

## CHAPTER III

### METHODOLOGY

#### A. Research Design

In this study, the researcher used a descriptive research to understand and describe students' ability to write argumentative essays by using Gemini AI. Descriptive research is a type of research that aims to systematically and accurately present symptoms, facts, or events related to the characteristics of a specific population or region. This type of research generally does not require the exploration or explanation of relationships between variables, or the testing of hypotheses (Hardani et al., 2020). According to Vardiansyah (2008) in (Leksono, 2013), descriptive research is an effort to process data into information that can be conveyed clearly and precisely, with the aim of being understandable to people who do not experience it directly. Similarly, in qualitative research, according to Cresswell (2012), which involves flexible questions and procedures, data collection in natural situations, inductive data analysis, and the development of general themes from specific findings. The focus is on giving a detailed description of a situation or activity, not on testing the effect of a single variable.

In analyzing data, this study uses raw data and uses clear and straightforward language to explain what happened and how it happened. In

short, descriptive methods focus on phenomena and the meanings people attach to them.

Although quantitative scores were used as an initial classification in the analysis, the main emphasis of this research is on descriptive interpretation to identify patterns, strengths, and weaknesses in students' writing, particularly in the areas of content, organization, grammar, vocabulary, and mechanics.

## **B. Research Settings**

This research was conducted around May 2025. The researcher first prepared the required research instrument classification by collecting student argumentative essays as documents for data collection. After the classification was accepted by the supervisor, on June 10-19, 2025, the researcher then collected data. This research took place at Imam Bonjol State Islamic University Padang, specifically with fourth-semester Class A English Tadris students.

## **C. Research Subject**

The participants in this study were fourth-semester students of Class A English Tadris at Imam Bonjol State Islamic University Padang. The participants selected were those who could provide the most relevant and in-depth information to understand the research problem and answer the research questions. Therefore, the researcher chose fourth-semester Class A English Tadris students as participants because at this stage, they had already studied

paragraph writing and were studying argumentative essays in the Essay Writing course.

#### **D. Research Instrument**

A research instrument is a tool used by researcher to collect data to achieve research objectives. In this study, the instrument used was the Writing Assessment Rubric by Jacobs et al. (1981). This rubric was chosen because it has been widely used in research assessing English writing skills and has clear criteria for five aspects of writing. This rubric assesses students' writing based on five main components:

1. Developing Ideas / Content – measures the relevance, completeness, and development of ideas in writing.
2. Organization – assesses the coherence of ideas, clarity of structure, and the use of connectors between sentences and paragraphs.
3. Grammar – measures the accuracy of sentence structure, tense, and grammatical appropriateness.
4. Vocabulary – assesses the appropriateness, variety, and accuracy of word choice in an academic context.
5. Mechanics – measures the precision of spelling, punctuation, capitalization, and writing format.

This instrument was chosen based on the consideration that Jacobs et al.'s (1981) rubric is highly suitable for academic contexts, providing detailed and measurable assessment criteria, facilitating descriptive analysis while

providing a strong foundation for descriptive interpretation. Furthermore, this instrument aligns with the research focus, which aims to describe students' writing ability in five key aspects in the context of using Google Gemini AI as a writing assistant.

#### **E. Techniques of Collecting the Data**

The data in this study were obtained from argumentative essay documents written by fourth-semester students of class A of the English Tadris in the Essay Writing course. Each participant wrote an essay of at least 150 words on the topic of “the increasing popularity of online learning”, with the requirement of using Google Gemini AI as an aid in the writing process. These documents were then analyzed using the assessment rubric of Jacobs et al. (1981), which covers five aspects: developing ideas/content, organizing, grammar, vocabulary, and mechanics. The results of this analysis were used to describe the students' writing abilities in detail and identify the strengths and weaknesses of their work in the context of using AI as a writing assistant.

#### **F. Techniques of Analyzing the Data**

In analyzing data, the researcher use six stages, according to Cresswell (2012). These six stages include organizing and preparing the data for analysis, reading all the data, beginning detailed analysis with the coding process, using the coding process to generate descriptions of the setting or people, as well as categories or themes for analysis, developing how the descriptions and themes

will be represented in the context of the data, and interpreting or making sense of the data.

1. Organize and prepare the data for analysis

This stage involves preparing all collected data for analysis. At this stage, researcher organize the data into a neat format, classify it, assign identification codes, and ensure all relevant data was properly stored. In this study, all argumentative essay documents written by students were collected on sheets of paper. Each document was assigned an identification code (S1, S2, S3, and so on) to maintain confidentiality. The documents were arranged in organized folders so they were ready for analysis.

2. Read through all the data

The second stage involves reading all the data thoroughly to gain a general understanding of the information. Researcher attempt to understand the overall meaning of the data before sorting or categorizing it. The goal is to capture nuances, initial patterns, or ideas emerging from the data. In this study, researcher read all essays thoroughly to gain an initial understanding of the writing quality, flow of ideas, and types of errors that occurred. This stage helps form an overview before conducting a more detailed assessment.

3. Begin detailed analysis with a coding process

At this stage, coding was the process of labeling or coding sections of data relevant to the research focus. In descriptive research, these codes typically

consisted of keywords or phrases that represented specific ideas or concepts. Coding was done openly at first, then refined as needed. Researcher conducted the initial coding process based on five aspects of Jacobs et al.'s (1981) rubric: developing ideas/content, organizing, grammar, vocabulary, and mechanics. Each aspect was assessed based on the rubric's criteria, and descriptive notes were added to highlight strengths or weaknesses.

4. Use the coding process to generate a description of the setting or people, as well as categories or themes for analysis.

After the data was coded, researcher used it to create detailed descriptions of the research setting, participants, or phenomenon under study. This coding also generated key categories or themes that became the focus of the analysis. The coding results were used to create in-depth descriptions of students' writing skills across each aspect. From this, categories or themes emerged, such as 'predominant grammatical errors,' 'use of academic vocabulary,' or 'coherence of ideas within sentences.'

5. Advance how the descriptions and themes will be represented in the descriptive context

This stage focused on how the analysis results would be presented. Researcher decided whether the data would be presented in the form of descriptive narratives, tables, direct quotes from participants, diagrams, or a combination of these. This format selection was important to ensure the research results were easily understood by readers. Researcher decided how to

present the results, including combining score tables, frequency distributions, and narrative descriptions that explained the strengths and weaknesses of the writing. Descriptive methods support quantitative data to provide a comprehensive picture.

#### 6. Make an interpretation or meaning of the data

The final stage was to interpret the findings, answer the research questions, and connect them to theories and previous research findings. Researcher interpreted how Gemini AI did or did not help students improve the quality of their writing, as well as the factors that influenced these results.

#### G. Trustworthiness

The next step of the research was to test the trustworthiness. To test the research trustworthiness, inter-rater reliability was used. Interrater reliability is a type of test used to align perceptions between researcher and expert in providing assessments of what is being researched (Purnawirardi, 2016). In general, reliability refers to the extent to which a data production system can withstand small changes in its structure (Gwet, 2021). For example, if data from an expert were replaced with data from a novice researcher with similar qualifications, would the data still produce the same results? If data from a researcher involved in the data collection process were replaced with data from an expert, would that affect the data—and to what extent? If certain procedures were changed, would valid data still be obtained? So inter-rater reliability is a

statistical measure used to assess consistency between observers who assess or classify the same sample.

This concept ensures that evaluation results are not overly influenced by the subjectivity of each assessor. The benefits include: data validity and study replication; research with high inter-rater reliability is easier to replicate and verify by other researchers, minimizing bias; standardizing assessment criteria helps reduce subjective bias and improve methodological quality; and assisting in the development of better research instruments and consistent evaluation procedures.

The inter-rater reliability method was used in this study because the researcher used documentation of students' argumentative essay writing test answer sheets using Gemini AI as the primary instrument. Based on these answer sheets, the researcher provided assessments alongside expert, and then compared and described the results.