.Pd, M.Pd	√	-	April, 19 <sup>th</sup> 2017
3.	Yuni Dwi Pangestu, S.Pd	√	-	April, 22 <sup>nd</sup> 2017

(See appendix 15)

### 3.7.2 Reliability of the test.

Reliability test is one of the important test in the measurement of the quality. Creswell (2002:146) state that reliability in quantitative research is essentially a synonym for dependability, consistency and replicability over time, over instruments and over groups of respondents. One of the meaning reliability is consistent. It refers to the consistency of test. Although, the test should be having a high validity, a good test also should have high reliability too. So, the score must be similar when the same test is given the same students on two different occasions. In this study, the resercher is using Pearson product moment to measure the realibility of the test

According to Surapranat (2009:94) Pearson product-moment correlation is using for measuring reliability. The formula is as follows:

$$r_{x_1x_2} = \frac{N\Sigma x_1x_2 - (\Sigma x_1)(\Sigma x_2)}{\sqrt{(N\Sigma x_1^2 - (\Sigma x_1)^2)(N\Sigma x_2^2 - (\Sigma x_2)^2)}}$$

$X_1$  = The scores of tests 1 (Pre-Test)

$X_2$  = The sores of test 2 (Post Test)

$N$  = Number of subjects

### 3.8 Data Analysis Technique

The purpose of data analysis is to know the effectiveness of using Duolingo game to increase students' grammar ability on personal pronoun in seventh grade students of SMP Taruna Jaya 1 Surabaya in academic year of 2016/2017. After collected all of the data, the researcher analyze and discuss the result of the pretest and posttest use SPSS 20.0 software. To analyze the data from the test, researcher conducts some steps.

#### 3.8.1 Homogeneity Test

Homogeneity test is using for knowing whether experimental class and control class are taken from population that have same ability or not. It's conducted using pretest scores of both class experimental and control class. The researcher did the test of homogeneity of variance by using spss 20.0 software. Here the hypothesis that follow for this test are  $H_0$  is accepted if the P-value is higher than (0,05), it means that the result is homogenous. Meanwhile,  $H_0$  is refused if the p-value is lower than (0,05). It means that the result is not homogeneous

#### 3.8.2 Normality Test

Normality test is being used to find out the data distribution are normal or not. In this case, the researcher will use SPSS verse 17.00 based on formula of One Sample Kolmogorov-Smirnov to measure the normality of the test. The calculation of the data is using the formula that appropriate with criteria of testing normality is if  $p_{value} < \alpha$  so that  $H_0$  is refused.

$H_0$  = Sample of data is normal distribution

$H_1$  = Sample of data is not normal distribution

The criteria of the test based on  $P$ - value as below :

$H_0$  push away, if  $P_{(value)} < \alpha$ , so data is normal distribution

$H_1$  push away, if  $P_{(value)} > \alpha$ , so data is more normal distribution.

### 3.8.3 T-Test Calculation

After testing normality, there is T-test. The purposed of this test is to analyze the differences of the student's grammar ability on personal pronoun before and after using Duolingo as the media. The researcher was using a sample T-Test through SPSS 20.0 software to analyze the data. There are some steps to analyze the data:

- a. formulating the hypothesis are in the form of  $H_0$  and  $H_1$
- b. Determining the value of  $T_{count}$  on the output of SPSS analysis.
- c. Determining the value of  $T_{table}$  from the statistical table in significance level  $0.05 : 2 = 0.025$  (two tailed test) with degree of freedom (df) is  $n-1$
- d. Determining the significance value based on the output of SPSS 20.0 analysis that value should be lower than 5% significance level ( $<0.05$ )
- e. Determining hypothesis testing in manual way with calculating  $T_{count}$  and  $T_{table}$  :
  - a. If -  $t_{count} < - t_{table}$  **or**  $t_{count} > t_{table}$  and  $Sig < 0.05$ , so  $H_0$  is rejected
  - b. If -  $t_{table} < t_{count} < t_{table}$  **and**  $Sig > 0.05$ , so  $H_0$  is accepted
- f. If  $H_0$  rejected, there is the differences between student grammar ability on personal pronoun before and after being used Duolingo as the media for teaching.

### 3.8.4 Computing Standard Deviation

$$S = \sqrt{\frac{\sum x^2}{N} - \bar{x}^2}$$

explanation:

S = Standard Deviation

$\sum x^2$  = The sum of the x squared scores

$\bar{x}^2$  = The mean of distribution

N = The number of students