

## **CHAPTER III**

### **RESEARCH METHOD**

In this chapter, the researcher discuss the description of the research methodology. The discussion covers research design; population, sample, and sampling; research instrument; validity and reliability testing; normality and homogeneity testing; data collecting method; and data analysis.

#### **A. Research Design**

Research design is the way of thinking and doing preparation for collecting and utilizing the data to achieve the goal of the research. To conduct the research, the researcher can use any kinds of research design. According to Subrata (2008:72) the kinds of research are historical research, development research, description research, case study, correlation research, experimental research, and action research.

In this research, the researcher uses quantitative approach. It is important to think the design of the the research. According to Aliaga and Gunderson (2002:81), quantitative research is explaining phenomena by collecting numerical data that are analyzed using mathematically based methods (in particular statistics).

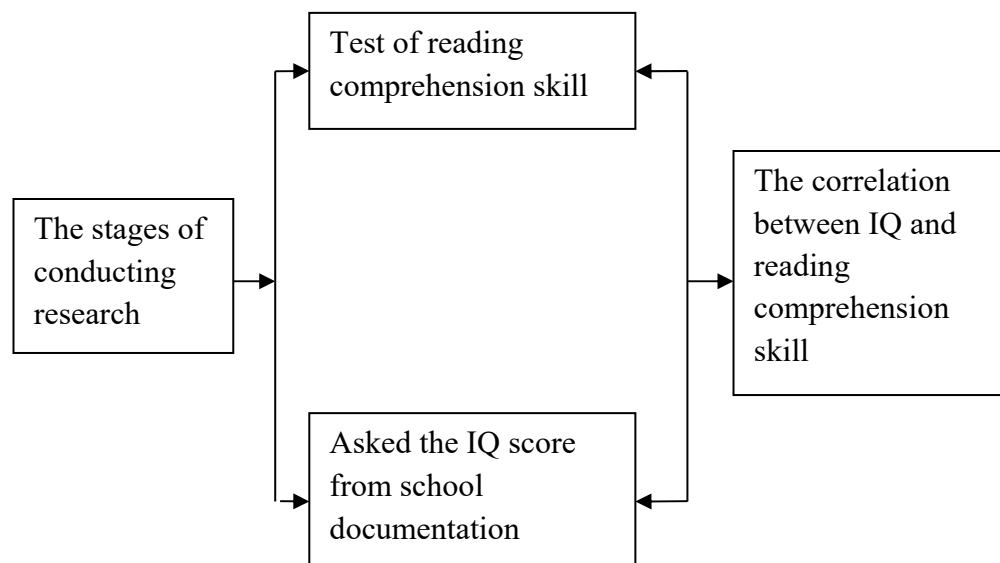
Judith pressie in Cresswell, J. (1998:28) states as follows:

Qualitative research is a loosely defined category of research design or models, all of which elicit verbal, visual, tactile, olfactory, and gustatory data in the form of descriptive narrative like field notes, recordings, or other transcriptions from audio and videotapes and other written records and picture or films.

It means that quantitative research methods dealing with numbers and everything that measurable in systematic way of investigation of phenomena and their relationship.

In this research, the researcher uses correlative research design. Latief (2011:111) states “Correlative research design are used to measure the relationship between two or more continuous variables”. In other definition, according to Yamin (2009:63), correlation design is research intent to know the correlation between two variables or more than two variable or correlation between independent variable and independent variable. So, correlation design is quantitative approach in which investigators measure the degree of relation between two or more variables using the statistical procedure of correlation analysis. This degree of assosiation, expressed as a number, indicates whether the two variables are related or whether one can predict another.

**Figure 3.1. Research Design Diagram**



## **B. Population, Sampling, and Sample**

### **1. Population**

As well as deciding the information that the researcher need before determine the sample, the researcher need to decide exactly what population going to be. According to Sugiono (2010:117), population is geographic generalizaion there are; object/subject has quality and certain of characteristics that set by researcher to learn then make a conclusion. In other definition, Arikunto (1998:115-117) states “Population is the whole of research subject”. In other word, population is a group of individuals or items that share one or more characteristics ffrom which data can be gathered and analyzed.

The population in this research is the first grade students of MAN 1 Tulungagung in academic year 2016-2017. As the population there are about 341 students.

### **2. Sampling**

Ary (2002:163) states that the concept of sampling involves taking a portion of the population, making observation on this smaller group, and then generalizing the finding to the large population from which the sample was drawn.

According to Sugiono (2010:118), sampling technique is the technique to taken sample. Technique sampling is divided into two groups; they are probability sampling and non-probability sampling. Probability sampling involves simple random sampling, stratified random

sampling and cluster sampling. Whereas non-probability sampling involves systematic sampling, quota sampling, and indicated sampling, purposive sampling, saturated sampling and snowball sampling.

In this research, the researcher used cluster sampling to take the sample. Cluster sampling is a sampling plan used when mutually homogeneous yet internally heterogeneous groupings are evident in a statistical population. According to Ary (2010:154), cluster sampling is a kind of probability sampling which the unit chosen is not an individual but, rather, a group of individuals who are naturally together. These individuals constitute a cluster insofar as they are alike with respect to characteristics relevant to the variables of the study. In addition, according to Arikunto (2010:185), in deciding the kind of cluster or group should be considered well about the feature why choose the sample.

Riyanto (2001:81) also states that the technique of research was orientation on choosing sample that population and the purpose was specific from research is known by researcher in the very beginning. From this sampling, the researcher can get the representative sample of the whole population.

The procedure of taking sample begins from the purpose of the study itself. The researcher wants to know whether IQ gives contribution in the student's reading comprehension skill or not. Based on the purpose above, the researcher chooses the class that has high IQ score in first grade

as the sample. Science acceleration class was to be samples of this research.

### **3. Sample**

The important step in conducting the research is select of the sample. Sample is a part of population that wants to be analyzed. Sample must be representative as one is to be able to generalize the population. According o Arikunto (2006:109), a sample must be representative to a population.

Sukardi (2007:54) states as follows:

The important condition to attention in take sample id two kind, they are total of apparently adequate sample and the profile of sample must be representative sample. The total of sample must be chose before doing research. There is abusively how much we can take the sample to represent population but in generally the greater of the sample is the greater to population explained.

In this research, the researcher's sample was the one class of science acceleration class in first grade students at MAN 1 Tulungagung that are 24 students.

### **C. Research Instrument**

The successful of the research is much decided by used of instrument, because data which is need to answer research questions and examine the hypothesis gained through instrument itself. According to Arikunto (2006:126) the device the researcher uses to collect data is called instrument. Instrument is one of the significant steps in conducting the research. So that, research instrument is tool of collecting data that should be valid and reliable.

In this research the researcher used two kinds of instrument, they are;

## 1. Test

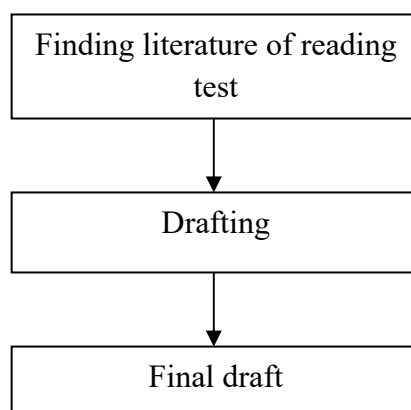
This instrument was a kind of instrument functioned to collect the data. The test was used to measure students' reading comprehension skill. According to Ary (2010:201) test itself is a set of stimuli presented to an individual in order to elicit responses on the basis of which a numerical score can be assigned.

The reading test was taken from the TOEFL book in form of multiple choices technique. The test consist of twenty five questions. This test was done only once and the researcher get the score to complete the data.

## 2. Document

Besides the test, to get the IQ score from the students, the researcher took the data from the result of IQ test that be documented by school and asked to copy the needed data. The IQ test held by Pusat Layanan Psikologi Universitas Negeri Malang every new academic year at MAN 1 Tulungagung.

**Figure 3.2. Test Development**



The steps of instrumentation, are:

1. Review Literature

The first steps to get valid and reliable test is reviewing literature concerning with the reading comprehension. Therefore, the researcher looks for the TOEFL book to get the valid sources to drafting instrument.

2. Drafting Instrument

After get information of reviewing literature, the researcher started to draft instrument that suitable with the sample.

3. Final Draft Instrument

The last step is final instrument means that the instrument has good or best quality where the instrument is appropriate.

#### **D. Validity and Reliability Testing**

The researcher used reading test as instrument to collect the data. This test to measure the student's reading skill. The result of the test will be compare with student's IQ score.

- 1. Validity of the test**

According to Brown (2004:22), the most complex criterion of an effective test and the most important principle of language testing is validity. It is the extent to which inferences made from assessment results are appropriate, meaningful, and useful in terms of the purpose of the assessment. In other definition, Sukardi (2005:122) state that validity is the degree that indicates in which a test measures what intended to

measure. Without having the validity of the test, a test is not important. In this test there are any content and construct validity.

**a. Content validity**

According to Brown (2004:24) a test is said to have content validity if its contents constitutes a representative sample of the language skills, structures, etc. being tested. The test will have content validity if it includes a proper sample of the structure or content which is relevant with the purpose of the test.

This test in this research had fulfilled the content validity because the reading test items were relevant with the purpose of the test. This test items have taken from the TOEFL textbook entitle “EASY TOEFL” by Irham Ali Saifuddin, dkk in term of multiple choice that can be used by student to prepare to do TOEFL test.

**b. Construct validity**

According to Brown (2004:25), a test is said to have construct validity if it can be demonstrated that it measures just the ability which is supposed to measure. The word ‘construct’ refers to any underlying ability which is hypothesized in a theory of language ability. Brown (2004:25) mentioned that a construct is any theory, hypothesis, or model that attempts to explain observed phenomena in our universe of perception.

In reading testing, the students be asked to answer the questions in form of multiple choice to measure the student’s



reading comprehension, and this is to fulfill the construct of reading test become valid in term of construct validity.

The validity and reliability of the test has been standard because the researcher took the test from the trusted literature. So, the researcher no need to test the validity of the test items again.

## **2. Reliability of the Test**

According to the Brown (2004), a reliable test is consistent and dependable. In other word, reliability means that scores an instrument are stable and consistent (Creswell, 2008:168). Reliability is necessary characteristic of any good test: for it to be valid all, a test must first be reliable as a measuring instrument (Heaton, 1989:162). Reliability is concerned with the effect of such random errors of measurement on the consistency of scores (Ary, 2002:250).

In this research, as discussed previously that the test items was took from the TOEFL book, so the researcher also no need to test the reliability of the test item, because of the test items have been reliable and trusted to share for students.

## **E. Normality Testing**

Normality test is used to test whether a variable is normal distribution or not. Sujianto (2009:77) states that normality distribution test is a test to measure whether our data has a normal distribution. Normal here means if the data have a normal distribution. The main reason of conducting normality testing is that it is necessary for the researcher to know whether the

population or data involved in the research is in normal distribution. To test the normality, the researcher used the *One Sample Kolmogorov-Smirnov* test with the provision that if Asymp. Sig. > 0,05, the data were normally distributed (Asmarani, 2008:234).

In this research, the normality test using SPSS 16.0 for windows. Normality test was done toward the two scores of IQ score and Reading Comprehension score obtained from the students. The result of Asymp. Sig. (2 tailed) was 0,163 in IQ score and 0,193 in reading comprehension score which were higher than 0,05 ( $0,163 > 0,05$  and  $0,193 > 0,05$ ). As a result, the Null Hypothesis ( $H_0$ ) was accepted, while the Alternative Hypothesis ( $H_a$ ) was rejected because all the data in a normal distribution.

**Table 3.3. The Result of Normality Testing**

		IQ_Score	Reading_Comprehension_Score
N		24	24
Normal Parameters <sup>a</sup>	Mean	131.79	83.00
	Std. Deviation	2.126	4.128
Most Extreme Differences	Absolute	.229	.221
	Positive	.229	.196
	Negative	-.200	-.221
Kolmogorov-Smirnov Z		1.120	1.081
Asymp. Sig. (2-tailed)		.163	.193
a. Test distribution is Normal.			

## **F. Data Collecting Method**

The data collecting method is the method to obtain the data in the research. The goal of the data collecting method in conducting scientific research was to get needed material by the researcher. In this research, the method of collecting data used is reading test. This test is to measure the students' reading proficiency.

According to the Brown (2006:401), a test as an instrument or procedure designed to elicit performance from the learners with the purpose of measuring their attainment of specified criteria. The same opinion is proposed by Djiwandono (2008:12) stating that a test is a tool or procedure used to measure the students' language proficiency.

The test items were taken from the TOEFL textbook entitle "EASY TOEFL" by Irham Ali Saifuddin, dkk. This test used to measure the student's reading comprehension skill in form of multiple choice, which consist of 25 items. After the researcher got the data from the reading test, the researcher continued to ask the IQ score from school documentation.

By this method, the researcher obtained the value of those data that will be analyzed to determine the relationship of student's IQ score and their reading comprehension skill. This data gathering took place at MAN 1 Tulungagung especially for first grade students.

The data of this research were taken by administering test. The reading test held on April 21<sup>st</sup>, 2017 in science acceleration class who as the sample of this research. The class consists of 24 students in the first grade students of

MAN 1 Tulungagung. The test item consists of 25 questions in form of multiple choice. Every right answer had score 4 and 0 was wrong answer. The maximum score was 100.

### **G. Data Analysis**

Data analysis is a review of a series of activities, grouping, systematization, interpretation and verification of data so that a phenomenon has social value, academic and scientific (Tanzeh, 2009:69). The data obtained from research result is the result of students test that were analyzed quantitatively. Quantitative analysis was done by using statistic which is called statistical analysis or inferential statistic. Statistic technique for determining relationship between pairs of score known as correlative procedures (Ary, 2002:143).

The purpose of this research was to measure the correlation between intelligence quotient (IQ) and students' reading comprehension skill. The data were analyzed by using *Pearson Product Moment Correlation*. The researcher used it because the data obtained from two variables was exposed in term of quantitative scores and the data was using interval scale. To make easier the calculation, the researcher used SPSS 16.0 in processing the data to get the correlation both of the variables. The variables were examined in this research is intelligence quotient (IQ) as independent variable (X) and students' reading comprehension skill as independent variable (Y) also, because correlation study is a association relationship.

The correlation can be positive or negative numbers. If the coefficient correlation is closed to 1, means that the relation between the two variables is strong. Whereas, if the coefficient correlation is closed to 0, means the relation of these variables is weak. The researcher determined the table interpretation of product moment scales as follows:

**Table 3.4. Interpretation Correlation Coefficient by Arikunto**

Correlation value (r)	Interpretation
0,000 – 0,200	Very low correlation
0,200 – 0,400	Low
0,400 – 0,600	Moderate
0,600 – 0,800	Enough
0,800 – 1,000	High correlation

From this formula, it could be gotten the correlation coefficient value of the two variables. Those variables were variables X (IQ score) and the variable Y (reading comprehension score). By the table above, the researcher can conclude the result of the correlation.