

### CHAPTER III RESEARCH METHODOLOGY

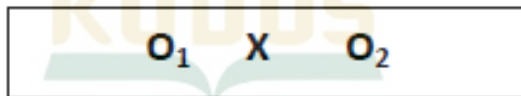
Determining the effectiveness of using media “snakes and ladders” towards students’ mastery in speaking, the researcher deemed the tenth-grade students of Islamic Senior High School Jepara to be studied. This chapter includes research method, the research setting, research population and sample, design and definition of operational variable, test of instrument validity, data collection techniques, and data analysis techniques.

#### A. Research Method

The method used in this study is a quantitative method. According to Creswell, the quantitative methods allow researchers to choose what they want to learn, ask detailed questions, collect measurable results from participants, analyze student work results using statistics, and conduct samples independently, as well as analytically.<sup>1</sup> This analysis is directly intended to affect one element. When applied correctly, it is the best form of cause-and-effect research hypotheses.<sup>2</sup>

The design used in this study is a quantitative experimental study. The experimental study used in this study was a pre-experimental design in the form of a one-group pretest-posttest design. With this design, a pre-test is performed prior to treatment. In this study, the results of the treatment can be compared with the pre-treatment (treatment) status, so that we can know more accurately. This can be expressed as:

#### Picture 3.1 Pre Experimental One Group Pretest-Posttest Design



Information:

- O<sub>1</sub> : Pretest value (before being given treatment)
- X : Giving the treatment
- O<sub>2</sub> : Posttest Value (after being treated)

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<sup>1</sup> John W Creswell, "Educational Research : Planning , Conducting and Evaluating Quantitative and Qualitative Research Fourth Edition," *Pearson New International* (2014).

<sup>2</sup> Jaydeepsinh Mahida, “Educational Research : Planning , Conducting , and Evaluating Quantitative And,” *Academia* (2003).

In the One Group Pretest-Posttest Design Experiment, an experimental study was conducted to conduct a preprocessing (pretest) test to know the speaking mastery of the students. After that, treatment was followed by visual media treatment, and a final test (post-test) was administered to measure post-treatment speaking mastery.<sup>3</sup>

## **B. Setting of the Research**

This study was conducted at Islamic Senior High School Jepara which was located in Blingoh, Donorojo Jepara. It was done during the second semester of the academic year of 2022/2023. The researcher chooses the school because the majority of students had quite low speaking and their speaking mastery was unknown.

## **C. Research of Population and Sample**

### **1. Research of Population**

A population is a group of individuals with common characteristics. The subjects of this study were all students of Islamic Senior High School Jepara in The Academic Year of 2022/2023.

### **2. Research of Sample**

A sample is a subset of a subject population that a researcher wishes to study in order to form a general opinion about the subject population.<sup>4</sup> The sample can also mean as a small part of the group members depending on a fixed process so that it can be used to represent the population. The sample is obtained because the population is so huge and it is very difficult for researchers to think it all.

In this study, we use non-probabilistic sampling, which is highly convenient, as the sampling technique. According to Creswell, non-probability sampling is a technique in which individuals are selected because they are available and convenient to researchers and because they represent traits they wish to study.<sup>5</sup> Although sampling is a convenient

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<sup>3</sup> Sugiyono, "*Metode Penelitian Kuantitatif, Kualitatif, dan R&D*". Bandung: Alfabeta, (2019).

<sup>4</sup> Creswell.

<sup>5</sup> Creswell.

sample, researchers select participants because they are willing and able to participate in the study.<sup>6</sup>

Convenience sampling was used because they were students who received a superior program, namely the English Speaking Program (ESP) and the researcher had obtained permission from the headmaster of the school. So, this sample is taken based on convenience because participants are comfortable for researchers and available for study. So, the sample in this research was 17 students in the tenth grade at Islamic Senior High School Jepara.

## **D. Design and Definition of Operational Variable**

### **1. Design of Variable**

The two types of variables used in this study are the independent variable (X) and the dependent variable (Y).

#### **a. Independent Variable. (X)**

An independent variable is a variable that affects or causes a change or occurrence of the dependent or dependent variable.<sup>7</sup> The independent variable in this study is the game media.

#### **a. Dependent Variable (Y)**

The dependent variable is the variable that is affected or which is the result of the independent variable.<sup>8</sup> The dependent variable in this study is the students' mastery in speaking.

### **2. Definition of Operational Variable**

Operational variables are operational definitions that describe the variables referenced in the study and how they are measured. Here is a description of the variables in the researcher's title:

#### **a. Media of " Snakes and Ladders" (X)**

Media of "Snakes and Ladders" is a media in the form of games that students have known for a long time and are fun activities. This game is played in groups by two or more people, and it can involve a lot of students talking during the game. Media snakes and ladders are

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<sup>6</sup> Creswell.

<sup>7</sup> Sugiyono. *Metode Penelitian Pendidikan Pendekatan Kuantitatif, Kualitatif, dan R&D*. Bandung: Alfabeta, (2014).

<sup>8</sup> Sugiyono.

ideal for use in teaching and learning processes. The purpose of using these media is to help teachers teach speaking, stimulate students' interest in learning English, and make it easier for students to contribute ideas and explanations.

b. Students' Mastery in Speaking (Y)

Speaking is the oral communication process between a speaker and listener, including both the productive ability to convey a message and the ability to understand, receive and hear the message. Speaking is one of the most important skills you need to learn in order to communicate well with others.

**Table 3. 1 Variable of the Content**

Independent Variable	X	The Snakes and Ladders Media
Dependent Variable	Y	Students' Mastery in Speaking

**E. Test of Validity and Reliability of the Instrument**

**1. Test of Validity**

Validation test is useful for measuring whether the questionnaire or questionnaire used by researchers as a data collection tool is valid or not. The questions in the questionnaire are said to be valid instruments if the questionnaire can reveal something to be studied. Valid means that the questionnaire can be used to measure what you want to measure. According to Brink & Wood, content validity is the qualification/assessment stage, which involves selecting experts to evaluate the content validity of each item and the total scale.<sup>9</sup> On the other hand, the validity of the material depends on the syllabus. The structural method to determine the validity of the instrument substance is given to the experts. The selected experts must have clear requirements to judge whether the material can be applied to the definition or not. It will be necessary to ensure that the tool is valid. Whereas, structural validity refers to the extent to which a conceptual or structural measurement tool is designed to measure.<sup>10</sup> This means the tool is clear and students can easily understand the test questions. To

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<sup>9</sup> Brink, P. J., & Wood, M. J. "Advanced Design In Nursing Research (Second Edition) (*kedua*)". London: SAGE Publications (2008).

<sup>10</sup> Brink, P. J., & Wood, M. J, (2008).

determine the validity of the tool, the researcher consulted and also tested the validity of the instrument to four experts.

In this study, before the instrument was given to students as respondents, it was first carried out a content validation test through the expert. This content validation is carried out to ensure that the contents of the test instrument are comparable to the goals to be achieved. The experts chosen by the researcher as testers for this validation were two lecturers and two English teachers. The score content-validity coefficient of the experts are calculated by the Aiken V formula:<sup>11</sup>

$$V = \sum s / [n(c-1)]$$

Information:

V : Rater agreement index

s : The score set by each rater minus the lowest score in the category

n : Number of raters

c : The number of categories that can be selected by the rater

After carrying out content validation tests with the experts, then item validation was carried out from the test instrument to 15 respondents. To carry out a validity test on each instrument test item, SPSS was used as an aid.

As for the item validation test conducted in this study, the researcher uses the following pattern:

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

Information:

$r_{xy}$  : The number of correlation coefficients (indices) between variables x and y

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<sup>11</sup> Amrullah, A., Fathoroni, F., Imran I., Lovy H., Tesha S., Yeo S. F., "Proceedings of the 3rd Annual Conference of Education and Social Sciences (ACCESS 2021)". Prancis: Atlantis Press SARL, (2023). [https://books.google.co.id/books?id=YoekEAAAQBAJ&pg=PA135&dq=Aiken+v+formula&hl=id&newbks=1&newbks\\_redir=0&source=gb\\_mobile\\_search&sa=X&ved=2ahUKEwjL6KvUjq7\\_AhVY1jgGHX7uCQEQ6wF6BAgKEAU#v=onepage&q=Aiken%20v%20formula&f=false](https://books.google.co.id/books?id=YoekEAAAQBAJ&pg=PA135&dq=Aiken+v+formula&hl=id&newbks=1&newbks_redir=0&source=gb_mobile_search&sa=X&ved=2ahUKEwjL6KvUjq7_AhVY1jgGHX7uCQEQ6wF6BAgKEAU#v=onepage&q=Aiken%20v%20formula&f=false)

- $\Sigma xy$  : The multiplication results of each score on the variables x and y  
 $\Sigma x$  : The results of each score on the variable y  
 $\Sigma y$  : The result of each score on the variable y  
 $\Sigma x^2$  : The results of the quadratic of each score on the variable x  
 $\Sigma y^2$  : The results of the quadratic of each score on the variable y

Validation test is done by comparing  $r_{\text{count}}$  and  $r_{\text{table}}$  with the following criteria:

- a. If  $r_{\text{count}} < r_{\text{table}}$  then the data is invalid
- b. If  $r_{\text{count}} > r_{\text{table}}$  then the data is valid

Then the correlation results obtained were consulted on significance table of 5% and the decision making can be seen in the results of the  $r_{\text{count}}$  (*Product moment*) and  $r_{\text{table}}$  which have a value of 0,4409 and a value  $\alpha = 0,05$ . This can be interpreted if  $r_{\text{count}} > r_{\text{table}}$ . Then the results obtained by items are declared valid, and if  $r_{\text{count}} < r_{\text{table}}$ . Then the results obtained by items are declared invalid.

## 2. Test of Reliability

Reliability test is a measuring instrument used to measure a questionnaire or test of a variable. A questionnaire or test is considered reliable or can be trusted when a person's response to reality is stable or consistent over time. In testing the reliability, the help of the SPSS program, specifically the Cronbach's Alpha statistical test was used. The instrument criteria are said to be reliable if the values obtained in the test using the Cronbach Alpha  $> 0,50$  and if Cronbach Alpha with coefficient  $< 0,05$  then it can be declared unreliable.<sup>12</sup> The reliability test is carried out using the following formula:

$$r_{11} = \left( \frac{n}{n-1} \right) \left( 1 - \frac{\sum s_i^2}{s_t^2} \right)$$

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<sup>12</sup> Mamik, *Metodologi Kualitatif*, ed. M. Choirel Anwar (Surabaya: Zifatama Plubishing, 2015),78  
[https://www.google.co.id/books/edition/Metodologi\\_Kualitatif/TP\\_ADwAAQBAJ?hl=id&gbpv=1&dq=teknik+pengumpulan+data&printsec=frontcover](https://www.google.co.id/books/edition/Metodologi_Kualitatif/TP_ADwAAQBAJ?hl=id&gbpv=1&dq=teknik+pengumpulan+data&printsec=frontcover).

Information:

$r_{11}$  : Instrument reliability coefficient

$n$  : The number of items used in the test

$s_t^2$  : Constant number

$\Sigma s_i^2$  : The total variance of the score of each item

## F. Data Collection Technique

This instrument is an implement for calculating, observing, or documenting the data of quantitative.<sup>13</sup> In other words, its tool is intended to help researchers collect data for research purposes. Researchers used research tools to collect data as follows:

### 1. Test

The instrument used in this study is the test. A test is a series of exercises, questions, or other means of measuring the abilities, knowledge, skills, intelligence, or talents of an individual or group.<sup>14</sup> After being treated by an English teacher to measure speaking ability, researchers administered oral tests to the same pretest and posttest classes.

The number of tests is one of the questions that are instructions. In this test, the teacher gives topics about describing animals, people and things and students must provide arguments about topics based on the topics obtained. The instruction for this test is that the student is asked to provide an argument in the form of describing someone or something based on the question given. Each student has the opportunity to present his/her argument. Amid the test, the teacher immediately assigns several points according to pre-prepared rubrics.

Researchers used rubrics to score speaking tests. The rubric used in this study is the analytical rubric. According to Gareis & Grant, analytical rubrics are key assessments that provide information about the performance of each component of a task, helping diagnose strengths and weaknesses.<sup>15</sup> It can be concluded that the analytic rubric is a rubric in which the assessment aspects and indicators are

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<sup>13</sup> Creswell.

<sup>14</sup> Arikunto, S. *Dasar-dasar Evaluasi Pendidikan*. Jakarta: Bumi Aksara, (2010).

<sup>15</sup> Gareis, C. R., & Grant, L. W. (2013). *Teacher Made Assesment*. New York: Routlage.

made in detail. In this study, there is one skill that is assessed. It is a student's speaking skill.

The researcher used the speaking rating scale proposed by Brown H Douglas as a determinant of scores in assessing students' speaking skills. Researchers use an analytic rubric. Then Brown states that, analytical assessment may be more accurately called analytical assessment to establish a closer relationship to classroom language teaching with formal testing.<sup>16</sup> It can be concluded that the analytic rubric is a rubric in which the assessment aspects and indicators are made in detail. There are five aspects assessed, namely vocabulary, grammar, pronunciation, fluency, and comprehension. The score may also include the speaker's accuracy, articulation, intonation, voice, eye contact, and gestures. The score section of the test is presented calculating the level of output based on one of the following parameters:<sup>17</sup>

**Table 3.2 Oral Scoring Categories**

<b>Aspect</b>	<b>Criteria</b>
Pronunciation	There are almost no traces of foreign accents.
	Even if you notice a particular accent, you will always understand.
	Pronunciation problems require focused listening and sometimes lead to misunderstandings.
	Pronunciation issues are very confusing. It is often asked repeatedly.

<sup>16</sup> H Douglas Brown and Priyanvada Abeywickrama, "Language Assessment," *Principles and Classroom Practices*. White Plains, NY: Pearson Education, (2004).

<sup>17</sup> (By Brown, 2004:406-407)



	The pronunciation problem was so severe that I could barely understand the conversation.
Grammar	Make a few notable errors (if any) in grammar or word order.
	Sometimes they make mistakes in grammar and/or word order that don't obscure the meaning.
	Frequently makes grammatical mistakes and word order is sometimes unclear.
	Grammar errors and word order make comprehension difficult. Often you have to rephrase sentences or stick to basic patterns.
	Grammar and word order errors are so severe that the language becomes virtually unintelligible.
Vocabulary	Vocabulary and idioms are used in much the same way as native speakers.
	In some cases, a lack of vocabulary can lead to inappropriate terminology and restructuring of ideas.
	Frequent use of the wrong words; somewhat limited conversation due to incomplete vocabulary.
	Misuse of words and a very limited vocabulary make comprehension even more difficult.
	Conversation is virtually impossible as the vocabulary is very limited.

Fluency	The language is fluent and easy like a native speaker.
	Language issues seem to play a part.
	Speed and fluency are greatly affected by language problems.
	Often hesitant, linguistically restricted, and often silent.
	The speech was so halting and disjointed that it made conversation almost impossible.
Comprehension	You seem to understand everything without difficulty.
	You can understand most things at normal speed, but some repetition may be required.
	Understands most of what is said more slowly and repeatedly than usual.
	After being told, many problems arise. "Social dialogue" can only be understood if it is repeated slowly and often.
	you cannot even understand basic English conversation.

The researcher evaluates students' speaking assessments from a score of 1-5 based on the skills possessed by the students and the description of the aspects above. The student's overall score is taken from the total score divided by the highest score in all dimensions or sub-aspects and added to the scale. To calculate the final value of Widoyoko, it can be formulated as follows:

$$SA = \frac{PS}{ST} \times SP$$

Information:

SA : Final scores

PS : Score acquisition (total score)

ST : The highest score in the assessment aspect (20)

SP : Scoring scale (100)<sup>18</sup>

## 2. Observation

The observation method is a scientific method in research by looking directly at matters relating to the object of research. The observation method is useful for seeing various things related to objects, related activities, people involved and others according to observations and the researcher's point of view.

## 3. Documentation

Documentation is one way to collect information by analyzing documents or seeing something related to oneself or others. Retrieval of documentation can be in the form of writing, pictures or other works of art that can support the credibility of the results of research conducted by researcher. This research documentation is in the form of photographs taken by researchers to strengthen the research results of researcher conducted during the research process.

## G. Data Analysis Technique

In quantitative research, after data from all sources or respondents has been collected, the data analysis stage will then be carried out. Then, carried out the data analysis stage including grouping data based on respondent variables, presenting data on

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<sup>18</sup> Widoyoko, E. P. *Penilaian Hasil Pembelajaran di Sekolah (Revision)*. Yogyakarta: Pustaka Pelajar, (2016).

each variable studied, performing calculations to answer problems, and calculations to test the proposed hypotheses.<sup>19</sup> In analyzing research data, the researcher used several stages, namely:

### 1. Analysis Assumption Test

The assumption test or prerequisite test used is normality test. This test was carried out with the SPSS 25 program. The normality test was carried out to find out whether the sample obtained was normally distributed or not. The normality test was carried out in the pretest and posttest classes. The statistical test used is the Shapiro-Wilk Test with the criteria of the  $Asmp. > 0,05$ . So the data is declared to have a normal contribution. The tests were carried out using the SPSS 25 application.

### 2. Hypotheses Test

In this study, the researcher does some analyses steps to do the hypotheses test. They are descriptive analysis and inferential analyses by using the T-Test formula.

#### a. Descriptive Statistical Analysis.

Descriptive statistical analysis is a data analysis technique used to analyze data by describing or illustrating the collected data without drawing general conclusions. Based on this analysis, we describe students' acquisition of speaking during treatment with learning media. Descriptive statistical analysis describes the mean, median, mode, minimum, maximum, and total number (sum) based on the number of samples.

#### b. Inferential Statistical Analysis

The t-test was used as the data analysis technique for testing hypotheses in this study. For this purpose, a statistical method using the following formula was used:

$$t = \frac{Md}{\sqrt{\frac{\sum x^2 d}{N-1}}}$$

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<sup>19</sup> Sugiyono.

Information :

T : T-test

Md : Mean of the difference between pretest and posttest

$\sum x^2d$  : Sum of squared deviations

N : Subjects in the sample

The procedure for hypothesis testing is as follows:

- a. Calculate the result of "Md" using the following formula:

$$Md = \frac{\sum d}{N}$$

Information:

Md : Mean of difference between pretest and posttest

$\sum d$  : Sum of the gain (posttest–pretest)

N : Subjects in the sample

- b. Find the result of " $\sum X^{2d}$ " using the following formula:

$$\sum X^{2d} = \sum d - \frac{(\sum d)^2}{N}$$

Information:

Md : Mean of difference between pretest and posttest

$\sum d$  : Sum of the gain (posttest–pretest)

N : Subjects in the sample

- c. Determine the result of  $t_{count}$  using the following formula:

$$t = \frac{Md}{\sqrt{\frac{\sum x^2d}{(N-1)}}}$$

Information:

Md : Mean of difference between pretest and posttest

d : Deviation of each subject

$\sum x^2d$  : Sum of squared deviations

N : Subjects in the sample

- d.b : Determined by  $N-1$ .<sup>20</sup>
- d. Determining key decision rules or criteria. The significant test rules are as follows:
- If  $t_{\text{count}} > t_{\text{table}}$  then  $H_0$  is rejected and  $H_1$  is accepted, this means that there is the effectiveness of using media “snakes and ladders” towards students' mastery in speaking (a case study at islamic senior high school jepara in the academic year of 2022/2023).
- If  $t_{\text{count}} < t_{\text{table}}$  then  $H_0$  is accepted and  $H_1$  is rejected, this means that there isn't the effectiveness of using media “snakes and ladders” towards students' mastery in speaking (a case study at islamic senior high school jepara in the academic year of 2022/2023)
- e. Determining the value of  $\alpha$  (significant level) and the price  $t_{\text{table}}$
- Finding  $t_{\text{table}}$  using the t distribution table with a significant level of  $\alpha = 5\%$  (0.05) and  $d.b = N-2$

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<sup>20</sup> Sugiyono.