# CHAPTER III
# RESEARCH METHODOLOGY

The method used in this research was the quasi-experimental research, in which the researcher gave certain treatment to the group of students to find out whether or not there are significant changes of students translation quality achievement after the training of Wordfast usage in translation process.

## 3.1 Population and Sample

## 3.1.1 Population

In a research it is supposed to be a research object either person or moment as the main source to gain the data. Nana Sudjana (1992:6) states that: "Population is the totality of the possible values, either the measurement result or the quantitative and qualitative measurement from the whole observed group members".

The population of the data is 80 students of the 7$^{th}$ semester Language and Literature program students in FPBS UPI. They are divided into class A and class B. Therefore, the population of this research is 80 persons. They were chosen because the students have finished their Principles of Translating Courses as the indicator that they basically have been introduced to the standardized translation procedure.

### 3.1.2 Sample

In a research, by the limitation of time, and finance, it is allowed not to observe all population. This research only involved a part of the determined population.

According to Sugiono (2004:56) sample is a part of the amount and characteristics possessed by the population. It is in line with Masri Singarimbun (1989:149) who states that:

> ... it is not necessary to observe the whole individual in a population, because besides it need high cost it also requires a long time. By observing a part of the population it is expected to gain the whole populations' characteristics.

To decide the sample size, Arikunto gives her opinion (1998:120):

> As a hint, if the subjects are less than 100, it would be better to involve the whole population, so the research will become a population research. If the subject is too large, the researcher may takes 10-15% or 20-25% or more, it depends on some consideration:
> a. The affordability of the researchers' time, effort and financial.
> b. The size of the observation region of every subject, because it is related with the quantity of the gained data.
> c. The size of the risk. For the high risk research, the larger the sample, the better result it will have.

Based on that opinion, the sample of this research is 25% from the whole population. Therefore, the sample of this research is 25% x 80 students = 20 students.

## 3.2 Variables

To avoid irrelevant discussion, the discussion must be limited into a specific area that the research intended. Based on limitation of the research as mentioned in chapter 1, this research only has a single variable, namely Translation Quality which is measured by percentage technique. The indicator in this research refers to the translation quality theory stated by Larson, Mildred (1998) which consists of three aspects: clarity, accuracy, and naturalness.

## 3.3 Research Methodology

In conducting a research, a research methodology is needed to direct and guide the research activity. Winarno Surakhmad (1998:131) states that:

> Method is the main way used to gain the researcher's goal, for example to test a set of hypothesis using certain technique and instruments. It is used after the research measures the naturalness viewed from the goal and the research condition.

Experimental method was used on this research. Experimantal method is a method that is purposed to test a hypothesis. Singarimbun (1995:7) states that:

> Experimental research is very suitable for hypothesis testing that is purposed to identify a cause and effect relation between the research variables. This research needs an exact variables and concept besides an accurate measurement. It is possible to conduct this research in a laboratory, a clasroom, and in field.

Furthermore, Singarimbun (1995:7) also states that the experimental research can be conducted with or without a control group. Therefore, because this research only involved a single group without any control group, pre-exprimental methodology is the most suitable methodology for this research. Single group pre-test and post-test design was used on this research. The following is the diagram of the research design:

| Pre-Test | TREATMENT | Post-Test |
|----------|-----------|-----------|
| $T_1$ | X | $T_2$ |

A pre-test was needed to measure initial translation quality of the group. Then, the group received the training of wordfast usage in translation process. A post-test was then administered to measure the students' translation quality after the treatment.

Finally, the pre-test and the post-test mean was then compared to see whether there are any improvement in translation quality. For further data analysis, an independent t-test was then performed to see whether or not the usage of wordfast can give significant contribution in increasing the students' translation quality.

## 3.4 Research Procedure

Before the research begins, the material used for the training activity during the treatment was firstly prepared. The instrument used to test the students' translation productivity before and after the treatment was also prepared.

### 3.4.1 Materials and Instrument

#### *3.4.1.1 Materials*

For the training purposes, a step by step tutorial paper of the Wordfast usage was made. The material includes the basic operational procedure of Wordfast usage in a Translation project. It also added by some information about the function and capabilities of translation memory in general. Therefore, it is expected that the student can understand the translation memory fundamentals, while they are trying to use it in the training period.

#### *3.4.1.2 Instruments*

To gain the data, some instruments were needed. Those were:

1. Pre-test sheets, a short passage was chosen to test the students' initial translation productivity achievement. The passage entitled "Transterm" which consists of 12 Sentences.

2. Post-test sheets, the test was given to the group after the treatment. This test uses the same text with the pre-test.

### 3.4.2 Administering Tryout Test

Tryout test has been conducted on 12 November 2004 it was administered to 10 students which were not included into the group. This tryout was conducted to measure the validity and the reliability of the test that will be used as the instruments of the research.

The test consists of 12 sentences. To measure the translation quality, each sentence was scored, ranged from 1 to 5 in term of each accuracy, clarity, and naturalness, thus there would be 36 (12 x 3 indicators) score items collected from this test.

Then the analysis was done to check the validity and reliability of each item to ensure that the instrument is valid and reliable to be used for the test.

### 3.4.3 Administering Pre-test

Pre-test was conducted on 13 December 2004. The Pre-test was alike with the tryout test, since the items of the test were considered statistically satisfactory after going through an item analysis. The students' translation score can be seen in the appendix. The test was administered in UPINET; a computer network facility in UPI, using the provided 20 personal computers facility. When the pre-test was conducted, all students were present. Time allocation for doing the test was 30 minutes. The pre-test sheets were distributed to the group before the treatment to see their initial translation quality level.

### 3.4.4 The Implementation of the Research

During the research, the group was received a training of Wordfast 4.22 usage in a translation process. The treatment was conducted from 20 December 2004 until 23 December 2004. During the research all students were present in the training period.

The following is the general illustration of the research implementation:

**Table 3.1**
**General illustration of the research implementation:**

| NO | DATE | ACTIVITY | MATERIAL |
|---|---|---|---|
| 1. | 12 Nov 2004 | Tryout | • Test Sheet |
| 2. | 13 Dec 2004 | Pre-test | • Pre-test Sheet |
| 3. | 20 Dec 2004 | Tutorial | • Introduction to Translation Memory<br>• Introduction to Wordfast interface and basic function.<br>• Translating "*Technical Specification of ACME SpeedPrint 720*" with Wordfast. |
| 4. | 21 Dec 2004 | Tutorial 2 | • Introduction to Wordfast advanced function.<br>• Translating "*Technical Specification of ACME SpeedPrint 1440*" |
| 5. | 22 Dec 2004 | Tutorial 3 | • Final Review and Capability Test<br>• Translating "*Transterm*" |
| 6. | 23 Dec 2004 | Post-test | • Post-test Sheet |

### 3.4.5 Administering Post-test

At the end of the training, a post-test was administered to the group. It was held on 23 December 2004. The post-test followed the same procedure with those of pre-test. The test used was the same as the pre-test. After the test, the test files was then collected and analyzed.

## 3.5 Data Analysis

### 3.5.1 Data Analysis on Tryout Test

Having scored the test, the test result was then analyzed in order to measure the validity and the reliability of the test. The following is the procedure of the analysis:

1. Editing, counting the returned test files and assessing whether the whole test files are complete.

2. Scoring, determining the score on each test item based on the following scoring pattern:

### Table 3.2
**Test score guidance based on the five level scales to measure translation quality Indicators.**

| Interpretation | Score |
|----------------|-------|
| Excellent | 5 |
| Good | 4 |
| Moderate | 3 |
| Bad | 2 |
| Poor | 1 |

Source : Sugiyono (2000:74), Metode Penelitian Administratif.

To determine the score interpretation, the score was interpreted based on Arikunto's (2001:230) framework about scoring the essay test item:

There will not any exact answer in an essay test. The answer will vary and be different among other. It will be difficult to make standardization. There is a suggestion determining the steps to assess and score the essay test.

Furthermore, Arikunto explains:

.... If the answer is complete, we should give score 5, slightly false give score 4, and so on until 2 and 1 to the least correct answer.

3. Tabulating, recapitulating the score into the following table:

**Table 3.3**
**Test score Table Form**

| Resp. | Test Item | | | | | | | | Total |
|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | ... | n | |
| 1. | | | | | | | | | |
| 2. | | | | | | | | | |
| 3. | | | | | | | | | |
| . | | | | | | | | | |
| . | | | | | | | | | |
| . | | | | | | | | | |
| N | | | | | | | | | |

4. Validity and Reliability Test

To test whether the instruments are feasible, a validity and reliability test was needed.

A. Validity Test

Validity test was done to measure the accuracy of the test. The following are the steps:

1) Giving a number to each test item. The Accuracy indicator is placed on number 1 – 12, Clarity on number 13 – 24, and Naturalness on 25 - 36.

2) Giving a score to each test item based on the determined classification.

3) Totalizing the respondents score

4) Calculating correlation using Pearsons' Product Moment formula as follows:

$$r_{xy} = \frac{N\sum XY - (\sum X)(\sum Y)}{\sqrt{[N\sum X^2 - (\sum X)^2][N\sum Y^2 - (\sum Y)^2]}}$$

(Suharsimi Arikunto, 2002:146)

5) Consult the $t_{count}$ value with the $t_{table}$ value with the following test criteria; if $t_{count} > t_{table}$, the correlation is significant. In contrast, if $t_{count} < t_{table}$ the correlation is not significant.

B. Reliability Test

The reliability test was done to determine the tests' result consistency. Below are the steps to measure the instruments' reliability:

1) Making item analysis table.

2) Calculating variance of each item and then the number is totalized.

3) Calculating total variance.

4) The reliability test using *Alpha Cronbach's* formula:

$$r_{ll} = \left[\frac{k}{k-1}\right]\left[1 - \frac{\sum \sigma_b^2}{\sigma_l^2}\right]$$

(Suharsimi Arikunto, 2002:171)

Notes:

$r_{11}$ = Instrument's Reliability

k = The amount of items

$\sum \sigma_b^2$ = The amount of item variance.

$\sigma_l^2$ = Total Variance

While the total variance formula is:

$$\sigma_b{}^2 = \frac{\sum X^2 - \dfrac{\left(\sum X\right)^2}{N}}{N}$$

Note:

$\sigma_b{}^2$ = Total Variance

$\sum X$ = Score Amount

N = The amount of the respondents

The $H_o$ will be rejected if $r_{count} < r_{table}$ in significance Level of 0,05. After the value is gained then the $r$ value is consulted with $r$ *Product Moment* to see whether the test is reliable or not.

### 3.5.2 Data analysis on pre-test and post-test

The data analysis technique used on this research is dependent t-test calculation based on the comparison between the pre-test and post-test means. Firstly, to see the indicators score improvement, a descriptive statistics analysis was used to the pre-test and post-test result. Five level scale based on the determined criterion was used to measure the indicators score in each test item.

Then, the respondents' score average from each indicator was calculated and interpreted based on the following interval formula stated by Sudjana:

$$\text{Interval Class Length} = \frac{\text{Range}}{\text{n of Interval Class}}$$

Because the test score is ranged from 1 until 5, 5 interval classes were determined. Then, it is discovered that the interval class length is:

$$\text{Interval Class Length} = \frac{5-1}{5} = 0,8$$

Based on the calculation, the following is the average score interpretation scale:

**Table 3.4**
**The Respondents' Score average Interpretation**

| Range | Interpretation |
|---|---|
| 1,00 – 1,79 | Poor |
| 1,80 – 2,59 | Bad |
| 2,60 – 3,39 | Moderate |
| 3,40 – 4,19 | Good |
| 4,20 – 5,00 | Excellent |

After the data processing, the next step is data explanation; the explanation stage from the gained data using simple descriptive statistics technique. This stage will generate a comprehension of how the data interrelated with the group achievement and behavior during the research.

The data will be presented using percentage technique to see the frequency of each score in each indicator. Then the score average from each indicator was also calculated to see the score change between the pre-test and the post test score.

Finally, a dependent t-test is used in this research to prove whether or not the null hypothesis is rejected or retained. If the null hypothesis is retained, it means that there is no significant contribution given by Wordfast Translation Memory application to the improvement of the students' translation quality. In contrast, if the null hypothesis is accepted, it means that there is a significant contribution given by

Wordfast Translation Memory application to the improvement of the students' translation quality. Based on Collidge (2000) there are some assumptions underlying the dependent t-test as follow:

The Assumptions of the dependent t-test are similar to the independent t-test. The dependent variable is assumed to come from a population that is normally distributed. As noted earlier, there must also be an equal number of scores in each group, although this is an experimental design requirement as well as a statistical requirement. It is also assumed that the score within a group are independent of one another.

### 3.5.2.1 The score are normally distributed

To measure whether or not the pre-test and post-test score are normally distributed, the following steps were taken:

1. Looking at the hypothesis

   Ho: the distribution of the scores are normally distributed

2. Finding the mean

3. Finding the Standard Deviation using the Formula:

$$S = \sqrt{\frac{\sum x^2 - \frac{\left(\sum x\right)^2}{N}}{N-1}}$$

4. Testing the Hypothesis of Normal distribution as follow

   a. Looking at the hypothesis

   b. Looking at the alpha level P 0.05

   c. Calculating the degrees of freedom with the formula:

      df = (k-3), where k = class interval

d. Comparing the observed and critical statistics at the calculated degree of freedom (df)

e. If the probability (asymp.2 tailed) > 0,05 Ho is accepted

### 3.5.2.2 Equal number of scores of pre-test and post-test

The number of scores (N) of pre-test and post-test must be equal. If the pre-test number of scores is 18, the post-test number of scores also must be 18.

### 3.5.2.3 The score within a group are independent

Each respondent in both pre-test and post-test must does their test in the same time using each Personal Computer, therefore it is assumed the score of each respondent will be independent.

### 3.5.2.4 Calculating the T-test

Finally, to find out the differences of students' Translation productivity achievement before and after the treatment, the dependent t-test based on Collidge (2000) was employed:

1. Subtract the pairs of scores (Post-test score – Pre-test Score).

2. Calculate the mean of the pre-test scores ($\bar{x}_1$)

3. Calculate the mean of the post-test scores ($\bar{x}_2$)

4. Calculate the sum of the squares of the differences between the pretest scores and the post-test scores ($\sum D^2$).

5. Obtain the square of the sum of the differences between the pretest scores and the post-test scores $\left(\sum D\right)^2$.

6. Determine the number of pairs of scores. In the formula, N refers to the number of pairs of scores.

7. Enter the value obtained from steps 1 – 6 into the formula for the dependent test.

$$t = \frac{\bar{x}_1 - \bar{x}_2}{\sqrt{\dfrac{\sum D^2 - \dfrac{\left(\sum D^2\right)}{N}}{N(N-1)}}}$$

t = t value

$\bar{x}_1$ = Mean of Pre-test

$\bar{x}_2$ = Mean of Post-test

N = the amount of the respondents

8. Compare the derived t value to the critical values of t ($t_{crit}$). The formula for the df in a dependent t test is $df = N - 1$, Where N = the number of pairs scores.

9. Determine whether the $H_o$ should be retained or rejected by comparing the derived t value to the tabled critical values of t at $\alpha= 0,05$. if the derived t value exceeds the tabled critical value of t (or if it less than the negative critical value), then $H_o$ is rejected. If not $H_o$ is retained.

10. Write up findings and make conclusion.

### 3.5.2.5 Calculating the effect determination

To calculates the effect determination, the following formula was used:

$$r = \sqrt{\frac{t^2}{t^2 + df}}$$

r = correlation coefficient of effect size
t = derived t value
df = the degree of freedom (N-1)

Then the result will be compared to the following scale to interpret the magnitude of the effect size:

| Effect Size | r Value |
|---|---|
| Small | 0,100 |
| Medium | 0,243 |
| Large | 0,371 |

Source: Colidge (2000:151)