

CHAPTER III

RESEARCH METHOD

3.1. Research and Development Method

In this study, the Research and Development (R&D) method was used to design, develop, and evaluate an English textbook based on Nias culture to enrich 21st century skill for students at SMK Negeri 1 O'o'u. According to Kusmaryani & Ramli (2023), R&D involves creating new products or generating new knowledge to improve existing processes, which are then applied to improve educational materials or practices. This approach would be particularly effective in an educational setting as it allows the development of innovative and practical resources for teachers and students. R&D method also allows for iterative testing and refinement, to ensure that the final product meets the specific needs of the users (teachers and students).

According to Morrison et al. (2021), R&D process allows educators to systematically analyze learners' needs and develop tailored teaching materials to improve learning outcomes. They argue that the iterative nature of ADDIE model, which consists of Analysis, Design, Development, Implementation, and Evaluation, facilitates continuous improvement based on feedback and effectiveness assessment. ADDIE model was crucial in this research because it offered a structured, iterative approach to instructional design. This ensured that the product would continuously refine to meet the learning needs of students. The model supported the development of a character pattern-based English teaching textbook that integrated language learning with character education, helping to create a holistic learning environment.

3.1.1. Data Collecting Technique

To collect the data needed for this study, several data collection methods were used, namely observation, interviews, and questionnaires. These techniques were used to gather relevant information from both teachers and students, providing a deeper understanding of the learning process and the implementation of the Nias culture-based English textbook developed in the classroom context.

3.1.2. Data Analysis Technique

For this study, data processing was conducted using two data analysis techniques: qualitative and quantitative analysis, which complemented each other.

1. Qualitative Analysis

a. Descriptive Analysis

The descriptive analysis focused on detailing and explaining the data comprehensively. According to Jacob (2023), descriptive analysis in qualitative research aims to provide an in-depth understanding of the phenomenon being studied by systematically and structurally presenting findings. In this study, data collected through interviews and observations was described to illustrate patterns of students' understanding in English language learning through culture. The descriptive results included detailed explanations of the behavior, attitudes, and cognitive traits of students observed during English lessons, emphasizing the role of cultural context in shaping their learning experiences.

2. Quantitative Analysis

Bingham (2023) states that the stages in quantitative analysis are interconnected, enabling researcher to gain a deeper understanding of emerging data patterns.

a. Data Reduction

This process involved sorting, simplifying, and coding the collected data. Information gathered from interviews or observations was categorized to uncover patterns in students' English learning as influenced by Nias cultural contexts. For instance, student behaviors such as using English creatively, collaborating in group tasks, or confidently expressing cultural ideas was classified to reveal how cultural elements enhance their language skills. These categorized data was simplified to support deeper analysis, with the ultimate goal of identifying how the integration of Nias culture fosters students' comprehension,

expression, and application of English, while also promoting key 21st century skills like critical thinking, creativity, communication, and collaboration.

b. Data Display

At the data display stage, the collected and reduced data are presented in a structured format to facilitate researcher in understanding and interpreting the research results. The data are presented through tables, diagrams, and descriptive narratives that highlight students' understanding patterns of English learning in the context of Nias culture. Before presentation, the data obtained is calculated to obtain percentage values and distributions of student achievement. These calculations provide a quantitative overview of the feasibility, practicality, and effectiveness of the developed textbook. The presentation of this data aims to clearly show the integration of local culture in English language learning with the development of 21st century skills, particularly critical thinking, creativity, communication, and collaboration. To support the accuracy of the data, percentage calculation formulas are used and displayed in the following section as the basis for data processing before being presented in an easy-to-understand visual form.

The formula used for questionnaire data per item is as follows:

$$P = \frac{x}{x1} \times 100 \%$$

Note:

P : Percentage needed

x : Score of the Respondent's Answer in One Item

x1 : Maximum Answer Score in One Question Item

100% : Constant

Based on the percentage score value, conclusions about the acceptability of the medium or product being developed will be determined. The degree to which the product under

development is deemed suitable increases with the percentage score obtained from the data analysis. The criteria for the test participants' and validators' evaluation findings are listed below tabulated for ease of viewing:

Table 3.1 Criteria for Feasibility Percentage

Percentage	Criteria
81.25 - 100	Very Worthy
62.25 – 81.25	Worthy
43.75 – 62.50	Less Worthy
$43.75 \leq$	Unworthy

c. Conclusion Drawing

At this stage, the researcher will draw conclusions based on the data that has been analyzed and presented. These conclusions will provide insights into how learning English through culturally relevant materials - particularly those based on Nias culture - contributes to students' language development and the factors that influence this process in an educational context. The aim is to understand how cultural contexts shape students' cognitive abilities, language proficiency and active engagement, thus revealing culturally-based English textbooks can feasible to used and support academic achievement and the development of 21st century skills such as critical thinking, creativity, collaboration and communication.

3.2. Procedure of Development

3.2.1. Analysis

In the analysis phase, the researcher began by identifying the needs of vocational high school students in relation to English learning, particularly focusing on how integrating Nias culture could enhance their comprehension. This phase involved assessing the current English curriculum and textbooks, conducting surveys or interviews with teachers and students, and analyzing students' comprehension levels to understand the challenges they faced in

learning English and how cultural relevance could support their development.

3.2.2. Design

- Creating the book outline: The researcher developed an outline or framework for the textbook that covered various themes and topics. The content will be designed to connect cultural elements with language acquisition, focusing on how cultural knowledge enhances students' comprehension and use of English in different contexts.
- Designing learning activities: The researcher designed activities or tasks that will help students enhance their understanding of English through cultural elements, such as Nias culture, while also promoting essential values like cooperation, responsibility, discipline, and perseverance. Each activity was structured to not only strengthen language skills such as speaking, listening, reading, and writing but also encourage the development of these key values, thereby fostering a holistic learning experience that connects language proficiency with cultural awareness and personal growth.
- Selecting materials and teaching strategies: The researcher selected materials relevant to the curriculum and applicable teaching techniques that will effectively improve students' understanding of English. This included selecting a learning approach that actively engages students in value-based learning. After completing the design stage, a prototype of the English Teaching Textbook was created for testing in the next stage.

3.2.3. Development

In the development phase, the actual content for the textbook created. This includes drafting reading materials, vocabulary exercises, and activities that connect English language learning with Nias culture. The researcher collaborated with language and cultural experts to ensure the content is accurate and appropriate. Multimedia elements, such as images, audio, or video clips showcasing Nias

culture, can be incorporated, and the materials will be pilot tested in classrooms to refine the content based on initial feedback.

3.2.4. Implementation

During the implementation phase, the textbook was introduced to grade X classrooms at SMK Negeri 1 O'o'u, and the researcher monitored textbook usage to assess how it increased student engagement and comprehension. Feedback from teacher and students was also collected to evaluate the integration of cultural content and its impact on language learning. In addition to the R&D approach with ADDIE model, this study employed a quasi-experimental design with a nonequivalent control group posttest-only structure to test and evaluate the effectiveness of the developed textbook in real classroom settings. This design allowed the researcher to compare learning outcomes between the experimental class, which used the Nias culture-based textbook, and the control class, which used the existing student textbook. The sample was selected using cluster sampling, in which intact groups of students (entire classes) were chosen rather than assigning individuals randomly. This technique was applied because the students in the school were already organized into fixed class groups, making it more practical and less disruptive to the learning process. Thus, one class was designated as the experimental group and another as the control group, in line with the nature of quasi-experimental research where random assignment of individuals is not feasible, but meaningful group comparisons can still be achieved (Creswell, 2020).

Data on student learning outcomes was collected using a post-test, administered after the treatment phase in both experimental and control classes. The post-test consisted of multiple-choice questions designed to assess students' understanding of English material while reflecting cultural integration elements. By applying this design and using post-test instruments, the study ensures a valid

and measurable comparison of learning outcomes between groups. This approach provides stronger empirical evidence on whether the Nias culture-based English textbook enhances students' engagement, comprehension, and mastery of 21st century skills compared to students' textbook.

3.2.5. Evaluation

Finally, in the evaluation phase, the effectiveness of the Nias culture-based textbook was assessed. Researcher will collect feedback from students, teachers, and other stakeholders, and analyze student performance data to measure improvements in English. This feedback was used to make necessary revisions to the textbook, ensuring that the textbook continues to meet the needs of vocational high school students and effectively supports their English language learning through Nias cultural integration.

With this development procedure, the English Textbook that was produced is expected to function as an effective tool for teachers at SMK Negeri 1 O'o'u to enhance students' mastery of English in alignment with 21st century skills through cultural learning. This textbook provided teachers with structured activities and materials that integrate language learning with cultural elements, aiming to improve students' language proficiency while fostering critical thinking, creativity, communication, and collaboration.