CHAPTER III

RESEARCH DESIGN

This chapter deals with research methodological procedures. This Includes Research Design, Population and Sample, Research Location, Sources and Kind of Data, Research Instruments, Data Collection and Data Analysis.

3.1 Research Method

This research uses a quantitative method because it measures the effect of the Ball Toss Review (BTR) strategy on students' ability by using measurable numbers and data. According to Sugiyono (2020), quantitative research is a research method based on the philosophy of positivism, used to examine a specific population or sample, with data collection using research instruments, and data analysis being quantitative/statistical in nature with the aim of testing predetermined hypotheses.

Since it's simpler to assess how much the Ball Toss Review technique influences students' vocabulary, I went with the quantitative approach. Pre-test and post-test scores are examples of data or numbers that make the results of this approach easily observable. so that we can determine with certainty whether or not there has been an improvement. It would be more difficult to demonstrate the impact clearly if we employed the qualitative method because the majority of the data would come from subjective observations or opinions.

3.2 Research Design

The design used in this research is pre-experiment; one group: pre-test post-test. In this design, there is one class; pre-test is conducted before treatment and

post-test is conducted after treatment. This treatment is made for experiment to determine the effects of a given treatment. According to, Creswell (2008) stats that the search used an appropriate initial type with a pre-test post-test design in which there is a pre-test given by the study to measure students' vocabulary scores. Thus, the results of the two tests can be compared with the students' vocabulary scores; before being given treatment and after being given treatment.

The researcher used one class of ten grade students from SMA Negeri 1 Kuta Baro. The first meeting included a pre-test to assess students initial vocabulary mastery. The treatment was then administered using the Ball Toss Review approach over multiple meetings while acquiring English language. After the treatment, students were given a post-test to see whether their vocabulary mastery had improved. According to Sugiyono (2015), this pre experimental design is used to compare the findings before and after treatment, with an emphasis on the effectiveness of the method employed.

This study includes two variables:

1. Independent variable: The implementation of the Ball Toss Review (BTR) approach as a vocabulary teaching method.
2. The dependent variable is students' vocabulary achievement, as measured by pre-test and post-test scores.

3.3 Population and Sample

All of the students enrolled in SMA Negeri 1 Kuta Baro during the academic year 2025–2026 made up the study's population. This demographic was chosen

because all students at SMA Negeri 1 Kuta Baro must grasp vocabulary as a basic part of studying the English language, and English is a mandated subject taught at all grade levels. The population is suitable for examining the efficacy of an instructional technique inside a single school context because the students are part of the same institution and share identical curriculum frameworks, learning policies, and instructional environments.

Purposive sampling was used as the sample strategy in this investigation. Purposive sampling enables the researcher to deliberately choose participants according to particular standards that are closely associated with the study's goals (Nyimbili & Nyimbili, 2022). This method was used because the study examined how well the Ball Toss Review (BTR) strategy improved vocabulary acquisition at a certain educational level.

The sample of this study consisted of one class, namely class X-B, with a total of 19 students. The selection of class X-B, rather than other classes such as X-A or classes from higher grades, was based on the following considerations:

1. First, according to the English teacher's records and first classroom observations, class X-B showed a comparatively lower baseline vocabulary achievement when compared to other parallel classes. Because instructional interventions are methodologically more observable and measurable when administered to students who still struggle with vocabulary acquisition, this condition makes class X-B more suitable for evaluating the efficacy of the Ball Toss Review (BTR) strategy. Crucially, this analysis does not suggest that students in class X-

B lacked aptitude; rather, it indicates that they required more instructional support when learning vocabulary.

2. Second, the goals of this study, which concentrated on enhancing vocabulary knowledge at the early stage of senior high school, closely matched the learning requirements of class X-B. The students in class X-B were in the process of moving from simple vocabulary to more sophisticated and contextual word usage. This circumstance made it appropriate to use Ball Toss Review as an interactive technique to improve word comprehension and recall.
3. Third, class X-B demonstrated comparatively uniform levels of English proficiency, as demonstrated by classroom exercises and corroborated by prior academic records. This homogeneity improved the study's internal validity by reducing the impact of unrelated factors, such as stark variations in students' language proficiency (Lenaini, 2021).
4. Fourth, the learning environment and classroom manageability were important considerations for choosing class X-B. The class exhibited a cooperative learning environment and controlled classroom dynamics, both of which were necessary for the successful and reliable application of an interactive technique like Ball Toss Review. On the other hand, during the research period, class X-A and other classes demonstrated less favorable classroom environments for ongoing interactive learning activities.
5. Lastly, the choice of class X-B was backed by study feasibility and accessibility. The researcher was able to carry out the therapy methodically and consistently throughout all research sessions thanks to the class schedule, the classroom's

availability, and the students' and the English teacher's participation. These pragmatic factors were essential to preserving the data collection process's dependability.

This sampling decision is in line with Arikunto's (2010) assertion that when the number of research participants is fewer than 100, it is appropriate to include all members of the selected group as the sample. Therefore, all 18 students of class X-B were taken as the sample of this study.

3.4 Research Location

This research was conducted at SMA Negeri 1 Kuta Baro, located in Aceh Besar, Aceh Province. The research was conducted at SMA Negeri 1 Kuta Baro because there's a real problem that fits the focus of the study, which is the low vocabulary mastery of tenth grade students. This location was chosen based on preliminary observations and the students' low English scores. According to Sugiyono (2020), a research location should be selected based on where it is most possible to obtain data that's relevant and aligned with the research problem.

The low level of English vocabulary knowledge among ten grade students at SMA Negeri 1 Kuta Baro is a significant problem in the area, which is why this study was chosen. Studying this is crucial since vocabulary forms the cornerstone of language proficiency. Additionally, early observations revealed that the teaching strategies were still repetitive and uninteresting, which led to students becoming easily disinterested and lacking motivation to learn. In order to increase student engagement and learning outcomes, this study was also chosen to test out Ball Toss

Review (BTR), an entertaining and interactive solution. Direct experience at the school and the desire to discover more engaging and successful teaching strategies also played a role in the topic selection.

3.5 Sources and Kind of Data

The data source in this study came from one group of students, namely students in class X-B of SMA Negeri 1 Kuta Baro in the 2025/2026 academic year. This study used quantitative data obtained from the results of students' vocabulary mastery tests before and after the implementation of the Ball Toss Review (BTR) Strategy. Numerical data demonstrating the students' language competence level was the type of information gathered. Pre-tests and post-tests administered to the same group were used to collect the data. The pre test was administered prior to the treatment to ascertain the students' beginning vocabulary abilities, and the post test was administered following the completion of the entire Ball Toss Review learning series to assess the students' vocabulary skills progress.

This study did not use a control group because the research design applied was a pre-experimental design with a one group pre-test post-test. Therefore, all research data came from only one group, namely class X-B. The comparison of learning outcomes was done by comparing the pre-test and post-test scores of students in that group.

The data obtained from the pre-test and post-test were then analyzed statistically to determine whether there was a significant increase in students' vocabulary mastery after being given treatment using the Ball Toss Review

Strategy. Thus, the data in this study are objective, measurable, and in accordance with a quantitative approach that aims to test the effectiveness of the learning strategies applied.

3.6 Research Instruments

The research instruments employed in this study consisted of vocabulary tests (pre-test and post-test) and accompanied by a questionnaire. These instruments were designed to measure students' vocabulary mastery before and after the implementation of the Ball Toss Review (BTR) strategy, as well as to obtain supporting data regarding students' perceptions of the learning process.

The selection of instruments was aligned with the learning objectives and materials presented in the Bahasa Inggris SMA/SMK Kelas X textbook published by the Ministry of Education, Culture, Research, and Technology, particularly the Arts theme focusing on Graffiti, which emphasizes vocabulary development, expression of opinions, and contextual language use.

According to Arikunto (2016), a test is a set of questions or activities intended to assess a person's or a group's aptitudes, knowledge, and competencies. In a similar vein, Brown (2007) defines a test as a way to gauge an individuals aptitude, expertise, or performance in a specific field. Tests were utilized in this study to objectively evaluate pupils' vocabulary mastery.

3.6.1 Pre-test

The purpose of the pre-test was to ascertain the students' initial level of vocabulary mastery prior to the application of the Ball Toss Review technique.

Forty questions made up this test, which was intended to gauge students' past knowledge of English language associated with the subject of arts, namely graffiti, as it is taught in the Grade X textbook.

The vocabulary assessed in the pre-test included nouns, adjectives, and verbs commonly used in discussions of graffiti and art, as well as vocabulary employed in simple contextual situations such as short opinion statements and descriptive sentences. The test items were constructed based on the learning materials in the textbook to ensure content validity and relevance to classroom instruction.

Prior to getting treatment, the pre-test served as a diagnostic tool to determine the students' baseline vocabulary competency. In experimental language learning research, determining students' starting vocabulary level is crucial since it enables researchers to precisely gauge learning progress. According to Nation (2015), determining students' beginning vocabulary knowledge is essential for choosing effective teaching methods and guaranteeing significant learning results.

3.6.2 Post-test

The post-test was given utilizing the Ball Toss Review technique following the conclusion of the treatment sessions. The post-test had forty questions, much as the pre-test. The post-test, however, used alternative vocabulary items and settings while keeping the same degree of difficulty and learning indicators as the pre-test so order to reduce the effects of memorization.

The post-test aimed to measure students' vocabulary development after participating in three treatment sessions in which the Ball Toss Review strategy was implemented. These sessions were conducted over three 90 minute meetings and

focused on reinforcing vocabulary related to Arts and Graffiti through interactive ball toss activities, repetition, and group discussion.

Through the Ball Toss Review strategy, students were actively engaged in recalling vocabulary items, associating words with meanings, and applying vocabulary in meaningful contexts. This active learning process is believed to enhance vocabulary retention and understanding. Schmitt and Schmitt (2020) argue that repeated exposure and active retrieval play a crucial role in vocabulary acquisition and long term retention, particularly when supported by game based learning activities. Furthermore, Webb and Nation (2017) assert that contextualized and interactive vocabulary learning activities have a stronger impact on vocabulary growth than isolated memorization techniques.

The effectiveness of the Ball Toss Review strategy in improving students' vocabulary mastery was determined by comparing the results of the pre-test and post-test.

3.7 Technique of Data Collection

The technique of data collection in this study was designed to systematically examine the effectiveness of the Ball Toss Review (BTR) strategy in improving students' English vocabulary mastery. The data collection process was conducted over five instructional meetings within three weeks and was aligned with the learning objectives of English instruction for grade X students at SMA Negeri 1 Kuta Baro. The vocabulary materials were adapted from the Bahasa Inggris SMA class X textbook, particularly the chapter discussing Arts with a focus on Graffiti.

Prior to the main data collection, preliminary classroom observation and an informal interview with the English teacher were conducted to obtain an overview of students' learning conditions, participation levels, and common difficulties in vocabulary learning. The results of these preliminary activities were used to design the instructional treatment but were not included in the statistical analysis.

1. First Meeting: Week 1 Pre-Test

Before the Ball Toss Review technique was put into practice, the first meeting was devoted to giving the pre-test to ascertain the students' beginning level of English vocabulary proficiency. Nouns, adjectives, and evaluative expressions that are frequently found in the textbook were among the vocabulary connected to arts and graffiti that were covered in the pre-test. The exam assessed students' comprehension of word meanings, context based vocabulary selection, and proper vocabulary item classification. The results of the pre-test, which was given for 60 minutes in a controlled classroom setting, were used as baseline information for comparison with the post-test.

2. Ball Toss Review Strategy for Treatment (Second, Third, and Fourth Meetings, Weeks 2 and 3)

Using the Ball Toss Review Strategy as the main teaching method, the treatment phase was conducted across three instructional sessions. Without forcing students to form complete sentences, the program focused on active vocabulary mastery connected to graffiti and the arts. Rather, in an interactive learning setting, the exercises concentrated on vocabulary recognition, meaning understanding, classification, and recall.

During the second meeting (Day 1 of Week 2), The instructor presented the Ball Toss Review Strategy's guidelines. In vocabulary exercises, students were instructed to react verbally when the ball was randomly thrown to them. Determining if a word reflected a positive or negative opinion of graffiti, putting vocabulary items into relevant categories such nouns, verbs, or adjectives, and declaring the meanings of art related language were among the activities.

The degree of difficulty was progressively raised in the third meeting (Day 2 of Week 2). Students had to identify synonyms or antonyms of terms connected to art, choose the most appropriate vocabulary item depending on the teacher's contextual cues, and discern terminology frequently used to support or refute viewpoints regarding graffiti. These exercises were created to encourage active student engagement while deepening students' comprehension of language usage in analytical exposition texts.

Day 1 of Week 3, the fourth meeting, served as a reinforcement session. To improve motivation and long term engagement, the Ball Toss Review Strategy was applied through group based exercises with basic competitive components. Students collaborated to examine, classify, and recall previously taught language pertaining to public art and graffiti. Through repetition, peer interaction, and purposeful practice, this stage sought to improve long-term language retention.

3. Fourth Post-Test Fifth Meeting (Second Day, Week 3)

After all treatments were finished, a post-test was administered at the fifth meeting as the last phase of data collecting. The purpose of the post-test was to gauge how much the students' vocabulary had improved after using the Ball Toss

Review Strategy. The indicators and degree of difficulty were the same to guarantee comparability, even if the test items were different from those used in the pre-test to prevent memorizing effects.

The post-test evaluated students' mastery of language linked to art and graffiti in terms of acceptable vocabulary selection, word classification, and meaning comprehension. The effectiveness of the Ball Toss Review Strategy in enhancing students' comprehension of English vocabulary was then assessed by comparing the post-test and pre-test findings.

3.8 Teqhnique of Data Analysis

The impact of the Ball Toss Review (BTR) strategy on students' understanding of English vocabulary was investigated using quantitative and descriptive statistical analysis of the data gathered for this study. Students' vocabulary performance before and after the treatment was compared, and their reactions to the learning technique were described.

3.8.1 Normality Test

Normality testing is used to determine whether the data on students' dynamic balance measurements are normally distributed. Such testing is a prerequisite for conducting hypothesis testing using parametric statistics.

1. If the significance value (Sig.) > 0.05, the data are normally distributed.
2. If the significance value (Sig.) ≤ 0.05, the data are not normally distributed.

If the test results indicate that the data are normally distributed, the analysis is continued with the Vocabulary Test Results Analysis using the Paired Sample t-

Test to determine whether there is a significant difference between the students' pre-test and post-test scores.

3.8.2 Vocabulary Test Results Analysis (Paired Sample t-Test)

A Paired Sample t-Test was used to assess the primary quantitative data from the pre-test and post-test. This statistical method was chosen to determine whether students' vocabulary achievement differed before and after the Ball Toss Review strategy was put into practice.

Because the data were gathered from the same set of students class X-B of SMA Negeri 1 Kuta Baro who took part in both the pre-test and the post-test, the paired sample t-test was acceptable. Sugiyono (2015) states that the paired sample t-test compares two related means to identify changes brought about by a specific treatment. This test is frequently used in educational research to measure learning progress within a single group, according to Ary, Jacobs, and Sorensen (2010).

To determine the mean scores, standard deviations, and significant values for this study, a statistical analysis program was used to process the pre-test and post-test results. A significance level of 0.05 was established. A statistically significant difference between students' pre-test and post-test scores was indicated by a significance value less than 0.05. The analysis's findings were utilized to assess if using the Ball Toss Review technique improved students' vocabulary mastery.

$$t = \frac{\overline{D}}{s_D/\sqrt{n}}$$

Source: Creswell (2012)

Description:

- $\bar{D}$ = Mean difference between post-test and pre-test scores
- S_D = Standard deviation of the score difference
- n = Number of samples (number of students)

Table 3.1 Students' Vocabulary Assessment Rubric

Assessment Aspect	Excellent (4)	Good (3)	Fair (2)	Poor (1)
Vocabulary Recognition	Correctly answers 31–40 items.	Correctly answers 21–30 items.	Correctly answers 11–20 items.	Correctly answers 1–10 items.
Meaning Identification	Accurately selects correct word meanings in almost all contexts (≥ 80%).	Minor errors in identifying meanings (60–79%).	Several errors in meaning identification (40–59%).	Frequently selects incorrect meanings (< 40%).
Word Form Understanding	Correctly identifies word classes (noun, verb, adjective) consistently.	Mostly correct with minor confusion.	Often confused about word forms.	Unable to identify correct word forms.
Contextual Vocabulary Use	Accurately selects appropriate vocabulary based on sentence context.	Mostly appropriate with minor contextual mistakes.	Sometimes inappropriate word choice.	Frequently inappropriate vocabulary selection.
Spelling Recognition	Correctly recognizes standard spelling in almost all items.	Minor recognition errors.	Several recognition errors.	Frequently fails to recognize correct spelling.

Source: Nation, I. S. P. (2013).

Scoring System

- Total items: 40 questions
- Each correct answer = 2.5 points
- Maximum score = 100

- 86 – 100: Excellent
- 71 – 85: Good
- 56 – 70: Fair
- ≤ 55: Poor