

Chapter Three

Methodology

This chapter discusses the methodology which used to conduct this research. This chapter is divided into six sections. They are research design, nature of data, research setting and participants, data collection method, data collection procedure, and data analysis.

Research Design

The researcher employed the quantitative descriptive approach. The reason of choosing quantitative descriptive approach is because the data of this research analyzed statistically and the researcher investigated the condition of learning facility and learning environment in order to give the description about the fact phenomenon. According to Creswell (2012), quantitative approach is the research which the data is analyzed by using mathematical procedures, called statistics. Besides, this research also uses the correlation method. It is because the researcher deals with finding out the correlation of independent variable (learning facility and learning environment) toward dependent variable (students' achievement). Creswell (2012) defined correlation method is the research that is used to describe and measure the degree of relationship between two or more variables.

Furthermore, this research consists of three variables they are independent variable *learning facility* (X1) and *learning environment* (X2) and dependent variable *students' achievement* (Y).

X1 = independent variable / learning facility

X2 = independent variable / learning environment

Y = dependent variable / students' achievement

Table 3.1: Operational Variable

Variable	Definition of variable	Indicator
Learning Facility (X1)	The equipment which can be used by the teacher to support the learning process	<ol style="list-style-type: none"> 1. Learning media (overhead projector, whiteboard or blackboard, book, television, radio, newspaper, magazine, picture, chart, and graph) 2. Learning resources (classroom, library, laboratory, office, and sport field)
Learning Environment (X2)	Learning environment includes the all conditions which can affect on students' behavior and it also can affect on students' achievement.	<ol style="list-style-type: none"> 1. External environment (circulation air, temperature, classroom cleanness, and lighting) 2. Social environment (the relation between other friends and the relation between teachers and students)
Students' Achievement (Y)	The learning result that has been achieved by the students after carry out the learning activity	<ol style="list-style-type: none"> 1. English score test

Nature of Data

This research is correlational research. There are three variables which are investigated in the research. The variables are independent variable and dependent variable. The independent variable in this research are learning facility and learning environment. In addition, the dependent variable in this research is students' achievement.

In the measure of independent variable, the researcher uses the questionnaire. The result of questionnaire was analyzed by quantitative approach. It is because in the research result, the data is concluded by using numbers. Moreover, to get the data on the students' achievement, the researcher used the documentation of English score test. The data got from the English teacher.

Research Setting and Participants

Research setting. This research was conducted in *SMK Muhammadiyah 2 Moyudan* which is located at *Dusun Ngentak, Sumberagung, Moyudan, Sleman*. *SMK Muhammadiyah 2 Moyudan* consists of 14 classes with some different majors. All of the classes in this school learn English, from the class X up to the class XII. The ground of choosing this target population because SMK Muhammadiyah 2 Moyudan has not provided the learning facility and learning environment optimally. Besides, the accessibility also becomes another consideration since it is located at the same region as the researcher's.

Research participants. In this research, the researcher needs a number of participants. Firstly, the researcher determined the population of the research. Arikunto (1993, p.102) explains “the population is the entire group of research subject or participants.” The population of this research is the students class XI at *SMK Muhammadiyah 2 Moyudan*. The number of all students class XI at *SMK Muhammadiyah 2 Moyudan* is 107 students. The distribution of each class shows in the table below.

Table 3.2: the number of the eleven grade students at SMK Muhammadiyah 2 Moyudan

Class	Total of students
XI AK 1	23
XI AK 2	30
XI AP 1	21
XI AP 2	28
Total	102

After choosing the population, the researcher is determined the sample of the research. Arikunto (1993) defined a sample is a subgroup which taken from the population to represent it. In this research, the technique used to select sample is simple random sampling. The researcher used a simple random sampling to ensure that each class of the participants had an equal chance of being selected for the sample. Arikunto (1993) explained simple random sampling demands that each member of the entire participants must have an equal chance. In determining the sample, the researcher used Arikuntos' statement. Arikunto (1993, p.107) said that "if the research participants less than 100, so that the research participants is taken all. But, if the research participants is more than 100, so that the research participants is taken approximately 10 – 15 % or 20 – 25 % or more." Therefore, the samples of this research are 74 students at *SMK Muhammadiyah 2 Moyudan*.

Table 3.3: Research Sample

Class	The number of students
XI AK 1	23
XI AK 2	30
XI AP 1	21
Total	74

Data Collection Method

This research was used two kinds of data collection method to get the data which is needed. The data collection methods are the questionnaire and the English score test for class XI.

The questionnaire. The questionnaire used to get the data about the learning facility and learning environment. Questionnaire is the instrument of data collection method that uses lists of question to answer. The participants of this research completed all of the questions in the questionnaire. In this research, the questionnaire were set in a five-point value Likert scale which required students to respond to each statement by indicating whether they strongly agree (5), agree (4), undecided (3), disagree (2), or strongly disagree (5). The researcher used these five factors to determine their degree of correlation with independent variable, as showed in the table below.

Table 3.4: Likert Scale

5 score	Strongly Agree
4 score	Agree
3 score	Undecided
2 score	Disagree
1 score	Strongly disagree

Students' English score. To get the data on the students' achievement, the researcher used the documentation of English score test. The data got from the English teacher of class XI at *SMK Muhammadiyah 2 Moyudan*. The data was in the form of written documents of students' score in English subject.

Validity and reliability. The research instrument should be valid and reliable. So, the questionnaire which is used as a research instrument should be valid and reliable. The validity and reliability in this research was measured and analyzed by SPSS for windows 22 program.

Validity. According to Arikunto (1993), validity refers to the appropriateness, meaningfulness, and usefulness of the inferences a researcher makes. It means that the questionnaire is valid if the statements of the questionnaire are able to reveal what is claim to measure. Arikunto (1993) stated that there are two main types of validity which are external validity and internal validity. The external validity is “The result data from the instrument based on the data or information about research variable” (Arikunto, 1993, p.137). It means that the statements of the questionnaire should be appropriate with research variable in order to produce the result data which is precised. According to Arikunto (1993), the internal validity is the suitability of instrument with the research variable. In this research, the researcher utilized the statistical measurement to determine the validity of the research questionnaire. First of all, the researcher gathered the data from the questionnaire. The data gathered were processed using SPSS version 22.0 to find the r value. The researcher then compared the r value of the data with the r table to find which question items are valid. The items are said to be valid if its r value is higher than r table. The questionnaire of this research consisted of 20 items. The researcher firstly conducted the piloting to examine the question items in the questionnaire. The result of the validity test of the items is presented in the following table.

Table 3.5
Test Validity of Question Items

No.	Question Item	<i>r</i> value	<i>r</i> table	Description
Learning Facilities (X1)				
1.	Q1	0,771	0,2	Valid
2.	Q2	0,729	0,2	Valid
3.	Q4	0,615	0,2	Valid
4.	Q6	0,602	0,2	Valid
5.	Q8	0,341	0,2	Valid
6.	Q11	0,618	0,2	Valid
7.	Q12	0,228	0,2	Valid
8.	Q14	0,843	0,2	Valid
9.	Q15	0,824	0,2	Valid
10.	Q18	0,412	0,2	Valid
11.	Q20	0,505	0,2	Valid
Learning Environment (X2)				
12.	Q3	0,514	0,2	Valid

13.	Q5	0,434	0,2	Valid
14.	Q7	0,649	0,2	Valid
15.	Q9	0,754	0,2	Valid
16.	Q10	0,302	0,2	Valid
17.	Q13	0,508	0,2	Valid
18.	Q16	0,689	0,2	Valid
19.	Q17	0,565	0,2	Valid
20.	Q19	0,520	0,2	Valid

The r table of this research is 0,2. The researcher then compared the r value of each item with the r table ($r = 0.2$) to finally found that the questionnaire items are valid. Based on the table above, it can be concluded that those items of the questionnaire are valid since the r value $>$ r table. The r table is attached in Appendix B.

Reliability. According to Arikunto (1993), the reliability refers to the consistency of scores or answer from one administration of an instrument to another and from one set of items to another. Arikunto (1993, p.144) explained that there are many procedures to test the reliability of a questionnaire statistically which are “Spearman-brown formula, Flanagan formula, Rulon formula, K-R.20 formula, K-R.21 formula, Hoyt formula, and Cronbach’s coefficient alpha”. In

this research, the researcher analyzes the data use Cronbach's coefficient alpha. The researcher use Cronbach's coefficient alpha because Cronbach's coefficient alpha is used to find out the reliability of an instrument that is the items scores are not 1 or 0, such as the questionnaire or the essay tests.

Table 3.6: The scale of reliability

Alpha	The scale of reliability
0,00 s/d 0,20	Less reliable
> 0,20 s/d 0,40	Rather reliable
> 0,40 s/d 0,60	Enough reliable
> 0,60 s/d 0,80	Reliable
> 0,80 s/d 1,00	Strongly reliable

All of the items of questionnaire was the closed-ended question that tested to prove the reliability. From the calculation of Cronbach's α formula, the researcher finds that the reliability coefficient (α) of 20 items in the questionnaire is 0,877. Field (204) stated that an instrument is said to be reliable if the reliability coefficient (α) is higher than 0,70. Accordingly, the instrument of the research is reliable. The following table shows the result of the research instrument's reliability test.

Table 3.7

Reliability Statistics

Cronbach's Alpha	N of Items
,877	20

Data Collection Procedure

In conducting the research, the researcher carried out some procedures to conduct this research. Firstly, the researcher made instruments that could be used in the research. Secondly, the researcher got permission to do the research in *SMK Muhammadiyah 2 Moyudan*. Then, the researcher distributed the questionnaire to the student class XI Accountancy. After that, the researcher required the students' English score test to English teacher in the school. After all the data is gathered, the researcher analyzed the data and discussed the data analysis. Finally, from the discussion the researcher can make the conclusions and give the suggestions.

Data Analysis

The researcher analyzed the data in order to answer the questions which are formulated in the research questions. The data were gathered from the questionnaire and also the students' English score. The data gathered from the questionnaire were analyzed using the Statistical Package for Social Science (SPSS) version 22.0. The questionnaire was examined to reveal the learning facility and learning environment. The researcher used the partial test (t test) to reveal whether the independent variable have the correlation on dependent variable. The data said do not have a positive correlation if *Sig* is lower than or the same as 0.05. Otherwise, if *Sig* is higher than 0.05, it can be concluded that the data have a positive correlation. In the result data of t test, we assume that independent variable have a positive correlation toward dependent variable. In this research, the learning facility was considered as first independent variable (X1)

and the learning environment was considered as second independent variable (X2) while students' achievement (Y) was regarded as the dependent variable.

Data analysis was started by processing the data gathered from closed-ended questionnaire. The next step was processing the data of the students' English score from the teacher that had been documented. The students' English score was classified into a range scale including *low*, *average*, *good* and *excellent* scale. The low scale pertain the score <50, the average scale lays between 51 – 69, the good scale is between 70 – 80, and the excellent scale represents the score between 81 – 100. Therefore, the statistic software, SPSS version 22.0 was used to process the data in order to see the correlation between independent variable and dependent variable.