CHAPTER III

RESEARCH METHODOLOGY

A. Research Design

This research aims to determine the results of using the Nearpod application to improve the reading skills of eighth-grade students at SMPN 10 Padang for the 2024/2025 academic year. Hasan stated that research is an activity conducted by researchers in a specific field, carried out with logical steps with certain goals and uses, which involves the repetition of previous research conducted by earlier researchers to seek new meanings (Syahrizal & Syahran Jailani, 2023).

Quantitative research is defined as a systematic investigation of phenomena by collecting measurable data using statistical, mathematical, or computational techniques. Quantitative research is largely conducted using statistical methods employed to collect quantitative data from research studies. Quantitative research is different from qualitative research. Quantitative research provides more measurable information. This is because there is data that can be used as a basis to produce more measurable information (Rustamana et al., 2024).

This research was a quantitative study employing a quasi-experimental design. A quasi-experimental design was used because the researcher does not have full control over the random assignment of subjects, but instead will use existing classes in the school. This study aims to determine the effect of using the Nearpod application on the reading

comprehension skills of eighth-grade students at SMPN 10 Padang for the 2024/2025 academic year.

The research design followed a posttest-only control group design. In this design, the researcher divided the sample into two groups: the experimental group and the control group. The experimental group received reading comprehension instruction using the Nearpod application, while the control group received conventional reading instruction without Nearpod. After the treatment, both groups were assessed through a posttest to measure their reading comprehension skills. A pre-test was not conducted to avoid pre-test sensitization Effects and to make the research more time-efficient. The design of this study will refer to the model proposed by Sugiyono (2013) and can be illustrated as follows:

Table 3. 1 Research Design

Group	Treatment	Posttest
E	X	O (Tes akhir)
C	-	O (Tes Akhir)

Explanation:

E = Experimental group

C = Control group

X = Treatment in the experimental class using Nearpod

O = Posttest Score (after treatment).

B. Research Settings

This research was conducted at SMP Negeri 10 Padang, which is located at Jl. Dr. M. Hatta, Kecamatan Kuranji, Kota Padang, West Sumatra,

Indonesia. The school was selected as the research site because it is a formal educational institution that implements regular English learning activities.

The research was carried out during the 2025/2026 academic year, specifically from July to August 2025, and lasted for approximately one month. The study was implemented during regular English classroom sessions as part of the school's normal teaching and learning process. All research activities were conducted under normal classroom conditions and were adjusted to the school's academic schedule.

C. Data and Source of Data

1. Population

According to Sugiyono (2013) A population is a generalization area that includes subjects or objects with specific characteristics defined by the researcher. In this study, the population consisted of all eighth-grade students at SMPN 10 Padang in the 2024/2025 academic year, in which the eighth grade was organized into 10 parallel classes.

2. Sample

According to Sugiyono (2013), a sample is a subset of the population that represents its characteristics. In this study, the sample consisted of two classes of eighth-grade students at SMPN 10 Padang, with each class comprising approximately 31 to 32 students.

3. Sampling

According to Sugiyono (2013) Sampling is a technique used to select a sample from a population to serve as research subjects. Its

purpose is to obtain representative data so that the findings can be generalized to a broader population. One suitable sampling technique for classroom-based research is cluster random sampling, which ensures that each cluster in the population has an equal chance of being selected.

In this study, cluster random sampling was used to select the sample classes. Each class of eighth-grade students at SMPN 10 Padang was considered a single cluster. Two classes were randomly chosen: one as the experimental group, which received reading instruction using the Nearpod application, and the other as the control group, which received conventional reading instruction without Nearpod.

This sampling technique helped ensure that the sample is unbiased and representative, thereby supporting the validity, reliability, and generalizability of the research findings. By applying random selection at the cluster level, the researcher was maintaining fairness in assigning classes to the experimental and control groups, consistent with the post-test-only control group design planned for this study.

4. Research Variables

According to Sugiyono (2013), research variables are aspects or factors defined by the researcher for investigation, from which conclusions were drawn. This study includes two variables: the independent variable (variable X), which is the use of Nearpod-based interactive learning media, and the dependent variable (variable Y), which is students' English reading comprehension skills.

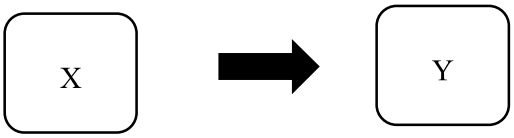

Table 3. 2 Relationship Between Variables

Explanation:

X: The independent variable is the use of the Nearpod application as a learning medium

Y: The dependent variable is the students' English reading comprehension skills.

D. Data Collection and Technique

1. Instrument

Sugiyono (2013) states that a research instrument is a tool used to measure natural or social phenomena. The research instrument employed in this study was a reading comprehension test designed to measure students' English reading comprehension skills, particularly on Greeting Card material. The instrument was administered as a posttest to both the experimental group and the control group after the instructional treatment had been completed. The use of a posttest-only instrument was intended to obtain an objective measurement of students' reading comprehension outcomes after being exposed to different teaching media.

The test was constructed in the form of multiple-choice questions, as this format allows for objective scoring and minimizes rater subjectivity. Each item consisted of four answer options (A, B, C, and

D), with only one correct answer. The test comprised 20 items, and students were given 40 minutes to complete the test. This duration was considered sufficient for eighth-grade students to read the texts carefully and respond to the questions appropriately.

The development of the reading comprehension test was based on the reading comprehension aspects proposed by Nuttall (1982). According to Nuttall, reading comprehension involves several essential skills, including identifying the main idea, understanding references, making inferences, locating detailed information, and interpreting vocabulary in context. In line with this framework, the instrument in this study covered five aspects of reading comprehension, namely main idea, reference, inference, detailed information, and vocabulary. Each aspect was represented by four questions, resulting in a balanced total of twenty items. This distribution was intended to ensure that students' reading comprehension was measured comprehensively and systematically, covering both literal and higher-level comprehension skills.

All reading texts and test items were adapted and modified from some references: *Detik-Detik Ujian Nasional Bahasa Inggris SMP/MTs 2019/2020, Mega Bank Soal Bahasa Inggris SMP Kelas 1,2, & 3 and UN SMP/MTs 2020 Bahasa Inggris*. The texts were carefully selected and adjusted to match the characteristics of Greeting Card material, including communicative purposes, commonly used expressions, and contextual meanings. The adaptation process aimed to ensure that the

content, language level, and difficulty of the test were appropriate for eighth-grade students and aligned with the learning objectives of the Merdeka Curriculum.

Table 3. 3 Indicators of Reading Comprehension

No.	An indicator to test reading	Number of Questions	Question Number
1.	Main Idea	4 Questions	1, 7, 14, 19
2.	Reference	4 Questions	4, 6, 10, 17
3.	Inference	4 Questions	2, 5, 15, 20
4.	Detailed Information	4 Questions	3, 8, 11, 16
5.	Vocabulary	4 Questions	9, 12, 13, 18

(Nuttall, 1982)

In terms of cognitive levels, the reading comprehension test items were classified into Lower Order Thinking Skills (LOTS), Middle Order Thinking Skills (MOTS), and Higher Order Thinking Skills (HOTS). This classification was intended to identify the level of cognitive processing required by each item and to ensure that the instrument measured students' reading comprehension gradually and systematically.

Table 3. 4 Cognitive Level Distribution

No	Category	Cognitive Level	Explanation	Number of Questions	Percentage	Questions Number
1.	LOTS	Remember, Understand	*Mengingat dan memahami informasi literal*	4 questions	20%	4, 11, 13, 18.
2.	MOTS	Apply	*Menggunakan informasi dalam konteks baru*	6 questions	30%	5, 10, 14, 16, 17, 19.

3.	HOTS	Analyze, Evaluate, Create	*Analisis, evaluasi, dan penciptaan gagasan baru*	10 questions	50%	1, 2, 3, 6, 7, 8, 9, 12, 15, 20

Out of the total 20 test items, four questions (20%) were categorized as Lower Order Thinking Skills (LOTS). These items focused on students' ability to remember and understand explicitly stated information in the text, such as identifying clear references, recognizing word meanings, and understanding literal details. The LOTS items functioned as basic comprehension checks to ensure that students were able to grasp surface-level information before engaging in more complex thinking processes.

Furthermore, six questions (30%) were classified as Middle Order Thinking Skills (MOTS). These items required students to apply information obtained from the text in context, such as determining the main idea, identifying the recipient of the message, interpreting references through contextual clues, and understanding the writer's intention when the meaning was relatively clear. The MOTS items served as a bridge between literal comprehension and higher-level analysis by encouraging students to use their understanding meaningfully.

Meanwhile, the remaining ten questions (50%) were categorized as Higher Order Thinking Skills (HOTS). These items required students to engage in analysis and evaluation, such as interpreting implicit

meanings, drawing inferences, evaluating the writer's purpose, and understanding emotional or social messages conveyed in greeting card texts. The dominance of HOTS items reflects the characteristics of Greeting Card material, which often communicates messages indirectly and requires readers to interpret meaning beyond what is explicitly stated.

Although HOTS items constituted the largest proportion of the test, they were constructed using short, familiar, and contextually relevant texts. This ensured that the cognitive demands of the questions remained appropriate for eighth-grade students. By embedding higher-level thinking tasks within everyday and meaningful contexts, students were able to engage in deeper comprehension without experiencing excessive difficulty.

Overall, the distribution of LOTS, MOTS, and HOTS items was intentionally designed to create a balanced yet challenging assessment. The combination of different cognitive levels enabled the instrument to measure students' reading comprehension comprehensively, from understanding literal information to interpreting implicit meanings and evaluating communicative intentions. Therefore, the cognitive level distribution of the test items was considered appropriate to support the objectives of this study.

2. Validity

Validity is an important criterion to determine whether an instrument is appropriate for measuring the intended variables. According to Sugiyono (2013)An instrument is valid if it can accurately measure what it is designed to measure. In this study, the instrument's validity was examined by expert validators.

3. Data Collection Procedures

According to Gay et al. (1987) This research consisted of three stages such as preparation, application, and finishing..

a. Preparation

At this stage, the researcher coordinated with the English teacher to determine the learning material. The researcher also decides the population and sample, prepares the lesson plan, teaching materials, and the posttest instrument..

b. Application stage

In this stage, the researcher was applying different treatments to two groups. The experimental group received reading comprehension instruction using the Nearpod application. The control group received reading comprehension instruction using conventional methods without Nearpod. No pre-test was given to avoid pre-test sensitization and to keep the research time-efficient.

c. Finishing (Posttest and Data analysis stage)

After the treatment, both groups were given a posttest to measure their reading comprehension skills. The researcher then analyzes the

posttest results statistically to determine the effect of using Nearpod on students' reading comprehension. Post-Experiment Phase.

E. **Data Analysis Technique**

To find out the effect of using Nearpod-based interactive learning media on the reading comprehension skills of eighth-grade students at SMPN 10 Padang, the researcher analyzed the data through the following steps:

a. Normality Test

The normality test was conducted to determine whether the posttest scores of both the experimental and control groups were normally distributed. This analysis employed the Shapiro–Wilk test using SPSS version 20 with a significance level of 0.05. The data were considered to be normally distributed if the significance value (p-value) was greater than 0.05. Conversely, if the p-value was less than 0.05, the data were regarded as not normally distributed.

When the assumption of normality was not fulfilled, the data analysis was continued using a non-parametric statistical test, namely the Mann–Whitney U Test. This test was selected because it does not require normally distributed data and is appropriate for comparing the scores of two independent groups, namely the experimental group and the control group.

b. Hypothesis Testing

Since the posttest data were not normally distributed, the research hypothesis was tested using the Mann–Whitney U Test. This non-

parametric test was applied to examine whether there was a statistically significant difference in reading comprehension scores between the students taught using Nearpod and those taught using conventional methods.

The decision-making criteria for the Mann–Whitney U Test were as follows: if the significance value (Asymp. Sig. / p-value) was less than 0.05, it indicated that there was a significant difference between the two groups, meaning that the use of Nearpod had a significant effect on students' reading comprehension skills. On the other hand, if the significance value was greater than 0.05, it indicated that there was no significant difference between the groups.