CHAPTER III

RESEARCH METHOD

A. Research Design

As stated chapter I that this current study aims to develop an android-based reading application as an English instructional media use the research and development (R&D) design. R&D is applied research to create a new product and to know the effectiveness of the product.[62] Muhammdad Adnan Latief states that R&D is a research design aimed at developing educational products, like curriculum, syllabus, text books, instructional media, modules, assessment instruments, ect.[63] Shortly, R&D deals mean research design that aims to produce a product to assist education especially to develop reading application as an English instructional media.

Generally, the function of R&D is to develop and to validate new product that is supporting in educational process. Muhammdad Adnan Latief also writes that it used to produce educational products that can be use to improve the quality of instructional activities and increase the quality of students' academic achievement.[64]

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[62] Sugiyono, Metode Penelian Pendidikan Pendekatan Kualitatif, kuantitatif, dan R&D (Bandung:Alfabeta, 2015), 407.

[63] Muhammad Adnan Latief, Research Methods On Language Learning (Malang: UM Press, 2014), 171.

[64] Sugiyono, Metode Penelian Pendidikan Pendekatan Kualitatif, kuantitatif, dan R&D, 176.

Furthermore, there are kinds of R&D models by Endang Mulyatiningsih, such as 4D (define, design, develop and disseminate) models and ADDIE (analysis, design, develop, implementation and evaluation) model.[65] According to Tegeh et, al., kinds of R&D models are Hannafin and Peck models, Borg and Gall models, DDD-E (decide, design, develop, and evaluate), Bergman and More models, Dick and Carey models, ADDIE models, Isman models.

The researcher conducts this research that aims to develop android-based reading application as an instructional media that used in learning process, to know feasibility android-based reading application as an instructional media by the experts, and to know students' perception using this application.

B. Place and Time of Research

This research is conducted at SMAN 1 Jiwan-Madiun at tenth grade in academic year 2016/2017. There are 21 students in the class XE. The location of the school is at Dandang Gendis Street, Teguhan, Jiwan-Madiun., phone (0351)458294, website: www.smanjiwan.sch.id. This research conducted from March-Mei which includes the stage of planning, research, and reporting.

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[65] Endang Mulyatiningsih, Metode Penelitian Terapan Bidang Penelitian (Bandung:Alfabeta, 2014) 195-199.

C. Research Procedure

This research procedure adapts ADDIE model of research and development, the model consist of five steps that include analysis, design, development, implementation, and evaluation. In line with Branch, it describes a process applied to instructional design in order to generate episode of intentional learning. There is an overview the purpose every steps of ADDIE models.[66]

The purpose of the analysis step is to identify the probable causes for a performance gap. It analyzes standard competence of the students, students' characteristic such as skill, knowledge, and attitude, and material based on standard competence and basic competence

The purpose of the design steps is to verify the desired performances and appropriate testing methods. By this step, it chooses material based on characteristic of the students and standard competence, make lesson plan, arrange matter and the key, design of media such as storyboard, collect background and picture appropriate the media.

The purpose of the development is to generate and validate the learning resources. This step is making product android-based reading application as an instructional media that create by Adobe Flash Professional CS6. The next is validating of material expert and media expert and the result about suggestion, and critic that can use as to do analysis and revision the application.

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[66] Robert Maribe Branch, Instructional Design: The ADDIE Approach (New York: Springer, 2009), 17–18.

The purpose of the implementation is to prepare the learning environment and engage the students. In this step, the media will be tested at tenth grade of SMAN 1 Jiwan-Madiun. In this step, it is to know feasibility of the media such as effectiveness, interesting, and efficiency especially of android-based reading application. And to know the students' perception use the media in learning process.

The purpose of the evaluation step is to assess the quality of the product and processes, both before and after implementation. It is to know the result of evaluation formative and evaluation summative.

On the other hand, based on statements of the problem, the researcher conduct this research to develop android-based reading application, to know feasibility the application by experts, and to know students' perception using this application. So, in this research is limited until implementation step.

D. Subject and Object of Research

The subject of this research is one person of media experts (Lecture of English Education, STAIN Ponorogo), one person of material experts (Lecture of English Education, STAIN Ponorogo), English teacher at SMAN 1 Jiwan-Madiun, and students of SMAN 1 Jiwan-Madiun class XE that number are 21 students. Object of this research is feasibility of instructional media.

E. Data Collection Techniques

The data collected in this research includes quantitative and qualitative data, which are:

a. Qualitative data is the data about the process of developing learning media such as critics, and suggestion of the experts and students.

b. Quantitative data is the data of this media about assessment feasibility from expert and data of students' perceptions.

F. Data Collection Instrument

This research will occupy questionnaire to collect data about android-based reading application. Questionnaire is about critics, suggestion, and opinion from experts and student. The questionnaire use Liker-type scale that is five alternative answers (strongly agree, agree, undecided, disagree, strongly disagree).[67] The questionnaires of this research consist of some indicators and aspects that are related to the development and use of android-based reading application which was adopted from Yushlihannisa's thesis.[68]

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[67] C. R. Kothari, Research Methodology Methods and Techniques (second revised edition) (New Dehli: New Age International, 2004), 79.

[68] Aulia Yushlihannisa Adnin, Developing Learning Media Mind-Mapping Accounting Based on *Android for XI IPS SMA Students'* (Undergraduate Thesis, UNY, Yogyakarta, 2015).

Table 1 Lattice of questionnaire for material experts

No	Indicator	Total item
Aspect of Material Relevant		
1	Relevancy of material between SK and KD	1
2	Clarity of learning objective formulation	1
3	Suitability of material with indicator	1
4	Clarity of material with learning objective	1
5	Material concept that reviewed from academic aspect reliability	1
Aspect of Material Organization		
6	Clarity of deliver the material	1
7	Systematic of deliver the material	1
8	Attractiveness of deliver the material	1
9	Benefit of the material	1
10	Actuality of material	1
11	The suitability of difficulty and immaterially concept with cognitive development of students	1
12	The clarity of example	1
Aspect of Evaluation/ Exercise		
13	The suitability of evaluation with material and learning objective	1
14	The truth of answer key	1
15	The clarity of instruction	1
16	The clarity of formulation of the problem	1
17	The truth of exercises concept	1
18	Variation of exercises	1
19	The difficulty level of exercises	1

	Aspect of Language	
20	Accuracy of the term use	1
21	Easiness of understanding the flow of material through the language use	1
	Aspect of Learning Strategy Effect	
22	The ability to encourage the curiosity of students	1
23	Media is support for the students independent learning	1
24	The ability of the media to add the knowledge	1
25	The ability of the media to improve students comprehension	1
26	The ability of the media to improve motivation of students in learning	1
Total Item Instrument		26

Table 2 Lattice of questionnaire for media expert

No	Indicator	Total Item
	Aspect of Language	
1	Accuracy of the term use	1
2	The suitability between language and level thinking of students	1
3	Easiness of understanding the flow of material through the language use	1
	Aspect of Learning Strategy Effect	
4	The ability to encourage the curiosity of students	1
5	Media's support for the students independent learning	1
6	The ability of the media to add the knowledge	1
7	The ability of the media to improve students comprehension	1
8	The ability of the media to improve motivation of students in	1

No	Indicator	Total Item
	learning	
Aspect of Software Engineering		
9	Creativity and innovation in learning media	1
10	The ease of function touch screen	1
11	The ease of operating the learning media	1
12	Reusability	1
13	Media can be easily managed	1
14	Opportunities of developing learning media to science and technology development	1
Aspect of Visual Display		
15	The suitability of the color display	1
16	The suitability of choosing font	1
17	The suitability of choosing font size	1
18	The appropriateness of the placement buttons that are consistent with layout based on pattern	1
19	The suitability of the image display that are presented	1
20	Image proportion balance	1
21	Attractiveness of design	1
Total Item instrument		21

Table 3 Lattice of Questionnaire for English Teacher

No	Indicator	Total Item
Aspect of Material Relevant		
1	The relevant of material between SK and KD	1
2	The clarity of learning objective formulation	1
3	The suitability of material with indicator	1

4	The clarity of material with learning objective	1
Aspect of Material Organization		
6	Clarity of deliver the material	1
7	Systematic of deliver the material	1
8	Attractiveness of deliver the material	1
9	Completeness of material	1
10	Actuality of material	1
11	The suitability of difficulty and immateriality concept with cognitive development of students	1
12	The clarity of example	1
Aspect of Evaluation /Exercises		
13	The suitability of evaluation with material and learning objective	1
14	The truth of answer key	1
15	The clarity of instruction	1
16	The clarity of formulation of the problem	1
17	The truth of exercises concept	1
18	Variation of exercise	1
19	The difficulty level of exercises	1
Aspect of Language		
20	Accuracy of the term use	1
21	The suitability between language and level thinking of students	1
Aspect of Learning Strategy Effect		
22	The ability to encourage the curiosity of students	1
23	Media's support for the students independent learning	1
24	The ability of the media to add the knowledge	1

25	The ability of the media to improve students comprehension	1
26	The ability of the media to improve motivation of students	1
Aspect of Software Engineering		
27	Creativity and innovation in learning media	1
28	Reusability	1
Aspect of Visual Display		
29	The attractiveness of design	1
Total Item Instrument		29

Table 4.Lattice of questionnaire for students

No	Indicator	Total item
Aspect of learning strategy effect		
1	The ability to encourage the curiosity of students	1
2	Media's support for the students independent learning	1
3	The ability of the media to add the knowledge	1
4	The ability of the media to improve students comprehension	1
5	The ability of the media to improve motivation students	1
6	The ease of using the program	1
Aspect Language		
7	The suitability between language and level thinking of students	1
8	The suitability of term with level thinking of students	1
Aspect of Material Organizing		
9	Clarity of deliver the material	1
10	Systematic of deliver the material	1
Aspect of Evaluation/ Exercise		
11	The clarity of instruction	1

	Aspect Visual Display	
12	The suitability of the color display	1
13	The suitability of choosing font	1
	Aspect Software Engineering	
14	The suitability of the image display that are presented	1
15	Attractiveness of design	1
	Total Item Instrument	15

G. Data Analysis Techniques

Data that has been collected then goes to analyze and to find out the assessment and the opinion of instructional media.

1. Process data of developing media

This data is descriptive data that contains how to develop of media till the last product.

2. Feasibility assessment media data by experts

Media assessment data obtained from the questionnaire results by material experts, media experts, teacher and students' perceptions. The next data is analyzed with this step:

a. Change the qualitative assessment to be quantitative

It is the scoring for questionnaire as follows:

Table 5. Scoring Table

Category	Score
SA (Strongly Agree)	5
A (Agree)	4
N (Neutral)	3
D (Disagree)	2
SD (Strongly Disagree)	1

b. To calculate the result of questionnaire by experts use combination validity

   analysis[69], they are:

   $$V_I = \frac{TSe}{TSh} \times 100\%$$

   $$V_{II} = \frac{TSe}{TSh} \times 100\%$$

   $$V_{III} = \frac{TSe}{TSh} \times 100\%$$

   To calculate feasibility of reading application use combination validity, as

   follows:

   $$V = \frac{VI + VII + VIII}{3} = \cdots \%$$

Description:

V= Validity

V_I = Material expert

V_{II} = Media expert

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[69] Sa'dun Akbar, Instrument Perangkat Pembelajaran (Bandung: Remaja Rosdakarya Offset, 2013), 82-83.

V_{III} = English Teacher

TSe = Total score

TSh = Total score maximal

c. Interpret the qualitative value of the overall average and each aspect using the following criteria.

Table 6. Conversion Criteria Values into The Scale 5.

Criteria	Classification
81.00% −100.00%	Totally feasible without or little revision
61.00% − 80.00%	Feasible with revision
41.00% − 60.00%	Moderately feasible, the suggestion is not used
21.00% − 40.00%	Not feasible, it cannot use.
00.00% − 20.00%	Totally unfeasible

3. Feasibility assessment media data by students' perception.

To calculate the result questionnaire from students' perception use formula, as follows:

$$\text{Validity audience} = \frac{\text{TSe}}{\text{TSh}} \times 100\%$$

Description:

TSe = Total score

TSh = Total score maximal