

CHAPTER III

RESEARCH METHODOLOGY

This chapter explained the research design; the population and sample; data sources and types; variables and indicators; data collection techniques; research instruments; and data analysis techniques.

A. Research Design

This research used a quantitative approach with a pre-experimental design, namely a one-group pretest-posttest design. According to Creswell (2012), quantitative research is characterized by attempts to address research problems by examining relationships between variables. In this design, participants were typically selected, then given a pretest (O_1), received a treatment or educational intervention (X), and finally given a posttest (O_2) to see changes after the intervention (Marsden & Torgerson, 2012). The process involved collecting numerical data from a large number of participants using instruments with predetermined questions and answer options.

The research activity lasted for 6 meetings. The first meeting was used for introductions and the pretest. The second through fifth meetings covered each type of past tenses, with practice using regular and irregular verbs. The lesson ended with a review of the material and practice exercises. The last meeting was used for the posttest and for filling out the questionnaire.

Data were analyzed using descriptive statistics and inferential analysis. Descriptive statistics included the mean, standard deviation, minimum, and maximum scores. For inferential analysis, the Shapiro-Wilk test was used to assess normality; if the data are normally distributed, a paired-sample t-test was used; if not, a Wilcoxon test was used. This study tests the null hypothesis (no significant difference before and after treatment) and the alternative hypothesis (significant improvement after MSAL implementation).

B. Population and Sample

The population is the total number of subjects that are used as a source of data in a study. According to Creswell (2012), a population is a group of individuals who have the same characteristic. This research involved 107 class X students of MA Manba'ul A'laa Purwodadi in the 2025/2026 academic year. There were 4 parallel classes at this level, with an average of 25-30 students per class. The population consisted of English language learners at the senior high school level. The researcher defined this population as those with the same level of education and in the same institution, so the results of this study were expected to be generalizable within that scope.

The sampling technique used in this study was purposive sampling. Before the study was conducted, the researcher obtained permission from the principal of MA Manba'ul A'laa Purwodadi and coordinated with the English teacher to ensure ethical conduct. The participants were selected based on the recommendation of the

English teacher who served as the research supervisor at the school and was familiar with the students and the school context. Class X-B, consisting of 28 students, was chosen because most students still had difficulty mastering the English Past Tenses, especially verb changes. The subjects of this study were the 28 students of Class X-B, while the object of the study was the students' mastery of English Past Tenses, which was examined after the implementation of MSAL. In addition, the class had good attendance and classroom discipline, which allowed the researcher to conduct the pre-test, treatments, and post-test according to the research schedule. Considering the limited time available during the field practice, this selection was made to ensure that the data collection process could be carried out smoothly and efficiently.

C. Sources and Types of the Data

This section includes the data source and data collection method.

1. Sources of the Data

a. Primary data

The primary data for this study were obtained from pre- and post-tests administered to students before and after the implementation of the MSAL method. According to Creswell (2012), a pre-test is an initial measurement of a participant's attributes or characteristics before receiving treatment in an experiment.

This study also collected data through a questionnaire administered. The purpose of this questionnaire is to determine students' responses, perceptions, and level of interest in the use of mnemonic songs in learning English Past Tenses. The questionnaire used a Likert scale containing several statements about students' learning experiences, motivation, and impressions of using songs as a learning medium.

b. Secondary Data

In addition, this research required supporting sources, such as school documents. There were class attendance lists, class lists, and English lesson schedules to determine the number and identities of students at the school.

2. Types of the Data

This study used two main types of data: quantitative performance data and descriptive quantitative data. First, the pre-test and post-test yielded numerical scores of students' mastery of English Past Tenses. Second, this study used descriptive quantitative data obtained from a Likert-scale questionnaire to measure students' responses, perceptions, and motivation levels towards the use of mnemonic songs.

D. Variables and Indicators

1. Variables

A variable is a concept or framework that a study measures or observes. Two variables were used in this research. According to Creswell (2012), a variable refers to a characteristic or attribute of an individual or an organization that can be measured or observed.

a. Independent Variable (X)

The independent variable in this research is the MSAL, a teaching innovation that use rhythmic, memorable songs to help students recall tense patterns.

b. Dependent Variable (Y)

The dependent variable in this research is students' mastery of English Past Tenses, defined as their ability to use correct verb forms across tenses.

2. Indicators

Indicators are measuring tools used to determine the extent to which each variable can be measured systematically. According to Creswell (2012), Indicators are the specific methods used by researchers to measure a variable. In this study, there were two groups of indicators according to the types of variables studied.

Table 3.1 The MSAL Treatment Exposure

Indicator	Operational Definition	Measurement
Song Exposure Frequency	Total number of MSAL sessions completed.	Class Activities (Target: 6 treatment sessions)
Mnemonic Drill Intensity	The intensity of repetition of MSAL.	Class observation (Target: Minimum 3-4 repetitions for each session).
Application Accuracy	Students' ability to apply formulas	Daily practice test

Table 3.2 Indicators of Students' Mastery of English Past Tenses

Indicator	Operational Definition	Measurement	Scoring
Simple Past Mastery	The ability to use the second form of verbs (Verb 2) correctly in sentences.	10 multiple-choice	27,78%
Past Continuous Mastery	The ability to apply the was/were + V-ing pattern to actions that were taking place in the past.	8 multiple-choice	22,22%
Past Perfect Mastery	Ability to use the pattern had + Verb 3 for actions that completed before another action in the past.	10 multiple-choice	27,78%
Past Perfect Continuous	The ability to use had been + V-ing for actions that lasted before a certain point in time.	8 multiple-choice	22,22%
Overall Proficiency	Overall level of mastery of past tenses grammatical structures.	Composite score of a total of 36 test questions.	100% (0-100 points)

E. Research Instruments

A research instrument is a tool used to measure or observe a person's characteristics or abilities (Creswell, 2012). To obtain high-quality data, the instruments used must meet validity and reliability. Validity refers to the extent to which an instrument measures what it is intended to measure (Creswell, 2012). In this study, the researcher used the Pearson Product-Moment by IBM SPSS Statistics 27. Meanwhile, reliability refers to the consistency of an instrument's measurement results. In this study, the researcher used Cronbach's Alpha by IBM SPSS Statistics 27. In this study, the researcher used two types of instruments to collect data: tests (pre-test and post-test) and questionnaires.

1. Test

The test was divided into two parts: a pre-test and a post-test. The pre-test was administered before treatment. Meanwhile, the post-test was administered after the treatment. The test in this study measured students' grammar abilities, particularly their use of past tenses. The test covered four types of past tenses: Simple Past Tense, Past Continuous Tense, Past Perfect Tense, and Past Perfect Continuous Tense. Each of these tenses was tested through items that assess understanding of verb forms and tense changes.

Before the test was used, it was reviewed by two experts: an English lecturer and an English teacher. They checked whether the test items are appropriate in terms of grammar content, language clarity, and their suitability for the research objectives. The researcher then revised the test items based on

their suggestions before using the final version of the instrument. To make the test blueprint easier to understand, the researcher presents a Table of Specifications (ToS).

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Table 3.3 Table of Specifications (ToS)

No.	Tense	Learning Indicator	Cognitive Level	Sentence Type	Tense Function	Item Number	Number of Items	Answer Key
1	Simple Past	Identify the correct verb form (V2 and to be) in affirmative sentences.	C1 (Remember)	Affirmative	Express completed actions and past situations.	1–6	6	C, B, A, A, A, E
2	Simple Past	Identify the correct verb form in negative and interrogative sentences.	C2 (Understand)	Negative & Interrogative	Express and ask about completed actions in the past.	7–10	4	E, A, C, B
3	Past Continuous	Identify the correct pattern (was/were + V-ing) in affirmative sentences.	C1 (Remember)	Affirmative	Describe actions that were in progress at a particular time in the past.	11, 13, 15, 17	4	C, D, C, A
4	Past Continuous	Identify the correct pattern in negative and interrogative sentences.	C2 (Understand)	Negative & Interrogative	Describe interrupted or ongoing actions in the past.	12, 14, 16, 18	4	E, B, C, B
5	Past Perfect	Identify the correct past participle (V3) and sentence pattern in affirmative sentences.	C1–C3 (Remember–Apply)	Affirmative	Express actions completed before another action in the past.	19, 22–26	7	B, B, B, B, E, A
6	Past Perfect	Identify the correct pattern in passive, negative, and interrogative sentences.	C2 (Understand)	Passive, Negative & Interrogative	Express and ask about actions completed before another past event.	20, 21, 27, 28	4	B, C, C, B
7	Past Perfect Continuous	Identify the correct tense pattern in affirmative and interrogative sentences.	C2–C4 (Understand–Analyze)	Affirmative & Interrogative	Describe actions that had been continuing before another event in the past.	29–36	8	D, D, C, B, C, A, E, C

2. Questionnaire

A questionnaire is used to determine students' responses to learning using MSAL. According to Creswell (2012), a questionnaire is a form in a survey design that is completed by participants and returned to the researcher for analysis. The questionnaire in this study used a Likert scale with five response options: Strongly Agree (5), Agree (4), Neutral (3), Disagree (2), and Strongly Disagree (1). The researcher used this questionnaire to measure students' mental and emotional responses after learning English Past Tenses using MSAL.

F. Technique of Collecting Data

This study aimed to determine the effect of MSAL on students' mastery of English Past Tenses. The researcher used two main data collection techniques: tests and questionnaires to obtain complete and accurate data. Data collection in this study was conducted periodically. It used a one-group pretest-posttest design. The process began with a pretest to measure the initial abilities of Class X students at MA Manbaul A'laa Purwodadi in mastering English Past Tenses. In this test, students answered questions covering the structures of Simple Past, Past Continuous, Past Perfect, and Past Perfect Continuous. The results of the pretest served as baseline data before the treatment was administered.

After the pre-test, students participated in a series of learning sessions. Researchers treated six sessions using the MSAL method. In this intervention, students were trained to understand tense formulas and verb tenses through specially

designed mnemonic song lyrics. After all treatment sessions were completed, researchers administered a post-test. In addition to the cognitive test, the researcher distributed questionnaires in the final session. This aimed to determine students' responses and perceptions regarding the use of songs in learning.

The data obtained from the test scores and questionnaire results were analyzed statistically. A comparison of the pre-test and post-test scores was used as the primary evidence to examine the improvement in students' mastery of the Past Tenses after the implementation of the mnemonic song method.

G. Technique of Analyzing Data

Data analysis in this research was conducted to determine whether there is a significant difference between students' pretest and posttest results. In this part, the researcher used SPSS to determine the effect of the MSAL on students' mastery of English Past Tenses.

The process began with data preparation, including checking the completeness and accuracy of the scores, followed by a normality test using the Shapiro-Wilk test to decide whether the data are normally distributed. Based on the results, the researcher chose the appropriate hypothesis test. Since the data were normally distributed, a paired-sample t-test was used. If the data were not normally distributed, a Wilcoxon signed-rank test was used. Both tests used a significance level of .05 to decide whether the improvement is statistically significant.

In addition, descriptive statistics were used to summarize the data, including mean, minimum, maximum, and standard deviation. The effect size was calculated using Cohen's d to show how strong the impact of the treatment. Then, the N-gain score was used to measure the effectiveness of the treatment. Finally, the questionnaire data were analyzed using percentages to measure students' responses regarding their mental and emotional feelings after learning English Past Tenses using MSAL.