Chapter III

Methodology of Research

In this last chapter, there are five points that will be explained. They are method that includes research design, population and sample, variable of research, technique of collecting data, and technique of analyzing data that is divided into normality test and hypothesis test.

Method

This research is an experimental research because of using experimental method. Riduwan (2011, p. 50) defined experimental research as a research which is trying to affect certain variable toward another variable in tightly controlled condition. In experimental research, there are three choices of designs that can be applied. They are true experimental, pre-experimental, and quasi experimental design. I will use quasi-experimental design in this research.

Research design.

I chosed quasi-experimental design because it is better than pre-experimental design which fails in presenting control group. It compares two groups. In quasi-experimental design, there are four designs such as, the time-series design, counterbalanced design, and factorial design. The design that will be used is nonequivalent control group design because in this design, two groups will be tested twice, pre-test and post-test. One group will not be treated called
control group and second group will be given a treatment named experimental group. Emzir (2009, p. 89) drew nonequivalent control group design as follow:

\[
\begin{array}{c}
O_1 \quad X \quad O_2 \\
O_3 \quad O_4
\end{array}
\]

Note:

\[X\] = treatment

\[O_1\] = pre-test of experimental group

\[O_2\] = post-test of experimental group

\[O_3\] = pre-test of control group

\[O_4\] = post-test of control group

Population and Sample

According to Riduwan (2011, p. 54), population is object or subject in an area which has fulfilled the certain requirements regarding to problem of research. He (2011, p. 56) also explained that sample is part of population that has certain characteristics which will be investigated. In this study, the populations were students of second grade of SMA Negeri 2 Limboto 2012-1013 Academic year.
These students were taken because analytical exposition is taught in second grade of senior high school based on curriculum. The samples were students of class XI IA3 and XI IA2. They were chosen purposively. The reason for choosing them as the samples was because they had similar level of ability in writing based on previous observation. Students of class XI IA3 were the experimental group and students of class XI IA2 were the control group. Experimental group will were given a treatment which is brainstorming technique and control group were taught with technique that teachers usually apply. So, the populations of this research were students of second grade of SMA Negeri 2 Limboto and the samples were students of class XI IA2 as the experimental group and students of class XI IA1 will be control group.

**Variable of Research**

There are two variables in this research. They are independent variable and dependent variable. Independent variable is brainstorming technique and dependent variable is students’ ability to generate ideas.

**Technique of Collecting Data**

In collecting the data, I used tests as the instrument. The form of the tests was essay because the skills that were investigated are writing skills. There were two tests that were given. The first was pre-test to investigate students’ prior ability. The test was given to both control group and experimental group. Students were asked to write an analytical exposition text by choosing one of several topics that were given. The topics were *smoking, infotainments, and uniform at school.*
Then, the second test was given after applying brainstorming technique to find out the improvement of students’ ability after applying technique to the experimental group. Both groups were tested. They were given topics such as *social network, smart phone, and watching television* and asked to write analytical exposition text based on the topic. The characteristic of the topics in pre-test and post-test were the same.

In assessing writing analytical exposition text, I used a rubric that which was adapted from Surapranata (2004, pp. 211-213). It includes eight criterions such as sense of audience and purpose, control of structure, vocabulary, spelling, punctuation, and grammar. The details of each criterion are in this table below.

**Table 3.1 Writing rubric assessment**

<table>
<thead>
<tr>
<th>Criterion</th>
<th>Not assessable 0</th>
<th>Limited level of competence 1</th>
<th>Adequate level of competence 2</th>
<th>Very high level of competence 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sense of audience and purpose</td>
<td>The material is irrelevant or there is insufficient material to make judgment.</td>
<td>Demonstrates little understanding of the requirements of the task; response is inappropriate for the intended audience and purpose; student loses sense of the task; displays little understanding</td>
<td>Demonstrates a good understanding of the requirements of the task; response is appropriate for the intended audience and purpose; student responds directly to the task; features</td>
<td>Demonstrates an exceptional understanding of the requirements of the task; response is very appropriate for the intended audience and purpose; student responds directly to the task; features</td>
</tr>
<tr>
<td></td>
<td>of the features of the figure.</td>
<td>of the genre are used appropriately.</td>
<td>the genre are controlled to create desired effect</td>
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<tr>
<td><strong>Control of structure</strong></td>
<td>There is insufficient material to make judgment.</td>
<td>Ideas lack organization; lack cohesion and coherence; displays little understanding of form; inappropriate length.</td>
<td>Appropriate organization and synthesis of ideas; cohesive and coherent; displays adequate understanding of form; appropriate length.</td>
<td>Very effective organization and synthesis of ideas; very cohesive and coherent throughout; controls form to create desired effect; effectively edited; appropriate length.</td>
</tr>
<tr>
<td><strong>Vocabulary</strong></td>
<td>There is insufficient material to make judgment.</td>
<td>Very limited-use words repetitively and/or incorrectly.</td>
<td>The response consists mainly of simple words used appropriately.</td>
<td>Very extensive and imaginative or has used simple words with great effect.</td>
</tr>
<tr>
<td><strong>Spelling</strong></td>
<td>There is insufficient material to make judgment.</td>
<td>Numerous errors indicating that student does not have control over conventional spelling; errors may inhibit effective communication.</td>
<td>A small number of minor errors.</td>
<td>Error free (allowance can be made for minor errors that can be attributed to the level of vocabulary).</td>
</tr>
<tr>
<td>Punctuation</td>
<td>There is insufficient material to make judgment.</td>
<td>Numerous errors indicating that student does not have control over conventional punctuation; errors may inhibit effective communication.</td>
<td>Basic with a few minor errors—response may not be divided into appropriate paragraphs.</td>
<td>The response is divided into correct paragraphs and the student displays control and confidence in using a range of punctuation.</td>
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<td>-----------------------------------------------------------------------------------------------------------------</td>
<td>---------------------------------------------------------------------------------</td>
<td>---------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Grammar</td>
<td>There is insufficient material to make judgment.</td>
<td>Numerous errors may inhibit effective communication.</td>
<td>Uses simple structures correctly and/or makes a reasonable attempt to use complex structures.</td>
<td>Uses a range of complex structures or uses simple structures with great effect and is virtually error free.</td>
</tr>
</tbody>
</table>

Adapted from Surapranata (2004, pp. 211-213)

Moreover, the highest score is 100. Sense of audience and purpose, vocabulary, spelling, punctuation, and grammar take 10% of score except for control of structure criterion. Control of structure criterion takes 50% of score.

It is because of my focus is in ability to generate ideas and it is included in control of structure criterion. The assessing can be drawn as:

1. Sense of audience and purpose criterion = \[
\frac{\text{Score}}{\text{Highest score}} \times 10\%
\]

2. Control of structure criterion = \[
\frac{\text{Score}}{\text{Highest score}} \times 50\%
\]

3. Vocabulary criterion = \[
\frac{\text{Score}}{\text{Highest score}} \times 10\%\]
4. Spelling criterion
   \[ \text{Score} = \frac{\text{Highest score}}{\text{Highest score}} \times 10\% \]

5. Punctuation criterion
   \[ \text{Score} = \frac{\text{Highest score}}{\text{Highest score}} \times 10\% \]

6. Grammar criterion
   \[ \text{Score} = \frac{\text{Highest score}}{\text{Highest score}} \times 10\% \]

Finally, the score of student’s writing text is the amount of scores of the seven criterions.

**Technique of Analyzing Data**

In analyzing data, I used normality test and hypothesis test.

**Normality of Data.**

Normality of data were tested by Liliefors method by real stage = 0,05 by using procedure as follows:

a) Observation \(X_1, X_2, \ldots, X_n\). To become \(Z_1, Z_2, Z_3, \ldots, Z_n\)

   With formula:
   \[ Z_i = \frac{X_i - \bar{X}}{S} \]

   Where: \( Z_i = \) Standard of Value
   \( \bar{X} = \) Average total score
   \( S = \) Total Score derivation

b) For every this definition used the list of distribution of definition normal and then it was counted the opportunity by using formula,

   \[ F(Z_i) = (Z \leq Z_i) \]
c) Next, the researcher counted the proportion $Z_1, Z_2, Z_3, \ldots, Z_n$ which is small or similarly with $Z_i$. If the proportion was stated by $S(Z_i)$, so:

$$S(Z_i) = \frac{\text{Amount of } Z_1Z_2Z_3\ldots Z_n \text{ which } s(Z_i) < }{N}$$

d) Counting the deviation of $F(Z_i) - S(Z_i)$ then set absolute value.

e) Take the big value among the absolute value deviation and called as $Lo$.

f) Criteria analysis: the data is normal if $L_o < L_{list}$

**Hypothesis Test.**

$$t_{test} = \frac{X_1 - X_2}{\frac{1}{n_1} + \frac{1}{n_2}}$$

Note: $n_1$ = Amount of students of experimental group

$n_2$ = Amount of students of control group

$x_1$ = Mean score of experimental group

$x_2$ = Mean score of control group

$S$ = Standard Deviation of post-test of both experimental and control group.

The hypothesis verification is “If $t_{Count} > t_{List}$, it means that $Ho$ is rejected and $Ha$ is accepted”. In this case, $Ha$ means “There is difference between students’ ability to generate ideas in writing analytical exposition text of experimental class which was given treatments, in this case brainstorming technique and control group which was not given treatments” while $Ho$ means “There is no difference between students’
ability to generate ideas in writing analytical exposition text of experimental class which was given treatments, in this case brainstorming technique and control group which was not given treatments”.”