CHAPTER III
RESEARCH METHODOLOGY

This chapter discusses the frame related to the method in analyzing the problem of the study. It includes the discussion of research method, population, sample and sampling technique, research instrument, validity and reliability test, data collecting technique and data analysis.

3.1 Research Methods

The research design of this research quantitative research design because the data in this research is performed in the form of number and it is analyzed by using statistic. In this research, the researcher uses descriptive correlational study because it is not intended to determine the effect of a treatment. According to Arikunto (2010, p. 4) descriptive correlational study conducted by researcher to determine the relationship between two or more variable.

This research has two variables, they are independent variable (X) and dependent variable (Y). The independent variable is self-esteem and the dependent variable is speaking ability.

3.2 Population, Sample, and Sampling Technique

Determination of the population, sample and sampling techniques are essential in the research process. The sample with the correct sampling technique can load sample truly representative of the population.

3.2.1 Population

Population is the total number of students taken by researchers. According to Sugiyono (2012, p. 80) population is meant as generalization region consisting of the subject that has certain qualities and characteristics that set by the researcher to learn and then drawn conclusions. Arikunto (2010, p. 173) states "Population is all subject of research". It means that the population is a collection of objects that is a whole of an object that is of concern to the researcher.

The populations in this study were all tenth grade students at SMKN 03 Kotabumi in the academic year 2020/2021. As presented in the following table.

TABLE 7
THE POPULATION OF THE RESEARCH

No	Class	Number of Students
1	X Teknik Otomotif 1	34
2	X Teknik Otomotif 2	32
3	X Teknik Otomotif 3	35
4	X Teknik Otomotif 4	34
5	X Teknik Permesinan 1	35
6	X Teknik Permesinan 2	29
7	X Teknik Permesinan 3	31
8	X BisnisKontruksiProperti 1	35
9	X BisnisKontruksiProperti 2	35
10	X BisnisKontruksiProperti 3	35
11	X Teknik KomputerJaringan 1	35
12	X Teknik KomputerJaringan 2	35
Total		405

From: Staff of Administration of SMKN 03 Kotabumi.

Based on the table above, the population in this study was 12 classes from 4 programs of the tenth grade in SMKN 03 Kotabumi academic year 2020/2021 which consist of 405 students.

3.2.2 Sample

According to Arikunto (2010, p. 174) sample is representative of population that is researched. Sugiyono (2012, p. 81) states “Sample is part of number and characteristic of the population”. Thus, it can conclude that sample is a limited number of elements from a proportion to represent population. Similarly, According to Arikunto (2006, p. 134) if the subject is less than 100, it is better to take all of the subjects. But if the subject is more than 100, the writer can take between 10% – 15 % or 20% – 25 % or more.

Based on the theory above, in taking the research sample, the researcher took sample proportionally 10% from each class. Thus, total number of sample is 43 students.

3.2.3 Sampling Technique

Sampling technique is the way to taken to sample. According to Sugiyono (2017, p. 82) random sampling is random sampling of population members without pay attention to the level that exist in that the population. Meanwhile, Arikunto (2010, p. 182) states “Proportional random sampling technique is the process of taking a sample to get representative sample or balance sample of each region”.

The researcher used proportional random sampling technique. The procedure in this random sampling is by the researcher writing the numbers according to the number of students in absence, so if the researcher has chosen a number randomly using a plastic-coated glass or it can be said as a lottery, when the number of absences came out, the researcher took the absent number as the research sample. This research consisted of twelveclasses. The calculation of sampling in this research is the population in each class timesto 10 %. The specification of the Sample in this research as follows:

TABLE 8
THE SAMPLE OF THE RESEARCH

No	Class	Number of Students	Total
1	X Teknik Otomotif 1	34 x 10%	3
2	X Teknik Otomotif 2	32 x 10%	3
3	X Teknik Otomotif 3	35 x 10%	4
4	X Teknik Otomotif 4	34 x 10%	3
5	X Permesinan 1	35 x 10%	4
6	X Permesinan 2	29 x 10%	3
7	X Permesinan 3	31 x 10%	3
8	X BisnisKontruksiProperti 1	35 x 10%	4
9	X BisnisKontruksiProperti 2	35 x 10%	4
10	X BisnisKontruksiProperti 3	35 x 10%	4
11	X Teknik KomputerJaringan 1	35 x 10%	4
12	X Teknik KomputerJaringan 2	35 x 10%	4
Total			43

3.3 Research Instruments

According to Arikunto (2010, p. 101) the instrument is a tool for researchers in using data collection methods. According to Sugiyono (2017, p. 102) research instrument is a tool used to measure natural and social phenomena observed and specifically this phenomenon is called a research variable. In this study researcher used the WhatsApp application and Google Form. To measure

students' self-esteem and speaking ability, the researcher used questionnaire which is delivered through Google Form application. The researcher used an oral test to measure students' speaking ability by using the WhatsApp application. The researcher made a WhatsApp group consisted of the number of students as the research sample, then the researcher gave the topic of the speaking test, namely theory descriptive. Students have to make videos to define national monuments, and the second instrument is a questionnaire that is distributed via a link with the Google Form application.

3.3.1 Instrument of Self-Esteem

In this research, the researcher used questionnaire to get score of students' self-esteems. The definition of self-esteem conceptually and operationally can be seen below.

a. Conceptual Definition of Self-Esteem

Self-esteem is a personal belief or judgement that is given by a person to himself or herself. It is about the certain attitude that she or he expresses as the value of his or her life.

b. Operational Definition of Self-Esteem

Self-esteem is the level of value to someone as measured based on seven aspects, namely: self-knowledge, self and others, self-acceptance, self-reliance, self-expression, self-confidence, and self-awareness. By using a likert scale of five, namely: strongly agree, agree, undecided, disagree, and strongly disagree. The score can be seen:

TABLE 9
SCORING SYSTEM OF QUESTIONAIRE

No.	Scale	Positive Statement Score	Negative Statement Score
1.	Strongly Agree	5	1
2.	Agree	4	2
3.	Undecided	3	3
4.	Disagree	2	4
5.	Strongly Disagree	1	5

c. Specification of Research Instrument

Based on the conceptual and operational definition above, the specification of the instrument can be seen in the following table bellows:

TABLE 10
SPECIFICATION OF SELF-ESTEEM INSTRUMENT

Variable	Aspect	Indicator	Number of Item	
			Positive (+)	Negative (-)
Students' Self-esteem (X)	Self-knowledge	Knowing personal value	1, 21	2, 22
		Believing in yourself for getting achievement	3, 23	24
	Self and Others	Knowing the difficulties in building relationship with others	5, 25	26
	Self-acceptance	Accepting the mistakes that have been made	7	4, 8, 28
	Self-reliance	Being independent	6, 9, 32	10, 18
		Being able to face challenges	11, 31	12
	Self-confidence	Having a strong belief that can do the best	15, 29, 35	16, 36
		Being able to take decision	17, 27, 37	30, 38
	Self-awareness	Thinking about the future	19, 39	20, 40
		Total	**22**	**18**

3.3.2 Instrument of Speaking Ability

a. Conceptual Definition of Speaking Ability

Speaking is a communication process that conveys information, ideas and opinion between two parties through verbal and oral.

b. Operational Definition of Speaking Ability

Speaking ability is students' ability to deliver their opinion which is shown by the score the students obtain from a speaking test which is measured based on the aspects of speaking namely grammar, vocabulary, fluency, pronunciation, and comprehension. Each of which is scored using Brown's (2004) scoring criteria that ranges from 1 to 5.

c. Specification of Instrument Speaking Ability

Based on the concepts of definition and operational definition above, the researcher can be following the criteria and scoring profile in assessing speaking ability modified from Brown (2004, p. 172-173) based on the oral rating sheet.

TABLE 11
INSTRUMENT SPECIFICATION OF
SPEAKING ABILITY ASPECT

Aspects	Score	Criteria
Grammar	1	Errors in grammar are frequent, but speaker can be understood by a native speaker used to dealing with foreigners attempting to speak his language.
	2	Can usually handle elementary constructions quite accurately but does not have thorough or confident control of the grammar.
	3	Control grammar is good. Able to speak the language sufficient structural accuracy to participate effectively in most formal and informal conversation on practical, social, and professional topics.

	4	Able to use the language accurately on all levels normally pertinent to professional needs. Errors in grammar are quite rare.
	5	Equivalent to that of an educated native speaker.
Vocabulary	1	Speaking vocabulary inadequate to express anything but the most elementary needs.
	2	Has speaking vocabulary sufficient to express himself simply with some circumlocullions.
	3	Able to speak the language with sufficient vocabulary to participate effectively in most formal and informal conversation on practical, social and professional topics. Vocabulary is broad enough that he rarely has to grope for a word.
	4	Can understand and participate in any conversation within the range of his experience with a high degree of precision of vocabulary.
	5	Speech on all level is fully accepted by educated native speakers in all its features including breadth of vocabulary and idioms, colloquialisms, and pertinent cultural references.
Fluency	1	(no specific fluency description. Refer to other four language areas for implied level of fluency)
	2	Can handle with confidence but not with facility most social situations, including introductions and casual conversations about current events, as well as work, family, and autobiographical information.
	3	Can discuss particular interests of competence with reasonable ease. Rarely has to grope for words.
	4	Able to use the language fluently orally levels normally pertinent to professional needs. Can participate in any conversation within the range of his experience with high a degree of fluency.
	5	Has complete fluency in the language such that his speech is fully accepted by educated native speaker.
Pronunciation	1	Errors in pronunciation are frequents but can be understood by a native speaker used to dealing with foreigners attempting to speak his language.

	2	Accent is intelligible though often quite faulty.
	3	Errors never interfere with understanding and rarely disturb the native speaker. Accent may be obviously foreign.
	4	Errors in pronunciation are quite rare.
	5	Equivalent to and fully accepted by educated native speakers.
Comprehension	1	Within the scope of his very limited language experience, can understand simple questions and statements if delivered with slowed speech, repetition, or paraphrase.
	2	Can get gist of most conversation of non technocal subjects (i.e., topics that require no specialized knowledge).
	3	Comprehension is quite complete at a normal rate of speech.
	4	Can understand any conversation within the range of his experience.
	5	Equivalent to that of an educated native speaker.

Source: Brown (2004, p. 172-173)

3.4 Validity and Reliability of Self-Esteem

3.4.1 Validity of Self-Esteem

Validity means how far the accuracy of a test instrument in measuring what will be measured. Arikunto (2010, p. 211) says that validity is a measurement that indicate the level of instrument. It means that the instrument which is valid has high validity. Arikunto (2010, p. 213) states “The researcher used product moment correlation formula to measure the validity of self-esteem instrument formula as bellow”:

$$r_{xy} = \frac{N\sum xy - \left(\sum x\right)\left(\sum y\right)}{\sqrt{\left\{N\sum x^2 - \left(\sum x\right)^2\right\}\left\{N\sum y^2 - \left(\left(\sum y\right)^2\right)\right\}}}$$

Description:

r_{xy} = Correlation coefficient of variable X and Y

$\sum xy$ = The sum of the products of X and Y

$\sum X$ = The sum of X scores

$\sum Y$ = The sum of Y scores

$\sum X^2$ = The sum of square of X score

$\sum Y^2$ = The sum of square of Y score

$(\sum X^2)$ = The sum of squared X scores

$(\sum Y^2)$ = The sum of squared Y scores

N = Total of respondent

The testing criteria were if $r_{observed} \geq r_{table}$ it clear that (H_o) is rejected and ($H_{a)}$ is accepted. The criteria of the validity of the anxiety test are:

a. H_O is accepted if $r_{observed} \leq r_{table}$ (the data are valid)

b. H_O is rejected if $r_{observed} > r_{table}$ (the data are not valid)

3.4.2 Reliability of Self-Esteem

After measuring the validity, the researcher measured the reliability of the instruments. Reliability is consistency of measuring instrument or how far the instruments could be measured the same subject at different times but show relatively similar result. Arikunto (2010, p. 221) state that, says that reliability refers to a description that an instrument can be convinced to be used as a tool to collect the data because that instrument is good enough. The researcher will give the try out to students in the tenth grade of SMK N 1 Kotabumi. In order to get the reliable questionnaire, the researcher uses Cronbach's Alpha Formula Arikunto (2010, p. 239):

$$r_{11} = \left(\frac{k}{(k-1)}\right)\left(1 - \frac{\sum \sigma_{b^2}}{\sigma_t^2}\right)$$

Description:

r_{11} = coefficient of reliability

k = number of items or number of questions

$\sum \sigma_{b^2}$ = number of items variance

σ_{t^2} = total variance

After knowing the result of calculating r_{11} above, the researcher compared with $r_{table.}$ If $r_{count} \geq r_{table}$, it is said reliable, and if $r_{count} < r_{table}$, it is said unreliable.

3.5 Validity and Reliability of Speaking Instrument

3.5.1 Validity of Speaking Ability

Validity is needed in research to know that the instrument used in the study is in accordance with the measurement instrument or not. A test can be said to be valid if the test measures the object to be measured, other than that it must be in accordance with the criteria. According to Setiyadi (2006, p. 21) validity relates to the use of measurement in a research and relate to reliability of measurement. There are some level of validity; high, medium, and low or not valid.

In this research, the researcher chooses construct validity. In this validity, the researcher can use the judgment of experts. In this case, the researcher asks for the judgment from lectures of speaking because they are experts in the field researched by the researcher, namely: Mrs. Dewi Sri Kuning, S.Pd., M.Pd. and the first advisors, Mr. Sigit Suharjono, S.Pd., M.Pd.

3.5.2 Reliability of Speaking Ability

According to Setiyadi (2006, p. 16) reliability is consistency of measurement or how far the measurement can measure the same subject in different times but shows the similar result. In this research, the researcherused inter-rater reliability. In this research, the researcher collaborated to the real teacher of the research sample.

According to Azwar (2012, p. 13) limitation of difference analyzed the result between rater is about 0.0 - 1.0. If the reliability coefficient is gotten about

0.0 - 1.0, it means that there is consistency between the rater and the test is reliable. In contrast, if the reliability coefficient is gotten more than 1.0; it means that there is an inconsistency between rater, and the test cannot say reliable.

According to Azwar (2012, p. 90), the formula to estimate inter-rater reliability that is done by k raters toward n subjects is as follow:

$$rxx^1 = \frac{(S_s^2 - S_e^2)}{S_s^2}$$

Note :

S_s^2 : variant between subject that is influenced by tatting

S_e^2 : variant interact between subject and rater

rxx^1 : coefficient reliability x

The formula to calculate S_e^2 and S_s^2 are:

$$S_e^2 = \frac{\sum_i 2 - \frac{(\sum R^2)}{n} - \frac{\sum T^2}{k} + \frac{(\sum i)^2}{nk}}{(n-1)(k-1)} \qquad S_s^2 = \frac{(\sum T^2)/k - (\sum i)^2/nk}{n-1}$$

Note:

I = rating number which is given by rater to a subject

T = the number of rating which is receive by a subject to all rates

R = the number of rating which is given by rater to all subject

N = total subject

K = total rater

The interpretation of reliability as follows:

$r_{11} \leq 0{,}20$: very low reliability

$0{,}20 < r_{11} \leq 0{,}40$: low reliability

$0{,}40 < r_{11} \leq 0{,}70$: medium reliability

$0{,}70 < r_{11} \leq 0{,}90$: high reliability

$0{,}90 < r_{11} \leq 1{,}00$: very high reliability

3.6 Data collection techniques

Data collecting technique is a technique used to collect the data. To collect the data, the researcher used a questionnaire to collect the data of students' self-esteem. Meanwhile, to collect the data students' speaking ability used oral test. The questionnaire of self-esteem consisted of 40 items.

3.7 Data Analysis

Since the data is numerical form, statistical analysis is applied to find out whether or not there is a correlation between self-esteem and their speaking ability. This research used statistic parametric method. In statistic parametric, there are three prerequisites test namely: normality test, homogeneity test, and hypothesis test.

3.7.1 Normality Test

Normality test is conducted to know whether the data from the sample are normal or not. To calculate the normality of a group of tests, Lilliefor 's formula is use.

According to Sudjana (2005, p. 466) test for normality with the formula Lilliefor's needs the steps as follows:

H_0 : the group comes from a normal population distribution

H_a : the group comes from abnormal population distribution

a. Determine the raw number by using the formula

$$Z_i = \frac{x_i - \bar{x}}{S}$$

Z*i* : number of raw

Xi : the values obtained

$\bar{x}$: average

S : standard deviation

b. Opportunity determines each raw number with the formula:

$F(Zi) = P(Z \leq Zi)$

c. Determine the proportion by using the formula:

$$S\ Z_i = \frac{numbers\ z_1, z_2, \ldots\ldots z_n\ that \leq z_i}{n}$$

d. Calculating absolute price using the formula: (S Z*i*) ¯¯ (S Z*i*)

e. Determining the largest absolute value which is called Lo and then compare Lo with L table. Normal criteria, if Lo < L table so the group has normal distribution.

3.7.2 Homogeneity Test

The researcher conducted homogeneity test. It is done to know whether the samples of the research are homogeneous or not. The researcher needed to calculate the biggest and the lowest variance to know homogeneity. According to Sugiyono (2012, p. 199) the formula to calculate homogeneity is:

$$F_{observed} = \frac{The highest variance}{The\ lowest\ variance}$$

According to Sugiyono (2012, p. 197) the testing criteria are:

The testing criteria for the data to be said homogeneity is if $F_{observed} < F_{table}$ so the data is homogeny.

3.7.3 Hypotheses Test

To test the hypotheses whether there is a positive correlation between self-esteem and students' speaking ability, the researcher used the formula Pearson product moment Arikunto (2010, p. 318) state that, the formula can be seen:

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

Notes:

r_{xy} : Coefficient of correlation

N : Total sample

xy : Total x and y

X : Independent variable

Y : Dependent variable

X^2 : The sum square of x variable

Y^2 : The sum square of y variable

TABLE 12
INTERPRETATION OF CORRELATION COEFFICIENT

Value r	Interpretation
Between 0,800 until 1,00	High
Between 0,600 until 0,800	Enough
Between 0,400 until 0,600	Medium
Between 0,200 until 0,400	Low
Between 0,000 until 0,200	Very Low (not correlated)

Source: Arikunto (2010, p. 319)

The testing criteria were if $r_{observed} \geq r_{table}$ it clear that (H_o) is rejected and (Ha) is accepted. It assumed that there is correlation between self-esteem and their speaking performance. Furthermore, to determine the significance correlation between two variables, the researcher uses t-test by the formula from Sugiyono (2012, p. 257) as below:

$$t_{observed} = \frac{r_{xy}\sqrt{n-2}}{\sqrt{1-r_{xy^2}}}$$

Description:

$t_{observed}$ = T calculation which is gotten from T table

r_{xy} = The result of correlation between two variables

n = The total of sample

The criteria of significant test is if $t_{observed} \geq t_{table}$, it means that there is significance. If $t_{observed} \leq t_{table}$, it means that there is no significance. Based on the formula of hypothesis test, the hypothesis in this research will be proven**:**

H_o : There is no significant correlation between self-esteem and speaking ability at the Tenth grade students of SMKN 03 Kotabumi Academic Year 2020/2021.

H_a : There is no significant correlation between self-esteem and speaking ability at the Tenth grade students of SMKN 03 Kotabumi Academic Year 2020/2021.