

CHAPTER 3

RESEARCH PROCEDURES

This chapter details the methodology that was employed to carry out the study. It consisted of seven components of the research process, including the research method, research focus, setting and participants, data collection, data analysis, research steps, and the timing and location of the research. Further details were provided below.

A. Method of the Research

For the research design, this research used the Classroom Action Research (CAR) design. To improve teaching practices and students' outcomes within the classroom context, the researcher used CAR. As Takala (1994) suggested that the teachers conduct research generally takes the form of CAR, which is a kind of research that combines the process of investigation with real action to solve problems that occur in the classroom or to create better learning programs. This is in line with Burns (2010) stated that CAR is a research method conducted by teachers to overcome learning problems through actions that are systematically designed to improve classroom practice. Similarly, Kemmis et al. (2014) said action research is a social practice that aims to change social practices consciously and systematically through joint critical reflection, to make them more rational, just, inclusive, and sustainable. Therefore, CAR not only helps teachers find practical solutions to problems in their classrooms but also empowers them to critically reflect, collaborate, and take meaningful actions that lead to continuous professional growth and improved student learning experiences. This research determined how students' English vocabulary mastery can improve with Duolingo as a MALL. The researcher used this method because it is the proper method to solve vocabulary-related problems in students' English vocabulary mastery. The researcher additionally employed Duolingo as a MALL tool to ensure the completion of full data analysis.

According to Kemmis et al. (2014) In conducting action research, there are four steps, as follows:

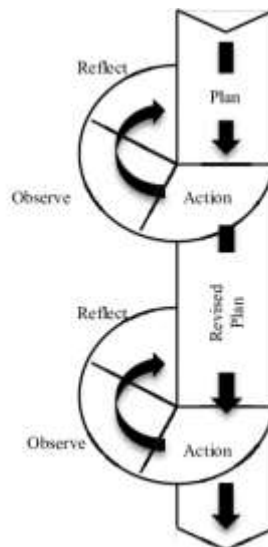


Figure 13. The Four-Step Action Research model is based on Kemmis et al. (2014).

a. Planning

The first step was to find an issue in the field and create an action plan to improve a particular area within the research context. In this step, the researcher found out the problems in the class by conducting pre-observation, pre-interview, and pre-test. In the pre-observation and pre-interview, it was discovered that most students had struggled with vocabulary, especially in understanding and remembering the vocabulary. The pre-test found that students had vocabulary problems in understanding the meaning, spelling, grammar, and pronunciation, with an average result of 61.45. This indicates that the average score is below the minimum completion criteria or school standard score ($61.45 < 85$).

To better understand the problem, the researcher sought to find out what methods were appropriate to address the problems faced by students in vocabulary mastery. The researcher collected information on improving students' vocabulary mastery in English learning in class. The researcher then discovered a strategy for improving students' vocabulary knowledge using Duolingo as a mobile-assisted language learning platform.

After that, to collect and analyze data, the researcher created research questions as a reference. Then, to conduct the research, the researcher created a lesson plan adjusted to the school's curriculum. Furthermore, the researcher prepared material topics about food and sport.

b. Acting

The second step, the researcher made a well-thought-out plan involving deliberate intervention in the teaching situation. In this case, the researcher took action using Duolingo as a MALL to solve problems and boost vocabulary in the classroom. In the action process, the researcher was observed by a peer observer to produce the data needed for the action process. In addition to obtaining supporting data, the researcher also collected data by conducting tests on students.

c. Observing

At this step, the researcher systematically observed the impact of the action and documented the context, actions, and opinions of the people involved. The researcher used qualitative and quantitative data collection techniques, often called mixed methods research. To overcome this problem, the researcher used qualitative data collection by conducting observations. Observations are carried out with the help of a peer observer and a fellow researcher to observe the class to obtain data during the learning process using Duolingo in class. Meanwhile, quantitative data collection used tests. Then, after the topics are taught in class, at the end of each cycle. Tests were given to measure the increase in students' vocabulary mastery after being given treatment.

Qualitative data is analyzed according to the procedure by selecting all the data that has been collected. The data was verified. Furthermore, the data interpretation used theories related to qualitative data until the researcher obtains information and could draw conclusions from the data. Meanwhile, quantitative data is analyzed using descriptive statistical analysis. After data analysis, the researcher obtained information related to findings to help answer research questions and produce conclusions.

d. Reflecting

This step involved the researcher in reflecting on, evaluating, and describing the impact of the action to more clearly grasp the developments and themes examined. After conducting data analysis to obtain supporting research from the results of observation sheets and tests, the researcher conducted a reflection. In reflection, the researcher must know what has been done from the beginning to the end of the research. Reflection is important because it evaluates the learning process to find advantages and disadvantages and improve the quality of future actions. If the first cycle does not generate substantial results, the researcher can proceed to cycle II. Additionally, the researcher may stop the cycle if there are significant changes in the second cycle.

B. Focus of the Research

This research focused on the use of Duolingo as a MALL in improving students' vocabulary mastery. Therefore, this research examined the process of using Duolingo as a MALL can improve students' vocabulary mastery and determined the increase in students' vocabulary mastery in one of the junior high schools in Tasikmalaya.

C. Setting and Participants

This research was conducted at one of the junior high schools in Tasikmalaya, West Java. The participants in this study are one selected class in the school, namely class 7-D, which consisted of 31 male students. The class was selected based on the problems found in the class, which were sought through class pre-observation, pre-interview, and pre-test. Students in this class had problems with vocabulary mastery, such as difficulty understanding or interpreting English vocabulary, constructing English sentences correctly, and pronouncing English vocabulary. These problems will be addressed by using Duolingo as a MALL to support students in improving their vocabulary through interactive and engaging language exercises. The researcher-maintained confidentiality and anonymity to protect the privacy of the participants and the institution where the research was conducted.

This research was conducted over three months, namely in September, October, and November. This classroom action research consisted of two cycles, where each cycle involved the four stages previously described. Due to time constraints related to the school's academic calendar and research schedule, the research implementation was completed up to the second cycle. Nevertheless, all stages have been implemented systematically to ensure the validity of the research process as well as the effectiveness of the actions implemented.

D. Data Collection

The researcher collected data for this study utilizing mixed-methods research, including qualitative and quantitative data.

1. Qualitative data

Qualitative data collected by observing Duolingo as a MALL, which improved students' English vocabulary. One of the most important research methods is observation; observers observe, evaluate, draw conclusions, and comment on interactions and relationships (Ciesielska et al., 2017). Observation is a method in qualitative research that involves direct observation in the field, including approaches such as ethnography and participant observation, which can be done in several research sites and serve as a complement or reinforcement of data in the research (Jamshed, 2014). For this research, the researcher used observation to record activities during the learning process using Duolingo as a MALL to show how it affects students' vocabulary mastery, thus producing in-depth data. Observation was conducted to see the classroom interaction between students and the teacher. Observation was conducted in the form of checklists and notes. This was done during the implementation of the method to record the teaching and learning activities.

The peer observer carried out observations. Namely, an observer assisted the researcher in observing how the learning method using Duolingo as Mobile-Assisted Language Learning improved students' vocabulary understanding. In the observation, the observer noted that during the Duolingo as a MALL activity in the classroom, the students engaged in a variety of

activities related to vocabulary aspects, such as selecting pictures and matching them with their meanings (meaning), translating words and sentences (meaning and grammar), listening and responding based on audio input (pronunciation), pronouncing words or sentences as instructed (pronunciation), and filling in the blanks with the provided options (spelling and grammar). According to Akhmedova and Rozikova (2021), peer observation benefits professional development, increases self-confidence, and improves teacher-teaching tools. In this situation, the researcher asked the observer to fill out the observation sheet that had been provided. The observation sheet contained a checklist of aspects that need to be considered and notes to provide comments on the learning process in the classroom, to provide detailed information and understanding of the implementation of Duolingo.

2. Quantitative data

Quantitative data collected by testing how Duolingo as a Mobile-Assisted Language Learning, improved students' English vocabulary mastery. The test is an evaluation tool used to measure the impact of using Duolingo on student learning outcomes (Ajisoko, 2020). This approach aligns with the principles of quantitative research, which typically involves systematic data collection about a phenomenon using standard measures and statistical analysis (Ahmad et al., 2019). In this research, the researcher used the test to measure Duolingo as a MALL to improve students' vocabulary mastery and obtain accurate and measurable data. Students were given this test before and after the Duolingo treatment to obtain data on increased vocabulary knowledge. Pre-test and post-test were used to gather quantitative data. This test is used to measure students' vocabulary mastery, which includes aspects of meaning, grammar, spelling, and pronunciation. The researcher has given students a pre-test of English vocabulary in class before the learning in cycle I was carried out, and provided a post-test at the final meeting of each cycle. The tests the researcher has given include multiple choice, matching format, translation, and pronunciation tests. In addition, the pronunciation test was carried out through voice recordings directly on the researcher's cellphone in class.

Moreover, the test was measured for validity and reliability. Fraenkel et al. (2012) stated that validity refers to how precise, meaningful and useful a conclusion drawn by the researcher is. They also stated that reliability relates to the level of consistency of the results or answers obtained, both between instrument implementations and between items in the instrument. In this research, validity was measured by asking an English teacher about the test content, while reliability was calculated using SPSS.

E. Data Analysis

1. Qualitative data

The observation results were analyzed to determine how to implement the teaching and learning process using the Duolingo application as MALL. After collecting the data, it was analyzed using Miles and Huberman's (1994) qualitative data analysis model. According to Miles and Huberman (1994), there are three steps in conducting this analysis, including:

a. Data reduction

In the data reduction process, the researcher took steps to filter and simplify the information obtained during learning activities. This means that the researcher selected data that is most relevant to the focus of the research, then summarizes and groups it so that it is easier to analyze. Data that was originally in the form of field notes of observation results was processed to make it more concise, clear, and meaningful. In this context, the data were obtained from observations by a peer observer in the classroom when students used Duolingo. The researcher selected the most relevant data, such as students' responses and enthusiasm for learning. The raw data is then summarized and arranged to make it clearer and easier to analyze, so that it can describe how Duolingo as a MALL improves vocabulary mastery.

b. Data display

At the data display stage, the researcher arranged the data that had been reduced into an organized and systematic form, so that it was easier to understand and analyze. The purpose of this step is to help the researcher see patterns, relationships, or trends from the data that has been collected,

so that they can conclude more clearly. Data presentations were carried out in various forms, such as tables, graphs, or descriptive narratives, depending on the type of data collected. In the context of the peer observations in the classroom using Duolingo as the MALL, the simplified data were then presented in the form of descriptive narratives that explained the learning process of the students' responses and enthusiasm. This way, the researcher interpreted the data more easily and found the relationship between the use of Duolingo as a MALL and the improvement of students' vocabulary mastery.

c. Conclusion drawing and verification

Conclusion and verification are the final stage in the data analysis process. At this stage, the researcher concluded from the data that had been reduced and presented previously and ensured that the results of the analysis are truly accurate and based on existing evidence. The purpose of this stage is to ensure that the conclusions drawn are reliable and accountable. However, conclusions cannot be determined hastily or before all data is collected and analyzed properly. This is determined by the number of field notes documents, the coding, storage, and collection processes, the author's speed, and the deadline. In the context of observing the use of Duolingo as a MALL, the researcher must ensure that all field notes and information collection are complete and well-organized. Factors such as the researcher's speed in processing data and the time limit of the study also affect when conclusions are drawn. In this way, the results of the research on how the process of using Duolingo as a MALL in students' vocabulary learning become more valid and accountable.

2. Quantitative data

After the data from the tests were collected, quantitative data was used to analyze the data. The data of this research was analyzed using descriptive statistics. Descriptive statistics were used to analyze quantitative data. Descriptive statistics such as frequency, mean, and standard deviation are usually used to describe the data (Creswell and Creswell, 2018). Similarly,

Dong (2023) stated that descriptive statistics is a tool used to summarize and produce clear data.

Student's score:

$$\frac{B}{N} \times 100$$

Notes:

B: correct number of items

N: number of questions

After that, the mean value of the data was calculated using SPSS. Learning to improve students' vocabulary mastery using Duolingo as a MALL was successful if the student's score reached the Minimum Completion Criteria (*KKM*) or the school standard score, which is 85.

F. Steps of the Research

The researcher first identified the problems faced by the students related to vocabulary mastery. Furthermore, the researcher conducted this research in two cycles, each consisting of four stages, which are planning, acting, observing, and reflecting. In cycle I, the researcher planned and implemented learning activities using the Duolingo application, observed the process and results, and then reflected on the strengths and weaknesses. Based on the reflection from cycle I, improvements were made in cycle II by repeating the same stages with adjustments to improve students' vocabulary mastery.

1. Identifying the Problem

To identify problems at the research location, the researcher first carried out a pre-observation in the classroom to obtain initial information about the learning situation. In addition, the researcher also conducted a pre-interview with an English teacher to gather information about the condition of students and the implementation of the learning process, especially related to vocabulary mastery. The researcher also conducted a pre-test, which underwent validity and reliability tests as an instrument to assess students' vocabulary mastery. The results showed that students had difficulty in mastering English vocabulary,

indicated by confusion when receiving tasks and low self-confidence. There are differences in ability between students, especially for those who have never learned English before in elementary school. The pre-test results showed most students had not reached the standard, with weaknesses in word meaning, spelling, grammar, and pronunciation.

2. Cycle I

a. Planning

In the planning stage, the researcher:

- 1) The researcher selected the use of Duolingo as a MALL as a tool to address the problem of limited students' vocabulary mastery.
- 2) The researcher designed a lesson plan by integrating Duolingo as a MALL to improve students' vocabulary mastery, while still paying attention to the suitability of the applicable curriculum at school.
- 3) The researcher compiled research instruments, including a post-test that had gone through a validity and reliability testing process to measure students' vocabulary mastery, as well as an observation sheet used to monitor learning activities in the classroom.

b. Acting

In the acting stage,

- 1) The teacher starts the session by greeting the students and asking questions related to the learning materials.
- 2) Students are instructed to download and install the Duolingo app and create a personal account.
- 3) Students access and complete units related to the learning materials.
- 4) During the Duolingo activity, students:
 - a) Select some pictures, and students are instructed to select the correct meaning of the picture.
 - b) Translate a word and a sentence.
 - c) Listen to the words and sentences in the Duolingo app and answer what they hear.

- d) Say the word or sentence as instructed.
- e) Fill in the blanks with the choices prepared in the Duolingo game.
- 5) Students focus on identifying new vocabulary related to the learning material.
- 6) The teacher distributes a worksheet titled “My Vocabulary List” to record new vocabulary.
- 7) Students write down ten new vocabulary words and their translations.
- 8) Students are invited to present their vocabulary findings, followed by in-class repetition.
- 9) Giving a test to students to collect data.

c. Observing

In the observing stage, the researcher:

- 1) The researcher involved an observer in the learning process to observe the activities by filling in the observation sheet and making notes during the process.
- 2) The researcher identified various activities using Duolingo as a MALL that occurred during the process of learning.
- 3) The researcher conducted a final assessment of students in the form of a post-test as a measuring tool for the extent to which Duolingo, as a MALL, improved students' vocabulary mastery.

d. Reflecting

At the reflection stage, the researcher evaluates the implementation of the action at the end of each cycle. This process was carried out through analyzing the results of observations and post-tests to review the effectiveness of the actions that had been implemented, based on the success criteria that had been set previously. If the action is considered successful, then the researcher will stop the cycle of research I. But if the results still cannot meet the expected targets, the researcher will make improvements to continue cycle II.

3. Cycle II

a. Planning

In the planning stage of cycle II, the researcher developed a lesson plan that had been refined based on the reflection results from cycle I. Although the lesson plan structure still referred to the previous format, the researcher replaced the learning material with a different topic, namely, descriptive text. In addition, the researcher also compiled relevant test instruments and re-prepared observation sheets used in the previous cycle.

b. Acting

At the action implementation stage, the researcher again implemented learning using Duolingo as a MALL. The implementation of this lesson was based on the reflection result in cycle I, where the researcher had evaluated the strengths and weaknesses of the previous action. Therefore, the teaching process in cycle II was designed with more optimal adjustments to increase the effectiveness in students' vocabulary mastery.

c. Observing

In the observation stage of cycle II, the researcher again monitored the learning process. The observation was conducted to analyze how the use of Duolingo as a MALL approach influenced students' vocabulary mastery throughout the learning process. In addition, the researcher also conducted a post-test again to measure the extent of the improvement of students' vocabulary skills compared to the previous results.

d. Reflecting

In the reflection stage, the researcher analyzed the results of observations and post-tests conducted in cycle II. Furthermore, she concluded and reported the research results. The researcher provided the results of how Duolingo, as a MALL, improved students' vocabulary mastery and the extent of the improvement.

Cycle I was conducted in four sessions. Cycle II was conducted in two sessions as a form of improvement from the previous implementation, as

The research was conducted at one of the junior high schools in Tasikmalaya City, West Java.

Activities	Month											
	Sep 2024	Oct 2024	Nov 2024	Dec 2024	Jan 2025	Feb 2025	Mar 2025	Apr 2025	May 2025	Jun 2025	Jul 2025	
Research Proposal Writing												
Research Proposal Examination												
Data Collection												
Data Analysis												
Thesis Result Seminar												
Thesis Examination												