CHAPTER III

RESEARCH METHODOLOGY

A. Research Design

The design of this research was an experimental research. According to Creswell (2012, p.295), experiment is test an idea (or practice or procedure) to determine whether it influences an outcome or dependent variable. In addition, Gay & Airasian (2012, p.249), in experimental research, the researcher manipulates at least one independent variable, controls other relevant variables, and observes the effect on one or more dependent variables.

This research used quasi-experimental research, which used pretest-posttest design. According to Creswell (2012, p.309), quasi experiment includes assignment, but not random assignment of participants to groups. This is because the experimenter cannot artificially create groups for the experiment. According to Muijs (2004, p.18), Quasi-experimental designs in educational research can be represented as follows:

Table III.1
Research Design

Group	Pretest	Treatment	Posttest
E	O_1	X	O_2
C	O_3	-	O_4

Where:

E : Experimental Group
C : Control Group
O_1 : Pre-test to Experimental Group
O_2 : Post-test to Experimental Group
X : Receive the treatment using Teams Games tournament (TGT) technique.
O_3 : Pre-test to Control Group
O_4 : Post-test to Control Group

B. Location and Time of the Research

This research was conducted at SMK Taruna Mandiri Pekanbaru. It is located in Rajawali Sakti Street No 90 Panam, Pekanbaru. It was conducted on 29 September until 19 December 2018.

C. Subject and Object of the Research

The subject of this research was the tenth grade students of SMK Taruna Mandiri Pekanbaru in the academic year 2018/2019 and the object of this research was the use of teams games tournament technique and students'reading comprehension at the SMK Taruna Mandiri Pekanbaru.

D. The Population and Sample of the Research

1. Population

According to Ary (2010, p.149) population is defined as all members of any well-defined class of people, events, or objects. The population of this research were all the students of the tenth grade at SMK Taruna Mandiri Pekanbaru in 2018/2019 academic year which consist of 9 classes. The total number of the tenth grade students at SMK Taruna Mandiri Pekanbaru is 278 students. The total population of the tenth grade students in each class can be seen in table below:

Table III.2
The Total Population of the Tenth Grade at
SMK Taruna Pekanbaru 2018

No	Classes	Total
1	X TAV	19 Students
2	X TG[1]	30 Students
3	X TG[2]	32 Students
4	X TKR[1]	36 Students
5	X TKR[2]	36 Students
6	X TSM	36 Students
7	X TKJ[1]	31 Students
8	X TKJ[2]	29 Students
9	X TKJ[3]	29 Students
	Total	**278 Students**

(Source: SMK Taruna Mandiri Pekanbaru 2018/2019)

2. Sample

In order to get the sample which represents the population, a sampling technique was needed in this research. Sampling technique is a technique which used to take the sample out of population to ensure that sample is unbiased. Sample is the amount of participants that is selected by the writer to collect the data of research. According to Fraenkel & Wallen (2006, p.106) sampling refers to the process of selecting the individuals who will participate in a research study.

Based on the table III.2, the population was large enough to be taken as sample of the research. In s electing the participants, the researcher used cluster random sampling technique. Fraenkel and Wallen (2009, p.67), cluster random sampling can be seen as the selection of classes, or clusters, of subjects rather than individuals so that cluster random sampling randomly selects class, not individuals. The steps in determining the experimental class and control class as follows:

a. First, the researcher made a kind of lottery.
b. Second, the researcher provided 9 pieces of small paper which each piece was the name of each class then the researcher rolled them up and put them into a glass.
c. Third, the researcher shook the glass and took one the pieces of the paper. For the first paper as the experimental class.
d. Next, the researcher shook the glass again and take one piece of rolled paper. For the second paper as the control class.

The result are class X TKJ^{2} as experimental class and X TKJ^{3} as the control class. The total sample of this research were 58 students. The following table presents the number of sample:

Table III.3
The Number of Sample of the Tenth Grade Students at SMK Taruna Mandiri Pekanbaru

No	Class	Type	Students		Total
			Male	Female	
1	X TKJ ^{2}	Experimental Class	20	9	29
2	X TKJ ^{3}	Control Class	24	5	29
	Total				58

(Source: SMK Taruna Mandiri Pekanbaru 2018/2019)

E. Technique of Collecting Data

Collecting data is the most important one in research in order to support the research. Arikunto (2013, p.51), says that instrument of the research is a tool or facility which is used by the researcher to collect data in order to make the research easier and get a better result, accurate, complete and systematic and easy to analyze. A good instrument helps the researcher to get an accurate data and take the conclusion based on the reality. There are

many kinds of technique for collecting data such as questionnaire, interview, observation, test and documentation.

In this research, the researcher used test. According to Brown (2003, p.384) a test is a method of measuring a person's ability, knowledge, or performance in a given domain. This technique was used to find out the students' reading comprehension of narrative text. The type of the test was multiple choice, the number of each pre-test and post-test consisted of 25 items. The researcher applied several techniques of data collection, they are as follows:

1. **Pre-test**

   The pre-test was carry out to determine the ability of students' reading comprehension. Item used for pre-test consisted of 30 items which appropriate with curriculum. The result of reading test try-out was presented by administer in order to determine the quality of the test as an instrument of the research. Multiple choice was given in which students are required to choose one correct answer from the option a, b, c, d, or, e.

2. **Treatment**

   The treatment conducted for experimental group only. The treatment was used teams games tournament (tgt) strategy in teaching reading comprehension. The length of the time to apply the strategy was about eight meetings.

3. Post-test

Post-test was given after teaching several times. Post-test was used to collect the final data about students' reading comprehension after giving treatment to the experimental class.

The blueprint of reading comprehension test is as follow:

Table III.4
The Blueprint of Reading Comprehension Test

Indicator of Items	Number Test Items		
	Try Out	Pre-Test	Post-Test
Students are able to identify the main idea of narrative text.	1,6,11,16,21,26	1,6,11,16,21	1,6,11,16,21
Students are able to make inference of narrative text.	2,7,12,17,22,27	2,7,12,17,22	2,7,12,17,22
Students are able to find out meaning of certain words of narrative text.	3,8,13,18,23,28	3,8,13,18,23	3,8,13,18,23
Students are able to identify generic structure of narrative text	4,9,14,19,24,29	4,9,14,19,24	4,9,14,19,24
Students are able to locate or identify general or specific information such as name of characters, the time of the story or the place of the story of narrative text.	5,10,15,20,25,30	5,10,15,20,25	5,10,15,20,25

After administering the test, the researcher took the total score from the result of the reading comprehension test. The students' score can be seen in the table below:

Table III.5
The Classification of Students' Score

No	The Score of Reading Comprehension Level	Categories
1.	80-100	Very good
2.	66-79	Good
3.	56-65	Enough
4.	40-55	Less
5.	30-39	Fail

Arikunto (2013, p.281)

F. The Validity and Reliability of Instrument

Validity and reliability of instrument are integral part in conducting a research since the instrument which will be used must be valid and reliable before using it to collect data in this research.

1. Validity of Test

According to Hughes (1989, p.22), a test is said to be valid if it measures accurately what it is intended to measure. In addition, Gay (2012, p.160) states that validity refers to the degree to which a test measures what it is supposed to measure and, consequently, permits appropriate interpretation of scores. According to Gay (2012, p.160), there are four kinds of validity. They are content validity, criterion-related validity, construct validity, and consequential validity. All of them have different usage function. Among all kinds of the validity, the content validity is the most appropriate to measure the instrument of the research.

In term of content validity, Brown (2003, p.388) stated that it refers to the content of the test provide samples about the subject matter are being measured. It means that we have to design the tests based on the material that they had learned, thus, the writer concluded that this research

belonged to the content validity in consideration of the tests reflected to what the students had learned the content of the curriculum.

Before the test was given to the sample of this research, the test was already try out first to the students of the tenth grade. The purpose of try out is to obtain validity and reliability of the test. To find out the validity of instrument, researcher calculated it by using SPSS 23 version. The standard value of validity is $r_{item} > r_{table}$**.** Based on the try out result, it was determined that all of the items were valid. The result of try out is as follows:

Table III.6
The Item Validity of Try Out

Item Number	r-item	r-table	Result
1	0.427	0.367	Valid
2	0.545	0.367	Valid
3	0.630	0.367	Valid
4	0.379	0.367	Valid
5	0.535	0.367	Valid
6	0.487	0.367	Valid
7	0.616	0.367	Valid
8	0.383	0.367	Valid
9	0.499	0.367	Valid
10	0.456	0.367	Valid
11	0.463	0.367	Valid
12	0.456	0.367	Valid
13	0.398	0.367	Valid
14	0.445	0.367	Valid
15	0.400	0.367	Valid
16	0.605	0.367	Valid
17	0.445	0.367	Valid
18	0.456	0.367	Valid
19	0.622	0.367	Valid
20	0.392	0.367	Valid
21	0.338	0.367	Invalid
22	0.073	0.367	Invalid
23	-0.287	0.367	Invalid
24	0.170	0.367	Invalid
25	-0.130	0.367	Invalid
26	0.413	0.367	Valid
27	0.409	0.367	Valid
28	0.385	0.367	Valid
29	0.491	0.367	Valid
30	0.396	0.367	Valid

Based on the table above, it was clear that there were 5 invalid items of 30 items. Thus, the researcher only took 25 valid items to be tested as instrument.

2. Reliability of Test

A test must be reliable as measuring instrument. Reliability is the degree to which the test consistently measures whatever it is measuring. The mean and standard deviation of the test must be known for obtaining the reliability of the test. According to Gay (2000) reliability is the degree to which a test consistently measures whatever it is measuring. It is reflected in the obtaining how far the test is able to measure the same object on different occasion indicating the similar result.

According to Cohen et.al, (2007 p.506), the guidelines of reliability is as follows:

Table III.7
Category of Reliability

No	Reliability	Category
1	>0.90	Very highly reliable
2	0.80-0.90	Highly reliable
3	0.70-0.79	Reliable
4	0.60-0.69	Minimally reliable
5	<0.60	Unacceptably low reliability

In this research, the researcher used software SPSS 23 version to calculate the reliability of the test. The result of test reliability is as follows:

Table III.8
Reliability Statistic

Cronbach's Alpha	N of Items
.853	25

The reliability of test was 0.853. It is categorized into highly reliable level.

G. The Technique of Analyzing the Data

To analyze the data of this research, the researcher used paired sample t-test formula. Pallant (2011, p.239) said that t-test is used to determine whether two means are significantly different at a selected probability level. The researcher also used SPSS 23 program to analysis the data. Based on the formulation of the problem, the researcher analyzed the data through the following procedures for each problem by using SPSS.

After found the difference, the researcher found out the effect size of the phenomenon. Pallant (2010) explain that effect size statistic provide an indication of magnitude of the differences between your groups (not just whether the difference could have occurred by chance). The effect size statistic used in this research is eta squared. The formula of eta squared according to Pallant (2011, p.243) is as follows:

$$\eta^2 = \frac{t^2}{t^2 + (n_1 + n_2 - 2)}$$

Where:
n^2 : Eta Square
t : t obtained
n_1 : the number of experimental class

The formula is use to know the significant different of students' reading comprehension before and after being taught by using Teams Games Tournament (TGT) technique at SMK Taruna Mandiri Pekanbaru.

In order to interpret the eta squared values, the guideline quoted from Cohen in Pallant (2011, p.243) can be seen as follows:

Table III.9
Interpretation of Eta Squared for Effect Size

No	Value	Effect
1	0.01	Small Effect
2	0.06	Moderate Effect
3	0.14	Large Effect