# III. RESEARCH METHOD

This chapter contains research design, population and sample of the research, variables, research procedure, data collecting technique, instrument of the research, scoring criteria, try out of the test, normality test, data analysis, and hypothesis testing.

3.1 Research Design

This research is co-relational study. In this research the researcher uses Ex Post Facto design because the researcher wants to investigate whether schemata have significant correlation with students' speaking ability. Hatch and Farhady (1982: 26) states that Ex Post Facto design is often used when the researcher had control over the selection and manipulation of the independent variable. In this research, there was no control group and no treatment to the subject.

In doing this research, the data is taken by having a content schemata test (X_1), formal schemata test (X_2), linguistic schemata test (X_3), and a speaking test (Y) to the sample. It can be described as follow:
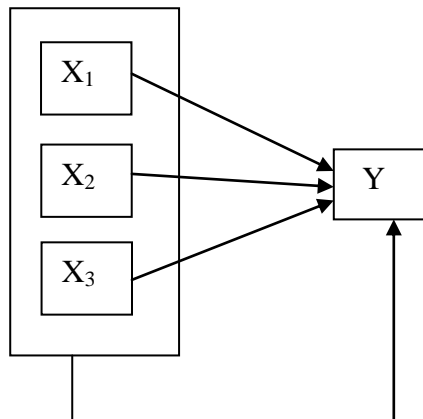
Where   :

X_1 = Test of content schemata

X_2 = Test of formal schemata

X_3 =Test of linguistic schemata

Y = Test of speaking

After getting the data, the researcher will analyze them, and will present description and explanation of whether there is positive correlation of the content schemata (X_1), formal schemata (X_2), linguistic schemata (X_3) and students' speaking ability (Y) using Pearson product moment method.

3.2 Population and Sample

The research was conducted at SMA N 1 Kotagajah Lampung Tengah and the population was the second year students. The sample was XI IPA 3. At SMA N 1 Kotagajah, there are eight classes at second grade and the researcher chose one class as the sample which was chosen by random sampling. Random sampling enables every individual of the population has the same opportunity to be chosen

as the sample. The class was chosen by using lottery. The procedures are: eight classes written in rolled paper are put into a glass. Then the glass was shaken two times and one class that came out was selected as sample.

3.3 Variables

This co-relational study has two variables; they are independent and dependent variable. Students schemata are independent variable because affect the students speaking ability. Students' schemata are divided into three types of schemata: content schemata (X_1), formal schemata (X_2) and linguistic schemata (X_3). While the speaking ability (Y) is dependent variable because depend on students' schemata.

3.4 Research Procedures

The procedure of the research as follow:

1. Deciding the population and selecting the sample.

   The research was conducted in second grade of SMA N 1 Kotagajah. She chose one class as the sample by using lottery.

2. Planning the materials for schemata and speaking test.

   Material related to recount text. The researcher chose recount text because she wanted to find the students' schemata related to the topic of Indonesian's Independent Day.

3. Conducting try out

   The researcher conducted the try out of schemata test in order to decide whether the tests are well designed. The test is said to have a good quality

if it has a good validity, reliability, level of difficulty and discrimination power.

4. Administering the schemata test.

The schemata test was conducted to know students' knowledge about Indonesian's Independent Day.

5. Administrating the speaking test.

After conducting the schemata test, the students have speaking test. That test was used to measure students' speaking ability.

6. Scoring the test.

After giving schemata and speaking test, the researcher was scoring the schemata test based on Arikunto's formula and speaking test was scored based on Heaton's scoring system.

7. Analyzing the data

The researcher analyzed the data using Bivariate Correlation (SPSS 17). It uses to find the correlation between students' schemata and their speaking ability.

8. Discussing and reporting the result of the data analysis

3.5 Data Collecting Technique

The data of the research is focused on students' schemata and speaking ability. There are two instruments to collect the data in this research; they are students' schemata tests and speaking test. These tests were conducted to get the data about the students' schemata and their speaking ability. The schemata test was in the form of multiple choice tests that consists of 15 items for each type of schema.

Each item has four alternatives a, b, c, and d. In the other hand, the speaking test was administrated in transactional conversation. In transactional conversation, students will have same schemata toward the topic given. The researcher used recorder to gain all the data about students' speaking test. After that, she transcribes the data gain.

3.6 Research Instruments

The researcher used the objective test as the instrument to investigate the students' content schemata (X_1), formal schemata (X_2), and linguistic schemata (X_3).The researcher conducted the try out at XI IPA 4 to determine whether the instrument was well design. The try out consist of 20 items for each content schemata, formal schemata and linguistic schemata test. After conducting the tryout the researcher analyzed those items to see their difficulty level and discrimination power. While speaking test was administrated in transactional dialogue.

Table 2. Specification of content schemata tryout test

No	Content	Number of Items
1	Previous experience	1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16,17,18,19,20

Table 3. Specification of formal schemata tryout test

No	Formal Schemata	Number of Items
1	Time	6,7,8,9,10,11,12,15,16,,20
2	Part of generic structure	1,2,3,4,5,13,14,17,18,19

Table 4. Specification of linguistic schemata tryout test

No.	Linguistic Schemata	Number of Items
1	Grammar	1,2,3,4,5,6,7,8,9,10
2	Vocabulary	11,12,13,14,15,16,17,18,19,20

3.7 Scoring Criteria

3.7.1 Scoring Criteria for Schemata Test

The purpose of schemata test is to obtain the data about the students' knowledge in speech. The scoring is based on the students' correct number in answering the test items. The final score is gotten by dividing the correct number with the total number (15) then multiply it with total score (100).

The formula can be seen as follow:

$$S = \frac{R}{N} \times 100$$

Description:

S = the final score of the test

R = the total number of the right answers

N = the total items

(Arikunto, 1997:212)

3.7.2 Scoring Criteria for Speaking Test

Table 5. The Rubric of Grading System by Heaton (1988: 100)

Score	Accuracy	Fluency	Comprehensibility
81-90	Pronunciation is only very slightly influenced by the mother-tongue.	Speaks without too great an effort with a fairly wide range of expression. Searches for words occasionally but only one or two unnatural pauses.	Easy for the listener to understand the speaker's intention and general meaning. Very few interruption or clarification

	There are no mistake of pronunciation and grammar at all	Each of students is able to deliver 6 line conversations by delivering all necessaries content. Delivering the conversation not more than 2 unnatural pauses	required. The listeners are easy to understand the content and catch goal of the conversation. There are no interruption required.
71-80	Pronunciation is slightly influenced by the mother-tongue. A few minor grammatical and lexical errors but most utterances are correct There are no more than 5 pronunciation and grammatical mistake	Has to make an effort at times to search for words. Nevertheless, smooth delivery on the whole and only a few unnatural pauses. Each student is able to only 5 line conversations by delivering 5 necessaries content. Delivering the conversation not more than 5 unnatural pauses	The speaker's intention and general meaning are fairly clear. A few interruptions by the listener for the shake of clarification are necessary. The listeners have one interruption to content or the goal of the conversation
61-70	Pronunciation is still moderately influenced by the mother-tongue but no serious phonological errors. A few grammatical and lexical errors but only one or two major errors causing confusion. There are no more then 10 pronunciation and grammatical mistakes	Although he has to make an effort and search for the words, there are not too many unnatural pauses. Fairly smooth delivery mostly. Occasionally fragmentary but succeeds in conveying the general meaning. Fair range of expression. Each student is able to mention only 4 line conversations by delivering 4 necessaries content. Delivering the conversation not more than 8 unnatural pauses	Most of what the speaker says is easy to follow. His intention is always clear but several interruptions are necessary to help him to convey the message or to seek clarification The listeners have 3 interruptions to content or the goal of the conversation
51-60	Pronunciation is influenced by the mother tongue but only few serious phonological errors. Several grammatical and lexical errors, some of which cause confusion. There are no more than 15 error of pronunciation and grammatical mistakes	Has to make an effort for mush of the time. Often has to search for the desired meaning. Rather halting delivery and fragmentary. Range of expression often limited. Each student is able to mention only 3 line conversations by delivering 3 necessaries contents. Delivering the conversation not more than 12 unnatural pauses	The listener can understand a lot of what is said, but he must constantly seek clarification. Cannot understand many of the speaker's more complex or longer sentences. The listeners have 4 interruptions to content or the goal of the conversation
41-50	Pronunciation seriously influenced by the mother-tongue which errors	Long pauses while he searches for the desired meaning. Frequently fragmentary and	only small bits (usually short sentences and phrases) can be

causing a breakdown in communication. Many 'basic' grammatical and lexical errors. There are more than 15 pronunciations and grammatical errors.	halting deliver. Almost gives up making the effort at times. Limited range of expression. Each student is able to mention only 2 line conversations by delivering 2 necessaries contents. Delivering the conversation more than 12 unnatural pauses	understood-and then with considerable effort by someone who is used to listening to the speaker. The listeners have 4 interruptions to content or the goal of the conversation

In addition, the following scoring system is promoted by Harris (1979).

Pronunciation

20   Speech is fluent and effortless as that of native speaker.

16   Always intelligible through on is conscious of definite accent.

12   Pronunciation problems necessitate concentrated listening and occasionally lead to misunderstanding.

8   very hard to understand because of pronunciation problem must frequently be asked to repeat.

4   Pronunciation problems too severe as to make speech unintelligible.

Grammar

20   Make few (if any) noticeable errors of grammar or word order.

16   Occasionally makes grammatical and/ or word order errors which do not, however, obscure meaning.

12   Make frequent errors of grammar and word order, which obscure meaning.

8.   Grammar and word orders make comprehension difficulty must often rephrase sentences and/or restrict him to basic patterns.

4   Errors in grammar and words order to severe as to make speech virtually unintelligible.

Fluency

20 Speech is fluent and effortless as that of native speaker problems.

16 Speed of speech seems to be slightly affected by language problems.

12 speed and fluency are rather strongly affected by language problems.

8 Usually hesitant, often forced into silence by language problems

4 Speech is as halting and fragmentary as to make conversation virtually impossible.

Vocabulary

20 Use of vocabulary and idioms is virtually that of native speaker.

16 Sometimes uses inappropriate terms and/or must rephrase ideas because of lexical inadequacies.

12 Frequently uses the wrong words, conversation, somewhat limited because inadequate vocabulary.

8 Misuses of words and very limited vocabulary make comprehension quite difficult.

4 Vocabulary limitation to extreme as to make virtually impossible.

Comprehension

20 Appear to understand everything without difficulty

16 understand nearly everything normal speed

12 Has great difficult following what is said

8 Has great difficult following what is said

4 Can not be said to understand even simple conversation in English.

The researcher used Heaton Grading system because it is commonly use by the other researcher and more simple.

3.8 Try Out of the Test

Try out of the test is important to do before getting the real data. It is used to know the quality of the test in order to get the data. The try out was conducted in the first meeting. The researcher used 20 items of each content schemata, formal schemata, and linguistic schemata test contain four options of answer for each (a,b,c,and d).This test is administrated in order to find out whether the test is well accurate and effective for the real test, so that the researcher can collect the data using this test. The accuracy and the effectiveness of the test was seen after the researcher conduct the try out test and analyze the difficulty level, discrimination power, the reliability and validity of it. Then, after analyzing those aspects, the researcher revised the test so that it can be used in the real test.

3.8.1 The Difficulty Level

Heaton (1988: 161) in his book states that the item simply shows how easy or difficult the particular item prove in the test. The index of difficulty is generally expressed as the fraction or percentage of students who answered the item correctly.

To see the level of difficulty, this research will use the following formula:

$$LD = \frac{R}{N}$$

Where:

LD   = level of difficulty

R   = the number of correct answers

N   = the number of students taking the test

The criteria of the difficulty level are as follow (Shohamy, 1985;79):

$0,0 - 0,3$ = difficult

$0,3 - 0,7$ = average

$0,7 - 1,0$ = too easy

3.8.2   The Discrimination Power

Heaton (1988: 179) states that the discrimination index of an item indicates the extent to which the item discriminates between the testes, separating the more able testes from the less able. The discrimination index shows whether those students who performed well on the whole test tended to do well or badly on each item in the test.

To know the discrimination power of the test, the researcher used the following formula. Shohamy (1985:81):

$$DP = \frac{U - L}{\frac{1}{2} N}$$

In which:

DP   = discrimination power

U   = the number of upper class who answer correctly

L   = the number of lower class who answer correctly

N   = the number of students who take part in the test.

Classification of discrimination power according to Arikunto (1997:375) is as follows:

DP 0.00 – 0.19   = poor

DP 0.20 – 0.39   = satisfactory

DP 0.40 – 0.69   = good

DP 0.70 – 1.00   = excellent

DP – (negative)   = bad item, should be deleted

3.8.3   Validity and Reliability

3.8.3.1 Validity of the Test

Validity of a test shows how far the instrument measures the items which supposed to be measured (Setiyadi, 2006:22). The researcher analyzed the test based on the content and construct validity in order to know the test has good validity or not.

a. Content validity

Heaton (1988:160) identifies the content validity as the validity that depends on a careful analysis of the language being tested and of the particular course objectives. The test should be constructed as to contain a representative sample of the course, the relationship between the test items and the course objectives always being apparent. In other word, the content validity always concern whether the test has good representative of the material that have been learnt or not. To get the content validity, the schemata test was taken from a recount text entitled Indonesian's independence day and the speaking test was taken form the same topic of recount text.

b.   Construct validity

Construct validity is concerned with the certain language knowledge skill. To know the test is really reflecting the language which is being measured, the researcher examined whether the test question actually reflect what is meant to know a language. To get the construct validity, schemata test covered content schemata, formal schemata and linguistic schemata. While the speaking test was administrated in transactional dialogue in order to get the construct validity.

3.8.3.2 Reliability of the Test

Reliability is the consistency in giving the same result towards the same subject on different occasion (Setiyadi, 2006: 18). Furthermore, Heaton (1988:162) states in his book, reliability is a necessary characteristic of any good test. The researcher used the inter-rater reliability for speaking test in order to avoid the subjectivity. It is used when the scoring of the test is conducted by two raters who have the same criteria of scoring. It can be says that there are two persons that scores the test result. The first rater is the researcher and the second rater is the English teacher.

To find out the reliability of the students' schemata test, the formula used is as follows:

1.   Determine the result using the Pearson Product Moment Formula as follows:

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

Where:

r_{xy} = the correlation coefficient of reliability between odd and even number

x = the total numbers of odd number items

y = the total numbers of even number items

x^2 = square of X

Y^2 = square of Y

$\sum x$ = the total score of odd number items

$\sum y$ = the total score of even number items

(Hatch and Farhady, 1982: 247)

The result of reliability of students' schemata test can be seen in appendix 12, 13 and 14 (pages 85, 86, and 87).

The criteria of reliability are:

a) A very low reliability ranges from 0.00 to 0.19

b) A low reliability ranges from 0.20 to 0.39

c) An average reliability ranges from 0.40 to 0.59

d) A high reliability ranges from 0.60 t0 0.79

e) A very high reliability ranges from 0.80 to 1.00

(Arikunto, 1997:67)

2. To see the reliability of the whole try out test, the Spearman Brown formula was used:

$$rk = \frac{2r1}{1 + r1}$$

Where:

rk   =   the reliability of the test

rl   = the reliability of half of the test

(Hatch and Farhady, 1982:246)

The result of the calculation can be seen in appendix 12, 13, and 14 (pages 85, 86, and 87).

3.9   Data Analysis

After conducting the test, the researcher analyzed the data. The finding of students' schemata and speaking test was used to find out the coefficient correlation between the students' schemata and their speaking ability. The researcher correlates the data using the Bivariate correlation (SPSS 17) and Pearson Product Moment Formula.

$$R\, y_{123} = \frac{\sqrt{r_{y_1}^2 + r_{y_2}^2 + r_{y_3}^2 - 4r_{y_1}.r_{y_2}.r_{y_3}.r_{123}}}{1 - r_{123}^2}$$

Where:

R_{y123} : The coefficient correlation between students' content schemata, formal schemata, linguistic schemata and their speaking ability.

r_{y1} : The coefficient correlation between X_1 and Y

r_{y2} : The coefficient correlation between X_2 and Y

r_{y3} : The coefficient correlation between X_3 and Y

r_{123} : The coefficient correlation between X_1, X_2, and X_3

(Sudjana, 1992:385)

The result of calculation of the whole schemata and students' speaking ability can be seen in appendix 17 (page 90).

3.10 Hypothesis Testing

To conclude a possible correlation between students' schemata and their speaking ability the researcher used Pearson Product Moment correlation run by SPSS 17. If the correlations sign appear with star, the correlation is significant. But if the correlation without star, the correlation is not significant. Determining the level of significant ά 0.05.

Notes:

1. H_O = There are no positive significant correlation between students' schemata and their speaking ability.

   H_I = There are positive significant correlation between students' schemata and their speaking ability.

2. Ho = There are no positive significant correlation between students' content schemata, formal schemata, linguistic schemata and their speaking ability.

   H_I = There are positive significant correlations between students' content schemata, formal schemata, linguistic schemata and their speaking ability.

Setiyadi (2006:167) states that coefficient correlation is always between -1 up to

+1. The coefficient correlation can be seen as follow:

Between 0,800 up to 1.00   = very high

Between 0,600 up to 0.800   = high

Between 0,400 up to 0,600   = moderate

Between 0,200 up to 0,400   = low

Between 0,000 up to 0,200   = very low