

## CHAPTER III

### RESEARCH METHOD

#### A. Research Design

This research focused on using TGT strategy to measure students' reading comprehension in learning narrative text. The researcher used quantitative research method because the research data as numerical data analyzed with statistic. The researcher chose experimental research for her study. Nunan states " Experiment is designs to collect data in such a way that treats to the realibility and validity of the research are minimised.<sup>1</sup> There was a treatment in this method research. It means that this method was used to search the treatment effect anything against to other in uncontrolled condition.<sup>2</sup>

Experimental research is a method that compare two groups. They are experimental group (with treatment) and control group (without treatment). There is pretest in the beginning and post test in the end of research. The students' achievement of pretest and posttest will be the result of the research.

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<sup>1</sup> David Nunan, *Research Methods in Language Learning*, (USA: Cambridge University Press, 1992), p.47

<sup>2</sup> Sugiyono, *Metode Penelitian Pendidikan Pendekatan Kuantitatif, Kualitatif, dan R&D*, (Bandung: Alfabeta, 2013), p.107

The design of experiment could be described as follows:<sup>3</sup>

O <sub>1</sub>	X	O <sub>2</sub>
O <sub>3</sub>	X	O <sub>4</sub>

Where:

O<sub>1</sub> : pre-test of experimental group

O<sub>2</sub> : post-test of control group

O<sub>3</sub> : pre-test of experimental group

O<sub>4</sub> : post-test of control group

X : Treatment

## B. Research Setting

### 1. Subject and Place of the Research

This research was conducted in MAN Gubug Grobogan. It was located on Pilang Kidul, Gubug, Grobogan. The subject of the study was the students of tenth grade of MAN Gubug Grobogan in academic year of 2015/2016.

### 2. Time of the Research

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<sup>3</sup> Sugiyono, *Metode Penelitian Pendidikan Pendekatan Kuantitatif, Kualitatif, dan R&D*,..., p.112-113

This research was conducted from 12<sup>nd</sup> April to 4<sup>th</sup> May on the second semester in academic year of 2015/2016.

### **C. Subject of the Research**

#### **1. Population**

According to Encyclopedia of Educational Evaluation cited by Arikunto “population is a set (or collection) of all elements processing one or more attributes of interest.<sup>4</sup> Population is overall subject of the research.<sup>5</sup> Population is the generalization region which consist of objects or subjects who have certain qualities and characteristics that set by researcher to learn and then draw a conclusion.<sup>6</sup> So, the population is the most significant factor in conducting a research.

The population of this study was the tenth grade students of MAN Gubug Grobogan in academic year of 2015/2016. The population was 70 students which consist of two classes.

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<sup>5</sup> Suharsimi Arikunto, *Prosedure Penelitian Suatu Pendekatan Praktik*, (Jakarta: PT. Rineka Cipta, 2010), p. 173

<sup>6</sup> Sugiyono, *Metode Penelitian Pendidikan Pendekatan Kuantitatif, Kualitatif, dan R&D*, ..., p.117

## 2. Sample

Sample is a part of the total number and characteristic belong to the population. The sample taken should draw the real condition of population, in other word sample should be representative from the population.<sup>7</sup> So, the researcher can take a conclusion from the sample.

The sample was tenth grade of A and B of MAN Gubug Grobogan.

## 3. Sampling Technique

Sampling technique is a technique that used to take the sample.<sup>8</sup> The researcher used bored sampling (sample jenuh) for her research because this technique determining sample if all members of population are used as a sample. This technique is often conducted when the amount of population is relative small, or research which wish to make generalizing with small mistake. Other term of this sample is census, where all the population members used as a sample.<sup>9</sup> The sample were X A and X B. The classes would be given the same material but with different

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<sup>7</sup> Sugiyono, *Metode Penelitian Pendidikan Pendekatan Kuantitatif, Kualitatif, dan R&D*, ..., p.118

<sup>8</sup> Sugiyono, *Metode Penelitian Pendidikan Pendekatan Kuantitatif, Kualitatif, dan R&D*, ..., p.118

<sup>9</sup> Sugiyono, *Statistika untuk Penelitian*, (Bandung: Alfabeta, 2007), p.

method. The experimental class was X A would be taught by using Teams Games Tournaments (TGT) on reading comprehension of narrative text, and the control class was X B would be taught without TGT on reading comprehension of narrative text.

#### **D. Research Variable**

Variable is a variation object of the research.<sup>10</sup> According to Farhady as cited by Sugiyono, variable is the person attribute or object attribute which has variation between a person to another or an object to other object. It called variable because there is variation.<sup>11</sup> There are two type of variable. They are dependent variable and independent variable. Those variables are:

##### 1. Independent variable

Independent variable is a variable that influences or to be caused of change or the appearance of dependent variable.<sup>12</sup> It means that an experiment involves making a change in the value of one variable called the independent variable. In this research, the independent variable was

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<sup>10</sup> Suharsimi Arikunto, *Prosedure Penelitian Suatu Pendekatan Praktik*,..., p. 159

<sup>11</sup> Sugiyono, *Metode Penelitian Pendidikan Pendekatan Kuantitatif, Kualitatif, dan R&D* ,..., p.60

<sup>12</sup> Sugiyono, *Statistika untuk Penelitian*, ... , p. 4

using Teams Games Tournaments in teaching reading comprehension.

## 2. Dependent variable

Dependent variable is a variable that influenced or become an effect of the independent variable.<sup>13</sup>

The dependent variable in this research was the students' achievement in the reading comprehension on narrative text. The writer can measure it using students' score from the test, and the indicators are:

- a. Identifying the social function of narrative text
- b. Identifying the generic structure of narrative text
- c. Identifying the language features of narrative text
- d. Identifying the moral value of narrative text
- e. Understanding the content of narrative text

## E. Technique of Data Collection

### 1. Documentation

Documentation is the written objects. To do the documentation method, the researcher investigates or to look for the data concerning matters or the variable that took the form of the note, transcript, book, newspaper, magazine, inscription, agenda, etc.<sup>14</sup> It refers to the

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<sup>13</sup> Sugiyono, *Statistika untuk Penelitian, ...*, p. 4

<sup>14</sup> Suharsimi Arikunto, *Prosedure Penelitian Suatu Pendekatan Praktik,...*, p. 201

archival data that helps the researcher to collect the needed data. This method is used to collect the data from the result of students' test. It is also to get the data of the students' name list that include in population and sample of research documentation of teaching and learning process in English subject. The researcher got the data from teacher English guidance.

## 2. Test

Test is a set of questions, exercises or other tools that used to measure the skill, intelligence of knowledge, or talent which has by individual or groups.<sup>15</sup> It means that test is used to measure language skill of the subject being researched, and how the students are thinking. In this research test is given to tryout class, experiment class, and control class. Tests is used to measure and get score in reading comprehension skill especially on narrative text. The students were given the try-out test, pre-test and post-test:

### a. Try-out test

Before doing the test, researcher would do try-out first. Good evaluation of our tests can help us measure students' skill more accurately. Based on the statement above, before administering the real test

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<sup>15</sup> Suharsimi Arikunto, *Prosedure Penelitian Suatu Pendekatan Praktik*,..., p. 150

(pre-test and post-test), I conduct a try out test to assess the test quality.

b. Pre-test

Before the teacher explains new material by using Teams Games Tournaments (TGT) strategy, the teacher would give a test to the students. Pre-test would be given before they get experience by using new strategy (TGT).

c. Post-test

Post-test would be given to the experimental class and the control class. The test would be given in order to know the increase of students' reading comprehension on narrative text. Post test would be given to the both of class after receiving treatment. The experimental class taught in teaching reading narrative text using TGT. Besides that, the control class taught without using TGT.

## **F. Technique of Data Analysis**

Data analysis is the last step in the procedure of research. In the analyzing the data from the pre-test and post-test, the researcher uses the statistical calculation of T-test. T-test is used in order to find out the differences of the score or the result of students' achievement in studying reading comprehension by using TGT and non TGT.

## 1. Try-out of Instrument of the Test

To find out whether test item is qualified as good instrument in the research or not before being to measure students' reading comprehension skill, previously try out test must be held. Try out test is implemented to find out the validity, reliability, level of difficulty, and discriminating power of test item.

After validity, reliability, level of difficulty, and discriminating power of test item were found out, then choose test item which is qualified to be used as instrument for measuring the students' reading comprehension skill. And the steps are as follow:

### a. Validity

Validity is a measurement that shows the levels of validity of instrument. It is a condition in which a test can measure what is supposed to be measured. The valid instrument will has the high level of validity.<sup>16</sup> It means that an valid instrument can measure the object which is researched.

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<sup>16</sup> Suharsimi Arikunto, *Prosedure Penelitian Suatu Pendekatan Praktik*,..., p.211

The validity of an item can be known by doing item analysis. It is counted using product - moment correlation formula:<sup>17</sup>

$$r_{pbi} = \frac{M_p - M_t}{SD_t} \sqrt{\frac{p}{q}}$$

Where:

$r_{pbi}$ : point biserial correlation coefficient

$M_p$ : the mean scores of subjects who correctly searched items correlation with the test.

$M_t$  : the average score of the total score.

$SD_t$ : standard deviation of the total score

$p$  : the proportion of subjects who answered right against the grain of the item being tested for validity item.

$q$  : the proportion of subjects who answered wrong of the items of the item being tested for validity item.

Calculating result of  $r_{pbi}$  is compared with score  $r_{table}$  by 5% degree of significant. If  $r_{count} > r_{table}$  test items of question is valid.

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<sup>17</sup> Anas Sudijono, *Pengantar Evaluasi Pendidikan*, (Jakarta: RajaGrafindo Persada, 2012), p.185

b. Reliability

Reliability refers to the stability or the consistency of the test scores. Reliability is an instrument called reliable to be used as a tool of collecting data because the instrument has been good. The reliable instrument can produce the reliable data too.<sup>18</sup>

To calculate the reliability of the test, the researcher uses the formula of K - R 20 as follows:<sup>19</sup>

$$r_{11} = \left(\frac{n}{n-1}\right) \left(\frac{S^2 - \sum pq}{S^2}\right)$$

Where:

$r_{11}$  : the reliability of the test

$n$  : the number of question of the test

$s^2$  : the standard deviation of the test

$p$  : the proportion of students who give the right answer

$q$  : the proportion of students who give the wrong answer

Calculation result of  $r_{11}$  is compared with  $r$  table of product moment by 5% degree of

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<sup>18</sup> Suharsimi Arikunto, *Prosedure Penelitian Suatu Pendekatan Praktik*,..., p.221

<sup>19</sup> Suharsimi Arikunto, *Dasar-dasar Evaluasi Pendidikan*, (Jakarta: PT, Bumi Aksara, 2006), p. 100-101

significance. If  $r_{11}$  is higher than  $r_{table}$ , the item of question is reliable.

c. Degree of Test Difficulty

A good question of the test is a question that is not really difficult and not really easy. The formula for degree of test difficulty is:<sup>20</sup>

$$P = \frac{B}{JS}$$

Where:

P : index of difficulty

B : the number of students who answer the item correctly

JS : the total number of students

The degree of test difficulty level can be classified as follows:

P : 0,00- 0,30 is difficult

P : 0,30- 0,70 is medium

P : 0,70- 1,00 is easy.

d. Discriminating Power

The discriminating power is a measure of the effectiveness of a whole test. The higher and low values of discriminating power are the more effective test will be.

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<sup>20</sup> Suharsimi Arikunto, *Dasar-dasar Evaluasi Pendidikan, ...*, p. 208

$$D = \frac{B_A}{J_A} - \frac{B_B}{J_B} = P_A - P_B$$

Where:

- D : discriminating power
- B<sub>A</sub> : number of students in the upper group who answer the item correctly
- B<sub>B</sub> : number of students in the upper group who answer the item correctly
- J<sub>A</sub> : number of all students in the upper group
- J<sub>B</sub> : number of all students in the lower group
- P<sub>A</sub> : the proportional of the upper group who answered the item correctly
- P<sub>B</sub> : the proportional of the lower group who answered the item correctly<sup>21</sup>

The criteria of determining the discriminating of power are below:

- D : 0,00- 0,20 is poor
- D : 0,20- 0,40 is satisfactory
- D : 0,40- 0,70 is good
- D : 0,70- 1,00 is excellent

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<sup>21</sup> Suharsimi Arikunto, *Dasar-dasar Evaluasi Pendidikan, ....*, p. 213-214

## 2. Pre-request Test

### a. Normality Test

Normality test is used to know the distribution data normal or not. To find out the distribution data is used normality test with chi-square. The formula of chi-square are here:<sup>22</sup>

$$\chi^2 = \sum_{i=1}^k \frac{(O_i - E_i)^2}{E_i}$$

Where:

$\chi^2$  : chi-square

$O_i$  : frequency from observation

$E_i$  : expected frequency

### b. Homogeneity Test

Homogeneity test is implemented to investigate whether two groups(experimental group and control group) have same variance or not. The formula is:<sup>23</sup>

$$F = \frac{Vb}{Vk}$$

Where:

Vb : biggest variant

Vk : smallest variant

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<sup>22</sup> Sudjana, *Metoda Statistika*, (Bandung: PT. Tarsito, 2005), p. 273

<sup>23</sup> Sugiyono, *Statistika untuk Penelitian*, (Bandung: Alfabeta, 2007),

c. Average of Similarity Test

It is used to examine average whether experimental group and control group have been decided having different average.<sup>24</sup>

Proposed hypothetical test in average similarity with the right test is as follows:<sup>25</sup>

$$H_0 : \mu_1 = \mu_2$$

$$H_a : \mu_1 \neq \mu_2$$

$\mu_1$ : average data of experimental group

$\mu_2$ : average data of control group

The t-test formula is used.

$$t = \frac{\bar{X}_1 - \bar{X}_2}{s \sqrt{\frac{1}{n_1} + \frac{1}{n_2}}}$$

With :

$$s = \sqrt{\frac{(n_1 - 1)S_1^2 + (n_2 - 1)S_2^2}{n_1 + n_2 - 2}}$$

Where:

$\bar{X}_1$  : average of experimental group

$\bar{X}_2$  : average of control group

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<sup>24</sup>Sugiyono, *Metode Penelitian Pendidikan Pendekatan Kuantitatif, Kualitatif, dan R&D* ,..., p. 273

<sup>25</sup> Sudjana, *Metoda Statistika*,..., p. 239

$n_1$  : number of experimental group

$n_2$  : number of control group

$S_1^2$  :standard deviation of experimental group

$S_2^2$  :standard deviation of control group

Testing criteria that apply  $H_0$  is accepted if –

$$t_{table} \leq t_{count} \leq t_{table}, t_{table} = t_{1-1/2\alpha}$$

With determinate  $df = (n_1 + n_2 - 2)$  and the significant  $\alpha = 5 \% (1-\alpha)$

### 3. Post Test

Post test are held after all treatments are conducted. This test is used to measure students' achievement after they were given treatments. The result of test is analyzed statistically.

#### a. Normality Test

Steps normality second step is the same as the normality test on the initial data.

#### b. Homogeneity Test

Steps Homogeneity second step was the same as the homogeneity test on the initial data.

#### c. Hypothesis Test

Proposed hypothesis test in average similarity with the right test is as follows:

$H_0 : \mu_1 \leq \mu_2$

$H_a : \mu_1 > \mu_2$

$\mu_1$  : average the students' reading comprehension of experimental group

$\mu_2$  : average the students' reading comprehension of control group

The t-test formula is used.

$$t = \frac{\bar{X}_1 - \bar{X}_2}{s \sqrt{\frac{1}{n_1} + \frac{1}{n_2}}}$$

With :

$$s = \sqrt{\frac{(n_1 - 1)S_1^2 + (n_2 - 1)S_2^2}{n_1 + n_2 - 2}}$$

Where:

$\bar{X}_1$  : average of experimental group

$\bar{X}_2$  : average of control group

$n_1$  : number of experimental group

$n_2$  : number of control group

$S_1^2$  : standart deviation of experimental group

$S_2^2$  : standard deviation of control group

Testing criteria that apply  $H_0$  is accepted if

$$t_{count} > t_{table}$$

With determinate  $df = (n_1 + n_2 - 2)$  and the significant  $\alpha = 5\%$  ( $1-\alpha$ )