

CHAPTER III

METHODOLOGY

A. Research Method

To carry out the inquiry for this study, the researcher combined a number of techniques from the sequential explanatory model. A method of inquiry that combines or associates qualitative and quantitative research methodologies is referred to as "mixed method research"¹. Quantifiable information must be acquired in order to respond to the first and second research questions, which deal with the students' on the need for creating narrative texts. The study used a questionnaire to collect those quantitative data, and the results of the data analysis will be presented as statistical data. Subsequently, In order to answer the third research question, the qualitative data was required, which concerned the elements that influence these students' interest. In order to gather qualitative information throughout the interview, open-ended questions were used². This approach was selected because it seeks to ascertain how using game based learning affects students' of reading comprehension and grammar in the context

¹ John David Creswell, John W. Creswell, *Research Design: Qualitative, Quantitative, and Mixed Methods Approaches. Fifth Edition*, Writing Center Talk over Time, 2018, doi:10.4324/9780429469237-3.

² John W Creswell, *Qualitative, Quantitative, and Mixed-Methods Research*, *Microbe Magazine*, 2009, IV, doi:10.1128/microbe.4.485.1.

of learning English. Two student groups will be compared in this study: While the control group will finish a homework assignment the conventional way, the experimental group will use game-based learning. Pre-test and post-tests are used in this quasi-experimental study's design to gauge how much students' comprehension has changed before and after treatment³. ‘

B. Place and Time of Research

During the implementation of this research, data collection is planned to be carried out in May 2025. SMPN 1 Petir, located in Serang Regency, Banten Province, was chosen as the object of research. One of the factors that prompted the researcher to choose this school is because the English teachers at the school apply the Independent Curriculum in their classroom learning and regarding the students' problem in reading comprehension and grammar in this school.

C. Population and Sample

Jhonson mentioned that the sample is part of the population to be observed and can be used to describe the population⁴. In the context of quantitative data collection, the sample is fully assigned as

³ Creswell, John W. Creswell.

⁴ R. Burke Johnson, *Educational Research Quantitative, Qualitative, and Mix Approaches 5th Edition*, Sage Publication, 2014, xi.

respondents. Based on these conditions, the purposive sampling method is chosen to be used

- 1) Population: 339 eighth-grade students at SMPN 1 Petir who are enrolled in English classes during the even semester of the 2024–2025 academic year make up the study's population
- 2) Sample: Purposive sampling was used to choose the study's sample. Purposive sampling is a non-probability sampling technique in which researchers choose participants according to particular standards or traits that are pertinent to the research issue. It is sometimes referred to as judgmental or selective sampling. Each group consists of 106 students. The sample consisted of two groups, namely:
 1. Experiment Group (class of VIII A and VIII B): 53 students working on homework using game based learning.
 2. Control Group (class of VIII C and VIII D): 53 students who do homework using traditional methods (e.g., assignments in exercise books or without game based learning).
 3. Interview (Experimental class): 3 students who do homework using Game-Based Learning and the result post-test is minimum, medium, and maximum⁵.

⁵ Creswell, John W. Creswell.

D. Data Collection

The researcher as a observer no participant, Due to the researcher's lack of classroom instruction, only gave instructions to the teacher who taught in the classroom to use game based learning in homework learning. However, the researcher controlled the course of the research process well.

Tests and interviews were used to gather data for this study. The test served as the main tool for assessing students' reading comprehension and grammar using game-based learning of narrative text. A pre-test and a post-test were included.

Meanwhile, the interview was conducted to obtain additional information regarding students' perceptions and challenge during the learning process using game based learning. Following the post-test, three students from the experimental group were interviewed.

1. Pre-test

The pre-test is the first step the researcher takes. A achievement test was the first tool utilized. It consisted of a series of written questions about reading comprehension and grammar using game based learning in narrative text, and was completed by a group of chosen research participants. The data in this study was collected

by spreading several questions. Researchers used achievement test to measure students' ability to learn reading comprehension and grammar using game based learning in narrative text.

2. Treatment

Following the pre-test, the researcher separated the participants into two groups: the experimental group and the control group. Before conducting the experiment, the researcher explained how to use game based learning. After the respondents understood how to use game based learning, the respondents conducted experiments with the experimental group for 4 meetings. Meanwhile, the control group continued to carry out learning as usual without using the game based learning application to do homework.

3. Post-test

The researcher used achievement test to provide a post-test following the experiment. The test was made with the same level of questions as the pre-test but with different questions to two control groups and an experimental group to find out the changes and development of students' knowledge.

4. Interview

In addition, the researcher also created a interview to answer the third research question about perception and challenge student in using game based learning. The subject of interview is the student with the maximum score, middle score, and the student with the minimum score were all interviewed for this study.

E. Data Analysis

With the use of SPSS 26.0 software, the data gathered from the pre-test and post-test findings were quantitatively examined using descriptive and inferential statistical techniques. In addition, the data from interview results were analyzed qualitatively using Nvivo 12 Pro. Here are the data analysis steps to be used:

1. Normality Test

It is crucial to ascertain whether the data are normally distributed prior to performing hypothesis testing. The data's normality was examined using the Kolmogorov-Smirnov test.

1) Decision criteria:

- a) **If the significance value (p-value) > 0.05, the data are normally distributed.**
- b) **If the significance value (p-value) < 0.05, the data are not normally distributed.**

2) The normality test was conducted separately for:

- a) Pre-test of the experimental group**
- b) Post-test of the experimental group**
- c) Pre-test of the control group**
- d) Post-test of the control group**

The results of this test would determine the appropriate type of hypothesis test to be used in the next stage.

2. Homogeneity of Variance Test

After testing normality, To determine if the differences between the experimental and control groups were homogeneous, a Levene's Test for Equality of Variances was performed.

1) Decision criteria:

- a) If the significance value (p-value) > 0.05, the data variances are homogeneous.**
- b) If the significance value (p-value) < 0.05, the data variances are not homogeneous.**

This test is necessary to ensure that both groups have equal variance, which is one of the assumptions in comparative statistical tests.

3. Hypothesis Testing

Based on the results of the normality and homogeneity tests, the following hypothesis testing procedures were carried out:

1) If the data are normally distributed:

a) Paired Sample t-test

Within the same group (experimental and control groups individually) to compare the results of the pre-test and post-test. This test establishes whether the scores of each group's students before and after the treatment change significantly.

b) Independent Sample t-test

To evaluate the experimental and control groups' post-test results and ascertain whether game-based learning significantly alters students' learning outcomes in comparison to more conventional approaches.

2) If the data are not normally distributed:

a) Wilcoxon Signed-Rank Test

When data are not normally distributed, the pre-test and post-test scores within each group are compared.

b) Mann-Whitney U Test

Comparing the experimental and control groups' post-test results when the data is not regularly distributed.

3) **Decision criteria for hypothesis testing:**

- a) **If the significance value (p-value) < 0.05 , the null hypothesis (H_0) is rejected and the alternative hypothesis (H_1) is accepted, indicating a significant difference.**
- b) **If the significance value (p-value) > 0.05 , the null hypothesis (H_0) is accepted, indicating no significant difference.**

4. Interview

Initially, the study through interviews with selected students to support the quantitative findings by exploring students' perceptions and challenges during game-based learning.

For the Interview, Huberman, and Saldana (2018), which has steps, for the interview findings⁶. The researcher selects the data in this step by focusing on and categorizing the material obtained from interviews in order to produce more focused data and concentrate on the pertinent results. The writer completed the following actions in this step:

- a) The interview was recorded by the researcher;
- b) The researcher used the Nvivo 12 Pro tool to turn the interview into text;

⁶ M B Miles, A M Huberman, and J Saldana, *Qualitative Data Analysis: A Methods Sourcebook* (SAGE Publications, 2018), 31

- c) The text was raw data that had not yet been reduced;
- d) The theme or coding was used to create a highlight for further analysis.

F. Hypothesis

1. Null Hypothesis (H_0)

Based on the formulation of the research questions, the null hypothesis proposed in this study is as follows:

- a. $H_{0\ 1}$: there is no significant influence of the use game-based learning to improving students' reading comprehension.
- b. $H_{0\ 2}$: there is no significant influence of the use game-based learning to improving students' grammar.

2. Alternative Hypothesis (H_a)

Based on the formulation of the research questions, the alternative hypothesis proposed in this study is as follows:

- a. H_{a1} : there is significant influence of the use game-based learning to improving students' reading comprehension.
- b. H_{a2} : there is significant influence of the use game-based learning to improving students' grammar.