**CHAPTER III**

**METHODOLOGY**

**3.1. Research design**

The type of research use is research and development (R&D) research methods. The model used is the ADDIE Model Sugiono 2013. The ADDIE model is an abbreviation for the five stages of the development process, namely Analysis, Design, Develop, Implement, and Evaluat

Revision

Analye

Revision

implement

Evaluation

Design

Revision

Development

Revision

**FIGURE 3: ADDIE Model**

**3.2. Subject, Object and Research Time**

The subjects in this research and delepmont were students in grade 11- IPA 1, totaling 35 students at SMAN 13 MEDAN And research time. Research and development will be carried out at SMAN 13 MEDAN. The implementation of the research is from the beginning of January – March 2023.

**3.3. The Procedure Research Development**

* + 1. Analysis

Based on observation conducted in SMAN 13 MEDAN by giving the questionnaire, the researcher found it was important to develop appropriate materials and more interesting to make students easily master the material as well as additional materials in addition to existing materials.

* + 1. Design

Researcher developed materials suitable for the needs of students based on core competence. Then appropriate teaching materials provided for students by making the material interesting because there were various pictures and colors.

* + 1. Development

In this stage, the result of design of materials need to be revised and validated by experts. The researcher develop the reading material by the environment of research setting, because it can help the researcher to develop the materials. The product formed a book that will motivate and add student's interest in learning. The product is use for eleven grade students at SMAN 13 MEDAN. Therefore, in this stage students examine based on design of reading materials. The data is gather from the experts by using close-ended item questionnaires will analyze to know whether the materials are good and appropriate with the students. The product will be revised again. This revision will be finished until the product is valid by the experts and match with the students' need. The experts' team consist of two experts; they are one material expert and one design expert. The experts team will give coments and suggestions through open-ended item questionnaire.

* + 1. Implementation

In implementation stage is product trials. It means that the product has been revised is implemented for the user of the product. If still found revision then revised again to make a good product. The user of the product is students.

* + 1. Evaluation

Evaluation is an important process of this research. This is the completion of the stages. In this stage action will be taken to improve the development of product and studies. The evaluation results are used to provide feedback to the user model/method. Revisions are carried out according to the new model/method.

**3.4. Data Collection Instruments and Techniques**

Questionnaire One of the data collecting tecniques in this research is questionnaire. According to Sugiyono (2013, P.199) questionnaire is a technique of data collection conducted by giving statements to respondents to be answered. will be shared to experts, teacher, and students. used to collect data about the feasibility of the book will be filled by experts, the questionnaire for teacher is given before learning process, and the questionnaire for student responses is given after the learning process. The instrument, the result of data collection from questionnaire, according to Johnson and Christensen (2008) as cited by Aminah (2016) questionnaire is instrument of data collection that is filled out by research participants. It is analyzed with many aspects of students' attitude. The aspect of students' need and interest will be concern in this reseach. Besides choose the appropriate answer, the participants also given chance to give comment and suggestion about the product.

Documentation Sugiyono (2013:240) stated that "Document is a record of events that had passed. Documents can be in the form of text, images, or the monumental works of someone". In this study, documentation used to collect the data of the school, like curriculum, syllabus, and worksheet.

**3.5. Data Analysis**

In order to understand the collected data, the data analyze on the basis of their characteristics and purpose. The subjects' responses on the questionnaire will calculated in the form of percentages. The answer from each question score based on Likert Scale (Riduwan & Sunarto, 2010, p. 21) which are:

**Table 3.1. Category Convention Table**

|  |  |
| --- | --- |
| **Category** | **Score** |
| Strongly Agree (Sangat Setuju/SS) | 4 |
| Agree (Setuju/S) | 3 |
| Disagree (tidak setuju/TS) | 2 |
| Sterongly Disagree (Sangat Tidak Setuju/STS) | 1 |

To analyze the percentage, the researcher use the following formula :

NA = PS x (100%) SM

Where : NA = Final Score

 PS = Score Obtained

 SM = Maximum Score

**Table 3.2**

**The range of score interpretation criteria proposed by riduwan (2016:p.41)**

|  |  |
| --- | --- |
| **Score interpretation criteria** | **Category** |
| 0% - 20% | Very Low |
| 21% - 40% | Low |
| 41% - 60% | Sufficient |
| 61% - 80% | High |
| 81% - 100% | Very High |