CHAPTER III

RESEARCH METHOD

In this chapter explaining about the method of research used in this research. This chapter include research design, procedure of development, design product validation and trial, research instrument, data collection technique, and data analysis technique.

A. Research Design

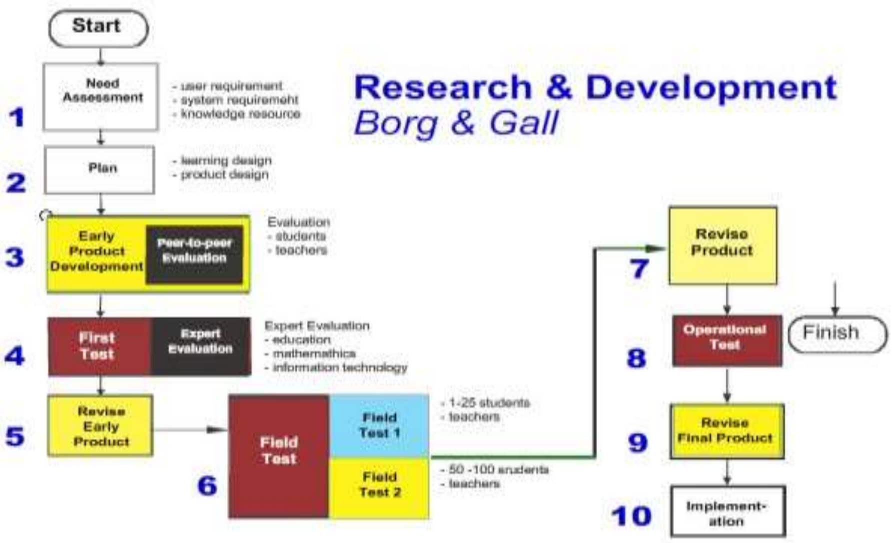
This research is a type of Research and Development (R&D). Gall et al., (1996) argue that "Educational R&D is an industry-based development model in which the findings of research are used to design new products and procedures, which are then systematically field-tested, evaluated, and refined until they meet specified criteria of effectiveness, quality or similar standards". In R&D, it will produce a product that is considered feasible and has an attractive visual power for learning. This is more likely to be applied as one of the innovations in critical thinking media development because this product has been validated by material experts, media experts, lecturers, and also students.

In R&D, there is a process of product development and validation. In this process, researchers will continue to learn. This research will produce a product in the form of a Mobile Application which is expected to be able to help students' understanding of RGI course.

B. Development Procedures

Mobile Application product development requires several steps in the production process. The development procedure developed by Gall et al. (2007) "The major steps in the R&D cycle used to develop minicourses are as follows: need assessment, plan, early product development, first test, revise early product, field test, revise product, operational test, revise final product, implementation".

Fig. 3.1. Model of Research and Development according Borg and Gall



Based on figure 3.1. showed that in the Borg and Gall model there are 10 steps. Due to the limited time and budget in the process of designing and developing *M-Reads*, the researchers condensed it into 7 steps. Borg and Gall developed an R&D model that is often used in education and programme development. This model consists of several steps that can help researchers or developers in designing, developing, and implementing a programme. The steps consist of need assessment, plan, early product development, field test, revise product, operational test, and implementation. Here are the description steps in the Borg & Gall Model:

1. Need assessment

The identification of problems and Mobile Application needs is the main step to achieve a product that is suitable for the problems in the field. This can be done through analyze user needs, problems to be solved, or the utilisation of existing opportunities. Researchers conducted a data or information collection stage that aims to find out and determine student learning. These include school learning, school potential, and curriculum analysis. The steps that must be taken at this stage are literature researches and field researches.

a. Literature Researches

The aim to obtain information from the results of research related to the material and characteristics of the media to be developed later, such as theories related to learning resources and RGI course.

b. Field Researches

Interviews are used in the field study to analyse needs and gather data regarding the necessity of creating *M-Reads* for Reading for General Information classes. Interviews were conducted with 1 lecturer and 15 students from semester 3 who had gone through the academic reading course. The goal of the field study is also to find a few related media products that have been created and examine their appearance and content. After that, the curriculum as it stands will be examined. The competencies that will be attained are seen based on the curriculum.

2. Plan

Plan was carried out after the researcher obtained data from interview needs analysis from lecturers and students. The researcher found students' responses ranging from what they learnt during the Academic Reading course to the difficulties. In this stage, there are 3 steps i.e. instructional design, conceptual design, and *M-Reads* design.

3. Early Product Development

Determining the initial design of the product (hypothetical design) to be developed, namely the *M-Reads* for Reading for General Information course.

4. Field Test

After the main product revision, the next step is to conduct the field test. At this stage, researchers conducted individual trials and limited trials by giving questionnaires to students containing their responses to find out the attractiveness of the Reading learning Mobile Application. Individual trials are conducted on 3-5 respondents. Then the data collect and analyse.

5. Revise Product

After researchers conducted the main field test with individual trials, then researchers conducted revise product. This stage is the second improvement stage which aims to stabilise the product before the operational test.

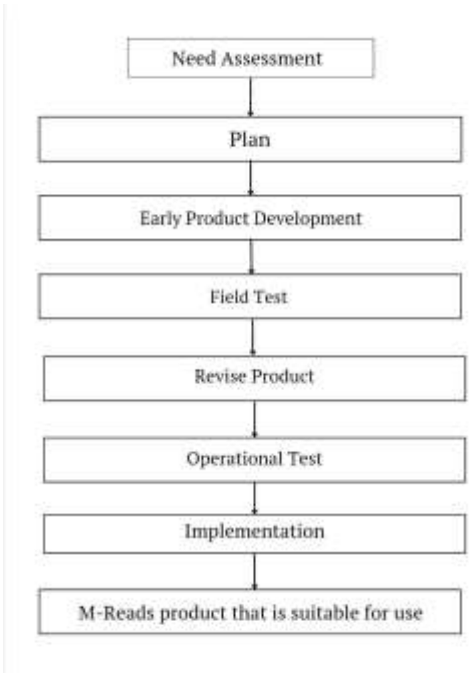
6. Operational Test

Operational test is conducted at a capacity of 6 classes. Field tests have the aim of knowing how profitable the product is. In this study, the *M-Reads* is trialled at the Reading for General Information course, then the researcher gives a questionnaire to find out the attractiveness of the Mobile Application as a learning resource. Mobile Application is declared interesting to use by obtaining a minimum score of 80,01% - 100%.

7. Implementation

The final result is an OSS-based Reading learning Mobile Application *M-Reads* packaged in the form of a Mobile Application that is ready to be used to support and facilitate Reading learning in the Reading for General Information course. The following is *M-Reads* model frameworks on this research.

Fig. 3.2. *M-Reads* model framework.



C. Product Validation and Testing

Validation is a step that aims to measure feasibility. Product validation can be done by conducting an assessment by material experts, media experts and Reading for General Information course lecturers to assess newly designed products. Product assessment is carried out by each expert in order to assess the design therefore the weaknesses and strengths can be known. In addition to validation, product trials are an important stage in development research that is carried out after the product design is completed. Product trials are conducted in three stages there are small group trials, individual trials, and field trials (large groups).

1. Validation Design

Product trials are carried out which are useful for knowing the feasibility of the resulting Mobile Application. The trial product processes include (a) initial product in the form of Mobile Application (b) Validation by material experts and media experts followed by analysis and revision I, (c) individual trials followed by analysis and revision II, (d) small-scale group trials followed by analysis and revision III, (e) field trials followed by analysis and revision IV, (f) final product Mobile Application.

The data analyses to obtain information about the shortcomings of the product for semester 2 students. The product revises as the final product, which is in the form of a Mobile Application product for OSS-based Reading learning for Reading for General Information course students of English study program IAIN Kediri semester 2.

2. Product Test Subjects

Mobile Application that has gone through the validation stage from material experts and media experts is ready to be tested. The subjects of this trial are 2nd semester students at the Reading for General Information course at the State Islamic Institute of Kediri, where this Mobile Application refers to the MBKM curriculum. This will greatly support learning in the classroom because every student has access to a smartphone and the design of this Mobile Application is packaged with attractive visuals. Small group trials will be conducted by 7 students, limited trials are conducted by one Reading for General Information course lecturer and 10 students, and field trials are conducted by 33 Reading for General Information course students.

3. Product Trial Time

Validation of material experts and media experts will be carried out at the State Islamic Institute of Kediri in December 2023-February 2024 followed by individual trials, limited trials, and then field trials.

These three stages have an important contribution in minimising the risk of developing a product that may not meet the target or user expectations. Product validation will help identify whether there is demand or interest in the product, while product testing ensures that the product will work well according to user needs.

D. Instrument of Collecting Data

The instrument in this study is a research sheet regarding the feasibility of Mobile Application learning Reading. This instrument prepares to determine the feasibility and attractiveness of the developed learning resources. The research conducts by material experts, media experts, lecturers teaching Reading for General Information courses, and responses from 2nd semester students in Reading for General Information classes. This research uses data collection techniques with instruments proposed by Walker & Hess (Arsyad, 2002). The development and determination of instruments will be adjusted and modified according to the needs of researchers. The following are the criteria for assessing learning media software based on the quality developed by Walker & Hess.

1. **Quality of Content and Objectives**

   Accuracy, completeness, balance, interest/attention, fairness, and suitability to the student's situation.

2. **Instructional quality**

   Providing learning opportunities, providing assistance for learning, motivating quality, instructional flexibility, relationships with other teaching programs, social quality of instructional interactions, quality of tests and assessments that can have an impact on students and can have an impact on lecturers.

3. **Technical Quality**

   Readability, ease of use, display quality, answer handling quality, program management quality, documentation quality.

   Researcher divided the instruments into four instruments, including:

   a. **Instrument for Needs Analysis**

      The researcher conducted the semi structured interview to students and lecturer to get the data for need analysis. The instruments of need analysis are adapted from (Hutchinson & Waters, 1987; Menggo et al., 2019; Suliadi, 2020) and modified by the researcher.

Table 3.1. The blueprint of the student interview's questions for need analysis

Aspect	The purpose of the questions		Number of questions
Target needs	Necessities	To find out the types of students' necessities in Reading for General Information class.	1, 2, 3, 4.
	Lacks	To find out the learner's difficulties toward reading in Reading for General Information class.	5.
	Wants	To find out the learners' needs for learning to read in Reading for General Information class.	6.

Table 3.2. The blueprint of the lecturer interview's questions for need analysis

Aspect	The purpose of the questions		Number of questions
Target needs	Necessities	To find out the types of students' necessities in Reading for General Information class.	1, 2, 3,
	Lacks	To find out the learner's difficulties toward reading in Reading for General Information class.	4.
	Wants	To find out the learners' needs for learning to read in Reading for General Information class.	5

b. Material Expert Instruments

A questionnaire utilises as the research tool for the material experts in this investigation. The purpose of this questionnaire is to gather information about the accuracy, suitability, and clarity of the content offered in this Mobile Application. Susilana & Riyanas' (2008) instrument blueprint is utilised by the material specialists' instrument. The materials criteria are represented by each statement in the questionnaire. Before the field test is held, the learning materials will be revised based on the findings of the material expert assessment. A lattice of tools for material experts is provided here.

Table 3.3. Material Assessment Blueprint for Material Experts.

No	Aspect	Assessment Indicators	No. Items	Amount
1	Valid	- Suitability of material to learning - Compliance with indicators - Material actuality	1-4	4
2	Level of importance	- Completeness of the material presented - Suitability to student characteristics - Suitability of examples with descriptions	5-10	6
3	Usefulness	- The usefulness of the material to improve students' abilities - The usefulness of the material for skills in everyday life - Appropriateness of approach (competency objectives)	11-14	4
4	Learnability	- Suitability with target characteristics	15	1
5	Attracting interest	- Learning motivation - Sparking curiosity	16-17	2

c. Media Expert Instruments

A questionnaire utilises as the research tool in this study for media specialists. The purpose of this questionnaire is to gather information about the viability of an OSS-based Mobile Application for Reading for General Information courses offered by *M-Reads*. According to Walker & Hess (1984) as adapted in Sutjipto & Kustandi (2011), the media expert assessment tool makes reference to this work. Prior to the field testing, the learning materials revise based on the findings of the media expert assessment. This is an instrument grid for media specialists. As the device is affixed within the appendix.

Table 3.4. Questionnaire Blueprint for Media Experts.

No	Quality of media	Indicators	No. Items	Amount
1	Quality of content and purpose			
	a. Correctness	- Attractiveness of Mobile Application - Clarity of instructions for using learning resources	1-4	4
	b. Completeness	- Image suitability with the material	5	1
	c. Balance	- Appropriateness of layout	6	1
	d. Appropriatenes s to the students' situations	- Suitability of language structure with the level of cognitive mastery of the target students	7	1
2	Quality of Learning			
	a. Providing learning opportunities	- Ease of understanding the learning materials	1	1
	b. Providing assistance with learning	- Breadth of material content	2	2
	c. Learning Flexibility	- Ease of students to learn	4	1
3	Technical Quality			
	a. Readability	- Readability of text - Appropriateness of font selection - Compatibility of background colour with text	5,6,7	3
	b. Easy to use	- Ease to use - Use of language	3,8,9	3
	c. Display or viewing quality	- Sharpness of colour - Display of presentation	7,10	2

d. Instruments for RGI course Lecturer

A questionnaire employs as the research tool for the RGI course lecturers in this study. The purpose of this survey is to learn what the instructors at RGI course think of the created Mobile Application. Researchers can use this tool to determine how well the Mobile Application is created for the university.

Table 3.5. Assessment Blueprint for RGI Course's Lecturer

No	Assessed Aspect	Indicators	No. Items	Amount
1	Learning and linguistic aspects	1. Providing learning opportunities	1-4	4
		2. Providing assistance with learning	5-7	3
		3. Motivating qualities	8-9	2
		4. Learning flexibilities	10	1
		5. May have an impact on students	11	1
2	Content/Material Aspect	1. Valid	1-4	4
		2. Level of importance	5-10	6
		3. Usefulness	11-13	3
		4. Learnability	14-16	3
3	Display & audio aspects	1. Readability	1-4	4
		2. Easy to use	5	1
		3. Display or viewing quality	6-12	1

e. Field Trial Instrument

The research instrument for field trials used in this research is a questionnaire. Questionnaires will be given to students to obtain data on small group trials and large group trials. This instrument contains student responses to determine the attractiveness of Mobile Application. The following is a blueprint of instruments for field trials.

Table 3.6. Blueprint of Assessment for Students

No.	Assessed Aspect	Indicators	No. Items	Amount
1.	Content/Material Aspect	Valid - Clarity of description - Clarity of examples - Suitability of images to material	1-4	4
2.	Quality of Learning	Motivational qualities - Attractiveness	8	1
3.	Technical quality	Readability - Readability of text or writing - Readability of the text (caption), font size and font colour - Colour composition - Use of language Quality of display or impressions - Image sharpness	6 5 and 7	1 2

Source: Kustandi & Sutjipto (2013) and Susilana & Riyana (2008)

E. Data Collection Techniques

In this research are using treatment, interview, and questionnaire for data collection techniques. A questionnaire is a research instrument that contains a series of questions or statements to collect data or information that must be answered by respondents freely according to their opinions (Arifin, 2014). A questionnaire is also a collection of questions submitted in writing to respondents and the answers are also in writing (Zulaeha et al., 2014). it has functions for description and measurement. Through description, researchers can get information about the identity of respondents such as name, gender, age, education, occupation, and others. then for the measurement function, the information obtained from the questionnaire can be accounted for as a measure of the variable (Suwartono, 2014). the appearance of the presentation of the questionnaire as a data collection medium will affect the respondent's response and seriousness in answering the questionnaire (Sugiyono, 2013).

F. Data Analysis

Descriptive analysis is used in this study in compliance with the development protocols that have been followed. The initial development phase is completed by creating a Mobile Application. This research uses descriptive analysis in accordance with the development procedures that have been carried out. The first stage of development is carried out by making a Mobile Application, then validated by material experts and media experts, then obtained stage I development revisions. The next stage is an assessment by a linguist lecturer, who then obtained a stage II product revision. After going through these stages, the next stage is field trials and then stage III development revisions are obtained. From the three stages of product revision, the final product is produced in the form of OSS-based Reading Learning Mobile Application for Reading for General Information course. Quantitative data obtained from respondents through questionnaires with Likert Scale, analysed descriptively statistics with steps (a) collecting rough data: (b) giving scores for quantitative statistics: (c) the scores obtained are converted into values with a scale of five. In addition, the scores obtained (percentage) compare with the criteria listed in the table below (Akbar, 2013). with the following description.

Table 3.7. The Level of Validity and Criteria

Validity Criteria	Validity Level
80, 01% - 100%	Valid; ,can be used without revision
70, 01% - 80%	Fair; ,can be used with small revision
50,01% - 70%	Less; ,Proposed to be unimplemented because need major revision
1% - 50%	Invalid; ,forbidden to be implemented

Validity = Gained score : Maximum score x 100%