CHAPTER III

RESEARCH METHODS

This chapter discusses the aspects dealing with the research used to collect and analyze the data. Those aspects are research design, population and sampling, research instrument, validity and reliability, normality testing, data collection method, and data analysis.

A. Research Design

This study employed the correlation research design. Lodico *et al* (2006: 14) defined correlational research was a quantitative method designed to show the relationships between two or more variables. Meanwhile, Ary (2006:27) stated correlational research gathers data from individuals on two or more variables and then seeks to determine if the variables are related (correlated). In correlational research designs, investigators use the correlation statistical test to describe and measure the degree of association (or relationship) between two or more variables or sets of scores (Creswell, 2012: 338). Accordingly, correlational research seeks to discover if two variables are associated or related in some way. It is for prediction that if two variables are correlated, knowing one can take an educated guess about what the other is likely to be.

There are two types of correlational research design according to Creswell (2012). The two primary correlation designs are explanatory design and prediction design. This study used explanatory design since it

will just investigate the degree of association between two variables and simply analyze all participants as a single group. As stated by Creswell (2012: 340), explanatory design is a correlational design in which the researcher is interested in the extent to which two variables (or more) co-vary, that is where changes in one variable are reflected in changes in the other. Therefore, since the goals of this study is to find out the correlation between intrapersonal intelligence students' academic self-efficacy and their engagement in English class, the elaboration from experts above strengthens the reason why correlation method is perceived the best to answer the research formulations of this study.

B. Population, Sample and Sampling

1) Population

Population, sample, and sampling were critical important factors must be included in order to conduct this research. Ary et al., (2002: 148) defined population as all members of any well-defined class of people, events, or objects. Meanwhile, Creswell (2012: 142) stated a population is a group of individuals who have the same characteristic. In accordance, a research population is a collection of individuals or objects known to have similar characteristics.

In this study, the population was coming from C class of English Education Department students at IAIN Tulungagung. The total numbers of population were 35 students with 30 of female and 5 of male.

2) Sampling

Due to the large sizes of populations, the researcher could not test each individual in the population because it was too expensive and time-consuming. This was the reason why the researcher relied on sampling techniques. Related to Fraenkel *et al* (2012: 91) sampling was the selection of the sample of individuals who will participate (be observed or questioned). To put it simply, sampling was the way of proses in taking sample intended to carry out research. Ary (2002: 16) stated "the purpose of sampling is to obtain information concerning the population".

With the intention of taking sample, the researcher was conducting research to the students who have been categorized as intrapersonal type of intelligence. Here, purposive sampling technique was the proper one aimed to select subjects in this research. Purposive sampling implied the way that researchers sample must be tied to their objectives, it was about with whom, where, and how one does one's research (Palys, T, 2008: 697). Therefore, it allowed researcher determined the subjects by defining specific characteristics suit to research purposes, so that it was expected to answer research questions.

3) Sample

Sample is simply a subset of the population. According to Lodico *et al* (2006: 143), "a sample is a smaller group selected from a larger population (in this case, a realistic population) that is

representative of the larger population". For having sample, researcher was allowed to conduct the study to individuals from the population so that the results of their study could be used to derive conclusions that will apply to the entire population. In this study, the sample was taken from C class students of English Education Department who had been included as intrapersonal intelligence thinkers measured by the questionnaire. Here, there were 10 students selected as the characterized subjects.

C. Variables

According to Ary (2006: 37) stated "variable is a construct or a characteristic that can take on different values or scores". There were two types of variable; independent and dependent variable. In this research, the writer had two variables which the term of one was affecting another that would be identified as follow:

1) Independent variable: students' academic self-efficacy.
2) Dependent variable: student engagement.

D. Research Instrument

In conducting research, instrument played a huge role as a tool with regard to obtain the involved data. It deals with the statement of Wilkinson and Birmingham (2003) who defined research instruments as the simply devices for obtaining information relevant to the research projects, and there are many alternatives from which to choose. Here, the researcher used questionnaire as the instrument. According to Brinkman

(2009), questionnaires have obtained a rather ambivalent reputation as a research instrument. Questionnaire is used to acquiring the needed data with the purpose of measuring intrapersonal intelligence students, their academic self-efficacy, and also their engagement in English class. The questionnaire used in this research was the type of closed questionnaires. It served the answers and allowed the respondents for being able to choose one of the available options.

The questionnaire was about 62 items for categorizing intrapersonal intelligence students adopted from *Itc Publications* that linked to the subjects involved in this research. With the form of statement, students were asked to fulfill the questionnaire by choosing and writing down the answer related to their agreement. The researcher provided 5 options for each statement.

It also came up for measuring student engagement in a class. The researcher also provided 5 options for each statement. By contrast, there were about 15 items in the form of statement that was taken from Scheiner and Louis (2006) in their *Engaged Learning Index*.

Meanwhile, for measuring students' academic self-efficacy, the questionnaire was adopted from a set of questionnaire proposed by Pintrinch and De Groot (1990). Here, students were instructed to respond to 9 items on a 7-point Likert scale.

Likert scale was used for determining the interval score of the questionnaire set. Ary (2006: 209) stated that *"likert scale assesses*

attitudes toward a topic by presenting a set of statements about the topic and asking respondents to indicate for each whether they strongly agree, agree, are undecided, disagree, or strongly disagree. The various agree - disagree responses are assigned a numeric value, and the total scale score is found by summing the numeric responses given to each item. This total score assesses the individual's attitude toward the topic". Thus, all answers of 3 questionnaires above would be organized as score in order to deal with the easier way.

For proposing 5-point Likert scale, every score indicated that if respondent wrote "5" the statement was definitely them, "4" indicated the statement was a lot like them, "3" indicated the statement was somewhat like them, "2" indicated the statement was a little like them, and "1" indicated the statement was not at all like them.

On the other hand, 7-point Likert scale presented every score in the way if respondent wrote "7", it indicated the statement was very true of them, "6" indicated the statement was usually true of them, "5" indicated the statement was often true of them, "4" indicated the statement was occasionally true of them, "3" indicated the statement was rarely true of them, "2" indicated the statement was usually not true of them, "1" indicated the statement was not all true of them.

Finally the total scores of students' answer in 3 questionnaires would present their intrapersonal intelligence level, their academic self-efficacy, and their engagement in a class. Based on standard score above,

the highest score of the intrapersonal intelligence questionnaire was 40 and the lowest score was 8. Then, the highest score of students' academic self-efficacy questionnaire was 63 and the lowest score was 9. While for the highest score of student engagement questionnaire was 75 and the lowest score was 15.

In addition, to strengthen the instruments, researcher had brief conversation with the respondents as further approach for the sake of ensuring that they gave an actual answer. Therefore, the researcher knew if they were honest or not by also doing interview as soon as they finish fulfilling the questionnaires.

E. Validity and Reliability

Validity and reliability are two words that almost always crop up when discussing and analyzing scientific research. Validity is the extent to which the procedure measures what it intends to measure. It attends to the definition stated by Hammersley in Ary (2002:452) that "an account is valid or true if it represents accurately those features of the phenomena that it is intended to describe, explain, theorize". In addition, Lodico *et al* (2006: 87-88) presented, "Validity focuses on ensuring that what the instrument "claims" to measure is truly what is measuring". Therefore, validity shows whether an instrument can measure what must be measured or not.

Reliability, on the other hand, refers to the consistency of a measurement. It deals with Azwar (in Sujianto 2009:97) who noted that

"*reliability* means consistency". However, these two criteria are absolutely important used to judge the quality of all pre-established quantitative measures. In addition, Triton (in Sujianto, 2009: 97) stated that there were some interpretations of Cronbach values (see table 3.1).

Table 3.1: Cronbach Alpha interpretation based on Triton

Cronbach values	Interpretations
0,00 – 0,20	Less reliable
0,21 – 0,40	Rather reliable
0,42 – 0,60	Quite reliable
0,61 – 0,80	Reliable
0,81 – 1,00	Very reliable

From the table above, the researcher could be seen that the closer the reliability coefficient to 1, the more reliable the instrument used in a research.

In this study, the writer uses 3 kinds of questionnaire taken by several resources. To measure intrapersonal intelligence students whom the writer took as the sample of this study, she uses *Multiple Intelligence Quiz* taken from *Itc Publications* that was established in 2002 by co-founders Gerard Alford, Eric Fragenheim and Paul Herbert. By concerning Howard Gardner's theory of multiple intelligences, this questionnaire was embedded with cutting-edge educational research, tried and tested instructional methods and a comprehensive range of practical lesson ideas

and examples aligned to the National Curriculum. The 62 items of this questionnaire were classified into 8 verified reliable classifications while for each type of intelligence presented 8 items (see table 3.2 – 3.9).

Table 3.2 for Verbal/Linguistic

Reliability Statistics

Cronbach's Alpha	N of Items
.759	8

Table 3.3 for Logical/Mathematic

Reliability Statistics

Cronbach's Alpha	N of Items
.724	8

Table 3.4 for Visual/ Spatial

Reliability Statistics

Cronbach's Alpha	N of Items
.611	8

Table 3.5 for Interpersonal Intelligence

Reliability Statistics

Cronbach's Alpha	N of Items
.626	8

Table 3.6 for Musical

Reliability Statistics

Cronbach's Alpha	N of Items
.824	8

Table 3.7 for Naturalistic

Reliability Statistics

Cronbach's Alpha	N of Items
.694	8

Table 3.8 for Bodily/ Kinesthetic

Reliability Statistics

Cronbach's Alpha	N of Items
.612	8

Table 3.9 for Intrapersonal Intelligence

Reliability Statistics

Cronbach's Alpha	N of Items
.832	8

Having known the value resulted by the reliability coefficient, the researcher surely concluded that the instrument used in this study was *reliable* and some included as *very reliable* based on the Cronbach Alpha's value interpretation given by Triton.

The conclusion could be simply seen (see table 3.2 for Verbal/ Linguistic) showed the Cronbach Alpha's value reached 0.759, for Logical/ Mathematic (see table 3.3) showed the Cronbach Alpha's value reached 0.724, for Visual/ Spatial (see table 3.4) showed the Cronbach Alpha's value reached 0.611, for Interpersonal Intelligence (see table 3.5) showed the Cronbach Alpha's value reached 0.626, for Naturalistic (see table 3.7) showed the Cronbach Alpha's value reached 0.694, and for Bodily/ Kinesthetic (see table 3.8) showed the Cronbach Alpha's value reached 0.612. Thus, these items were included as *reliable* instrument. Meanwhile, for Musical (see table 3.6) showed the Cronbach Alpha's value reached 0.824 and for Intrapersonal Intelligence (see table 3.9) showed the Cronbach Alpha's value reached 0.832. This proved that 16 items for measuring Musical and Intrapersonal Intelligence were included as *very reliable* instrument.

The second questionnaire which concerning academic self-efficacy was proposed by Pintrich and De Groot (1990: 37). It provided that the self-efficacy scale (a = .88) consisted of nine items regarding perceived competence and confidence in performance of class work (e.g., "I expect to do very well in this class," "I am sure that I can do an excellent job on the problems and tasks assigned for this class," "I know that I will be able to learn the material for this class"; cf. Eccles, 1983; Schunk, 1981 cited in Pintrich and De Groot, 1990: 35) was included as reliable instrument (see table 3.10).

Table 3.10 for Academic Self-Efficacy

Reliability Statistics

Cronbach's Alpha	N of Items
.879	9

The third questionnaire is for measuring student engagement in a class proposed by Scheiner and Louis (2006). In their study, they developed a multidimensional measure of engagement by adding psychological components. With a coefficient alpha of 0.5 until 0.7 for each item, the newly developed *Engaged Learning Index* appears to be a reliable tool for educators to measure a broader spectrum of student engagement in the learning process (see table 3.11).

Table 3.11

Rotated Component Matrix and Factor Loadings for the Final Version of the Engaged Learning Index

Items	**Factor 1 (Meaningful Processing)**	**Factor 2 (Participation)**	**Factor 3 (Focused Attention)**
I can usually find ways of applying what I'm learning in class to something else in my life.	0.74		
I feel energized by the ideas that I	0.74		

am learning in most of my classes.			
I feel as though I am learning things in my classes that are worthwhile to me as a person.	0.73		
I am learning a lot in most of my classes this semester	0.72		
I find myself thinking about what I'm learning in class even when I'm not in class.	0.72		
I often discuss with my friends what I'm learning in class.	0.69		
I usually think about how the topics being discussed in class might be connected to things I have learned in previous class periods.	0.65		
When I am learning about a new idea in a class, I think about how I might apply it in practical ways.	0.56		
Sometimes I get so interested in something I'm studying in class that I spend extra time trying to learn more about it.	0.52		

I regularly participate in class discussions in most of my classes.		0.77	
I ask my professors questions during class if I do not understand.		0.75	
Sometimes I am afraid to participate in class.		0.70	
Often I find my mind wandering during class.			0.79
In the last week, I've been bored in class a lot of the time.			0.77
It's hard to pay attention in many of my classes.			0.75

Note. Factor loadings less than .40 are not displayed. Principal components analysis with varimax rotation (Scheiner and Louis, 2006: 27)

F. Normality

Normality testing was used to know whether each instrument have normality or not. The main reason of conducted normality testing in this research that it was necessary for the researcher to know that the population or data involved in the study was in normal distribution. One of the well-known ways to test the normality in a research used *One-Sample Kolmogorv-Smirnov test.* This could be done easily by using SPSS 16.0 program. Normality test was done towards the two scores (student

engagement score and academic self-efficacy score) obtained from the students. The data was presented as the next table (see Appendix 2).

The hypotheses involved were:

a. H_0 : The data is in normal distribution

b. Ha : The data is not in normal distribution

The analysis of which hypothesis was accepted refer to the significance value ($\alpha = 0.05$). Null hypothesis (H_0) would be accepted when the *Asym. Sig* value was higher than significance value (*Asym. Sig* > 0.05). Meanwhile, when the *Asymp. Sig* value was lower than 0.05 (*Asymp. Sig* < 0.05), null hypothesis (H_0) would be rejected, then alternative hypothesis (H_a) would be automatically accepted. The resulted of the normality testing done by using SPSS below (see table 3.12).

Table 3.12 for Normality Testing

One-Sample Kolmogorov-Smirnov Test

		Unstandardized Residual
N		10
Normal Parameters[a]	Mean	.0000000
	Std. Deviation	2.87513948
Most Extreme Differences	Absolute	.188
	Positive	.156
	Negative	-.188
Kolmogorov-Smirnov Z		.595

Asymp. Sig. (2-tailed)	.871

a. Test distribution is Normal.

Based on the table above, it could be seen that *Asymp. Sig. (2-tailed)* was 0.871 which means it was higher than 0.05. As a result, the null hypothesis (H_0) was accepted while the alternative hypothesis (H_a) was automatically rejected. Accordingly, all data from the scores was in a normal distribution.

G. Data Collection Technique

The data collection technique is the way to obtain the data in the research. Data collecting method was a systematical and standard procedure used to collect data that is needed. As stated by Chaleunvong (2009), "data-collection techniques allow us to systematically collect information about our objects of study (people, objects, phenomena) and about the settings in which they occur". The data of this study was collected by administering the questionnaire consisted of *Multiple Intelligence Quiz* that was distributed on May 13rd 2019 to select the sample, then the researcher continued to distribute a set of *Engaged Learning Index* and *Self-Efficacy* questionnaire on May 16th 2019 to the 10 samples who had been selected.

H. Data Analysis

Data analysis was technique to analyze the obtained data. As this research, all data were gain from the result of test in the form of number.

All data were analyzed quantitatively. The numerical data was obtained from the subjects' of academic self-efficacy score and student engagement score.

After all the data was gathered, firstly, the researcher *tabulated* them into the tables which expected for readers to understand easier. Secondly, knowing the correlation between the two involved variables, researcher employed computer calculation of *Pearson Product Moment* correlation using SPSS 16.0 program to analyze the data. This showed the result that the interpretation coefficient correlation (*r*)value of how strong/high or weak the correlation between the variables. Consider the following interpretations given the following size of coefficients related to Creswell (2012: 347);

- *.20 –.35:* When correlations range from .20 to .35, there is only a slight relationship; this relationship may be slightly statistically significant for 100 or more participants.
- *.35 –.65:* When correlations are above .35, they are useful for limited prediction. They are the typical values used to identify variable membership in the statistical procedure of factor analysis (the inter correlation of variables with a scale), and many correlation coefficients for bivariate relationships fall into this area.
- *.66 –.85:* When correlations fall into this range, good prediction can result from one variable to the other. Coefficients in this range would be considered very good.

- *.86 and above:* Correlations in this range are typically achieved for studies of construct validity or test–retest reliability. In fact, researchers want their reliability and validity test correlations to be this high.

Thirdly, the researcher would take a conclusion based on the result showed by SPSS 16.0 program if the hypothesis was rejected or accepted.