

CHAPTER III

RESEARCH METHODOLOGY

A. Research Design

This research used the quantitative research. The type of the research was an experimental research. According to Johnson, in an experiment, the researcher's goal is to establish a cause-and-effect relationship between two phenomena¹. An experimental research is simply a way of learning something by varying some condition and observing the effect of something else². Thus, Creswell states that an experimental research is used when the writer want to establish possible cause and effect between the independent and dependent variables³. Independent variables are variables selected by the researcher to determine their effect on or relationship with the dependent variable⁴. Meanwhile, dependent variable is to ask which variable is being measured to determine the effect of other variables on it.

¹Donna M. Johnson, *Approaches to Research in: Second Language Learning*, New York & London: University of Arizona, Longman, p. 165

² James H. Mcmilan, and Sally Schumacher, *Research in Education*, (Boston: Person Education Inc., 2006), p. 253

³ Jhon, W..Creswell. *Educational Research: Planning, Conducting, and evaluating Quantative and Qualitative Research*. New Jersey: Pearson Education, 2008, p. 299

⁴James Dean Brown, *Understanding Research in Second Language Learning: A teacher's guide to statistics and research design*, New York: Cambridge University Press, 1988. p.10

This research was designed as a quasi-experimental research with nonequivalent control group intended to find out the effect of using pelmanism game on reading comprehension of narrative text of the first year students at Vocational School Taruna Pekanbaru. The design of this research was quasi-experimental design which used two groups, pretest-posttest. Cohen states that quasi-experiment is in the natural setting rather than the laboratory, but where variables are isolated, controlled and manipulated⁵. The experimental groups is separated from the non-equivalent control group that indicates the experimental and control groups that have not been equated by randomization⁶.

In investigating the research, there were two classes of the ten grade students of Vocational School Taruna Pekanbaru involved. The pretest was given in both of classes to know their reading comprehension of narrative text. After giving the treatment to the experimental group, the writer would give post test for both of them. The target of this research was the ten grade students at Vocational School Taruna Pekanbaru. The design of this research can be seen in the following table:

⁵ Louis Cohen, Lawrence Manion, & Keith Morrison, *Research Methods in Education Sixth Edition*, (New York: Routledge, 2007), p. 274

⁶ Ibid, p. 283

Table III. 1

Research Design

Group	Pretest	Treatment	Post-test
A	A1	X	A2
B	B1	Ø	B2

Where:

A : Experimental Class

B : Control Class

A1 : Pretest for Experimental Class

B1 : Pretest for Control Class

X : Paragraph Puzzle

Ø : No treatment

A2 : Posttest for Experimental Class

B2 : Posttest for Control Class

B. Location and Time of the Research

This research was conducted at Vocational School Taruna Pekanbaru. It was located at Rajawali Sakti Street, Tampan district, Pekanbaru City. This research was conducted from April to May 2014.

C. Subject and Object of the Research

The subject of the research was the ten grade students at Vocational School Taruna Pekanbaru. The object of the research was the effect of using pelmanism game activity on students' reading comprehension.

D. Population and Sample of the Research

1. Population

Population or universe means, the entire mass of observations, which is the parent group from which a sample is to be formed.⁷ All items in any field of inquiry constitute a ‘universe’ or ‘population’.⁸ The population of this research was the ten grade students at vocational high school Taruna Mandiri Pekanbaru. They were all about 233 students divided into nine classes. They were assumed to have the same level of proficiency and the same background.

Table III.2

Distribution of the Research Population

Class	Male	Female	Total
X TSP	29	7	36
X TAV	6	5	11
X TKR 1	33	0	33
X TKR 2	33	0	33
X TSM	23	0	23
X TKJ 1	33	0	33

⁷ Yogesh Kumar Singh, *Fundamental of Research Methodology and Statistics*, (New Delhi: New Age International, 2006),p.82.

⁸ C.R. Kothari, *Research Methodology Methods and Techniques*, (New Delhi: New Age International (P) Limited, Publisher), p. 55.

X TKJ 2	29	4	33
X TKJ 3	26	5	31
Total	212	21	233

2. Sample

The sample is representative of the population from which it is drawn.⁹ Sampling is fundamental to all statistical methodology of behavioral and social research.¹⁰ In this research, the writer used random sampling technique, especially cluster sampling technique.¹¹ Cluster sampling is the most useful when the population is very large. According to Gay and Airasian Random sampling is the process of selecting a sample in such a way that all individuals in the defined population have an equal and independent chance of being selected for the sample¹². Cluster sampling randomly select the groups, not individuals¹³. All the members of selected groups have similar characteristics.¹⁴ The similar characteristics intended

⁹ Louis Cohen, Lawrence Manion and Keith Morrison, *Research Methods in Education*, (London: Routledge Falmer, 2000), p.95.

¹⁰ Loc.cit.Yogesh.p.82.

¹¹ L.R. Gay and Peter Airasian, *Educational Research Competencies for Analysis and Application: Sixth Edition*, New Jersey: Prentice-Hall, Inc, 2000, p.129

¹² Ibid, p. 123

¹³ Loc. cit, p. 129

for both of class are: the students were taught by the same teacher of English, the students had the same level, and the students had the same material about learning of writing. Therefore, the writer took two classes to represent the population having similar characteristics. In this research, the writer took two of eight classes as population. Class X TKJ 1 was a control class and class X TKJ 2 was an experimental class. Both classes X TKJ 1 consisted 33 and class X TKJ 2 consisted of 33 students, so that the total sample of this research was 66 students.

Table III. 3
Sample of the research

Experiment class X TKJ 2		Control class X TKJ 1	
Male	Female	Male	Female
29	4	33	0
33		33	
Total : 66			

E. Blueprint of Test

Table III. 4
Blueprint of Test

No	Indicators	Number of items	Total
1	Identify main idea in narrative text	1, 2, 3, 4	4
2	Identify inference in narrative text	5, 6, 7, 8,	4
3	Mastery of vocabulary on reading narrative text	9, 10, 11, 12	4
4	Identify generic structure of narrative text	13, 14, 15, 16	4
5	Identify supporting details in narrative text	17, 18, 19, 20	4
Total			20

F. Technique of Data Collection

In this research, the writer used test to collect the data. The test was used to measure the comprehension of the first grade students in reading narrative text being researched.¹⁵ The test consisted of pretest that was given before the treatment and posttest given after doing the treatment. Then, the writer took the total score from the result of the reading comprehension test. The classification of the students' score is shown below:¹⁶

Table III. 5
The Classification of Students' Score

Score	Categories
80-100	Very Good
66-79	Good
56-65	Enough
40-55	Less
30-39	Fail

G. Technique of Data Analysis

In this research, the writer used test to collect the data. The test was used to find out the students' reading comprehension on narrative text. In

¹⁵ Suharsimi Arikunto, *Prosedur Penelitian: Suatu Pendekatan Praktik* (Jakarta: Rineka Cipta, 2010), p.266.

¹⁶ Suharsimi Arikunto. *Dasar-dasar Evaluasi Pendidikan*. (Jakarta: Bumi Aksara, 2009). p.245

analyzing the data, the writer used students' pre-test and post-test scores of the experimental and the control group as the data of the research. The writer analyzed the data by using statistical method.

To find out whether there is or no a significant effect of using Pelmanism game on reading comprehension of the ten grade students at Vocational School Taruna Pekanbaru, the collected data were analyzed by using t-test. T-test¹⁷ was used to know whether the result of the research was statistically significant. In this research, the data were analyzed by using SPSS version 16.0. Manually, the formula of t-test is as follows¹⁸:

$$t_o = \frac{M_x - M_y}{\sqrt{\left(\frac{SD_x}{\sqrt{N-1}}\right)^2 + \left(\frac{SD_y}{\sqrt{N-1}}\right)^2}}$$

t_o : The value of t – obtained

M_x : Mean score of experimental sample

M_y : Mean score of control sample

SD_x : Standard deviation of experimental group

SD_y : Standard deviation of control group

N : Number of the class

¹⁷ Hartono, *Statistik Untuk Penelitian*, (Yogyakarta:Pustaka Belajar, 2008), 208.

¹⁸ Ibid .p.208.

After counting the t-test, it is important to obtain the degree of freedom that was used to determine whether the t-value was significant or not. The formula of degree of freedom was computed as follows:¹⁹

$$df = (N_x + N_y) - 2$$

Where:

df : the degree of freedom

N_x : the number of students in experimental class

N_y : the number of students in control class.

Statistically, the hypotheses are:

$$H_a: t_o > t_{table}$$

$$H_o: t_o < t_{table}$$

H_a is accepted if t_o is bigger than t_{table} or there is a significant effect of using pelmanism game on reading comprehension of narrative text of the ten grade students at Vocational School Taruna Pekanbaru.

H_o is accepted if t_o is smaller than t_{table} or there is no significant effect of using pelmanism game on reading comprehension of narrative text of the ten grade students at Vocational School Taruna Pekanbaru.

¹⁹ Hartono, *Ibid*, p. 212

H. Validity and Reliability of the Test

1. Validity of the Test

The tests used to test students' reading comprehension should be valid and reliable. The test can be valid if it measures accurately what it is intended to measure²⁰. In this research, the writer used content validity to know the validity of reading comprehension test. Content validity is partly a matter of determining if the instruments contain an adequate sample of the domain of content, it is supposed to represent.²¹ Thus, the test was given based on the material studied by the students. The material of the test was taken from the textbook used by the ten grade students at Vocational School Taruna Pekanbaru.

2. Reliability of the Test

A test must first be reliable as measuring instrument. Reliability is a necessary characteristic of a good test. Calculation of reliability uses various kinds of formula. They are Spearman-Brown formula, Flanagan formula, Rulon formula, Hoyt formula, Alfa formula, Kuder Richardson 20 formula and Kuder Richardson 21 formula. From all of these formula, the

²⁰ Arthur Hughes, *Testing For Language Teacher* (United Kingdom: Cambridge University Press, 2003). 26.

²¹ Fraenkel, Jack R. & Norman E. Wallen, , *How to design and evaluate a research in education*, (New York: McGraw-Hill Companies Inc, 2006), p. 153.

researcher used the Kuder Richardson 20 (K-R 20) formula to calculate the reability of the test. The formula is as follows:

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

Where are :

$$\begin{aligned} S_t^2 &= \frac{\sum x_t^2}{N} \\ &= \frac{3868}{24} \\ &= \mathbf{161.17} \\ n &= 20 \\ St^2 &= \mathbf{161.17} \end{aligned}$$

$$\sum p_q = 4.53$$

$$\sum x_t^2 = 17.33$$

$$N = 24$$

$$\begin{aligned} r_{ii} &= \left(\frac{n}{n-1} \right) \left(\frac{St^2 - \sum pq}{St^2} \right) \\ &= \left(\frac{20}{20-1} \right) \left(\frac{0.72 - 4.53}{0.72} \right) \\ &= \left(\frac{20}{19} \right) \left(\frac{3.81}{0.72} \right) \\ &= (1.05)(0.83) \\ &= 0.56 \end{aligned}$$

The reliability coefficients for good identified kinds of structure text and reading comprehension test was expected to exceed 0.0 and closed 1.00. Heaton states that, the reliability of the test was considered as follows:

- a. 0.0-0.20 = reliability is low

- b. 0.21-0.40 = reliability is sufficient
- c. 0.41-0.70 = reliability is high
- d. 0.71-1.0 = reliability is very high²²

²² J.B. Heaton, *Writing English Language Tests*. (Cambridge: Cambridge University Press, 1988), 168