

## CHAPTER III

### RESEARCH METHOD

#### A. Model of Development

This research was undertaken to develop Adobe Flash-based interactive learning multimedia to teach narrative texts. To gain the purpose, it needed a research approach that highlights an effort to produce the interactive learning multimedia. Therefore, in designing model, the researcher used Research and Development approach by adapting Brog and Gall Model.

Educational research and development (R & D) is a process used to develop and validate educational products. The steps of this process are usually referred to as the R & D cycle, which consists of studying research finding pertinent to the product to be developed, developing the product based on these findings, field testing it in the setting where it will be used eventually, and revising it to correct the deficiencies found in the field testing stage. In more rigorous program of R & D, this cycle is repeated until the field-test data indicate that product meets its behaviorally defined objectives.<sup>1</sup>

Brog and Gall model consisted of ten major steps. There were as following: Step 1 involved research and information collecting or need analysis. It included review of literature,

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<sup>1</sup> Walter R. Brog & Meredith D. Gall, *Educational Research an Introduction; Fourth Edition*, (New York: Longman Inc., 1983), p.772.

classroom observations, and preparation of report of state of the art. Step 2 and 3 consisted of planning and develop preliminary form of product. Planning included defining skills, stating objectives determining course sequence, and small scale feasibility testing. Develop preliminary form of product included preparation of instructional materials, handbooks, and evaluating devices. Then step 4 involved preliminary field testing. It included interview, questionnaire data collected and analyzed from the school. For step 5 conducted main product revision, revision of product as suggested by preliminary field-test result. Step 6 main field testing. Main product revision used quantitative data on subject's course as evaluation. Operational product revision was happened in step 7, revision of product as suggested by main field-test result. Next, for step 8 and 9 involved operational field testing and final product revision. And the last step involved dissemination and implementation. It is a report on product at professional meetings and journals. Work with publisher who assumed commercial distribution. Monitor distribution to provide quality control.<sup>2</sup>

However to ease and make shorter the process of designing the product, the researcher limited the development just to six

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<sup>2</sup> Walter R. Brog & Meredith D. Gall, *Educational Research an Introduction; Fourth Edition*, (New York: Longman Inc., 1983), p.775-776.

steps. Besides, the researcher also adapted the process with the needs of development.

## B. Procedure of Development

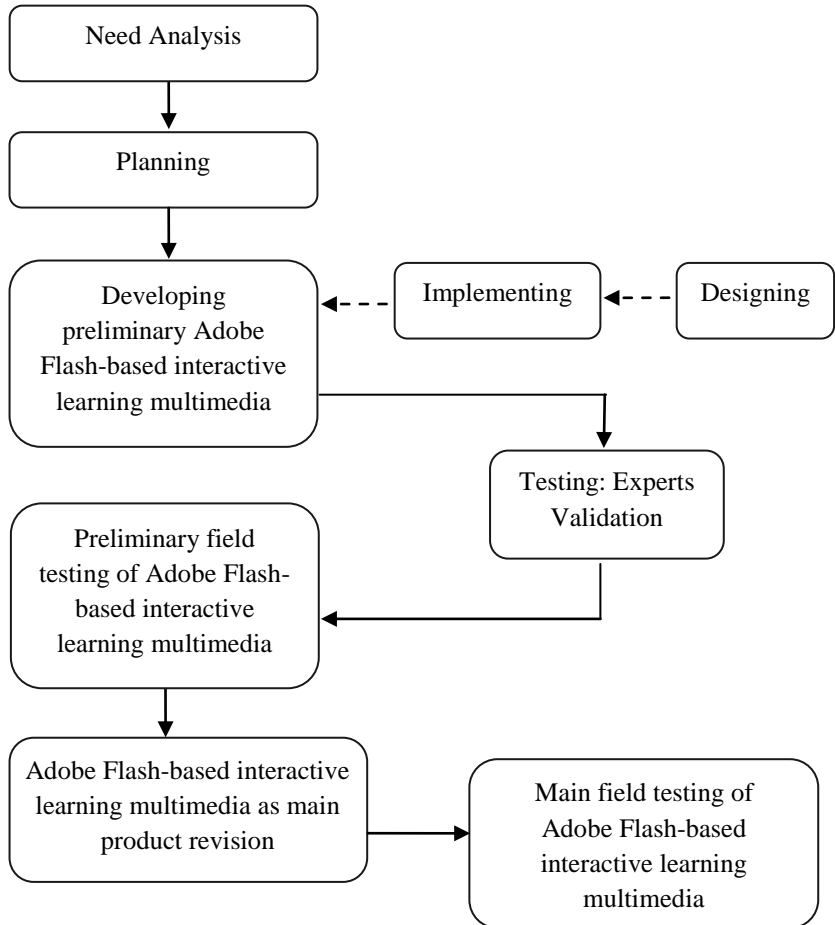


Figure 3.1 Modified from Brog and Gall model steps scheme

Figure 3.1 explained about the procedure of product development in the research based on the modified development model from Brog and Gall. The researcher just took six steps in this research because of limited time and money.

### **1. Need Analysis**

The first step was need analysis. This step was conducted to search information about the important the product that will be developed.

Need Analysis is the process of identifying and evaluating needs in a community or other defined population of people. The identification of needs is a process of describing “problems” of a target population and possible solutions to these problems.<sup>3</sup>

The need analysis in this research was concerned with giving questionnaire as a foundation of knowledge upon which to develop a given educational product. In this step, the problems were identified. Then the researcher analysed the audience, the standard competence and basic competence of KTSP curriculum, the technology that used to develop the product and the media that was used to deliver the product. The researcher conducted the needs analysis by doing observation in the form of questionnaire.

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<sup>3</sup> Allison L. Titcomb, “Need Analysis”, *ICYF Evaluation Concept Sheet*, (USA: The University of Arizona, 2000), p. 1.

There were 10 multiple-choice questions. The students could choose one of available choices or write down their own answer in the blank space. Based on the data from the needs analysis, there were 24 respondents who filled in the questionnaire. They were students in class VIII G of SMP Negeri 1 Brati. 14 of them were male and 10 were female.

## **2. Planning**

After the data of need analysis were obtained, the next step was planning to develop the product. The steps of the planning included the formulating of learning material of narrative texts, lesson plan and validation instruments of media and material experts.

## **3. Developing Preliminary Adobe Flash-Based Interactive Learning Multimedia**

After initial planning has been completed, the next major step in the R & D cycle was to build a preliminary form of the educational product that can be field tested.<sup>4</sup>

In this step the researcher designed course grid, flowchart and storyboard before developed the product. Next, the researcher developed the materials into interactive learning multimedia by using Adobe Flash CS3 Professional.

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<sup>4</sup> Walter R. Brog & Meredith D. Gall, *Educational Research an Introduction; Fourth Edition*, (New York: Longman Inc., 1983), p. 781.

The result was called the first product. It would be consulted by media experts and material experts.

#### **4. Preliminary Field Testing of Adobe Flash-Based Interactive Learning Multimedia**

The purpose of the preliminary field test was to obtain an initial qualitative evaluation of the new educational product.<sup>5</sup> The field trials were consisted of a small group trial in order to determine the feasibility and appropriateness of the use of instructional design. The subject of preliminary field testing was five students of VIII G class. At the stage the subjects would learn narrative text by using Adobe Flash-based interactive learning multimedia.

#### **5. Main Adobe Flash-Based Interactive Learning Multimedia Revision**

In all phases of the R & D cycle involving product evaluation. It was important to establish field sites similar to those in which the product will be used when it is fully developed.<sup>6</sup> After the preliminary field test of this interactive learning media, all data were compiled and analyzed. From

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<sup>5</sup> Walter R. Brog & Meredith D. Gall, *Educational Research an Introduction; Fourth Edition*, (New York: Longman Inc., 1983), p. 782.

<sup>6</sup> Walter R. Brog & Meredith D. Gall, *Educational Research an Introduction; Fourth Edition*, (New York: Longman Inc., 1983), p. 782.

these result, the researcher re-planned the media and then went to make revision.

## **6. Main Field Testing of Adobe Flash-Based Interactive Learning Multimedia**

The purpose of the main field test in R & D cycle was to determine whether the product under development meets in its performance objectives. Generally an experimental design was used to answer this question.<sup>7</sup>

### **C. Research Subject**

The subject of this research was students of SMP Negeri 1 Brati at the VIII grade students of VIII G as preliminary field testing and VIII H as main field testing in the academic year 2015/2016. This subject was determined using cluster random sampling technique.

### **D. Data Collection Technique**

This section discussed data collection technique and the research instrument used in this research. The researcher used two data collection techniques namely descriptive qualitative and quantitative data. Qualitative data and quantitative results were obtained from questionnaire validation experts, reviews of

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<sup>7</sup> Walter R. Brog & Meredith D. Gall, *Educational Research an Introduction; Fourth Edition*, (New York: Longman Inc., 1983), p. 783.

material expert and teaching media experts. The data were from the field trials obtained from the comments or responses, questionnaire result and test result.

Questionnaire of validation was for instructional design expert and teacher. Questionnaire of validation was made in order that the researcher knows some suggestions and revisions should be made by the researcher. It was created to gather information about validity of the product prototype. Besides, it helped the researcher knew the weakness of the product. The questionnaire was given to expert review consisting of instructional design expert and teacher. They assessed prototype and gave suggestion to revise the prototype. The test was undertaken from the questionnaire validation of the test experts. After the test was valid based on the questionnaire validation, the test would be given to the subjects.

Besides data from the result of the test, the documentation was needed to help the researcher run the result. According to Suharsimi Arikunto, the documentation method was used to look for the data concerning the matters or the variable that take form of the note, transcript, book, newspaper, magazine, inscription, notes of a meeting, agenda, etc.<sup>8</sup> The researcher used the

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<sup>8</sup> Suharsimi Arikunto, *Prosedur Penelitian; Suatu Pendekatan Praktik*, (Jakarta: PT. Rineka Cipta, 2010), p.274.



documents related to the object of research such as students' name list and lesson plan.

Before the researcher used the instruments to collect data, the instruments were consulted to the instructor who guided the researcher in conducting the research, so that the content validity of the instrument can be achieved. Here the questionnaire instruments of media expert.

Table 3.1 Instruments of interactive learning multimedia questionnaire validation

| <b>Aspect</b> | <b>Indicators</b>   | <b>Questionnaire numbers</b> | <b>Numbers</b> |
|---------------|---|------------------------------|----------------|
| Organizing    | <ul style="list-style-type: none"> <li>a. The sequences of managing the content Adobe Flash-based interactive learning multimedia is good.</li> <li>b. Adobe Flash-based interactive learning multimedia is easy organized</li> </ul> | 1, 2                         | 2              |
| Language      | <ul style="list-style-type: none"> <li>a. The language is communicative</li> <li>b. The language is understandable and clear.</li> </ul>  | 3, 4                         | 2              |
| Pictures,     | <ul style="list-style-type: none"> <li>a. The image, sound, and video related</li> </ul>  | 5, 6, 7                      | 3              |

|                   |   |            |   |
|-------------------|---|------------|---|
| Sounds and Videos | <p>to narrative texts are suitable with the topic.</p> <p>b. The sound, and video work well.</p> <p>c. The image, sound, and video is clear and good.</p>     |            |   |
| Instruction       | <p>a. There are clear instructions in each navigation.</p> <p>b. Consistency in using symbols of navigation.</p>  | 8, 9       | 2 |
| Interface         | <p>a. Front display and color is good and easy to read.</p> <p>b. Layout interface is good.</p> <p>c. The animation effects are good.</p>                     | 10, 11, 12 | 3 |
| Utilizing         | <p>a. The questions form of exercise can be used easily.</p> <p>b. The Adobe Flash-based interactive learning multimedia can be operated and used easily.</p> | 13, 14     | 2 |

In the instrument of material expert pointed about aspects related to instructional media materials covering aspects learning materials and contents. Here the instruments of learning material expert.

Table 3.2 Instrument of material questionnaire validation

| <b>Aspects</b>                | <b>Indicators</b>   | <b>Questionnaire number</b> | <b>Number</b> |
|-------------------------------|---|-----------------------------|---------------|
| Standard competence           | <ul style="list-style-type: none"> <li>a. Conformity with the formulation of the basic competences.</li> <li>b. The accuracy of the translation of indicators of basic competence.</li> <li>c. Clarity of indicators formula.</li> <li>d. Measurable of indicators.</li> <li>e. Conformance with indicators of cognitive development of students</li> </ul> | 1, 2, 3, 4, 5               | 5             |
| Learning material and process | <ul style="list-style-type: none"> <li>a. Truth content/learning material.</li> <li>b. Systematic preparation of lesson plan.</li> <li>c. Conformance of</li> </ul>   | 6, 7, 8, 9, 10, 11, 12      | 7             |

|          |  |        |   |
|----------|--|--------|---|
|          | <p>learning material with indicators.</p> <p>d. The selection of strategies, approaches, methods, and means of learning is done appropriately, thus enabling students actively learn.</p> <p>e. The clarity of the activities of teachers and students at every stage of learning.</p> <p>f. Activities of teachers and students defined clearly and operational, so it was easy to be implemented by the teacher in the learning process.</p> <p>g. Provide opportunities for students to ask questions and submit ideas.</p> |        |   |
| Language | a. The use of the language in terms of the rules of English  | 13, 14 | 2 |

|         |  |        |   |
|---------|--|--------|---|
|         | usage.<br>b. The simplicity of the sentence's structure.   |        |   |
| Time    | a. Compatibility of time allocation.<br>b. Details of time for each stage of the learning.       | 15, 16 | 2 |
| Closing | a. Directing students to make a summary of learning materials.<br>b. Giving homework assignment. | 17, 18 | 2 |

Table 3.3 Instrument of test validation

| <b>Aspects</b> | <b>Indicators</b>   | <b>Questionnaire number</b> | <b>Number</b> |
|----------------|---|-----------------------------|---------------|
| Material       | a. The content of the material based on the Standard Competence and Basic Competence in terms of the determination indicator.<br>b. The questions appropriate with the indicator.<br>c. Limitation of the question appropriate with | 1, 2, 3                     | 3             |

|              |   |            |   |
|--------------|---|------------|---|
|              | the expected answer.  |            |   |
| Construction | <ul style="list-style-type: none"> <li>a. The instruction on how to answer the questions appropriate with the questions provided.</li> <li>b. Scoring guidelines appropriate with the question assessment criteria logically.</li> </ul>  | 4, 5       | 2 |
| Language     | <ul style="list-style-type: none"> <li>a. The question items using the English grammatically.</li> <li>b. The formulation of the questions did not use the word/phrase that raises multiple interpretations or misunderstandings.</li> <li>c. The formulation of the questions did not contain words that might offend the learners.</li> </ul> | 6, 7, 8, 9 | 4 |

Students in the field trial would give their judgment in Adobe Flash-based interactive learning multimedia quality. It would use questionnaire instruments as follow.

Table 3.4 Instruments of student's questionnaire

| <b>Aspects</b> | <b>Indicators</b>      | <b>Questionnaire number</b> | <b>Number</b> |
|----------------|------------------------|-----------------------------|---------------|
| Motivation     | Interest               | 1, 2, 3                     | 3             |
| Appearance     | Appearance quality     | 4, 5                        | 2             |
| Material       | Understanding material | 6, 7, 8                     | 3             |
| Utility        | Impact to the students | 9, 10                       | 2             |

#### **E. Data Analysis Technique**

The data analysis technique used by researcher was qualitative data and quantitative data. The data would statistically analyze descriptively. Qualitative data in the form of comments and suggestions from material and media experts was used to improved and revised the product developed. Qualitative data also derived from the opinions and suggestions of the students. Then the quantitative data obtain from the assessment score of material experts and media experts.

After that, the researcher looked for the score of the average score of all of the quantitative data from all validation questionnaires used this formula below:

$$P = \frac{\sum X}{\sum Xi} \times 100\%$$

Where:

P : Percentage

$\sum X$  : Sum of validation score (will be given by validator)

$\sum Xi$  : Sum of the highest score

A scale was used to find the agreement towards the appropriateness to the interactive learning multimedia. It was analysed by using rating scale, each indication of the responses to the statement was measured by score. There were 4 points for Strongly Agree (SA), 3 points for Agree (A), 2 points for Disagree (DA), and 1 point for Strongly Disagree (SD).

Validation criteria which was used were showed in the table below.

Table 3.5 Quantitative data conversion of rating scale<sup>9</sup>

| Percentage (%) | Qualification |
|----------------|---------------|
| 76-100         | Valid         |
| 51-75          | Valid enough  |
| 26-50          | Less valid    |
| 0-25           | Invalid       |

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<sup>9</sup> Sugiyono, *Metode Penelitian Kuantitatif Kualitatif dan R & D*, (Bandung: Alfabeta, 2011), p. 99.