CHAPTER III RESEARCH METHOD

A. Model of Development

This research is undertaken to develop Moodle-based interactive online media to teach reading. To gain the purpose, it is needed a research approach that highlights an effort to produce the interactive online media. Therefore, in designing the model, the researcher uses Research and Development approach by adapting Borg 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 findings pertinent to the product to be developed, developing the product based on the finding, 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 indicate that product meets its behaviorally defined objectives.¹

Borg and Gall model consists of ten major steps. They are as follows: step 1 involves research and information collecting or need analysis. It includes review of literature, classroom observations, and preparation of report of state of the art. Step 2 and 3 consists of planning and develop preliminary form of product. Planning includes defining skills, stating objectives determining course sequence, and small scale feasibility testing. Develop preliminary form of product includes preparation of instructional materials, handbooks, and evaluating devises. Then step 4 involves preliminary field testing. It concludes interview, questionnaire data collected and analyzed from the school. For step 5 and 6 conduct main product revision and main field testing. Main product revision uses quantitative data on subjects' course as evaluation. Operational product revision is happened in step 7, revision of product as suggested by main field-test result. Next, for step 8 and 9 involve operational field testing and final product revision. And the last step or step 10

¹ Gall, M, D., Gall, J. P., & Borg, W. R. *Educational Research an Introduction; Third Edition*. (USA: Pearson Education, 1983), p.772

involves dissemination and implementation. It is a report on product at professional meeting and journals. Work with publisher who assumes commercial distribution. Monitor distribution to provide quality control. 2

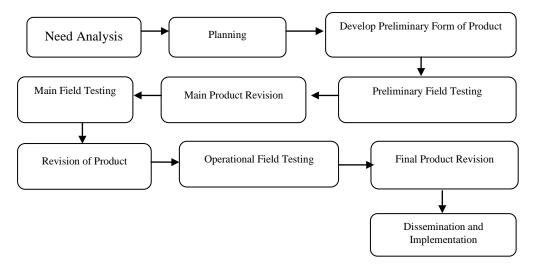


Figure 3.1: Bog & Gall Steps Scheme

However, to ease and make shorter the process of designing the product, the researcher limits the development just to six steps. Besides, the researcher also adapts the process with the needs of development.

²Gall, M, D., Gall, J. P., & Borg, W. R. Educational Research an Introduction, p.775-776

B. Procedure of Development

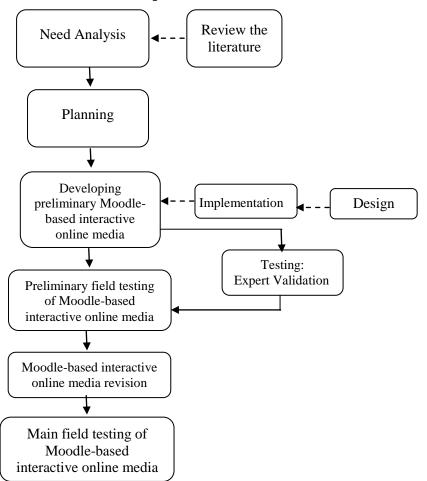


Figure 3.2: Borg and Gall model steps scheme

The chart explained about the procedure of development in this research is based on Borg and Gall development model. This model includes ten steps as the researcher said before, but the researcher just took six steps in this research based on limited time and money.

1. Need Analysis

The first step is need analysis. This step was done to search information how is important the product will be developed. It consisted of review the literature.

A literature review is undertaken to collect research findings and other information pertinent to the planned development. As in basic or applied research, one purpose of the literature review is to determine the state of knowledge in the area of concern.³

The literature review in this research was concerned with interviewing as a foundation of knowledge upon which to develop a given educational product. In this step, the researcher interviewed the vice principal of curriculum areas, teacher of English subject and students.

Related to the developing Moodle-based interactive online media, need analysis consisted of describing use case diagram of Moodle.

2. Planning

The next literature review concerned with the formulating of learning material narrative text, lesson plan and validation instruments as the planning. The researcher also determined local host for offline installation and purchased hosting and domain website. The more specific product of Moodle in this research was developing the content of Moodle.

3. Developing Preliminary Moodle –Based Interactive Online Media

After the initial planning has been completed, the next major step in the R & D cycle is to build a preliminary form of the educational product that can be field testing.⁴ Before making a Moodle-based interactive online media, the researcher made this media offline. It was done to learn it more. So, the developing of the content of Moodle would be easier and faster.

Developing the content of Moodle have done in steps. The first step, the researcher started the installation of Bitnami as local host and then proceeded Moodle installation. Installation was done requires several stages. It was starting from the selection of Moodle version until the determination of the corresponding PHP version.

The next stage, the researcher designed the system planning of the interactive online media. System planning was implemented by using use

³ Gall, M, D., Gall, J. P., & Borg, W. R. *Educational Research an Introduction*, p.777

⁴ Gall, M, D., Gall, J. P., & Borg, W. R., *Educational Research an Introduction*, p.781

case system diagram. In the use case diagram there are three actors related to this online media system. They are student, teacher and admin.

Furthermore, the researcher made the planning design of the display in the Moodle-based interactive online media. The researcher did some assessment of the appropriate template with Moodle version being worked on. Finally the researcher has chosen the essential template. This online media design was done gradually. It was starting from the selection of slide images, writing the menu, and the topics that will be displayed on the home page.

Next, the researcher conducted the developing product. It was the product design that would be applied in field testing. In this Moodle based interactive online media consists of narrative reading material, discussion forum topic and questions quiz and game form. Especially for making quiz, the researcher used hot potatoes software. Hot Potatoes is not a part of Moodle but it can be used in Moodle in a very simple and effective manner. Many teachers actually prefer it to the homegrown Moodle version. It has five types of activities that can be created while staying offline on your computer, and uploaded later to Moodle.⁵ Hot potatoes have module that is suitable of Moodle application. The materials and the quiz has previously been examined and assessed by English lecturer of IAIN Walisongo Semarang and has gained a wide range of input and guidance. Determination of the course material originated from the determination of SK and KI Standard Competence (SK) and the Core Competence (KI) on the subjects of English grade X. It is based on 2013 curriculum. KI were selected namely (3.9) Analyze the social function, the generic structure, and language feature in a simple narrative text in legend form. Furthermore, the basic competence developed and structured into a lesson plan, teaching materials, and assessment instruments.

⁵ Mary Cooch, *Moodle 1.9 for Teaching 7-14 Year Olds Beginner's Guide*, (Birmingham, UK:Packt Publishing Ltd, 2009), p. 72

The next step, the validation was done by online media expert of IAIN Walisongo Semarang and the online media expert of SMAN 13 Semarang. Based on the inputs and evaluation experts, then the online media Moodle-based was revised to further improve quality and get a decent product to be applied. It can be seen at http://elen.airybelle.com. This site used ELEN as the site name. ELEN is an English Learning Environment Network.

4. Preliminary Field Testing of Moodle-Based Interactive Online Media ELEN

The purpose of the preliminary field test is to obtain an initial qualitative evaluation of the new educational product.⁶ The field trials consisted of a small group trial in order to determine the feasibility and appropriateness of the use of instructional design. At this stage the subjects visited and learned the online media Moodle-based.

5. Moodle-Based Interactive Online Media Revision

In all phases of the R & D cycle involving product evaluation. It is important to establish field sites similar to those in which the product will be used when it is fully developed.⁷ After the preliminary field test of this online media, all data were compiled and analyzed. From these results to re plan the site and then went on to make the revision called for.

6. Main Field Testing of Moodle-Based Interactive Online Media ELEN

The purpose of the main field test in R & D cycle is to determine whether the product under development meets its performance objectives. Generally an experimental design is used to answer this question.⁸

⁶ Gall, M, D, & Borg, W. R. Educational Research an Introduction, p.782

⁷ Gall, M, D., & Borg, W. R. Educational Research an Introduction, p.782

⁸ Gall, M, D., & Borg, W. R. Educational Research an Introduction, p.783

C. Research Subject

The subject of this research is students of SMAN 13 Semarang at the X grade students of X MIA-1 and X IBBU in the academic year of 2014/2015. This subject was determined using cluster random sampling technique.

D. Data Collection Technique

This section will discuss data collection technique and the research instrument used in this research. The researcher used two data collection techniques namely descriptive qualitative data and quantitative data. Qualitative data and quantitative results were obtained from questionnaire validation expert, reviews of material expert and online media expert. The data were from the field trials obtained from the comments or responses, questionnaire result and test results.

Questionnaire of validation is for instructional design expert and teacher. Questionnaire of validation is 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 can help researcher know the weakness of the product. The questionnaire was given to the expert reviewer consisting of instructional design expert and teacher. They assess the prototype and give suggestion to revise the prototype. The test was under took from the questionnaire validation of the test expert. 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 research. According to Arikunto, the documentation method is used to look for the data concerning matters or the variable that took the form of the note, transcript, book, newspaper, magazine, inscription, notes of a meeting, agenda, etc.⁹ The Researcher used the documents related to the object of research such as students' name list and lesson plan.

⁹ Suharsimi Arikunto, Prosedur Penelitian ..., p.274

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.

Online media validation criteria was based on expert team of learning media contest, Romi Satria as the expert team of software, LIPI experts, IlmuKomputer.com, Pustekkom in Dikmenum Learning media contest in 2006¹⁰ and also based on Alpha testing criteria from Alesi and Trollip in the result of report whose title Pengembangan Model E-Learning Adaptif Terhadap Keragaman Gaya Belajar Mahasiswa Untuk Peningkatkan Efektivitas Pembelajaran by Herman Dwi Surjono, Ph.D. Nurkhamid, M.Kom.¹¹ It could be concluded that the aspect of online media validation instrument are as follows:

No	Aspects	Indicators	Questionnaire numbers	Numbers
1	Material	 a. The learning material on Moodle- based interactive online media suitable with syllabus b. The sequence of managing the content Moodle – based interactive online media was good c. The language was understandable and clear d. The image and video related to the topic in narrative text 	1, 2, 3, 4	4
2	Interface	a. Front page was good display.b. Course design was good.	6, 7	2
3	Informatio n	There are clear instructions in each topic.	5	1
4	Reliable	 a. The questions in form of assignment, quiz and discussion could be accessed easily. b. The Moodle- based interactive online media could be accessed easily 	8,9	2

Table 3.1 Instruments of online media questionnaire validation

¹⁰ Romi Satria Wahono, Aspek Rekayasa Perangkat Lunak dan Media Pembelajaran, at http://RomiSatriaWahono.Net, accessed on November, 17th 2014.

¹¹ Herman Dwi Surjono, Ph.D. and Nurkhamid, M.Kom., *Pengembangan Model E-Learning Adaptif Terhadap Keragaman Gaya Belajar Mahasiswa Untuk Meningkatkan Efektivitas Pembelajaran*, (Yogyakarta:UNY, 2008), p. 32-33

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.

Aspect	Indicators	Number	Numbers
Standard competence	 a. Conformity with the formulation of the basic competencies b. The accuracy of the translation of basic competence indicators c. Clarity formulation indicator d. measurable indicators e. Conformance with indicators of cognitive development of students 	1, 2, 3, 4, 5	5
Learning material and process	 a. Truth content / learning materials b. Systematic preparation of lesson plans c. Conformance of learning materials with indicators d. The selection of strategies, approaches, methods and means of learning is done appropriately, thus enabling students actively learn e. The clarity of the activities of teachers and students at every stage of learning. f. Activities of teachers and students defined clearly and operational, so it was easy to be implemented by the teacher in the learning process g. Provide opportunities for students to ask questions and submit ideas 	6,7,8, 9,10, 11,12,	7
Language	a. The use of language in terms of the rules of English usageb. The simplicity of the sentence's structure	13,14	2
Time	a. Compatibility of time allocationb. Details of the time for each stage of the learning	15, 16	2
Closing	a. Directing students to make a summary of learning materialsb. Giving homework assignments	17, 18	2

Table 3.2 Instruments of material questionnaire validation.

The instrument of test validation is as follows:

Aspects	Indicators	Questionnaire Number	Numbers
Material	 a. The content of material based on the Core Competence and Basic Competence in terms of the determination indicator b. The questions appropriate with the indicator c. Limitation of the question appropriate with the expected answer 	1, 2, 3	3
Construction	 a. The instructions on how to answer the questions appropriate with the questions provided b. scoring guidelines appropriate with the question assessment criteria logically 	4, 5	2
Language	 a. The question items using the English grammatically b. The formulation of the questions did not use the word / phrase that raises multiple interpretations or misunderstandings c. The formulation of the questions did not contain words that might offend the learners 	6, 7, 8, 9	4

Table 3.3 Instrument of t	test questionnaire validation
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Students in the field trial gave their judgment in Moodle – based interactive online quality. It used this questionnaire instruments:

Aspects	Indicators	Questionnaire Number	Numbers
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

Table 3.4 Instrument of student's questionnaire

E. Data Analysis Technique

The type of data this study is qualitative data and quantitative data, the data were statistically analyzed descriptively. Qualitative data in the form of comments and suggestions for improvement of the product matter experts and media experts then analyzed and described in qualitative descriptive to revise the products developed. Qualitative data was also derived from the opinions

and suggestions of the student. Then the quantitative data obtained from the assessment scores matter experts and online media experts.

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

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

Where :

P : Percentage

 Σ : Sum of validation score (was given from validator)

 Σ : Sum the highest score

Validation criteria which used in the program validation are shown in the table below.

Percentage (%)	Validation Criteria
76-100	Valid
56-75	Valid enough
40-55	Less valid
0-39	Invalid

Table 3.5 Program validation criteria¹²

¹² Arikunto, S.. Dasar-dasar Evaluasi Pendidikan. (Jakarta : Bumi Aksara, 2009), p.245