CHAPTER III

RESEARCH METHOD

This chapter deals with the description of research methodology which is intended to find out the correlation among cognitive resilience, metacognitive reading awareness and reading comprehension skill. It consists of research design, participant of research, instruments and data analysis.

A. Research Design

Research design is a strategy to arrange the setting of the research in order to get valid data. It based on the research problem in order to be able to explain more comprehensively. This research used quantitative research which employs a path analysis design. Path analysis produces a correlation pattern that can be broken down into many interpretations of the outcomes. It's a type of multiple regression analysis that's used to investigate a variety of topics in causal analysis. It can investigate situations in which there are numerous final dependent variables and those in which there are influences in the form of a chain[1].

At the meantime, the direct and indirect contributions of an independent variable are both explored in the path analysis. It is based on the fact that path analysis allows the researcher to evaluate theoretical hypotheses about the cause-effect relationship without changing the variables[2]. It indicates that the researcher does not apply a treatment to a specific variable in the measurement. The basic assumption of this model is that some variables have a powerful relationship with one another.

This research design is used by the researcher since it allows us to see the relationship between the researched variables and the contribution of independent variables to dependent variables. The corrected model, which is a combination of several regression models with no mediation model, is the path analysis research model employed in this study. This is due to the fact that there were two sorts of variables and those are independent and dependent variables.

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[1] L Streiner, "Finding Our Way: An Introduction to Path Analysis," *Can J Psychiatry* 50, no. 2 (2005): 115-122. https://doi.org/10.1177%2F070674370505000207.
[2] Streiner.

B. Participant of Research

Based on the purpose of the study above, the population of this study was senior high school students of Kediri. The researcher chose the eleventh graders of Senior High School 6 Kediri. To decide the sample, this research uses probability sampling. Probability sampling is defined as the kind of sampling in which every element. In selecting the research participant, the researcher applies simple random sampling. For a path analysis, the minimum sample size is 100, and the ideal sample size is 400 to 1000. Moreover, in this school, it consisted of 11 classes; those were 9 science classes and 2 social classes. The total number of students who took science was 315 students and 70 students took social program. So, the total was 385 students. Moreover, the researcher decided to take 40% from the total population which is 385 students in total. Therefore, the result will be 385 x 40% = 150 students.

Table 3. 1 Population in Each Class

Class	Students Amount
XI MIPA 1	35
XI MIPA 2	35
XI MIPA 3	35
XI MIPA 4	34
XI MIPA 5	36
XI MIPA 6	35
XI MIPA 7	37
XI MIPA 8	35
XI IPS 1	36
XI IPS 2	34
Total	**385**

The researcher chose the participants of each class at random while choosing the sample. The current study has a sample size of 142 students according to the methodology.

C. Research Instrument

In this research, the researcher used two kinds of instrument for collecting data. Those were a questionnaire and a test. The instruments of collecting the data will be explained in the following:

1. Questionnaire

A questionnaire is a research tool that consists of a set of questions or other forms of prompts designed to gather data from a respondent. Questionnaires assist researchers in obtaining significant amounts of data from a larger sample of people in a quick or easy, affordable, and efficient manner[3]. A typical research questionnaire has a combination of closed-ended and open-ended questions. Meanwhile, the researcher uses close-ended question as type of the questionnaire in this research. There are 2 questionnaires as follow:

a) Cognitive resilience questionnaire

The cognitive resilience questionnaire is adopted from Smith (2015) who developed the scale for cognitive resilience[4]. The scale's items are assertions concerning one's views and sentiments about one's behaviour[5]. This consists of 10 items scale that have 5 possible response; 1-5. Strongly agree will be scored 5, agree will be scored 4, neutral will be scored 3, disagree will be scored 2, and strongly disagree will be scored 1. The blueprint can be seen on table 3.2.

Table 3. 2

The specification of Cognitive Resilience questionnaire

No.	Dimension	Indicator	Item number
1.	Optimism about the future	Students are optimist to expect something good to happen to them	4, 6
2.	Life-goal tracking	Students set their goals for achievement	1, 3, 7
3.	Satisfaction with productivity and effectiveness	Students have their own satisfaction toward their productivity and effectiveness	9, 10

[3] Ilker Etikan, "Developing Questionnaire Base on Selection and Designing," *Biometrics & Biostatistics International Journal* 5, no. 6 (May 4, 2017): 219–21, https://doi.org/10.15406/bbij.2017.05.00150.

[4] MA Smith,"HRP-Lab-Cognitive-Resilience-Scale.Pdf," *HRP LAB (2015)*. https://www.hrplab.org/iq-working-memory-capacity-tests/

[5] Sadhna Sharma and Sona Ahuja, "Consciousness Quotient As a Predictor of Executive Functioning," *MIER Journal of Educational Studies Trends & Practices* 5, no. 2 (January 1, 2021): 212–24, https://doi.org/10.52634/mier/2015/v5/i2/1490.

4.	Living according to core values	Students do the things by their values and goal setting	2, 5, 8

b) Metacognitive reading awareness questionnaire

The metacognitive reading awareness questionnaire is adopted from Mokhtary and Reichard (2002) who developed a questionnaire about metacognitive reading awareness[6]. This consists of 30 items scale that have 5 possible response; 1-5. Always or almost always will be scored 5, usually will be scored 4, sometimes will be scored 3, only occasionally will be scored 2, and never or almost never will be scored 1. The blueprint can be seen on table 3.3.

Table 3. 3

The specification of Metacognitive reading awareness questionnaire

No.	Dimension	Indicator	Item number
1.	Planning and evaluation	Readers' strategies used to prepare themselves for reading and to evaluate and measure the results of the efforts	1, 9, 10, 14, 19, 26, 29
2.	Person knowledge	General knowledge or learner's perceptions about the problematic series of reading	4, 7, 18, 20, 23, 28
3.	Mental translation	Learners' mental translation strategy	3, 12, 17, 21, 22, 30
4.	Directed attention	Learners' strategy helps them to concentrate and stay focus on the task given	5, 11, 13, 15, 16, 27
5.	Problem solving	Strategies used by readers to get involved and hinder the obstacles	2, 6, 8, 24, 25

2. Test

Test is one of the most widely utilized assessment strategies in school. Tests are used to compare a sample's quality, skill, ability, or knowledge to a predetermined standard, which can be regarded acceptable or not. In line with that, Adom et al. (2020) state that tests are procedures

[6] Mokhtari and Reichard, "Assessing Students' Metacognitive Awareness of Reading Strategies."

used in educational practice to measure a student's ability to execute certain activities, exhibit mastery of a skill, or demonstrate topic understanding[7].

Multiple-choice tests or a weekly spelling bee can be used as tests. Moreover, this research use reading comprehension test in the form of multiple choice. The test for reading comprehension will be taken from the ETS TOEFL Reading test[8]. The test will be consists of 50 items. It will be taken from the TOEFL ITP Assessment Series. The blueprint can be seen on appendix 1.

D. Data Collection

The researcher will use some steps in collecting the data. The first is preparing the questionnaires. Those are cognitive resilience and metacognitive reading awareness questionnaires. The next is preparing the reading comprehension test. Then, the researcher will distribute the questionnaires and the test directly to the participants. The researcher will need about a week to distribute them to the 100 participants.

The distribution of questionnaire and test will be done in different day with the questionnaire distribution in the first day. Then, the test distribution will be done in the next day. Moreover, the researcher will make limitation time to participant do the reading comprehension test. Typically, the TOEFL reading test was done in 55 minutes and so do this research test. In the end, after the data is collected, the researcher will check and convert the answer into numerical data before it will be tabulated in *Microsoft Excel*.

E. Data Analysis

The researcher will analyse the data in this research by three parts. Those are instrument analysis, prerequisite test and hypothesis testing.

1. Instrument Analysis

The researcher uses 2 type of instrument that is going to analyse, as follow:

a) Analysis of questionnaire

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[7] Dickson Adom, Jephtar Adu-Mensah, and Dennis Atsu Dake, "Test, Measurement, and Evaluation: Understanding and Use of the Concepts in Education," *International Journal of Evaluation and Research in Education (IJERE)* 9, no. 1 (March 1, 2020): 109, https://doi.org/10.11591/ijere.v9i1.20457.

[8] ETS, *TOEFL ITP Practice Tests*, Level 1, vol. 3 (United States: ETS TOEFL, 2020).

The researcher will input those data into *Ms. Excel* to analyse the questionnaire in this research. The results of students' answers are numerical data which is a questionnaire scale of 1 to 5. On cognitive resilience, the likert scale has equal score with *strongly agree* will be scored 5, *agree* will be scored 4, *neutral* will be scored 3, *disagree* will be scored 2, and *strongly disagree* will be scored 1. Meanwhile, on metacognitive reading awareness, the likert scale has equal score with *always or almost always* will be scored 5, *usually* will be scored 4, *sometimes* will be scored 3, *only occasionally* will be scored 2, and *never or almost never* will be scored 1.

b) Analysis of TOEFL Reading Test

The researcher will input the result of the TOEFL Reading test into *Ms. Excel* to analyse the test of this research. The test consists of 50 items, so each of the items has 2 points if the participants get correct answer. Meanwhile, the items will have 0 points if the participants get incorrect answer. Therefore, the highest score of this test is 100 by calculating all of the 50 items correct answer.

2. Prerequisite Test

The researcher will use SPSS 21 to analyse the prerequisite test as the data of this research. This test will be divided into four steps: normality test, linearity test, heteroscedasticity test, and linear regression.

a) Normality test

The goal of a normality test is to determine whether or not the distribution of research data is normal. The researcher employs the Kolmogorov-Smirnov test to determine whether the data is normal. If the significance (sig.) number is larger than 0.05, the data is regularly distributed. It can be concluded that the data distribution is abnormal if it is lower.

b) Linearity test

The researcher will use the linearity test to determine the linearity between independent and dependent variables. ANOVA (test for linearity) on a significance value of 0.05 can be used to determine the linearity test. If the significance value of the departure from linearity is greater than 0.05, two variables are deemed linear.

c) Heteroscedasticity test

The heteroscedasticity test is used to see if the variance of regression errors is affected by the values of the independent variables. If the dots on the scatter plot are scattered out without

any evident pattern, there is no error with heteroscedasticity, which means the assumption that the errors are independent and identically distributed.

d) Linear regression

In linear regression, there is a section when the researcher tries to figure out how the independent and dependent variables are related. Correlation is how independent factors help produce or attain dependent variable, while correlation is a statistical metric that reveals the amount to which two or more variables change together. As a result, a parameter to determine whether or not the correlation is strong is required. The value and degree of the correlation can be seen as follow[9]:

Table 3. 4

Coefficient variable

No	Value (r)	Degree
1	0.00 – 0.199	Very weak
2	0.20 – 0.399	Weak
3	0.40 – 0.599	Sufficient
4	0.60 – 0.799	Strong
5	0.80 – 1.00	Very strong

3. Hypothesis Testing

The data will examine by using the research hypothesis as a guide. Based on the research hypothesis, researcher will use a path analysis mediation model because metacognitive (Y) will be used as a mediator that determines the influence of cognitive resilience (X) on reading comprehension (Z). Then, the researchers will use a Z-Sobel test to determine the magnitude of the influence. SPSS AMOS 25.0 and SEM (Structural Equation Model) will also be used to identify the direct and indirect contributions among the variables.

[9] Jonathan Sarwono, "Mengenal Path Analysis: Sejarah, Pengertian dan Aplikasi," *Jurnal Ilmiah Manajemen Bisnis* 11, no. 2 (November 2011): 285–96.