CHAPTER III

RESEARCH METHOD

This part, the writer discussed research type, research design, place and time, population and sample, research instruments data collecting procedure and data analysis procedure.

A. Research Type

In conducting the study, the writer used quantitative approach. It is because of the problem of study that answered through quantitative. Quantitative is a method that is based on positivist, that is valid science, science that can be expressed numerically and it is generalizability.[1] The aim of the quantitative approach is to measure the validity, reliability, index difficulty, quality of distracter options, and the quality of multiple choice test based on good criterion of the test of summative test at the tenth grade made by the English teacher of SMK Kesehatan Borneo Bhakti Husada Palangka Raya.

B. Research Design

In this study, the writer used content analysis. It is a study which analyzes English summative test at the tenth grade made by the English teacher in measuring student's achievement at SMK Kesehatan Borneo Bhakti Husada Palangka Raya in order to find the validity, reliability, index difficulty and the effectiveness of distracter that has possess by a good test.

---

[1] Sedarmayanti and syarifudin Hidayat, *Metodology Penelitian,* Bandung: Mandar Maju, 2002, P.35

Content analysis is widely used in education. The following are some of the purposes of content analysis in educational research:

a. To identify bias, prejudice, or propaganda in text books. For example, a researcher might analyze high school history text in particular school district to determine how often women are mentioned and how much discussion is given in each mention.

b. To analysis types of errors in students' writings. For example, you could look at students' written work to classify spelling or grammatical errors and their nature and frequency.

c. To describe prevailing practices. For example, you could identify the entrance requirements of Big Ten universities by analyzing their bulletins.

d. To discover the level of difficulty of material in textbooks or other publication. For example, you could ask, "What is the vocabulary level of the fourth-grade social studies textbook in this district?"

e. To discover the relative importance of, or interest in, certain topics. For example, you might analyze popular educational research textbooks to see the coverage given to qualitative research and change in that coverage over time.

Content analysis may be done in an emergent design framework, or they may be done in a quantitative research framework with variables that

are specified a priori and numbers that are generated to enable the researcher to draw conclusions about these specified variables.[2]

C. Place and Time of the Study

In this study, the writer needed about one month to collect the all of the data accurately and briefly. The place of the study was in SMK Kesehatan Borneo Bhakti Husada.

D. Population and Sample

1. Population

The population of this study is the English summative test at the tenth grade made by the English teacher of SMK Kesehatan Borneo Bhakti Husada Palangka Raya in the 2012/2013 academic year. The writer took summative test at the tent grade as the sample of the study. Therefore, the study is called population research. It is also called population study or census study.[3] Population is a set or collection of all elements processing one or more attributes of interest.[4] Mean while the students and the teacher are as informants to get the data.

2. Sample

Sample is a part or representative of population. It is also called sample research if someone aimed to generalize research of sample research. Sample research is a research that is only done towards part of

---

[2] Donal Ary, *Introduction to Research in Education (8th edition)* Wadsworth: Cengage, 2010. P. 458

[3] Arikunto, *Prosedur Penelitian Suatu Pendekatan Praktik,* Jakarta: Rineka Cipta 2002, p. 112

[4] *Ibid..,* p. 108

representative of population. The result of research used for all of subjects combined as population.

In this sense the writer took the English summative test at the tenth grade made by the English teacher at SMK Kesehatan Borneo Bhakti Husada Palangka Raya as sample research. [5]

E. Research Instrument

Instrument is measurer used to get quantitative information about the variation of characteristic of variable objectively.

In this study, the instrument used summative test at the tenth grade made by the English teachers of SMK Kesehatan Borneo Bhakti Husada Palangka Raya are:

1. Instrument Validity

Validity refers to extend to which the results of an evaluation procedure serve the particular uses for which they are intended.[6] If the tests are valid, they can be used as instrument for measuring the students' ability. To measure the validity of this test, the formulation below used:

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

Where:

r_{pbi} = coefficient validity of each item

Mp = mean of the right answer

Mt = Mean of the total score

---

[5] *Ibid..,* P. 117

[6] WilmarTinambunan, *Evaluation of Students' Achievement,* Jakarta: Departemen Pendidikandan Kebudayaan, 1988, p. 11.

SDt   = standard deviation from the total score

p   = proportion of the students' correct answer for each item

q   = proportion of the students' wrong answer for each item (1-p).[7]

The interpretation of correlation of coefficient is:

r between   0,00 – 0,20   : no correlation

0,20 – 0,40   : low

0,41 – 0,70   : fair

0,71 – 0, 90   : high

0,91 – 1,00   : very high (perfect)[8]

To determines the Mt and SDt as bellow:

a. Determining Mean Total (Mt) by formula:

$$Mt = \frac{\sum X_t}{N}$$

b. Determining Standard Deviation Total (SDt) by formula

$$SD_t = \sqrt{\frac{\sum Xt2}{N} - \left[\frac{\sum X_t}{N}\right]^2}$$

In this study, the writer used face validity, content validity and construct validity to measure the validity of the test.

[7]Anas Sudijono, *PengantarStatistikPendidikan,* Jakarta: Raja GrafindoPersada, 2003, p. 245-246.

[8] M. Ngalim Purwanto, *Prinsip-Prinsip dan Teknik Evaluasi Pengajaran.* Cet. 9. Bandung: RemajaRosdakarya, 2000, p. 139.

a. Face Validity

Face validity of the test is when the test is indeed testing what it claims to test; the test samples the actual content of what the learner has achieved or expects to achieve.[9]

b. Content Validity

Content validity refers to the extent to which a test measures a representative sample of the domain tasks under consideration.[10] The content that has been taught to the students must be based on the curriculum and syllabus. The purposed was to measure the agreement between the content of the test item and the curriculum or materials given by the teacher. There are the analysis procedures of content validity:

1) Preparing the curriculum and syllabus used by the teacher.

2) Comparing the curriculum and syllabus material with the content of the English summative test the items.

3) Tabulating the result.

c. Construct Validity

If a test has construct validity, it is capable of measuring certain specific characteristics in accordance with a theory of language behavior and learning. This type of validity assumes the existence of

---

[9] H. Douglas Brown, *Teaching by Principle: An Interactive Approach to Language Pedagogy* (2nd ed.), Longman, 2001, p. 388-389

[10] E.N. Gronlund, *Measurement and Evaluation in Teaching (fourth edition),* New York: Macmillan Publishing Co., Inc. 1981, p. 90.

certain learning theories or constructs underlying the acquisition of abilities and skill.[11]

Thus, the validity of a test is the extent to which the test measures what is intended to measure. So, to measure the validity the writer used the content validity and construct validity for validations of instruments.

2. Instrument Reliability

The reliability of test should be consistent and stable. The reliability refers to how consistent test scores and other evaluation results are from one measurement to another.[12] So, reliability is a necessary characteristic of measurement of any good test for it to be valid at all and a test must be reliable as a measuring instrument.

To measure reliable of this test, the writer will use KR_{20} formula.[13]

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

Where:

r_{11} = coefficient reliability test

S^2 = total variant

n = total of test item

p = proportion of the students' correct answer for each item

[11] J.B. Heaton, *Language Testing,* London: New Jersey, 1987. P. 154
[12] E.N. Gronlund, *Measurement and Evluation in Teaching,* p. 117.
[13] Arikunto, *Dasar-Dasar Evaluasi Pendidikan,* Jakarta:Bumi Aksara 1999, P. 100

q   = proportion of the students' wrong answer, or q = 1- p.

$\sum$ pq = total result math of p and q.

To determines the S^2 as bellow

$$S^2 = \frac{\sum X - \frac{(\sum X)^2}{N}}{N}$$

To know the level of test validity and reliability can be seen on the value bellow:

r between   0,00 – 0,20   : no correlation

0,20 – 0,40   : low

0,41 – 0,70   : fair

0,71 – 0, 90   : high

0,91 – 1,00   : very high (perfect)[14]

3. Index Difficulty

Determining item difficulty on a test related to the numbers of students who answer the item correctly. A good test has to be proportional item, which means in a test has to have balancing within easy item, enough and the difficult. The good item consists of a fair number of difficult, fair and easy items. A very easy test will not stimulate students to enrich his effort to solve it. While a test that too difficult will make students hopeless and there no passion to try again because it out of their rich.

---

[14] Anas Sudijono, *Pengantar StatisticPendidikan,* Jakarta: Raja Grafindo Persada,2003, P. 245

The formulation as follows to determine the item difficulty:

$$TK = \frac{U-L}{T}$$

Where:

TK = index difficulty

U = numbers of the correct answer from upper group

L = numbers of the correct answer from lower group

T = number of upper and lower group.[15]

Then it classifies the result from the application of the calculation above as follows:

1) If the item difficulty 0,00 – 0,30 it says the difficulty test.

2) If the item difficulty 0,30 – 0,70 it says the middle item.

3) If the item difficulty 0,70 – 1,00 it says easy test.

4. The effectiveness of distracter

To analyze the effectiveness of distracter the writer compared the students' numbers in upper and lower group who choose the wrong alternative distracters.

F. **Data Collecting Technique**

In the study, the writer used some techniques to collect the data. The techniques consist as follows:

1. Documentation

---

[15] M. Ngalim Purwanto, *Prinsip-Prinsip dan Teknik Evaluasi Pengajaran* .Cet. 9. Bandung: Remaja Rosdakarya, 2000, p. 119

a. The number of the students at the tenth grade of SMK Kesehatan Borneo Bhakti Husada in the second semester.

b. The material of English subject for the tenth grade of SMK Kesehatan Borneo Bhakti Husada in the second semester.

c. The English summative test at the tenth grade of SMK Kesehatan Borneo Bhakti Husada in the second semester.

d. The students answer sheet for the tenth grade of SMK Kesehatan Borneo Bhakti Husada in the second semester.

2. Interview

In the study, the writer interviewed the English teacher to ask:

a. How the summative test is made?

b. What are the sources used by the English teacher in making summative test?

c. Why the English teacher does use the sources?

G. Data Collecting Procedure

In the study, the writer used some procedures to collect the data. The procedures consist of some steps as follows:

1. Editing: to check the completeness of the names or identities of sample, to check amount of paper of test items and the contents of samples' answer accordance with the data needed

2. Coding: to change the name of sample with code such as A1, A2, and so on.

3. Scoring: to give score to the students' answers based on the key answers.

4. Tabulating: to place the data in a certain table.

5. Analyzing:

   - Analyzing the validity (face, content and construct validity) of each test item.

   - Analyzing the reliability of all test items.

   - Analyzing the index difficulty of item.

   - Analyzing the distracter option of item.

H. Data Analyses Procedure

In analyzing the data of summative test, the writer used criteria of good test:

a. To find out the validity, the writer used formula $r_{pbi} = \dfrac{M_p - M_t}{SD_t} \sqrt{\dfrac{P}{q}}$

To measure the validity, the writer also used the face validity, content validity and construct validity.

b. Reliability

To find out the reliability of the test, the writer used KR_{20} formula to measure the reliability of the test.

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

c. Index difficulty

To find out the item difficulty, the writer used: $TK = \dfrac{U-L}{T}$

d. The distracters

To know the quality of good distracters is by comparing the students' numbers in upper and lower group who choose the wrong alternative distracters.

e. To know the quality of multiple choice test is based on good criterion of the test.