

CHAPTER III

METHODOLOGY

3.1 Research Design

This study is addressed to develop Basic Writing module for English Education Department students at University of Muhammadiyah Gresik as additional learning sources to increase basic writers' knowledge in composing their academic paragraph. The module is written in paper based. In addition, following the growth of technology the module is supported by *.apk* (Android Application Package) as learning media. The researcher hopes that the product of this study could increase learners' knowledge in composing academic paragraph and elicit their interest in learning Basic Writing subject. Supporting the goal of this study, the researcher uses *R & D* (Research and Development) research design as Borg and Gall (2003:541) reveal that *R & D* is approach of research which can be used to developing product for improving education.

3.2 Steps of the Study

In *R & D* study, there are various Instructional Design (ID) models. The researcher adapts ID model from Branch (2009) that consists of five generic phases, i.e. Analysis, Design, Develop, Implement, and Evaluate. To make the model is applicable with this study the researcher modifies the model as presented in Figure 9. The procedure of each step is presented in table 3.1.

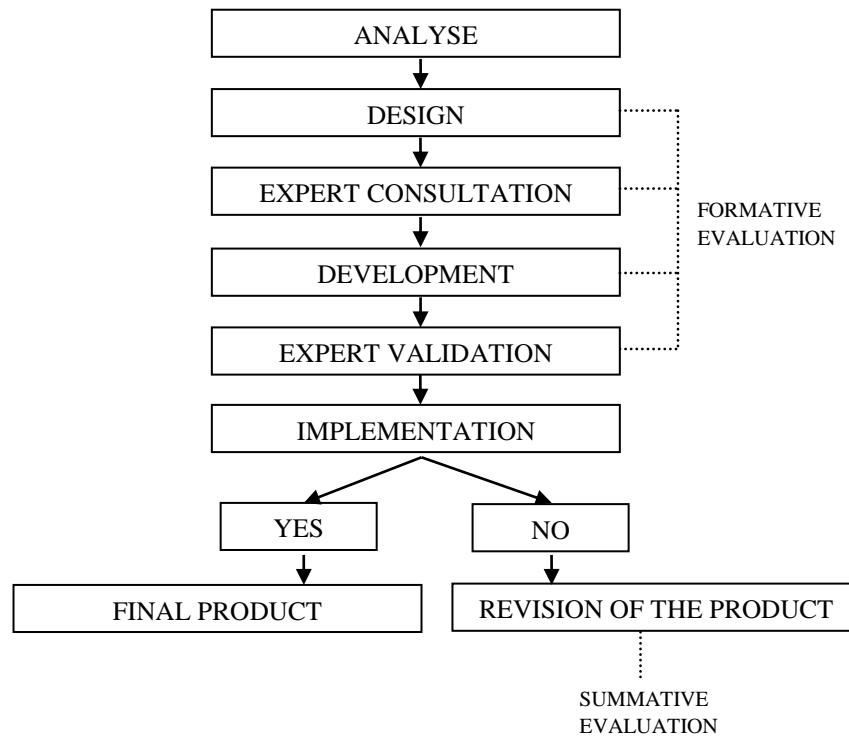


Figure 9. Modified ID model based on Branch (2009)

Table 3.1: Research and Development Procedure

Concept	Procedures
1. Analyze Conducting need analysis towards Basic Writing subject and respondents.	a. Analyzing learners' need. b. Analyzing the imbalance learning process. c. Analyzing basic competence of Basic Writing subject. d. Identifying required learning sources. e. Determining instructional goal.
2. Design	a. Composing learning objectives.

Determining the goal of learning.	b. Composing learning activities. c. Composing learning exercises. d. Designing user interface.
3. Development Generating and validating learning sources.	a. Making lesson plan. b. Developing materials content. c. Developing supported learning media. d. Conducting formative revision.
4. Implementation Preparing the learning environment and engaging the students.	a. Conducting try out for the developed learning sources.
5. Evaluation Conducting the last improvement based on the data obtained both before and after implementation	a. Conducting summative evaluation.

The procedure above was implemented as the guidance for the researcher in conducting this research. Further explanation about the steps of ADDIE model could be explained as follows.

3.2.1 Need Analysis

In this step, the researcher analyzed the target needs and learning needs. Three prior aspects in **target needs** are necessities, wants, and lacks. *Necessities* is type of need determined by demand of target situation. In other words, it answered the question “What should the basic writer have to know in order to fulfil needs in

target situation (Basic Writing course)?” After analysing students’ necessities, it required the process to obtain the data about the students’ *lacks*, i.e. what the students’ weaknesses from Basic Writing materials that they had learned. The last process in target needs was analysing the students’ *wants* relates to their interest in receiving Basic Writing materials. Analyzing target needs only was not enough to obtain the data about student needs. It required the other process that was analyzing **learning needs**. Learning needs is a process about how the researcher will facilitate the students to reach gap in target needs.

To do need analysis, the researcher collected the data with some instruments. Those instruments were need analysis questionnaire and interview list. For each process below reflects to the process in analyzing target needs and learning needs.

a. Analyzing Learners’ Needs

The researcher distributed need analysis questionnaire to the 31 of second semester English Department students who enrolled in Basic Writing subject at the 2015/2016 period to obtain the data about their needs, including target needs (lacks and wants) and learning needs. The items total for the target needs was 15 items; meanwhile, the items total for learning needs was 18 items. The questionnaire can be seen in appendix.

b. Analyzing the Imbalance Learning Process

The researcher conducted interview with Basic Writing instructor to get the information about students’ needs, including target needs and learning needs. The interview session discussed about the condition of teaching learning process, including learning method, learning materials, learning sources, and learning

media. List of interview questions can be seen in appendix. In addition, the researcher also made verification relates to the students' answer from need analysis questionnaire.

c. Analyzing Basic Competence of Basic Writing Subject

In analyzing students' necessities, the researcher conducted document analysis for the *RPS (Rencana Pembelajaran Semester)*. It was addressed to know what the materials covered in Basic Writing subject. The *RPS* is included in appendix.

d. Identifying Required Learning Sources

As aforementioned that this study is aimed to develop Basic Writing module (paper based) that is supported by Android application as supplement or learning media. So, the researcher needed to know the usage of Smartphone and its specification based on the students' response from the questionnaire. Also, the researcher observed the classroom to know the functionality of the supported learning source such as LCD.

e. Determining the Instructional Goals

The result of need analysis questionnaire, interview, and document analysis were written in *prototype* based on the researcher consideration. The prototype was used as reference in designing the content of the module. The instructional goals for the module were adopted based on the Bloom taxonomy. It was determined and adjusted based on the learning method principle that was implemented in the module, i.e. discovery learning.

3.2.2 Design

The researcher conducted this step after obtaining the result from analyze step. In this step, the researcher made a planning that to prove the goal of learning, including *course grid* and *user interface*. The course grid, including material framework and exercise framework are the result from point a, b, and c below; meanwhile, the user interface that contains Basic Writing application design is the result from point d. In designing process, the researcher consulted the course grid and user interface to the experts. The experts were material expert, media expert, and thesis advisors.

a. **Composing Learning Objectives.**

It is stipulated based on the basic competence and the material which is developed by the researcher. It covers GIO (General Instructional Objectives) and SIO (Specific Instructional Objectives). GIO declares the goal of material discussed in each unit. In the other side, SIO contains the detail of materials cover in each unit.

The module and the application cover basic competences of Basic Writing subject which are arranged in eight units. The first chapter entitles *I Have My Sword* covers the material about how to write simple sentence to complex sentence. The second chapter entitles *That is What I Mean* discusses about topic sentence, controlling idea, and supporting sentences material. The third chapter entitles *I Conclude That ...* contains concluding sentence and outline material. The fourth chapter entitles *Let It Flow* covers developing simple academic paragraph material. The fifth chapter entitles *O ... O ... I Forget It* discusses about review and revise expository paragraph material. The sixth chapter entitles *It Looks Good*

covers descriptive paragraph material. The seventh chapter entitles *My Personal Experience* contains recount paragraph material. The eighth chapter entitles *Your Fault is ...* discusses about peer-editing material.

b. Composing Learning Activities.

Composing learning activities here is addressed to facilitate the student in understanding the principle of materials discussed through the principle of discovery learning, i.e. stimulation, problem statement, data collection, data processing, verification, and generalization. For each principle is presented in the other activity names. The researcher labels *activity 1: starting point* to represent stimulation step, *activity 2: beyond the question marks* to represent problem statement step, *activity 3: let's think* to represent data collection step, *activity 4: share your idea* to represent data processing step, *activity 5: verify your opinion* to represent verification step, and *activity 6: compelling the principle* to represent generalization step.

c. Composing Learning Exercises.

The exercises contain task activities which are adjusted and arranged based on the discovery learning principle in facilitating the students to be more understanding the material principle obtained. It is also written based on Bloom taxonomy from the easiest to the most difficult. Some instructional goals which are used in the module are *comprehension, analysis, synthesis, and evaluation*.

d. Designing User Interface.

To ease the researcher in developing Android application, the researcher designed user interface for Basic Writing application. It contains depiction or plan

about how the application will look like and work. The draft is written in black and white document.

3.2.3 Development

The result from the previous step, design, was used as reference in developing learning sources. In this process, the researcher made lesson plan as the guidance for the teacher about the usage of module (paper-based) and the application in delivering Basic Writing materials. The other activities in this process were developing materials content (paper based module) and developing learning media.

a. Making Lesson Plan

The *RTM (Rancangan Tatap Muka)* or lesson plans for eight basic competences cover pre-teaching, whilst-teaching, and post teaching. The lesson plan is aimed to guide the teacher in delivering Basic Writing materials by using the module (paper-based) and the application. The *RTM* can be seen in appendix.

b. Developing Materials Content

In developing materials content, the researcher used the *course grids* that had been designed as reference. For each chapter is developed with seven activities. The first activity to the sixth activity facilitates the students to comprehend the principle of materials discussed. The seventh activity covers the exercises to facilitate the students to be more understanding the materials discussed.

c. Developing Supported Learning Media.

The result of user interface design was used to developing Basic Writing application. To develop the application, it required some programs. Those

programs are Adobe Photoshop, CorelDRAW, IcoFX, JDK (Java SE Development Kit), App Inventor (website), Bluestacks App Player, and App to Market.

1. Adobe Photoshop

The researcher used Adobe Photoshop CS5 EXTENDED to design the components of user interface. Those components are menu buttons, navigation buttons, GIO identifier, and backgrounds which are saved in .psd (Adobe Photoshop) format so that it is possible to edit the file with the last data saved after Adobe Photoshop program is closed. When those components input to the application, the file of menu buttons, navigation buttons, and GIO identifier are saved in .png (Portable Network Graphics) format; meanwhile, the background files are saved in .jpg (Joint Photographic Experts Group) format. The program of Adobe Photoshop CS5 EXTENDED can be seen in Figure 10.

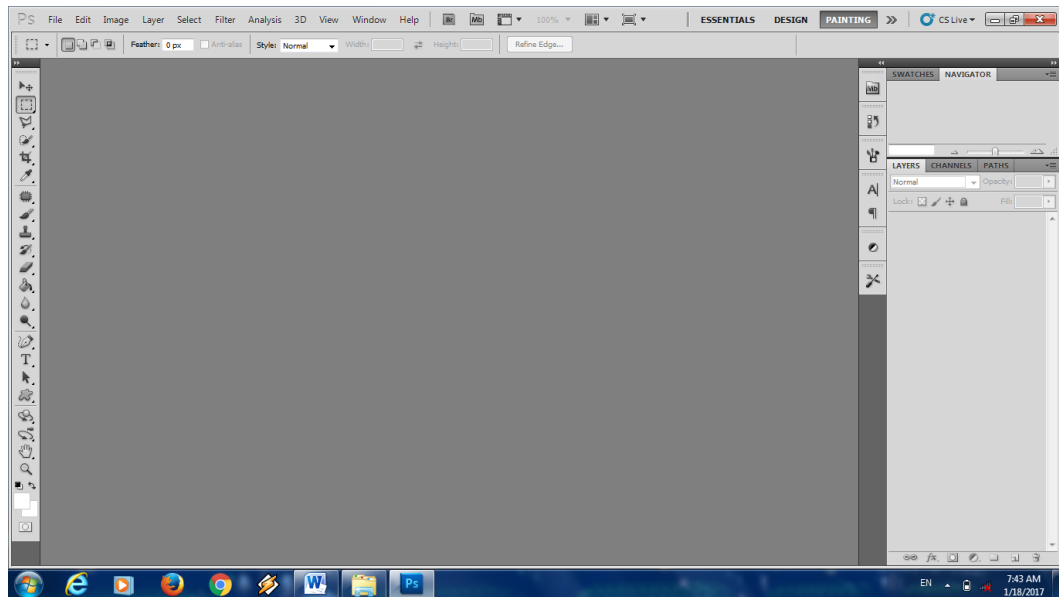


Figure 10. Adobe Photoshop CS5 EXTENDED Program

2. CorelDRAW

The researcher used CorelDRAW X5 to make the design of the application icon. The file of application icon from CorelDRAW X5 is saved in two formats. The first format is .cdr (CorelDRAW). The second format is .png (Portable Network Graphics). The function of the first format is giving access to the researcher for editing the application icon with the last data saved after the CorelDRAW program is closed. The second format is used to input the file to the application. The program of CorelDRAW X5 can be seen in Figure 11.

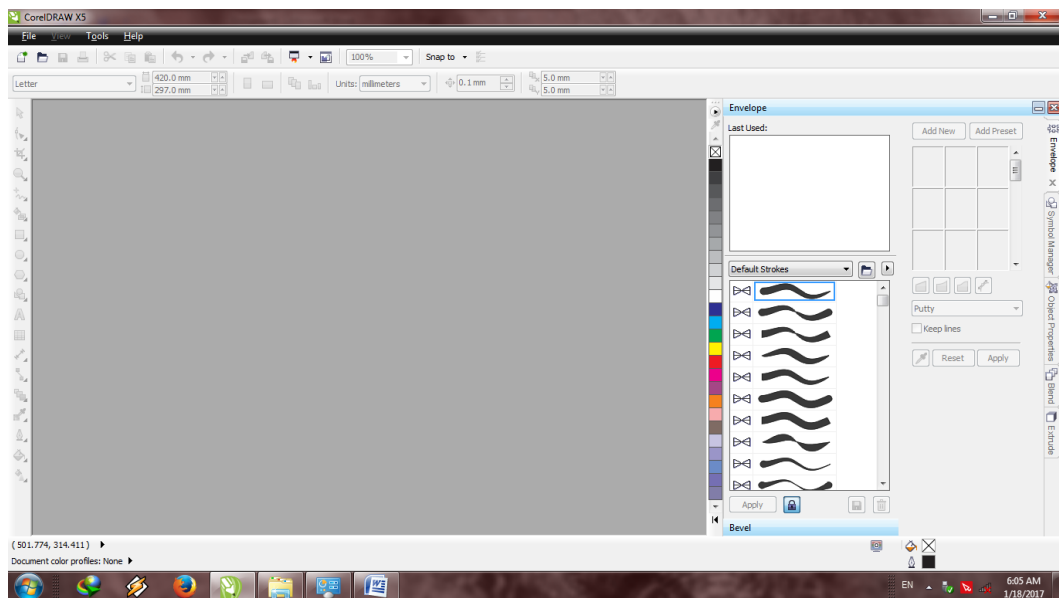


Figure 11. CorelDRAW X5 Program

3. IcoFX

To make the application icon is well-performed (appeared without shattering image), the researcher adjusted it by using IcoFX program. The program can be seen in Figure 11. When the feature of green robot (showed by Android symbol) is clicked, it makes the image (Basic Writing icon from CorelDRAW) is adjusted to the demand of Android application icon system. The normal icon sizes used are

36x36 (ldpi), 48x48 (mdpi), 96x96 (xhdpi), and 144x144 (xxhdpi). The output file extension from this program is .png (Portable Network Graphics) format.

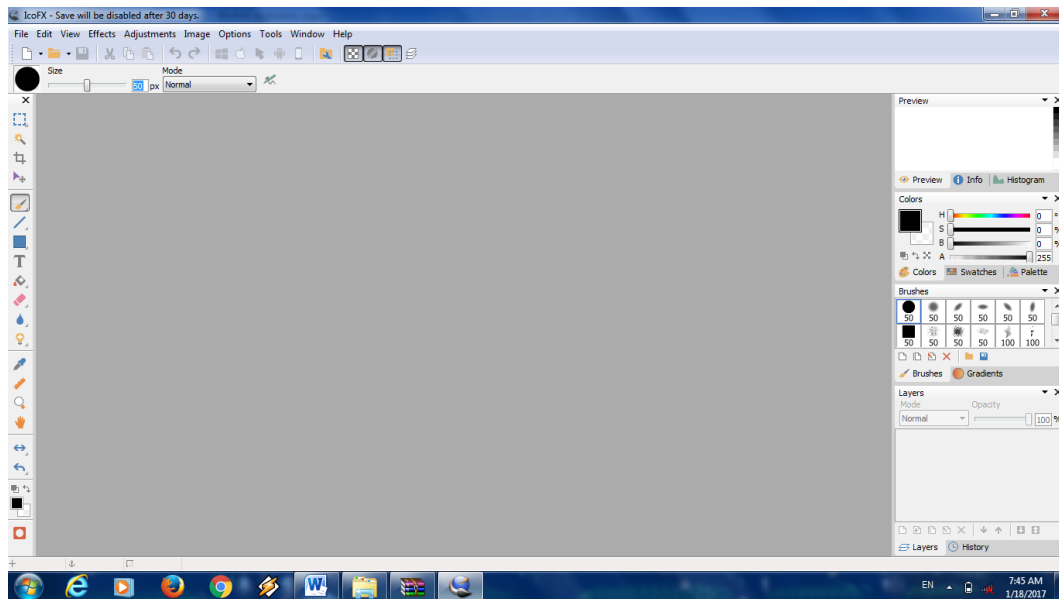


Figure 11. IcoFX Program

4. JDK (Java SE Development Kit)

Ensuring the process of developing Android application is writing effectively, installing Java SE Development Kit (JDK) is necessarily needed to work with the other Android programs developments, such as App Inventor and Bluestacks App Player. Here, the researcher used Java SE Development Kit 8. The program can be seen in Figure 12.



Figure 13. Java SE Development Kit 8 Program

5. App Inventor

MIT App Inventor 2 (Beta) is a brand of website that provides free facility to the people who want to develop their own Android application. This website can be accessed on ai2.appinventor.mit.edu. The projects in App Inventor are saved in .aia (Adobe Illustrator Action File) format and in .apk (Android Application Package) format. The function of first format is used to edit the application project when it is opened in the different time. The second format is used to installing the application in Android devices. The website can be seen in Figure 14 below.

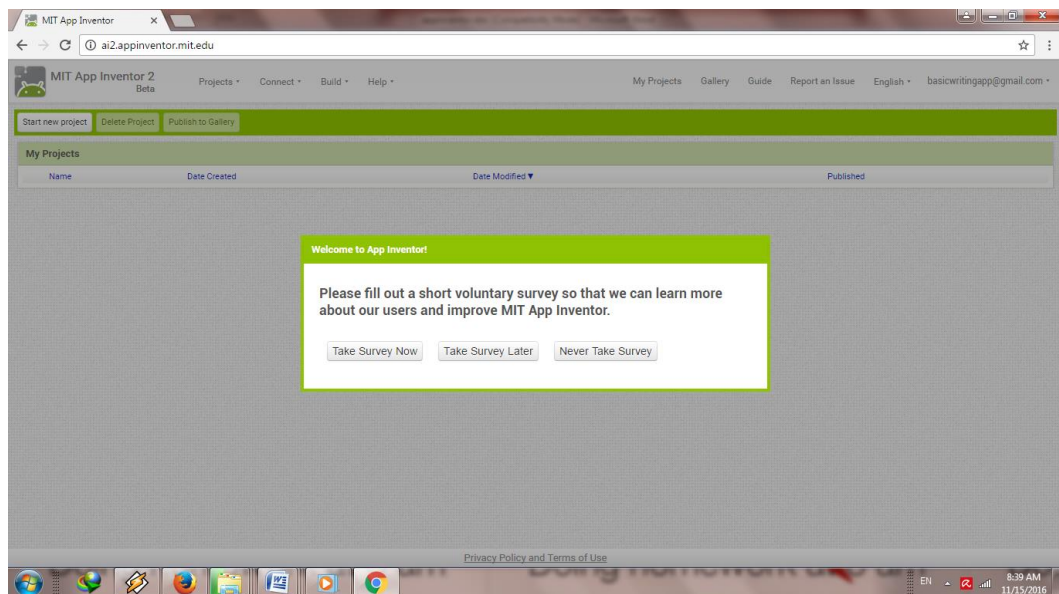


Figure 14. App Inventor Website

6. App to Market

Generally, the developed application is in debug condition. To make the application does not read as 'trial' version in Android device, it will be better if the application has certificate (digital). The researcher used App to Market 4.1 to sign the application. The program can be seen in Figure 15.

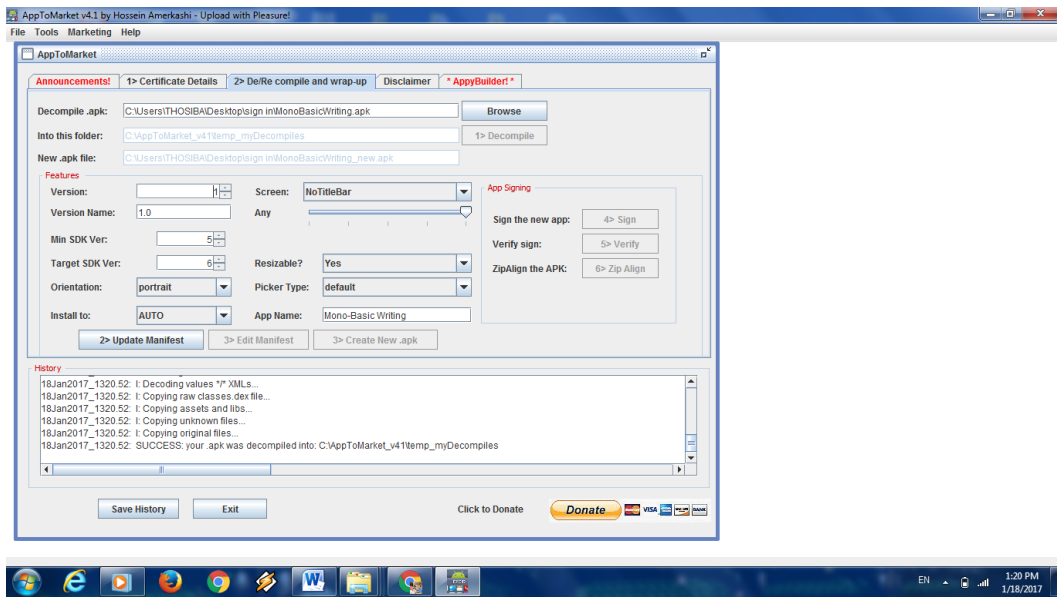


Figure 15. App to Market 4.1 Program

7. Bluestacks App Player

The function of this program is used as Android emulator. The way of this program work is imitating the real capabilities of Android device. Users are able to install and use Android application after installing Bluestacks App Player in their PC (Personal Computer). The programs can be seen in Figure 16.



Figure 15. Bluestacks App Player Program

d. Conducting Formative Revision.

Formative revision is a continuum process after the learning sources are developed. Before the products of this study were implemented to the students, they were validated by experts. The experts were media expert and material expert.

1. Expert Validation

To know the eligibility level of the product, the researcher got the score, comment, and suggestion by giving evaluation sheet questionnaire to some experts. The researcher considered that the media expert was a person who knew the process in making Android application so that he can give the correlated comment and suggestion. Therefore, the researcher asked the lecturer from Informatics Engineering as media expert. To check the content validity of the product, the researcher asked the Basic Writing instructor to give the validation as material expert.

2. First Revision (Formative Evaluation)

Formative evaluation was conducted after the researcher obtained expert validation. The developed products were improved based on the comment and suggestion from media experts and material experts. Next, the result of formative evaluation was used at the implementation step.

3.2.4 Implementation

The implementation was taking place at University of Muhammadiyah Gresik with 31 of second semester English Education Department students who enrolled in Basic Writing subject at the 2015/2016 period. At the beginning of implementation process, students read the Basic Writing module (paper

based). Then they were asked to use the Basic Writing application. At the end of try out session, students received an evaluation sheet questionnaire to give their response towards the products of this study.

3.2.5 Second Revision (Summative Evaluation)

The last step in this study was doing the summative evaluation. The researcher revised the Basic Writing module and the application based on the result of students response judgment in implementation step if there was necessary improvement. Also, it was adjusted based on the comment and suggestion from experts.

3.3 Research Setting

This research was conducted at the University of Muhammadiyah Gresik at the 2015/2016 period. This university has five faculties, i.e. faculty of teacher training and education, faculty of economy, faculty of engineering, faculty of agricultural, and faculty of religion. The focus of this study was located at the faculty of teacher training and education in English Department.

3.4 Research Subject and Object

The subjects of this study were English Department students who enrolled in Basic Writing subject at the 2015/2016 period, media expert who was a lecture in Informatics Engineering Department, and material expert who was a lecture in English Department. The objects of the study were Basic Writing modules that were written in paper based and in digital form.

3.5 Method and Data Collection Instrument

3.5.1 Data Collection Technique

Data collection technique at this research were conducting interview, conducting document analysis, and distributing questionnaire. Further detail about the steps of data collection technique in this research can be explained as follows.

3.5.1.1 Conducting Interview

According to Cristensen (2004), interview is data collection technique in which an interviewer (the researcher or someone working for the researcher) asks questions to the interviewee (the research participant). The researcher conducted interview to obtain the data relates to the condition of teaching learning process, including learning method, learning materials, learning sources, and learning media from the lecturer who teaches Basic Writing subject. Also, the researcher made validation data relates to the students answer from need analysis questionnaire.

3.5.1.2 Conducting Document Analysis

To know what the materials cover in Basic Writing subject, the researcher conducted document analysis. In addition, the aim of document need analysis was to obtain the data about students' necessities. The document was *RPS (Rencana Pembelajaran Semester)* that was used in Basic Writing subject at the 2015/2016 period. The *RPS* consisted of the goal of learning, course description, topic area, reference, assessment form, period to deliver the materials, basic competences, learning materials, learning method or strategy, and the weight of each basic competence.

3.5.1.3 Distributing the Questionnaire

Distributing the questionnaire is data collection technique that is conducted by giving some questions or written statements to the respondents for obtaining their answers or response (Sugiyono, 2014: 193). The researcher used this data collection technique to gather the data relates to the students' needs in need analysis step. The researcher also distributed the evaluation questionnaire to know the eligibility level of the product in this study based on the experts' judgment validation (media expert and material expert) and students' judgment response.

3.5.2 Data Collection Instrument

3.5.2.1 Interview Instrument

Interview instrument contained information that was asked to the Basic Writing instructor about teaching learning process and additional learning sources that were developed in this research. The framework to do interview is listed below.

Table 3.1: Interview Question Framework

Aspect	Point discussed	Number of item	Total
I. The condition of teaching learning process.	1. Learning method	1	5
	2. Learning materials	2, 3	
	3. Learning sources	4	
	4. Learning media	5	
II. Additional learning	5. Basic Writing Module and Basic Writing	5	1

sources	Application		
Items Total		5	6

3.5.2.2 Need Analysis Questionnaire Instrument

To construct need analysis questionnaire instrument, the researcher adapted the theory from some experts: Siniscalco and Auriat (2005), Hutchinson and Waters (1987), Olson and Land (2007), Lv and Chen (2010), and Gebhard (2000). The questionnaire consisted of 15 items for target needs and 18 items for learning needs. It was written in close form (multiple choices) and open form (requires answer explanation). The framework of need analysis questionnaire is presented at the following table. Further detail about the questionnaire framework and the constructed questionnaire can be seen in appendix.

Table 3.2: Need Analysis Questionnaire Framework

Aspect	Sub-component	Point discussed	Number of item	Total
I. Learning Needs.	1. Student background.	1. Writing textbook.	1	18
	2. Learning background.	2. Times to write.	2	
		3. Habitual learning manner.	3	
		4. Basic Writing experience.	4	
		5. Favourite activities.	5	

		6. Hope for Basic Writing instructor.	6	
		7. The way in teaching Basic Writing materials.	7	
		8. The way in giving Basic Writing assignment.	8	
		9. Pre-writing strategies which have been taught.	9	
		10. Post-writing strategy which has been taught.	10	
	3. Learning media.	11. Common learning media used in teaching learning.	11	
		12. Smartphone.	12	
		13. Smartphone operating system.	13	
		14. Smartphone manufacture.	14	
		15. Internet connection.	15	

		16. Internet connection sources.	16	
		17. The way in using Smartphone.	17	
		18. Digital Basic Writing module Android.	18	
II. Target Needs.	4. Learning materials	19. The way to understand paragraph structure organization.	19	15
		20. The way to decide writing topic.	20	
		21. The way to understand the general process of writing.	21	
		22. Ability to decide the topic.	22	
		23. Ability to implement the	23	

		rule of academic paragraph structure organization.		
		24. Ability to generate topic sentence.	24	
		25. Ability to point out the controlling idea.	25	
		26. Ability to generate supporting details.	26	
		27. Making an outline.	27	
		28. Ability to develop idea into paragraphs.	28	
		29. Ability to work with the unity of paragraph.	29	
		30. Ability to work with the	30	

		coherence of paragraph.		
		31. Ability to apply the rule of punctuation marks.	31	
		32. Editing spelling errors.	32	
		33. Ability to work with grammar.	33	
Items Total				33

3.5.2.3 Media Expert Judgment Questionnaire Instrument

The media expert validation questionnaire was adapted from Wicaksono (2006), Cahyo (2015), and Ulwan (2015) criteria. The evaluation questionnaire was constructed with five *Likert scales* or with five alternative judgments, i.e. 5 for strongly agree, 4 for agree, 3 for neither agree nor disagree, 2 for disagree, and 1 for strongly disagree. The following table shows the framework of the evaluation sheet questionnaire for media expert.

Table 3.2: Media Expert Judgment Questionnaire Framework

Aspect	Sub-component	Criteria	Number of item	Total
I. Design.	A. Visual Communication	1. Colour composition.	1, 2.	10

	.	2. Layout. 3. Button. 4. Size. 5. Font.	3, 4, 5. 6, 7. 8. 9, 10.	
II. Programming	B. Software Engineering	6. Interactive. 7. Operating.	11, 12. 13, 14, 15, 16.	6
III. Utility	C. Benefit	8. Learning process relevancy.	17, 18, 19, 20, 21.	5
Items total				21

3.5.2.4 Material Expert Judgment Questionnaire Instrument

To check the content validity of the product, the researcher asked Basic Writing instructor to give the validation as material expert. The questionnaire was adopted based on the BSNP (National Education Standards Agency) criteria in 2014 and Cahyo (2015). The form of the questionnaire was constructed with five *Likert scales* or five alternative judgments, i.e. 5 for strongly agree, 4 for agree, 3 for neither agree nor disagree, 2 for disagree, and 1 for strongly disagree. The framework of material expert judgment evaluation sheet questionnaire is presented below.

Table 3.3: Material Expert Judgment Questionnaire Framework

Aspect	Sub-component	Criteria	Number of item	Total
I. Content	A. The materials conformity.	1. The completeness of the materials. 2. The depth of the materials.	1, 2, 3, 4, 5, 6, 7, 8, 9, 10. 11, 12.	12
	B. The materials accuracy.	3. Topics. 4. Elements and structure. 5. Language.	13, 14, 15, 16. 17, 18, 19. 20, 21, 22, 23, 24.	12
II. Presentation	C. Presentation technique.	6. Systematic. 7. Balance.	25, 26, 27. 28.	4
	D. Learning Presentation.	8. Concentration towards student. 9. Concentration toward SCL approach and learning media (discovery learning).	29, 30, 31, 32. 33.	5
III. Text	E. Typography.	10. Font.	34, 35.	4

		11. Letter. 12. Spelling errors.	36. 37.	
IV. Utility	F. Benefit	13. Learning process relevancy.	38, 39, 40, 41, 42.	5
Items Total				42

3.5.2.5 Student Response Judgment Questionnaire Instrument

The evaluation sheet contained some judgment criteria that were proposed to the media expert and material expert. The form of the questionnaire was constructed with five *Likert scales* or five alternative judgments, i.e. 5 for strongly agree, 4 for agree, 3 for neither agree nor disagree, 2 for disagree, and 1 for strongly disagree. The framework of students response judgment questionnaire can be presented at the following table.

Table 3.4: Student Response Judgment Questionnaire Framework

Aspect	Sub-component	Criteria	Number of item	Total
I. Content	A. The materials conformity.	1. The completeness of the materials.	1.	1
	B. The materials accuracy.	2. Topics. 3. Language.	2, 3. 4, 5, 6, 7.	6

II. Presentation	C. Learning Presentation.	4. Concentration towards student.	8, 9.	2
III. Design	D. Visual Communication	5. Colour composition. 6. Layout. 7. Font.	10, 11. 12. 13, 14.	5
IV. Programming	E. Software Engineering	8. Interactive. 9. Operating.	15, 16. 17, 18, 19.	5
V. Utility	F. Benefit	10. Learning process relevancy.	20, 21, 22, 23, 24.	5
Items Total				24

3.6 Instrument Validity and Reliability

3.6.1 Instrument Validity

The valid instrument concerns to the extent of the instrument that measure what should be measured. The instruments were constructed based on particular theory in each framework and adjusted based on the importance of the study. Then, it was consulted to the thesis advisors to determine the content of the instrument is valid or not. The validated instruments were used to collect the data in this research.

3.6.2 Instrument Reliability

Reliability has close meaning with consistency. It means that the evaluation instrument could have high reliability if the constructed test has consistent result in measuring what should be measure (Sukardi, 2008). The evaluation questionnaire in this study was constructed based on five alternative judgments, i.e. 5 for strongly agree, 4 for agree, 3 for neither agree nor disagree, 2 for disagree, and 1 for strongly disagree. To know the reliability instrument which has judgment gradation, the instrument was analyzed with *Alpa Cronbach* formula (Arikunto, 122). First, the researcher determined the variance for each item. Then, the variance from each item was summed up. Next, the researcher determined the variance total. After obtaining amount of variance from each item and variance total, the results were inputted to the *Alpa Cronbach* formula. The usage of this formula can be seen in appendix.

According to Budi (2006) there are five reliability levels. The highest value of reliability obtained the highest credence level of the instrument used. The first reliability level is started from 0.00 to 0.20 that is included in *very low* category. The second reliability level is started from > 0.20 to 0.40 that is included in *low* category. The third reliability level is started from > 0.40 to 0.60 that is included in *adequate* category. The fourth reliability level is started from > 0.60 to 0.80 that is included in *high* category. The fifth reliability level is started from > 0.80 to 1.00 that is included in *very high* category.

3.7 Data Analysis Technique

3.7.1 Data Analysis from Need Analysis Questionnaire

The researcher analyzed the data from need analysis questionnaire by determining the percentage of students' response from each item. It can be obtained by dividing the number of response frequency with number of respondent and then multiplied with 100%. The result of the percentage was used as reference to analyze the proportion students' needs, including target needs (lacks and wants) and learning needs.

3.7.2 Data Analysis from Interview

To analyze the data from interview process, the researcher wrote the script. Then the interview script was paraphrased based on each question that had been asked. As final step, the researcher concluded all of the data from interview session.

3.7.3 Data Analysis from Expert Judgment and Student Response Judgment

To analyse the data that was obtained from expert validation (media expert and material expert) and students response judgement relates to the eligibility level of the product, the data analysis technique used by the researcher is explained as follows. First, the researcher determined the scoring criteria, i.e. 5 for strongly agree response, 4 for agree response, 3 for neither agree nor disagree response, 2 for disagree response and 1 for strongly disagree response.

Next, the data was analysed by counting the mean score based on the formula according to Ary et al. (1990: 132). It summed of raw score that was divided with the number of cases. To know the eligibility level of the product, the mean score obtained was assessed based on interval score in five scales. The way

to determine the formula of score interval conversion was according to Nurkancana (1992). It required calculating the value of Mean Ideal (MI) and Standard Deviation Ideal (SDI). The value of the MI can be determined by totalling the minimum ideal score (x_1) and maximum ideal score (x_2) and then it was divided with two. To get the SDI value can be determined by decreasing the maximum ideal score (x_2) with minimum ideal score (x_1) and then it was divided with six. As a result, the researcher obtains 3 for the MI and 0.6 for the SDI.

From the result of MI and SDI, it was distributed to the normal curve interval. As the centre point, the number of MI (3) was written in the centre of the curve. For each point movement to the right increases as many as the number of SDI (0.6), otherwise for each point movement to the left decreases as many as the number of SDI (0.6).

The result of normal curve interval with SDI weight was analyzed to the ideal interval distribution in five-scale. Based on the score stipulation above, the minimum ideal score is 1; meanwhile, the maximum ideal score is 5. To know the score interval that is included in *very poor* category, the formula to classify the mean score to this category is $minimum\ score < X \leq MI - 1.8\ SDI$. The second score interval to classify the mean score to *poor* category can be determined by the formula $MI - 1.8\ SDI < X \leq MI - 0.6\ SDI$. The third score interval is included in *fair* category that can be determined by the formula $MI - 0.6\ SDI < X \leq MI + 0.6\ SDI$ to classify the mean score obtained. The fourth score interval to classify the mean score to the *good* category can be determined by the formula $MI + 0.6\ SDI < X \leq MI + 1.8\ SDI$. The last score interval to classify the mean score to *very good* category can be determined by the formula $MI + 1.8\ SDI < X \leq maximum$

score. Further detail about the formula pattern in data analysis from expert judgment and student response judgment can be seen in appendix.

The result of the mean score was obtained from raw score in five scales so that it should be converted to the standard value in 0 to 100 range to know the eligibility level the products of this study. The eligibility level according to Wicaksono (2015: 54) can be determined by dividing the score result with maximum score, then multiplied with 100. To interpret the standard value obtained, it needs number of MI and SDI from 0 to 100 ranges to be inputted to the ideal interval distribution in five-scale in determining standard value interval conversion.

If the raw score scale is started from 1 to 5, it can be concluded that the minimum ideal value (x_1) is 20 and maximum ideal value (x_2) is 100. Based on the minimum ideal value and maximum ideal value, the Mean Ideal (MI) is 60 and the Standard Deviation Ideal (SDI) is 13.3. To classify the value is included in *very good* category, it can be determined by $83.94 < X \leq 100$ standard value interval. It means that the value obtained is less than 83.94 and more than equals to 100. The second standard value interval is $67.98 < X \leq 83.94$ that is used to classify the value is included in *good* category. It means that the value obtained is less than 67.98 and more than equals to 83.94. The third standard value interval ($52.02 < X \leq 67.98$) is used to classify the value is included in *fair* category. It means that the value obtained is less than 52.02 and more than equals to 67.98. The fourth standard value interval is $36.06 < X \leq 52.02$ that is used to classify the value is included in *poor* category. It means that the value obtained is less than 36.06 and more than equals to 52.02. The last standard value interval is $20 < X \leq$

36.06 that is used to classify the mean score from the raw score is included in *very poor* category. It means that the value obtained is less than 20 and more than equals to 36.06.