

CHAPTER III

RESEARCH METHODS

This chapter present the description of the research method used in the study. It consists of (1) research design, (2) population, sampling and sample, (3) Research Instrument, (4) Validity and Reliability Testing, (5) Data Collecting Method, (6) Data Analysis

A. Research Design

Research design is commonly defined as the way of thinking and doing preparation to complete research and achieve the goal of the research. The writer wants to know whether any correlation between Intelligence Quotient (IQ) and student's English achievement, so the design use in this study is correlation study.

This research was use quantitative research. According to Aliaga and Gunderson (2002:81), Quantitative research is 'Explaining phenomena by collecting numerical data that are analysed using mathematically based methods (in particular statistics). In another definition according to Muijs (2004:2) quantitative research is essentially about collecting numerical data to explain a particular phenomenon.

According to Judith Pressie in Cresswell, J. (1998:24) 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 narratives like field notes, recordings, or other transcriptions from audio and videotapes and other written records and picture or films.

Identification, choosing and problem formulate



Arrange term of thought



Hypothesis formulate



Test-hypothesis in a posteriori manner



Doing working through



Making conclusion

Figure 3.1 Steps by Quantitative Research

This research included in correlation design. Yamin (2009:63) state that Correlation design is research intent on know the correlation between two variables or more than two variable or correlation between independent variable and dependent variable.

Correlation design is quantitative research in which investigators measure the degree of relation between two or more variables using the statistical procedure of correlation analysis. This degree of association, expressed as a number, indicates whether the two variables are related or whether one can predict another.

In this study, the writer used correlation between two variables. In popular usage, the term correlation refers to any type of relationship between events or object. In statistical correlation, there must be measures for each subject (person) in-group. If this condition is satisfied, the data can be inserted into a statistical formulation, which will reveal the type and strength of the relationship under the study.

The writer just uses one class to find and collect the data. There are two stages to collecting the data. The first stage in this study was done by distributing the text of test. Distributing the test was done to know the students' achievement. The second stage is distributing IQ test as to know the IQ score of students'.

B. Population, Sampling and Sample

1. Population

Before the sample was collected, the researcher had to determine the population. According to Sugiono (2010:117) Population is geographic generalization there are : object/subject has quality and certain of characteristic that set by researcher to learning then make the conclusion. The whole of research subject (Arikunto, 1998:115).

The population of this study is the first year students in the 2013-2014 academic year conducted at MAN 1 Tulungagung, Jl. Mastrip Beji, Tulungagung consisting 11 classes. There are about 356 students, 96 male and 260 female as the population.

2. Sampling

In this study, the researcher used purposive sampling to obtain the sample. According to Hadi (1990:75) Sampling adalah cara yang digunakan untuk mengambil sampel, (sampling is the ways of doing to get sample). Sampling was constituted to choose some of individual process in research so they or individual as a voluntary. The purpose of sampling is use some of individual to get information about population. Sampling is the way to take sample.

In this research sampling technique was used to take sample is *purposive sampling*. According to Arikunto (2010:183), purposive sampling is the process of selecting sample by taking subject that is not based on the level or area, but it is taken based on the specific purpose.

According to Riyanto (2001:81) stated that the technique of research was orientation on choosing sample that population and the purpose was specific from research is knowing by researcher in the very beginning. With *purpose sampling* the researcher can choose the sample those that representative and get represent of population.

3. Sample

Selection of the sample is very important step in conducting a research study. Sample is a part of population which will to be analyzed. Sample must be representative as one is to be able to generalize with confidence from the sample to population. According to Arikunto (2006:109), a sample must be representative to a population. Based on Ary (2002:163) a sample is a group of a population. It means that good sample must be representative of the entire as possible, so that the generalization of the sample of this research.

According to Sugiono (2010:118) Sampel adalah bagian dari jumlah dan karakteristik yang dimiliki oleh populasi tersebut, (sample is part of number and characteristic those set in the population). Population form a part of population representative population, so if the researcher find information on sample its mean that information was constituted from the sample.

According to Sukardi (2007:54) stated that the important condition to attention in take sample is two kind, they are total of apparently adequate sample and the profile of sample must be representative sample. The total of sample must be choose 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.

Knowing that the population is huge in number, therefore, for this research, the writer took only one class that is X science 1 class, it means there are 30 students in round 8,42%, 6 male and 24 female. From the population the writer token 29 students' as sample because 1 of students' off the followed test. This decision was make with the consideration that these two classes they are teach by the same teacher, Dra. Yuliani.

C. Research Instrument

Instrument has important functions in this research. Instrument is one of the significant steps in conducting this research. Therefore, the researcher must choose an instrument in the process of collecting data. Research instrument is tool of collecting data that should be valid and reliable.

According to Arikunto (2006:126) the device the researcher uses to collect data is called instrument. Instrument has important in this research. Instrument is one of the significant steps in conducting this research. The successful of research is much decided by instrument used, because data which is need to answer research question and examine the hypothesis gained trough instrument itself. Instrument was constitute measurer that used to get quantitative information about variation of characteristics objectively (Hadjar, 1999:160).

The instrument of this research were tests. According to Ary (2010:201) test 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 test from researcher is to know the achievement of students. The researcher makes English test for the students that consist fifteen questions in the form multiple choices, twenty nine questions in the form fill the blank and write using own their words.

The writer conducted the field by getting the IQ score from students' data and students' English score from English test. The students' IQ score was taken from the result IQ test and the writer takes this score by students' document. the writer needs to get the score so the writer ask to students' to copy their data and then the students' give the data to the writer. The test held by Pusat Layanan Psikologi Universitas Muhammadiyah Malang. There are five psychology aspect in this intelligence test, they are: "*Intelegensi, Kreativitas, Komitment Terhadap Tugas, Kepribadian, and Minat*".

D. Validity and Reliability Testing

According to Ary, (1985:213) research is always dependent upon measurement. There are two important characteristic that every measuring instrument should passes: validity and reliability. Before using these test, a try out to 30 students to find out the validity and reliability of the test.

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1. Validity

The validity of an assessment or tool indicates the extent to which it is an adequate measure of the curriculum and objectives it represent. According to Gay in Tanzeh (2009:57) the definition of validity is the degree to which a test measures what it is supposed to measure. A common misconception is that a test is, or, is not valid. The researchers get validity from English teacher.

According to Brown in Isnawati (2012:27), there are four types of validity, they are content validity, criterion-related validity, construct validity and face validity. Furthermore, the researcher emphasized on the content validity and construct validity in this research.

Sukardi (2007:115) stated that An instrument so-called valid if the instrument that is to be use can measure what will measurability. The validity of instrument is standard was indicated where is a instrument of test what will measurability.

Content validity is a kind of validity which depends on careful analysis of the language being tested and of the particular test. A test is said to have content validity if its contents constitutes a representative sample of the language skill, structures, etc. being tested. The researcher made this test based on the course objectives in the syllabus of first grade in MAN Tulungagung 1. Therefore, this test is valid in term of content validity.

In this test, the researcher asked student to answer the multiple choice and questions in the form fill the blank and write using own their words test to

measure the students' achievement. The researcher made this test based on the course objectives in the syllabus and consult with English teacher of first grade of MAN Tulungagung 1.

Therefore, this test is valid in term of content validity and constructs validity. The content validity in this research can be showed as follow:

Table 3.1. Content Validity

No.	Competence indicator	Test item
1.	Students are able to answer the active passive voice	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15
2.	Students are able to answer the Question of the text.	16, 17, 18, 19, 20, 21, 22, 23, 24, 25
3.	Students are able to answer the change of condition active or passive voice	26, 27, 28, 29
4.	Students write with their own word	-

According to Brown in Isnawati (2012:29) mentioned that a construct is any theory, hypothesis, or model that attempts to explain observed phenomena in our universe of perception. Based on the theory above, in the test, the researcher asked the students to answer the question based on recount text to measure to the students' reading achievement and fulfill the construct of reading test and therefore valid in term of construct validity. However, the writer makes this questionnaire by herself so this test is very valid or not the writer not knowing about that.

2. Reliability

According to Howit and Cramer (2000:28) reliability is the extent to which the measure will give the same response under similar circumstances.. In other words, reliability shows a measure of consistency in measuring the same phenomenon..

Sukardi (2007:122) stated that reliability is the level in the test in a consistent manner measure at any test. A research instrument can called reliability the tool was used what to use measure cab used in when and in any time, the result is same. Ary at all (2002:250) states that reliability is concerned with the effect of such random errors of measurement on the consistency of scores.

In this test, the researcher was consultation with English teacher of the students' of MAN Tulungagung 1. So there is was not use reliability testing.

E. Normality and Homogeneity

1. Normality

According Sujianto (2009:77) normality distribution test is a test to measure whether our data has a normal distribution. There is not used normality test.

2. Homogeneity

Homogeneity testing is intended to make sure that the collected manipulation data in analysis is truly taken from a population which is too different each other. Especially in a study which is predictive, the model which is

used must be appropriate with the composition and its distribution (Sujianto:112). To know the normality, the researcher used One Way Anova with SPSS. The result can be seen in table below.

Table 3.2 Homogeneity Pre-test Using One Way Anova

ANOVA					
testB					
	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	372.749	12	31.062	1.155	.386
Within Groups	430.217	16	26.889		
Total	802.966	28			

The pretest is called homogeneity test if the significant score more than 0.050. Based on the table above that test is homogeneity because $0.386 > 0.050$.

F. Data Collecting Method

The data collecting method is the method to obtain the data in the research. The aim of the data collecting in conducting scientific research was to get material that needed by the research. In this research, the researcher used achievement test. According to Hughes in Isnawati (2012:14) states that the purpose of achievement test is to establish how successful individual students, group of students, or the courses themselves have been in achieving objectives. This test used to measure students' achievement

Arikunto (2006:127) states that “ test is a series question, exercise or other means which are used to measure the skill, knowledge, intelligent, ability or talent that have by individual or group”. The material of the test is taken from english book which related to their subject and based on senior high school curriculum with the subect the news item text. This test used to measure on the students’ achievement in MAN Tulungagung 1.

The test in this study comprises of some question that are given to respondents to get the data about students’ achievement. In arranging questions the writer passed through a long time. The first the writer started from reviewed literature from students’ book. After that the writer wrote the question and then checking with the teacher of the lesson and also the writer gave the test in one class to check the validity of the test.

At the first week the writer make a some of questionnaire and show to the teacher English what about the question, that is suitable to her students or not. The writer makes a questionnaire twice because at the first the teacher fell that the questionnaire was difficulty to students do carry out the questionnaire. And the second time the teacher was fell that the questionnaire is suitable to the students. After that, the writer give the questionnaire to two class to know the validity of the test and to compare one class to other class.

G. Data Analysis

According to Prasetyo (2008:184) stated that data analysis constitute of a continuation process from data processing to see how to interpret data, then analysis data from output at hand in processing data result stage. In this research the writer was used quantitative analysis.

Hasan (2006:30) said that Analysis quantitative is analysis that using statistic instruments, the instrument that use models like mathematic model. The result was given in numerical form then was explained and interpret in a descriptively. Analysis data quantitative also called statistic analysis. Statistic analysis is method to organize and analysis data quantitative or data that to need as data quantitative (Tanzeh, 2006:31).

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. The data obtained from research result is the result of student test that were analyzed quantitatively. Quantitative analysis was done using statistic which is called statistical analysis or inferential statistic.

The writer used a survey method through correlation technique. She analyzed he research by using *Product Moment Correlation* to know the result.

According to Sudijono (179:2008) *Product Moment Correlation* is one of technique that usually used to find out the significance of the correlation between two variables. This technique was published by Karl Pearson, therefore it often called by *Person Correlation Technique*. It is called *Product Moment Correlation*

because it is usually used to correlate one variable to another variable based on its correlation coefficient value.

The last step in this chapter is analyzing data. This analysis is to see and to find out whether there is significance correlation between students' Intelligence Quotient (IQ) score and their achievement in learning English. And to find out the result of this research, the writer analyzed the data by using Person's Product Moment Correlation, as follow:

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

r_{xy}	= correlation coefficient between X and Y
$\sum XY$	= sum of cross products of deviation scores of X and Y
$\sum X$	= Total score of X
$\sum Y$	= Total score of Y
N	= number of respondents
X	= distributions of students' IQ score
Y	= distribution of English score

Criteria	: If $r_o > r_t$ means there is correlation and H_a is accepted, H_o is rejected
	: If $r_o < r_t$ means there is no correlation and H_a is rejected, H_o is accepted
H_o	: there is no correlation between students' Intelligence score and students' achievement in learning English
H_a	: there is correlation between students' Intelligence score and students' achievement in learning English