

CHAPTER III RESEARCH METHODS

3.1 Research and Development Method

This research aims to develop concept mapping as a learning tool to enhance students' English background knowledge at SMP Negeri 7 Gunungsitoli. This research uses the Research and Development (R&D) method, which is a systematic approach commonly used in educational research to create and evaluate educational products. This is reinforced by W. Kusmaryani (2023) that R&D involves the creation of new products or the generation of new knowledge to improve existing processes, which are then applied to enhance educational materials or practices. By using this method, it is hoped that the product developed will be effective, feasible and practical.

Picture 3.1 R&D Steps in General



This research is expected to provide a positive contribution in the development of interactive learning tool that help students understand basic English concepts better.

3.1.1 Data Collecting Technique

This research will employ observation, interviews, questionnaires, and documentation as data gathering methods. This seeks to gain a thorough grasp of the research topic. Each method has a unique function in obtaining insightful information. The detailed explanation is as follows:

1. Observation

Observation will employed to obtain qualitative data related to the learning process, namely by directly witnessing and recording student

behavior and interactions during the learning process. As stated by Kusmaryani & Ramli (2023) that a technique for gathering information through observation of individuals, situations, or physical qualities as they are occurring naturally. Through this technique, researchers monitor how students' understanding and involvement in learning English. In addition, this method helps identify patterns or barriers that can hinder their progress, providing data on the practical of concept mapping to integrate background knowledge. Based on the initial observation data conducted on October 15, 2024, it was used as an initial data for problem formulation and analysis material at the ADDIE development model analysis stage.

2. Interview

Interview activities is conducted to obtain qualitative data related to student characteristics during the implementation of learning, teaching materials used, curriculum used during the learning process to obtain initial data in conducting needs analysis. The type of interview used is a structured interview which is conducted using a list of questions that have been created based on the objectives. According to (Creswell, 2019), interviews are a qualitative data collection technique in which the researcher asks participants open-ended questions to gather detailed and comprehensive responses about their experiences, perceptions, or perspectives. At the product development stage, interviews were conducted to obtain information on the extent to which students can connect new concepts with existing knowledge using Concept Mapping and to determine potential obstacles in its implementation in the classroom. This is a way to find out the feasibility and practicality of the product being developed. The sources of the interview were English teachers and 8th grade students at SMP Negeri 7 Gunungsitoli.

3. Questionnaire

To identify the effectiveness, feasibility, and practicality the Concept Mapping as tool to integrate background knowledge that will

be applied in the English learning process. This questionnaire is used in the process of developing and implementing. A questionnaire is a tool for collecting data that consists of a list of inquiries intended to systematically collect information from participants (Creswell, 2014). The questionnaire used in the development process consists of an expert validation questionnaire, where material experts and product experts provide an evaluation of the feasibility of the concept mapping and the quality of the contents. This assessment will be a reference for making product improvements. The subjects of the product trial are experienced experts. Meanwhile, the questionnaire in the implementation process will be given to teacher and 8th grade students in order to determine the response of effectiveness, feasibility, and practicality the concept mapping as learning tool.

4. Documentation

Documentation involves collecting and analyzing existing and newly generated materials relevant to the research. These include lesson plans, student academic records, and completed concept mapping, which provide concrete evidence of students' learning progression. Additional resources, such as photographs, videos, and notes taken during teaching sessions, are also utilized to support the analysis. This technique helps in creating a repository of data that reflects both the initial and ongoing development of students' English background knowledge during the application of Concept Mapping in learning process.

3.1.2 Data Analysis Technique

Data analysis is a crucial step in the research process because it allows researchers to convert unprocessed data into findings that are supported by scientific principles. This is supported by (Miles et al., 2014) state that data analysis is a crucial procedure for methodically searching and gathering information gathered from field notes, observations, interviews, and documentation. They do this by classifying, characterizing, synthesizing,

compiling, and identifying patterns, as well as by selecting what is significant and drawing conclusions.

Through analysis of the generated products, both qualitative and quantitative data were gathered for this study. The outcomes of observations, interviews, and written responses are examples of qualitative data, which the researchers will thoroughly explain. On the other hand, quantitative data derived from tests and surveys will be processed using a variety of formulas to enable easy presentation to others. The four primary processes of data analysis—data reduction, data display, and conclusion drawing—are followed by verification in this analytical approach (Hamzah, 2020).

1. Data Reduction

Data reduction involves simplifying and organizing the collected data to make it easier to analyze. This step helps in focusing on the most relevant information to address the research questions. the process includes: (1) identifying key themes from the interviews and observations, the researcher will categorize feedback based on common themes such as understanding vocabulary, conceptual clarity, and student engagement. (2) summarizing test results from the initial and last test scores will be condensed into clear. This could include calculating average scores or comparing the percentage of improvement for each student. (3) filtering unnecessary information with Eliminating irrelevant data or responses that do not contribute to answering the research questions. (4) Using coding techniques for qualitative data (from interviews and observations) to categorize responses into themes, such as "improved understanding," "interest in learning," or "challenges with concept mapping."

2. Data Display

Once the data is reduced, the next step is to organize and present the data in a way that is accessible and understandable. This stage is critical for drawing meaningful insights. The researcher will present the concept mapping created by students to show how their understanding of English concepts changed over time. This will highlight the students'

ability to connect and organize different pieces of information before and after using concept mapping. After that, researcher will present quantitative data, such as the average score increase in initial and last tests, in bar graphs or line charts. This helps in visualizing the improvement in English background knowledge among students. And then, present data from interviews and questionnaires in table formats, comparing student and teacher feedback before and after the implementation of the concept mapping tool. The last is describe how students' perceptions of English learning changed after using concept mapping, using direct quotes from interviews to support the findings.

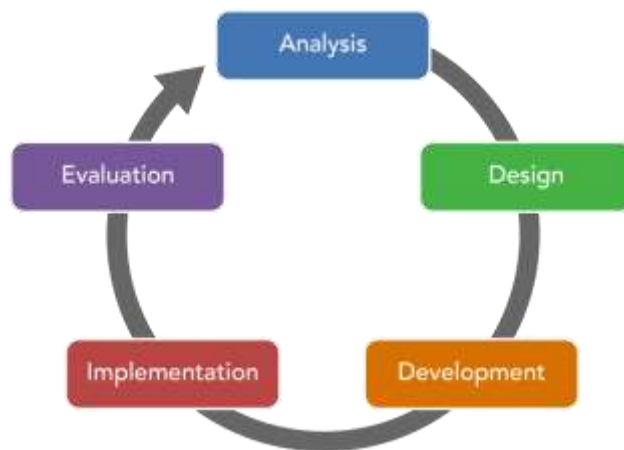
3. Drawing Conclusion and Verification

In the drawing conclusions phase, the researcher interprets the data to address the research questions, focusing on the effectiveness of concept mapping, its impact on students' ability to recall and understand English concepts, and the engagement and motivation of students. These conclusions are drawn by comparing initial and last test scores, analyzing improvements in students' ability to organize and connect concepts through concept mapping, and determining if the tool made learning more engaging through observations, interviews, and questionnaires. Additionally, the practicality and feasibility of concept mapping in classroom settings are assessed based on feedback from both teachers and students.

The final step of data analysis is verification, where the researcher ensures the validity and reliability of the conclusions. This is done through member checking, where students and teachers review the interpretations for accuracy; triangulation, comparing data from various sources to ensure consistency; and peer review, having other researchers evaluate the findings to ensure credibility. By following these steps data collection, reduction, presentation, drawing conclusions, and verification the researcher ensures a thorough and reliable analysis of the effectiveness, practicality, and feasibility of concept mapping in integrate students' English background knowledge.

3.2 Procedure of Development

The ADDIE model is used in the research that will be done on the creation of concept mapping as a learning tool. In order to incorporate students' foundational understanding of English, a concept mapping tool was developed using the ADDIE model, a methodical framework that encompasses the Analyze, Design, Develop, Implement, and Evaluate stages.



Picture 3.1 ADDIE Model Stages

The following section describes the stages of the development procedure:

3.2.1 Analysis

This analysis stage is the earliest stage and will form the basis for the following stages. In stage, focuses on identifying the specific needs and challenges faced by students in learning English in the preliminary studies at SMP Negeri 7 Gunungsitoli. This includes:

- a. Classroom Observation: Observations are conducted to gain insight into the actual teaching and learning process. The researcher observes students' behavior and characteristics, engagement levels, and comprehension during English lessons. This helps identify specific areas where students face difficulties, such as vocabulary mastery, grammar comprehension, or application of concepts in practice. In addition, classroom management strategies and teaching methods used by teachers are analyzed to understand how they affect learning outcomes.

- b. Interview with teacher: Semi-structured interviews with English teachers were conducted to gather perspectives on the challenges students face while learning English in grade 8. Teachers provided valuable insights into students' learning abilities, common misconceptions, and low background knowledge in English learning. Teachers also shared their experiences and strategies in teaching English, highlighting what worked well and what needed improvement. These interviews helped identify gaps that could be addressed and provided a basis for designing solutions that aligned with classroom realities.

The results of the analysis that have been obtained by the researcher will then be subjected to a formative evaluation, namely an expert review. Input and criticism that have been given by the supervising lecturers who act as experts will be used as a basis for improving the results of the researcher's analysis to proceed to the next stage.

3.2.2 Design

After the needs analysis is obtained, the researcher will design the product. At this stage, concept mapping as a solution or product appropriate learning tool to integrate students' English background knowledge. The following is the design process carried out:

- a. First, determine objectives: Establish clear objectives for the concept mapping tool, namely being able to integrate background knowledge, vocabulary retention, and improve conceptual understanding with consider learning outcomes in English.
- b. Concept Mapping Prototype: Design a template or guideline and content created for a concept mapping. First, determine the model and type of concept mapping developed. Next, compile the product framework starting from the cover, table of contents, concept mapping examples, evaluation sheets, bibliography, and so on. In this process will take into account the aspects of aesthetic function and content, as well as various other aspects by using data sources obtained from research, thinking, brainstorming, or from previous

product development guidelines. The resulting product is expected to have good quality, low, and the right schedule (effective and efficient).

- c. **Selecting Learning Materials and Strategies:** Researchers will select materials that are relevant to the curriculum as a Merdeka Curriculum adopted by the research school object effectively to improve students' understanding of English while developing their background knowledge. In addition, planning methods and activities to introduce and use concept maps in the classroom, ensuring they are in line with student needs and the curriculum.

3.2.3 Development

The development phase is concerned with making the designs made during the design phase a reality. This section covers the use of concept mapping to assist in incorporating students' prior knowledge and comprehension in creative and useful ways. There are following the process:

- a. **Content Development:** Developed concept mapping templates, examples, and instructional guides for teachers and students. These materials were specifically designed to help students visualize relationships between English concepts, such as connecting vocabulary to grammatical structures or thematic units. The templates were designed to be easy to use, incorporating visual cues such as color and shape to facilitate understanding. Examples were provided to model effective concept mapping, while the instructional guide outlined step-by-step methods for teachers and students to create and use concept mapping effectively in learning activities.
- b. **Expert Validation:** Consulted with education experts to review and refine the tool to make it effective, feasible, and practical to use. The validation process involved content experts who ensured the content aligned with English language learning objectives, design experts who evaluated the usability and visual appeal of

the concept mapping, and language experts who reviewed the clarity and appropriateness of the language used. Feedback from these experts was systematically incorporated to improve the quality and applicability of the tool.

- c. Preliminary testing: Conducted an initial, small-scale product pilot to test the usability of the concept mapping tool. This involved a small group of students and teachers using the tool in a controlled classroom setting. The pilot aimed to identify the strengths and weaknesses of the product, with a focus on student engagement, ease of use, and alignment with learning objectives. Observations, feedback forms, and short interviews with participants were used to gather data to refine the tool before wider implementation.

3.2.4 Implementation

Implementation is a real step to apply Concept Mapping as a learning tool on the background of students' English knowledge at SMP Negeri 7 Gunungsitoli. In its implementation, teaching will be carried out following the flow of learning objectives with collaboration with subject teachers to apply concept mapping to learning activities. As stated, pclassroom action research (CAR) approach will be used to implement products melalui 4 siklus.

1. Planning

In the Planning stage, preparation for the implementation of Concept Mapping as a learning tool takes place. This step includes Setting clear learning objectives and outcomes. The researcher sets a schedule of meetings and activities by adjusting the English learning schedule. Collaborating with the English teacher to ensure that concept mapping are aligned with the curriculum, learning objectives, and teaching methods. Discussing how Concept Mapping will be introduced and integrated into daily classroom activities (e.g., as a pre-lesson activity, during the lesson to summarize concepts, or for post-lesson reinforcement).

2. Action

The Action Phase is where the actual implementation of the product occurs in the classroom. This phase involves Presenting the Concept Mapping tool to students, explaining how it helps organize their thoughts and connect new information to what they already know. Teaching students how to create and use concept mapping as a learning strategy. This may involve modeling the process for students, showing examples, and providing guidance on how to connect concepts and ideas together and give test.

3. Observation

The Observation phase involves monitoring and evaluating the effectiveness of Concept Mapping as a learning tool directly during implementation. Key activities in this phase include observing how students engage with Concept Mapping during the lesson.

- Are they able to connect new knowledge to their existing background knowledge?
- Are students make connections between different language skills (e.g., vocabulary mastery and reading comprehension)
- Are students active and have feedbacks in learning while using concept mapping?

4. Reflection

In the Reflection stage, the researcher reflects on the implementation results to determine whether the learning objectives have been met and what adjustments need to be made for the next cycle. Review the data collected during the observation stage, including student responses to the concept mapping, assessment of their learning outcomes, and teacher feedback.

3.2.5 Evaluation

The evaluation phase assesses the effectiveness, practicality, and feasibility of the concept mapping tool. First, collect data during the implementation phase through observations, interviews, and questionnaires to identify areas for improvement. Second, measure the overall impact of the tool by analyzing initial and last test results and evaluating student feedback. And finally, make adjustments to the tool based on the evaluation findings to improve its effectiveness and alignment with learning objectives.

RESEARCH SCHEDULE

This research will be conducted in class 8 of SMP Negeri 7 Gunungsitoli. Research schedule outlines the timeline for the entire research, including each the stages as follows:

Table 3.1 Research Schedule

Time (Month)	Activity
November 2024	Preliminary study and analysis stage
December 2024	Designing concept mapping as a product and designing a research proposal
Januari 2024	Presenting prototype of concept mapping and result of research proposal
Februari-Mei 2024	Concept mapping development, expert evaluation, class implementation using CAR, and product effectiveness assessment
Juni 2025	Presenting research results and product development from concept mapping