

Chapter Three

Methodology

This section explains the ways to conduct the research and the methods of research. The section is divided into research design, population and sample, sampling, data collection method. Then, the last section is data analysis.

Research design

The researcher investigated the correlation between students' autonomous learning and academic achievement. Then, this study used quantitative research. Donmoyer (2012) stated that quantitative research is an approach toward study empirics to collect, analyze and show the data in numeric than narrative. It was the approach to the exact record and to analyze the data using statistical calculations. Creswell (2012) contended that some major characteristics of quantitative research are; creating purpose statement, research questions and hypothesis that are specific, narrow, measurable and observable. Then, quantitative is collecting numeric data from a large number of people using the instrument with preset questions and responses. The other hand, quantitative research is analyzing trends; comparing group; relating variables using statistical analysis; and interpreting results by comparing them with prior predictions and past research (Creswell, 2012). This study also relates to students' autonomous learning as the independent variable and students' academic achievement as the dependent variable.

This study used correlation research design. According to Sukardi (2009), correlation research design is a study that involves data collection actions to determine whether there is a level of relationship between two or more variables.

Creswell (2012) argued that a correlation is a statistical test to determine the tendency of the pattern for two, more variables, or two sets of data consistently. The existence of relations and the level of variables were important; it was being able to develop in accordance with research objectives. By this point, this study investigated the correlation between students' autonomous learning and students' academic achievement.

Research Setting

The research was conducted at one private universities in Yogyakarta of English teacher training program that was started from November 2018. This decision was based on two reasons. First, the researcher wanted to investigate students' learning autonomous in the context of English teacher training program with the hope that the result of the study would give benefits for the lecturers and students to develop their academic achievement in teaching and learning process. Second, as students of the English teacher training program, the researcher also required to have teaching performance and English performance independently. So, autonomous learning was needed to support the mastering teaching and learning process in English teacher training program.

Research Population and Sample

Before conducting the research, the researcher determined who will be the subject of research. This study had the population to determine the simple with sampling strategy to get reliable research data.

Research population. The population is the total number of subjects who became the subject of research. Sugiono (2007) stated that population is a

generalization region consisting of objects or persons that have certain qualities and characteristics set by the researcher to study. Whereas according to Hadeli (2006), the population is the overall object of research that serves as data. The researcher took students entire batch 2015 at English teacher training program as the population. The total population were 118 students. Students batch of 2015 were chosen because they still have fulltime courses in their semester. It was easier for the researcher to get the data. Creswell (2012) stated that the researcher chooses the respondents who are ready and accessible to be studied.

Research sample. The sample is the set of individuals selected from a population and it must represent the population. In line with that opinion, Sugiono (2007) argued that sample is part of the number and characteristics possessed by the population. The researcher took the sample as many as needed from the population. It was used to get responses from respondents that were the same characteristic. Respondent was the sample of people who are selected from a population for the purpose of a survey. Cohen, Manion & Morrison (2011) said that a sample size of 30 is held by many to be the minimum number of cases if researchers plan to use some form of statistical analysis on their data, though this is a very small number and we would advise very more consider. Arikunto (1992) stated that the approximation of subject less than 100 is about 10-15%, 20-25% or more. It considerate of aspects of time, power, fund, region and the risk that has by the researcher. In this study, the researcher used cluster random sampling to take the samples. The stratify within cluster sample, those which are focused and which demonstrate discriminability, are able to be acquired (Cohen, Manion, and

Morrison, 2011). The cluster random sampling helped to get samples easily. In this study, the researcher took minimum samples about 50% of the population. It aimed to minimize the risk of sample error. The minimum sample was 59 respondents. By this point, the researcher distributed questionnaire into three classes and got 71 respondents from the whole class as the samples.

Research Instrument

In this study, the researcher used questionnaire and document as the research instruments to collect the data.

Questionnaire. The questionnaire was used to measure students' autonomous learning. The researcher needed the numerical data to investigate the level students' autonomous learning (see appendix A). Cohen, Manion and Morrison (2011) said that questionnaire is the useful instrument in providing structured, numerical data, able to administrated without the presence and being comparatively straightforward to analyze. The other opinion by Sugiono (2010) who said that questionnaire is a data collection technique done by giving a set of questions or written statement to the respondent to be answered. It used to measure attitudes, opinions, and perceptions of a group of people about social phenomena. This questionnaire was used to find the score of students' autonomous with Likert scale. Djali and Muljono (2007) argued that Likert scale was used to measure of attitude, opinion and perception in education phenomenon.

Respondents were asked to answer the questions with alternative answer. The researcher distributed the questionnaire using the Indonesian language to

make the participants understand and answer the questionnaire easily. Then it also reduced the bias data. Respondents only gave a check mark (√) on the answer column available on the instrument sheet according to their situation. According to Sumanto (1995), Likert scale aims to get a response from the person to some statement by showing whether they agree, do not specify, agree and strongly disagree with each statement. The alternative score of the positive answer is; strongly agree (4), agree (3), disagree (2), strongly disagree (1). Then, the alternative score of the negative answer is; strongly disagree (4), disagree (3), agree (2), strongly agree (1). The questionnaire was adapted from Silawati (2013) which consisted of 38 statements. The questionnaire detail is presented on the table below:

Description	Statements		Total
	Positive	Negative	
Motivated	3,10,13,15, 21, 24	8,34,37	9
Confident	2,6,14	9,11	5
Independent	1,4,5	7,12	5
Initiative	17,20,26,32	28	5
Responsible	16,18,22,30,36,38	19,23,25,27,29,31,33,35	14
Total	22	16	38

Students' GPA. The document was to determine students' academic achievement level through students' grade point average (GPA). The students'

GPA was gained from administration office of English teacher training program. In detail, students' GPA was used as an indicator to determine their academic achievement level.

Data Collection

The researcher used attitude scale as data collection method. The data collection consisted of 71 samples of students of English teacher training program at private universities in Yogyakarta. The researcher distributed the instrument of questionnaire into three classes. Before distribution, the questionnaire validity was checked by experts' judgment. The respondents are asked to answer based on their situation in the learning process. After that, the instrument checked the reliability to get the reliable data.

Instrument Validity. The instrument needed to be tested before being distributed. It clarified the questions that the questionnaire instrument consisted of valid questions. Dempsey (2002) said that validity refers to instrument capability in collecting the data to measure and get relevant data. The questionnaire was checked by three experts' judgment in order to measure tools of the data. All of the experts' judgment suggested customizing all items in the questionnaire based on the situation for students at English teacher training program. Sugiono (2012) argued that valid means the instrument can be used to measure what to be measured. All experts said that all adapted all questionnaire items were useful in order to avoid invalid data. The result of the valid questionnaire items (see appendix A) were used to collect data.

Instrument Reliability. To test the reliability of the instrument, the researcher used alpha Cronbach coefficient method. Measuring the reliability is carried out using statistics calculation. Kuntjojo (2009) argued that an instrument is reliable because it can be used to measure the data by result consistency. The instrument was measured by the Cronbach's alpha and it was reliable when the result is greater or equal 0,70 (Nazaruddin and Basuki, 2016). An alternative reliability calculation was found by using Cronbach's Alpha coefficient. The reliability guidelines can be seen in the table below:

Score	Category
> 0.90	Very Highly Reliable
0.80-0.90	Highly Reliable
0.70-0.79	Reliable
0.60-0.69	Marginally/Minimally Reliable
< 0.60	Unacceptably Low Reliability

There were 71 respondents that were asked using the questionnaire consisting of 38 items. The reliability of questionnaire was on 0.850 and it was considered as highly reliable category with interval (0.80-0.90). So, the questionnaire was good to be used. The result of questionnaire reliability was shown on the next page:

<i>Table 3. The Result of Reliability Test</i>	
Cronbach's Alpha	N of Items
0.850	38

Actually, the instrument was reliable to be used but based on the data per item indicated four items that were not reliable. It is because of all items was on category of a highly reliable which included in the interval 0.80-0.90.

<i>Table 4. The Result of Reliability Test Per-items</i>						
Item	Cronbach's alpha value	Status		Item	Cronbach's alpha value	Status
Q1	0.841	Highly Reliable		Q20	0.846	Highly Reliable
Q2	0.846	Highly Reliable		Q21	0.850	Highly Reliable
Q3	0.842	Highly Reliable		Q22	0.846	Highly Reliable
Q4	0.849	Highly Reliable		Q23	0.853	Highly Reliable
Q5	0.847	Highly Reliable		Q24	0.849	Highly Reliable
Q6	0.845	Highly Reliable		Q25	0.848	Highly Reliable
Q7	0.844	Highly Reliable		Q26	0.845	Highly Reliable
Q8	0.853	Highly Reliable		Q27	0.843	Highly Reliable
Q9	0.851	Highly Reliable		Q28	0.840	Highly Reliable
Q10	0.844	Highly Reliable		Q29	0.839	Highly Reliable
Q11	0.847	Highly Reliable		Q30	0.845	Highly Reliable
Q12	0.842	Highly Reliable		Q31	0.850	Highly Reliable
Q13	0.850	Highly Reliable		Q32	0.843	Highly Reliable

Q14	0.843	Highly Reliable	Q33	0.846	Highly Reliable
Q15	0.845	Highly Reliable	Q34	0.849	Highly Reliable
Q16	0.844	Highly Reliable	Q35	0.844	Highly Reliable
Q17	0.846	Highly Reliable	Q36	0.847	Highly Reliable
Q18	0.850	Highly Reliable	Q37	0.847	Highly Reliable
Q19	0.853	Highly Reliable	Q38	0.847	Highly Reliable

Data analysis

The researcher used descriptive statistics and inferential statistics. Cohen, Manion, and Morrison (2011) argued that descriptive statistic used to determine the frequencies, the tendency (mean, modes, and median), and dispersal (standard deviation and range). Inferential statistic with contrast strives made inferences and predictions based on the data gathered. Therefore, the researcher used descriptive statistics and inferential statistics using Pearson Product Moment Correlation (r) to analyze the data and to answer all three research questions of the study.

The first research question about students' autonomous learning level was analyzed using descriptive statistics. The researcher used descriptive statistic to present and describe the data by indicating central tendency (mean, modes, and median). The result data from respondents' answer was input into Microsoft Excel then after that was analyzed through statistics calculation. Before making the results of data analysis, the researcher made the interval of students' autonomous learning level category, it was adapted from Supranto's (2006) formula. The level of students' autonomous learning was categorized into four categories such as

very high, high, moderate and low. The total items are 38 with the maximum score of each item is 4 and the minimum score is 1 for the item. The result of the interval value was shown below:

$$c = \frac{\text{Max value} - \text{Min value}}{N}$$

$$c = \frac{(4 \times 38) - (1 \times 38)}{4}$$

$$c = \frac{152 - 38}{4}$$

$$c = 28,5$$

c	= class width
Max value	= Maximal value
Min value	= Minimal value
N	= Number of classes

The formula was showed the class width about 28,5. It was used as the interval to categorize the level of students' autonomous learning. The complete category was shown on the table below:

Scale	Category
$123.6 < x \leq 152$	Very High
$95.1 < x \leq 123.5$	High
$66.6 < x \leq 95$	Moderate
$38 < x \leq 66.5$	Low

The second research question about students' academic achievement level, the researcher also used descriptive statistic. The data of students' academic achievement was the score of students' GPA about 0.00-4.00. The categorizing of the level of students' GPA are such as "very high/cumlaude", "high/very satisfy",

“moderate/satisfy”, and “low”. The category of GPA level was based on the book of *Panduan Akademik UMY 2013/2014*. The level of students’ GPA will divide based on all GPA from respondents. Then, it will know after GPA getting the data from the administration office.

Table 6. <i>Category of Students’ GPA</i>	
Scale	Description
3.51 – 4.00	Very High / Cumlaude
2.76 – 3.50	High / Very Satisfy
2.00 – 2.75	Moderate / Satisfy
Lest than 2.00	Low

For the last research question, the researcher used inferential statistic to find the relation between students’ autonomous learning and students’ academic achievement. It was to measure the hypothesis whether the hypothesis was accepted or rejected. Before measuring the hypothesis, the researcher tested the normality of the data before analyzing the data using inferential statistic. Normality test was used to determine whether the data distribution was normal or not (Cohen, Manion, & Morrison, 2007).

In this study, the researcher used Pearson Product Moment (r) to investigate the correlation between multiple intelligences and students’ academic achievement. Cohen, Manion, and Morrison (2007) stated that the Pearson’s product-moment correlation coefficient (r) is ranging statically from -1.0 to +1.0. The correlation coefficient of -1.0 means there was perfect negative correlation between two variables. It happens in the negative correlations, when one variable

increases while the other variable decrease and vice versa. The correlation coefficient of +1.0 means the perfect correlation between two variables. Perfect correlation is positive correlations when variables can increase and decrease together.