

CHAPTER III

RESEARCH METHODOLOGY

A. Research Design

This study employs a quantitative research method using a descriptive survey design. The selection of this design is aligned with the research objectives, which aim to identify and describe the readiness of English teachers toward the integration of Artificial Intelligence (AI) in senior high school English classes in the Bandung region. Unlike correlational or causal research, this study does not seek to examine relationships or causal effects among variables. Instead, it focuses on describing the current condition of teachers' readiness and identifying the dimensions that most strongly support or hinder AI integration in English language teaching.

According to Sugiyono (2022), quantitative descriptive research is used to systematically describe phenomena, characteristics, or conditions within a population based on numerical data. Similarly, Creswell & Creswell (2022) explain that descriptive survey research enables researchers to collect quantitative information from a sample in order to describe attitudes, perceptions, behaviors, or characteristics of a population. This approach is appropriate for the present study because it allows the researcher to measure and describe teachers' readiness toward AI integration objectively through numerical data.

The study focuses on three dimensions of teacher readiness, namely cognitive readiness, affective readiness, and psychomotor readiness. Cognitive readiness refers to teachers' knowledge and understanding of AI technologies and their educational applications. Affective readiness relates to teachers' attitudes, confidence, motivation, and willingness to adopt AI in classroom instruction. Psychomotor readiness refers to teachers' practical skills in utilizing AI tools to support teaching and learning activities. In addition, the study seeks to identify challenges that teachers encounter when preparing for AI integration in English language teaching.

Collected data are analyzed using descriptive statistical techniques, including frequencies, percentages, mean scores, and standard deviations. These

statistical measures are used to determine the overall level of teacher readiness, identify the strongest and weakest dimensions of readiness, and describe the challenges experienced by teachers regarding AI integration. The interpretation of the findings is based on predefined score categories to facilitate a comprehensive understanding of teachers' readiness levels. The findings are expected to provide an empirical overview of English teachers' readiness for AI integration and contribute to the development of AI-supported English language teaching practices, teacher professional development programs, and educational policies related to AI implementation in schools.

B. Research Location and Time

This study is conducted in Bandung City, West Java, Indonesia. Bandung was selected as the research site because it is recognized as one of the major educational cities in Indonesia, with a large number of senior high schools and a rapidly developing digital technology infrastructure. Furthermore, many schools in Bandung have incorporated technology into their teaching and learning activities, making the city an appropriate setting for investigating teachers' readiness to utilize Artificial Intelligence (AI) in English language teaching.

The availability of internet access, digital devices, and technology-based learning platforms in Bandung further supports the implementation of this study. The educational environment in the city is relatively adaptive to technological advancements, enabling the researcher to obtain data that align with the objectives of the study, particularly regarding teachers' knowledge, skills, attitudes, and pedagogical readiness in integrating AI into the teaching and learning process.

The study is conducted over a two-month period, from May to June 2026. During this period, several research activities are carried out, including the development of research instruments, the distribution of questionnaires to participants, data collection, data processing and analysis, and the preparation of the research report. The systematic implementation of these stages is expected to generate accurate data and support the achievement of the research objectives effectively and efficiently.

C. Population and Sample

The population of this study consists of English teachers working at senior high schools in the Bandung region, West Java, Indonesia. According to Sugiyono (2022), a population is a generalization area consisting of subjects or objects that possess specific characteristics determined by the researcher for investigation and conclusion drawing. English teachers were selected as the target population because this study focuses on examining their readiness toward the integration of Artificial Intelligence (AI) in English language teaching.

Since it is not practical to collect data from the entire population, a sample is selected to represent the target population. Creswell and Creswell (2022) define a sample as a subgroup of a population selected for participation in a study. This study employs purposive sampling as the sampling technique, in which participants are selected based on specific criteria relevant to the research objectives. The criteria include English teachers who are actively teaching at senior high schools in the Bandung region, have experience using digital technology in educational settings, and are willing to participate voluntarily in the study.

The sample of this study consists of 30 English teachers working at senior high schools in the Bandung region. The participants were selected using purposive sampling based on the established criteria to ensure that they were relevant to the objectives of the study. Through this sample, the researcher expects to obtain meaningful information regarding teachers' cognitive, affective, and psychomotor readiness, as well as the challenges they encounter in integrating Artificial Intelligence (AI) into English language teaching. The findings are expected to provide a descriptive overview of teachers' readiness toward AI integration in the educational context.

D. Research Instrument

A research instrument is a tool used to gather data needed to answer the research questions. In quantitative research, instruments are designed to measure variables systematically so that the data can be analyzed using statistical methods (Sugiyono, 2023). In this study, a structured questionnaire served as the main instrument to collect data on English teachers' readiness for Artificial Intelligence (AI) integration in English language teaching.

1. Questionnaire

The questionnaire was designed to examine the readiness of English teachers to integrate Artificial Intelligence (AI) into English language teaching. It consisted of 35 closed-ended statements assessed using a five-point Likert scale, ranging from 1 (Strongly Disagree) to 5 (Strongly Agree). This scale was chosen because it is widely recognized as an effective way to measure respondents' opinions, attitudes, and levels of agreement in quantitative research (Sugiyono, 2023). The questionnaire items were developed based on the Technology Readiness framework proposed by Parasuraman (2000) and supported by recent studies on AI integration in education. The instrument covers four key indicators: Cognitive Readiness, Affective Readiness, Psychomotor Readiness, and Challenges of AI Integration. The distribution of questionnaire items across these indicators is presented in Table 3.1.

Table 3.1 Questionnaire Framework

Variable	Indicator	Item Numbers	Total Items
English Teachers' Readiness for AI Integration	Cognitive Readiness	1-10	10
	Affective Readiness	11-20	10
	Psychomotor Readiness	21-28	8
	Challenges of AI Integration	29-34	6
Total			34

As shown in Table 3.1, the questionnaire measures one research variable through four indicators. The Cognitive Readiness indicator focuses on teachers' knowledge and understanding of AI and its application in English language teaching. Affective Readiness examines teachers'

attitudes, confidence, and willingness to adopt AI in their instructional practices. Psychomotor Readiness evaluates teachers' practical ability to use AI tools for teaching activities. Meanwhile, the Challenges of AI Integration indicator identifies barriers that may influence AI implementation, such as limited training opportunities, inadequate technological resources, insufficient institutional support, and concerns related to the accuracy and ethical use of AI. Together, these indicators provide a comprehensive picture of teachers' readiness for AI integration in English language teaching.

2. Instrument Validity

Instrument validity refers to the extent to which a research instrument is capable of measuring the construct it is intended to assess (Sugiyono, 2023). An instrument is considered valid when its items accurately represent the research variables and effectively measure the concepts being investigated. Therefore, validating the questionnaire is an important step to ensure that the collected data accurately reflect the objectives of the study.

In this research, the validity of the questionnaire was established through expert judgment before the instrument was distributed to the respondents. The validation process involved an English Language Education lecturer with expertise in educational research and English language teaching. The expert evaluated the questionnaire by examining the relevance of each statement to the research objectives, the consistency of the items with the theoretical framework, the clarity of the wording, the grammatical accuracy, and the suitability of the language for English teachers as the target respondents.

To support the validation process, the researcher provided the questionnaire draft together with the research indicators and their theoretical foundations. After reviewing the instrument, the validator offered several suggestions to improve the quality of the questionnaire. These recommendations were incorporated by revising the wording, refining

sentence structure, and improving the clarity of several statements. Once the revisions had been completed, the questionnaire was considered appropriate and valid to be used as the primary instrument for collecting data on English teachers' readiness for AI integration in English language teaching.

3. Instrument Reliability

Instrument reliability refers to the degree to which a research instrument produces consistent and dependable results when it is administered under similar conditions (Sugiyono, 2023). A reliable instrument is expected to measure the intended constructs consistently, thereby reducing measurement errors and improving the accuracy of the collected data. For this reason, reliability testing is an essential stage in evaluating the quality of a research instrument.

In this study, the reliability of the questionnaire was assessed using IBM SPSS Statistics Version 27 by applying the Cronbach's Alpha coefficient. The analysis was conducted after all questionnaire responses had been collected from the participants. Cronbach's Alpha was selected because it is a widely accepted statistical technique for measuring the internal consistency of questionnaires that employ multiple Likert-scale items (Sugiyono, 2023). The reliability analysis included all 35 questionnaire items to determine whether the instrument consistently measured the four dimensions of English teachers' readiness for AI integration, namely cognitive readiness, affective readiness, psychomotor readiness, and challenges of AI integration.

The interpretation of the reliability coefficient followed the criteria proposed by Sugiyono (2023). A Cronbach's Alpha value of 0.70 or higher indicates that an instrument has acceptable internal consistency and can be considered reliable for research purposes. Accordingly, the questionnaire was regarded as reliable if the calculated Cronbach's Alpha coefficient met or exceeded this minimum value. The results of the reliability analysis are presented in Chapter IV.

Table 3.2 Cronbach's Alpha Reliability Criteria

Cronbach's Alpha Coefficient	Interpretation
------------------------------	----------------

≥ 0.90	Excellent
0.80-0.89	Good
0.70-0.79	Acceptable
0.60-0.69	Questionable
0.50-0.59	Poor
< 0.50	Unacceptable

Source: Adapted from Sugiyono (2023).

E. Research Procedures

To achieve the objectives of this research, the research procedures are carried out

systematically through the following steps:

1. Determining the research location, population, sample, and research period at senior high schools in Bandung from May to June 2026.
2. Conducting a literature review and developing the questionnaire based on the indicators of teachers' readiness to use Artificial Intelligence (AI) in English language teaching.
3. Validating the questionnaire through expert judgment and conducting a pilot test to examine the validity and reliability of the instrument.
4. Distributing the validated questionnaire to the selected respondents through Google Forms and collecting the completed responses.
5. Organizing and analyzing the collected data using descriptive statistical techniques.
6. Interpreting the findings and drawing conclusions based on the results of the data analysis to answer the research objectives.

F. Data Analysis Technique

Data analysis refers to the process of organizing, processing, and interpreting the collected data in order to answer the research questions and achieve the objectives of the study. In quantitative research, data analysis involves the application of statistical techniques to produce objective, measurable, and systematic findings (Creswell & Creswell, 2022). Therefore, descriptive statistical analysis is employed in this study because it is consistent with the purpose of the research, which is to describe the level of English teachers' readiness toward the integration of Artificial Intelligence (AI) in English language teaching rather than examining causal relationships among variables.

The data collected through the questionnaire are first subjected to data editing, coding, tabulation, and data entry using Microsoft Excel and IBM SPSS software. These procedures are carried out to ensure the accuracy and completeness of the data before statistical analysis is conducted.

The analysis techniques used in this study include descriptive statistics, mean score calculation, and percentage analysis. Descriptive statistics are used to summarize and present the characteristics of the data through frequencies, percentages, mean scores, and standard deviations. These statistical measures provide an overview of teachers' readiness toward AI integration and help identify the strongest and weakest dimensions of readiness.

Furthermore, mean score analysis is employed to determine the overall tendency of respondents' answers for each dimension of teacher readiness. Percentage analysis is also used to describe the distribution of responses across different categories. The interpretation of mean scores is based on predetermined readiness categories, ranging from very low to very high levels of readiness.

Table 3.1 Mean Score Interpretation

Mean Score Range	Interpretation
4.21 – 5.00	Very High
3.41 – 4.20	High
2.61 – 3.40	Moderate
1.81 – 2.60	Low

1.00 – 1.80	Very Low
-------------	----------

Through these statistical procedures, the study is expected to provide a comprehensive and objective description of English teachers' readiness toward the integration of Artificial Intelligence (AI) in English language teaching. The findings are also expected to contribute to a better understanding of the opportunities and challenges associated with AI implementation in education and to provide practical recommendations for teachers, schools, and educational stakeholders.

