CHAPTER II

REVEW OF RELATED LITERATURE

2.1 Basic Writing

2.1.1 The Definition of Basic Writing

Otte and Mlynarczyk (2010:78) define Basic Writing as one of the writing college courses which provides access to the freshmen for increasing their ability in composing writing product. Nordquist (2015) states that Basic Writing is pedagogical terms of writing for the students who are perceived to be unprepared for courses in freshmen composition. At University of Muhammadiyah Gresik, the aim of Basic Writing course as one of the prerequisite subjects in English Education Department is designed to introduce students for the minimum requirements needed by students in writing.

2.1.2 Subject in Basic Writing

Based on the university policy, first-year learners are given facility to take Basic Writing or more advance writing course (Coffin, 2005). High school graduate students who enrol in Basic Writing course are called as basic writer (Harrington and Kassner, 1998; Kassner, 1999). Generally, Basic Writing course at University of Muhammadiyah Gresik is followed by second semester English Education Department students at their first-year college program.

2.1.3 Writing as a Process

There is not something in this world that was born directly to be perfect. Lenneberg (1967) in Brown (2007) makes analogy the way of people learn swimming is similar to the way of people learn writing. People learn swimming if

there is water available and usually the instructor will teach them. Similar to writing, when learners are the member of linguistic society they will learn it with the instructor who teaches or assists them.

Specifically, it can be assumed that those abilities cannot be achieved naturally. Before people can swim, they try to learn front crawl or freestyle in the routine until they can demonstrate numerous swimming styles. This condition is not different with writing. Writing is a process to try and more to produce the best product. When the learners feel afraid for showing or developing their idea and worried that the result does not appear like they are expected, it is not a good reason. Thinking to be perfect is natural condition actually, but without showing the best effort producing the idea into well-organized writing paragraph will be only as a hope. Inside of learners' mindset should be embedded that: 1) The principle of writing is keeping to write, revise, and edit (Oshima and Hogue, 1998:3). 2) Both of fluency (quantity) and accuracy (quality) in writing ability are notable thing in separate process.

2.1.3.1 Steps of Writing

Betty S. Flowers (1976:834-835) presents a writing process into four different stages and roles, namely *madman*, *architect*, *carpenter*, and *judge.* At the first stage of writing, learners should be positioned themselves as madman. It means that they should believe that they have numerous of idea and do not be hesitant to show it. It does not matter if they write it sloppily (just let their idea flow down). In common prewriting step, the madman holds the role to do brainstorming with some activities as a way to generate the idea relates to the topic that you will write. After getting work with the powerful energy of madman,

now they turn as architect. As architect, they should review the information that has been gathered and made by the madman. After that, they should choose the largest material of it and then pour into outline so that they can finish the planning step. The next role is carpenter. The main carpenter's task is bringing the architect's framework into reality. In the other words, learners should compose their writing product based on the outline. When they make the rough draft, their product is not should be perfect because there is a step namely revising. Here, they should check its content and organization, including unity and coherence (Oshima and Hogue, 1998:11). They can add, change, or delete the original idea from the previous stage for making sure that their idea talks about one and the only one relates to the topic. Then learners should ensure themselves that their sentence by sentence is hold together, clearly written, and there is no sudden jump between each movement (smooth and arrange in logical order). At the last stage, learners have critical energy as a judge. They inspect their grammar, spelling and punctuation. Without doing editing, their writing product will seem chaos because one or two mistakes which may they do frequently. When they have checked all of the criteria, they have finished the editing process.

Madman, architect, carpenter, and judge are the main systematic writing process which is introduced by English professor at the University of Texas. After learners experience all of those roles, they are able to rewrite their final product. This Flowers paradigm is an excellent way in making conceptualization of writing process which is served into fun parable and guiding us from the beginning until the end (Balmford, 1999).

2.1.3.2 Basic Writing Proficiency

The growth of Basic Writing has been arisen since1960s and transformed as important subfield in 1970s with the teacher-scholar Mina Shaughnessy as the pioneer (Otte and Mlynarczyk, 2010:3). Shaughnessy (1976) presents two distinct competence territories in Basic Writing proficiency, i.e. choice territory and givens territory. The *choice territory* focuses on the learners' quality in making decision to select the words, sentence pattern, and rhetorical strategies. Relates to the way of their word selection, they should consider if they truly use formal writing word (without dealing with slang or other non-formal vocabularies used in daily life), making it works in phrase or sentence and then developing it as idea into organized paragraph. The main concern of *givens territory* is based on the correct forms of three linguistic subsystems: grammar, spelling, and punctuation. Often, in writing the instructor does not teach of those linguistic subsystems directly because its complexity especially for grammar, but, practically it is like direct instruction for the learners to work and explore with these linguistic subsystems in composing their writing product. That is the origin of givens territory labelled. Further details about linguistic subsystems, learners' competence in this territory is assessed based on the usage of their wrong and right relates to the major formal written English grammar (subjects and verbs agreement, pronouns agreement, and antecedents), spelling (the accuracy of common word spelling is important to ensure the reader focus on the writing content rather than on much spelling error), and punctuation (comma, period, semicolon, and quotation mark). In addition, Shaughnessy also uses capitalization as an aspect which is assessed in givens territory.

Gebhard (1996:221) claims that the common things associated with writing relates to the usage of appropriate grammatical rule (subject-verb agreement, article, tense), syntax (word order), mechanics (punctuation, spelling), and idea organization (coherence and cohesion). Some aspects inside of learners' writing product which can be assessed are its unity, completeness, and coherence (Desy, 1976). Uehling (2003) presents some assesses competencies in Basic Writing. The first competency is the ability of learner to master the way of idea development with relevant supporting details and examples. The second competency states that learners should be able to edit their writing product for its mechanical error.

For the module, the researcher takes some focus. The first is idea development as foundation in composing writing product. It can be proved through of frequent opinion by some experts (Shaughnessy, 1976 and Uehling, 2003) who state that developing idea is one of the proficiencies in Basic Writing that should be mastered by learners. The second focus is organization relates to the unity and coherence of paragraph structure. Uehling (2003) points out that learners' paragraph organization can be used as learners' writing parameter. Punctuation, especially comma and semicolon are the other focuses in the module is necessarily included as it is stated by Oshima and Hogue (1998:245) punctuation has important role to convey the word meaning.

2.1.3.3 The Role of Basic Writing

Kassner (1999) finds that basic writer may know what should be written, but she does not know how to write it. Besides that, she feels difficult to put some words and makes it flow right. Further, basic writer have weaknesses in developing idea with few specific details for supporting topic sentence and

arrange good paragraph structure organization. Shaughnessy (1976) reveals that grammatical error and undeveloped paragraphs are two common problems which are experienced by basic writer.

Relates to the problem above, Rabideau and Brossell (1995) states that the essential focus of Basic Writing course in higher education is helping inexperienced writer to improve their writing through wider practice because they feel stuck to start writing, express idea clearly, and do revision for what they have been written are the constant problems encountered by basic writers.

Through of the Basic Writing existence, it gives the real evidence about a course which has designed to help learner become proficient writer in college level (Adams, 1993). Furthermore, Perry (1963) believes that learners should be taught the way of thinking both of inside and outside of their field. Consequently, it can be concluded that Basic Writing gives a chance for the learners to get better understanding in using the perspective of academic and non-academic world to be practiced and developed in written form without any barriers between those perspectives (Lu and Horner, 2000). Although Perry's (1963) analysis has been written in many years ago, it is still relevant to be applied for the learner today (Lipson, 2012). In addition, Gilyard (2000) calls Basic Writing course as a place that provides the authentic voice of student development.

2.2 Module

Based on Oxford Advanced Learner's Dictionary (1995) module is several independent units that is used together at a college course or self-study. Dick and Carey (2001:9) defines module as unit of self instruction which consists of integrated theme and information needed by learner to acquire and assess the

specific knowledge and ability where it is served as a component of curriculum. It can be conclude that module is a unit of self instruction which consists of integrated learning theme and information needed by learner to acquire and assess the particular knowledge and ability where it is used together with a course at university as a part of curriculum component.

In spite of the module form is digital or print from, usually it consists some learning materials relate to the specific subject where the content is adjusted based on target need of an institution. Nardo and Hufana (2014) explain at least there are three benefits which can be obtained by learner when they use module in teaching learning process. First, learners could sharpen their focus and attention towards the material that they learn through sequence of activities in module. Second, the usage of module elicits independent learning to the learners because they will master the concept of learning material through level of exercises which have been arranged from easy to difficult. The last but not least, learners may get better view of self-study. By finishing each task or exercise in the module with little or no guidance from teacher, they know the progress of their ability in comprehending the concept of learning material.

The real example of module development is conducted by Nardo and Hufana (2014) who construct it for students in Technical Writing subject. The link literature of the developmental study may be indirect, but it should be relevant to the foundational theory of the project like procedural model and factors which cause development process in the other situations (Richey and Klein, 2005). The result of evaluation shows that their modules have lacks in its materials and exercises. The improvement of technical writing module materials is conducted

based on the student's and expert's suggestion. Its activities or tasks are added and modified to enrich student's written output. At the final development, the modules are evaluated fit to the curriculum and rated good by the students and excellent by the English teachers so that it can be used as reference in Technical Writing subject.

The previous basic writing books have been composed by Reid (1996) and Tyner (2008). The book by Reid (1996) comprises of eight chapters which are arranged with different topics entitle Family, Home, Country, Culture, Travel Experience, First Impressions First Problems, Adjustments & Solutions, and Similarities & Differences. This book has numerous paragraphs which are followed by grammar exercise, questions relates to the specific detail of the paragraph and its main idea, writing planning format, including some topics and questions where the answer should be exist inside of paragraph (refers to supporting details), and writing task both of individual and group project (peer editing). The lack of this book is not explained the structure organization of paragraph explicitly. Before students practice their writing, they are asked to comprehend structure organization of paragraph by themselves based on the examples of the paragraph which have been read, do its exercises, and follow the writing project instruction. The researcher assumes that without obvious rules of paragraph structure organization, basic writer may have lack guidance in composing academic paragraph.

The current Basic Writing book which is written by Tyner (2008) consists of six chapters inside it, i.e. Writing from Experience, Writing about Relationship, Writing about Opinions, Writing to Compare, Writing about Problems and

Solutions, and Writing about issues. The basic elements of writing process inside it are prewriting, writing first drafts, doing revisions, final editing, and writing review. This book provides numerous reading texts in all process of writing as input or reference for the students before they practice the writing process exercise in each chapter. The other features inside of this book are the explanations about mechanical aspect and grammar. This book has a few explanations towards the structure of paragraph organization. According to Uehling (2003), the level of writing ability can be determined based on the student's paragraph organization. It can be assumed that wider explanation about paragraph organization is necessarily needed.

The prior development of the modules and books as aforementioned is paper-based. To be different with those experts, the researcher develops paper based Basic Writing module that is facilitated by Android application.

2.3 Digital Module

2.3.1 Digital Content

According to Shiratuddin and Hassan (2003) electronic or *digital* content can be defined as a process of creating, providing, and distributing information into digitalized content form with viewing it on screen rather than paper based. Based on the definition of digital content and module which have been obtained *digital module* is a unit of self instruction, served with integrated learning theme and information needed by learner to acquire and assess the particular knowledge and ability by viewing it on screen where it is used together with a course at university as a part of curriculum component.

They also reveal that there are two forms of digital content. The first is content which only has one type of information. It can be full of text, audio, or graphic content. The second content comprises more than two types of those information contents which is known as multimedia or hypermedia.

Both of digital content information types above could give contribution in learning with textbooks, tutorials, and theses as its form, as reference in dictionaries and encyclopaedias form, as entertainment in comics and novels form, as advertisement in brochures form, and as browsing source in newspapers, journals, and magazines form (Borchers, 1999; Shiratuddin and Hassan, 2003).

Specifically, in education sector electronic content or digital content can be used in numerous forms, such as: electronic research reports (eResearch-report), electronic journals (eJournal), electronic books (eBook), electronic lecture modules (eLecture-module), and electronic lecture slides (eLecture-slide) (Shiratuddin and Hassan, 2003).

The general common formats of digital content are Portable Document Format (PDF), Rich Text Format (RTF), Standard Generalized Markup Language (SGML), Hyper Text Markup Language (HTML), and eXtensible Markup Language (XML) (Armstrong and Lonsdale, 1998; Hawkins, 2000). Following the growth of smart device popularity now, ePub (electronic Publication) become e-book standard format publication (Horne, 2012). Relates to the popularity of smart device content, Choi et al (2014) reveals that the digital content now is available to be displayed as application which comprises of multimedia, animation, and rich user interaction. Android Application Package (APK) is the usual application format saves in Smartphone.

In this research, digital Basic Writing module can be classified as digital content which use hypermedia information type, including text, graphic, and audio. In its development, the *.apk* format is used. Relates to the writing application exist in Android market, the researcher found some applications which give chance to develop its content gap. English Writing is application which only explains about the theory need in composing product of writing. Writing Exercise, as like its application name only provides command or instruction as source to practice writing. Based on these previous Basic Writing applications, the researcher develops digital Basic Writing module which contains both of the theory and practice.

Bonime and Pohlmann (1998) states the benefit of electronic content especially book, there is hyperlink feature (making the book content is linked to the other page both inside and outside of the book), multimedia support (the content can be presented by mixing type of information, such as text, picture, audio, or video), and searching feature (allowing the user to look for any piece of information which is needed and move to the other parts instantly) which are not exist in paper based book. As impact, these features are not really different for the digital module in this research.

2.3.1.1 Android Operating System

2.3.1.1.1 Android definition

Darcey and Conder (2009) simply defines Android as an open source platform that give access to the developers (third parties) and handset manufacturer to develop the platform. According to Haghighatgoo (2016), Android is Linux-based operating system that is designed primarily for touch

screen device. Samal and Jena (2014) defines Android as open source Linux-based operating system for mobile device, such as tablet computers and Smartphone, developed by Open Handset Alliance, and led by Google. It can be concluded that Android is an open source and modified mobile operating system platform based on Linux version which is developed by Open Handset Alliance (OHA) and led by Google where it is designed primarily for touch screen device.

2.3.1.1.2 Brief History about Android

Here, brief history about Android is presented by Darcey and Conder, 2009:1-21; Lee, 2011:2; Sivakumar, 2015. Several years ago, we may remember the function of the phone was just a phone .We only used it as simple communication tool like calling someone over there, or sending him a short message. Day by day, the mobile users were even increase. Practically, they wanted to customize their phone and made it be multifunction, but before the existence of Android, mobile user may not realize their want to develop their own *application* without having the permission from handset manufacture. The manufactures refused to expose their internal work relates to their handset which caused them developed the mobile software (application) only in their own factory. At the market, there are numerous handset manufactures such as: Samsung, Sony Ericsson, HTC, LG, Nokia, Motorola, Treo, Blackberry, Apple, and many others with different kinds of Operating System (OS) like Windows Mobile, Symbian, Palm/Garnet, RIM Blackberry, and iPhone (well-known as iOS). Escaped from those proprietary platforms (close-sources), now the question is how to make an application can be applicable in any device?

In 2003, Andy Rubin, Rich Miner, Nick Sears, and Chris White established Android, Inc. in Palo Alto, California, U.S. The initially focus of this company was to design operating system for digital camera, but they changed it to develop mobile OS because its large market. In 2005, Google purchased Android Inc. to save it from its main founders' economic crisis. After the acquisition was reached, Google asked those prime of Android. Inc developers stayed at that company. In November 2007, Google cooperated with Open Handset Alliance (OHA) for making *Android Project*. The business alliances of OHA are software developers, service providers, chip makers, and handset manufactures. Many of the OHA members are dominated by handset manufactures, including Samsung, Sony, Motorola, HTC, LG and semiconductor companies such as Text Instruments, NVIDIA, Intel, and Qualcomm.

To answer the demand of mobile user as aforementioned, Google wanted Android become *free* and stand as *open-source*. That's way the operating system of Android is licensed under GNU (General Public License Version 2 (GPLv2) as *copyleft* license. Copyleft license here has a function to make protect the works of developer still be open source. As comparison, it will be different to close source platform that use *copyright* license. Without getting permission from the creators, the developer may not change of their works. Supporting its open source platform, most of Android framework or code for its level version is released under Apache Software License (ASL/Apache2). It means, this license allow every handset manufactures freely use Android code in developing this operating system to their Android device which may give their own feature as difference point from the other products. In another implication as open-source,

while the developers are developing application, they only need to think, consider, and develop how to create application which is be able to work in various different devices of Android.

Correlating as mobile open-source platform, Android chooses Linux which stands as computer open-source operating system to support it. Here, Linux 2.6 Kernel operating system is used to handle core system operation and work its role as Hardware Abstraction Layer (HAL) between handset physical hardware and software stack of Android.

2.3.1.1.3 Why should be Android?

Coming back to the question how to make an application can be applicable in any device in the brief history above. Android is open source of operating system for mobile device which has been supported by Google (Lee and Salman, 2012). It means the developers have free authority to develop application which is available for general vendor hardware manufactures as long as the devices are supported by Android (Lee, 2011). Bringing the phrase *open source*, the researcher concludes that the developing of digital Basic Writing module by using Android operating system is possible to do.

In addition, mobile application which is developed based on Android operating system is more effective and efficient because it can be produced fast, and categorized into user friendly which refers to the application is easy to learn, use, and understand (Hanafi and Samsudin, 2012). They also point out that Android application has a plus point in Android market if compared with its rivalry because it can work virtually in PC (Personal Computer) through Android emulator. The existence of Android user percentage during this decade in 21

century (Figure 1) is the other reason why the researcher chooses Android as Smartphone device's operating system to develop digital Basic Writing module application.

Worldwide Smartphone Forecast by OS – Shipments, Market Share, Year-Over-Year Growth, and 5-Year CAGR (shipments in millions)

Region	2016* Shipment Volumes	2016* Market Share	2016* YoY Growth	2020* Shipment Volumes	2020* Market Share	2020* YoY Growth	5 year CAGR
Android	1,254.6	82.6%	7.6%	1,624.4	84.6%	4.6%	6.9%
iOS	231.2	15.2%	-0.1%	269.0	14.0%	3.2%	3.0%
Windows Phone	23.8	1.6%	-18.5%	17.8	0.9%	-5.7%	-9.4%
Others	9.5	0.6%	-15.1%	9.2	0.5%	4.8%	-3.9%
TOTAL	1,519.0	100.0%	5.7%	1,920.4	100.0%	4.3%	6.0%

Source: IDC Worldwide Quarterly Mobile Phone Tracker, March 3, 2016.

* Forecast data

Figure 1. The Existence of Android User Percentage

2.3.1.1.4 Supporting Android Device

In the late 2010s, Android operating system has been powered in various devices, such as: E-readers devices, internet TVs, Netbooks, MP4 players, Smartphones, and Tablets (Lee, 2011:4). One of the popular Android device utilize now is Smartphone. Smartphone is a device which has ability not only as cellular phone but also desktop computer (Kibona and Rugina, 2015). A statistical data from www.statista.com as the statistical portal website shows a forecast data about the significance growth relates to the total of Smartphone users worldwide year by year (Figure 2). To be pertinent with the fact of Smartphone users' existence, the researcher prioritizes the usage of Smartphone to access digital Basic Writing module as additional learning source.
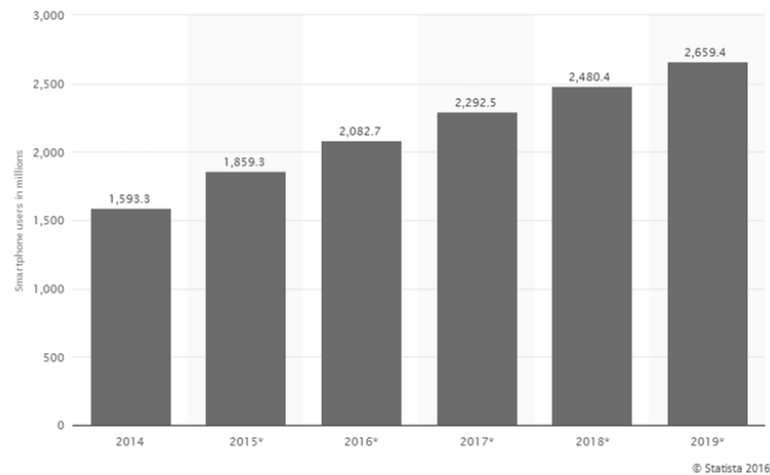
Figure 2. Number of Smartphone Users Worldwide From 2014 to 2019 (in millions)

2.4 Developing Basic Writing Module: Paper Based and Android Based Operating System for English Education Department Student Procedure

Module is a unit of self instruction, served with integrated learning theme and information needed by learner to acquire and assess the particular knowledge and ability where it is used together with a course at university as a part of curriculum component (Dick and Carey, 2001:9; Oxford Advanced Learner's Dictionary, 1995:750; Shiratuddin et al., 2003).

Relates to the instruction inside of module, it correlates with teaching learning activities that should be able to help learners in comprehending knowledge and put the knowledge from short to long memory (Isman, 2011). Dick and Carey (2001:10) reveal that the systematic instruction requires learner to interact actively with the learning materials rather than read them passively. They also reveal that in designing instruction, it requires model. The aim of constructing model is showing the relationship among the steps and how it occurs chronologically (Seels and Glasgow, 1997:167). The process inside of the model

is referred to Instructional System Design (ISD) which comprises of five general phases, i.e. Analysis, Design, Development, Implementation, and Evaluation (ADDIE) (Dick and Carey, 2001:4; McGriff, 2000; Grafinger, 1998; Molenda, 2004). Instructional Design (ID) model gives visual representative of procedural that is used in ISD process (Seels and Glasgow, 1997:166). The usual ID model is presented in oval or round, linear and rigid, line with some boxes which put in above and below, rectangle, and cross (The Herridge Group Inc., 2004; Seels and Glasgow, 1997:169-170). It can be noted here that ID is an umbrella of ISD; meanwhile, ISD is an umbrella of ADDIE.

Gustafson and Branch, 2002:14-45 create ID models taxonomy based on its prior importance, i.e. classroom-oriented model, product-oriented models, and system-oriented models. Classroom oriented-model is primary given to the teacher whose the student needs some instruction form. Usually, the resource development is limited produced because the range of its output is around one or a few hours of instructions. In simply word, classroom-oriented model is appropriate for the teachers who want to develop their teaching learning materials. To be different with product-oriented models, the product development will be implemented in several hours, few days, or in duration (the output is self-instructional or instructor-delivered package). The last model namely system-oriented model is developing wide instruction for the whole course or curriculum. Based on those specific characteristics, these are some reviews of product-oriented ID models which may contribute its process in this research which is addressed to develop Basic Writing module as the product.

2.4.1 Types of the Product-Oriented ID Models

2.4.1.1 Bergman and Moore (1990)

The first product-oriented model is from Bergman and Moore (1990) which is presented in Figure 3. The focus of this model is presenting the process of developing Interactive Video (IVD) or multimedia (MM) products, but it is also applicable to generate the other variance of high-technology and interactive instructional products (Gustafson and Branch, 2002:32). The six generic activities of this model are *analysis, design, develop, produce, author,* and *validate* (Bergman and Moore, 1990:15-20). For each activity requires input to deliverable output and evaluation. The result from each output in each activity is used as input for the next activity. The existence of checklist in each phase shows that this model gives extensive consideration in evaluation.
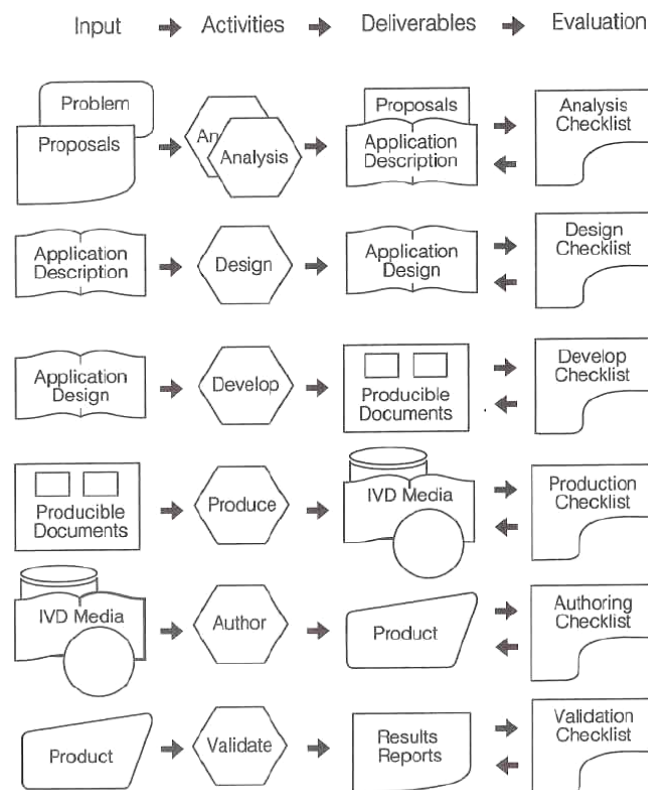

Figure 3. The Bergman and Moore Model

Several activities in analysis are identifying audience, tasks, environment, and content which should be inserted in RFP (Request For Proposal). The output of this activity is a complete Application Description Document. When the description of application is obtained, design activity is taking place. It includes the specific strategy, treatment, and logical flow towards future application. The results of this work are written in Application Design Document as blueprint. The detail of application in design document should be developed on paper. The output of this activity is producible document, such as video storyboard, audio presentation written scripts, and graphic renditions. The producible document from development activity is used as input in producing activity with transferring it into various medium: video, audio, graphic, and text. The fifth activity, authoring is an activity that integrates the individual media into complete product. Controlling and testing the product are the other activities in authoring. The complete product from authoring activity will be evaluated based on its original objectivities.

2.4.1.2 de Hoog, de Jong, and de Vries (1994)

The second product-oriented model is from de Hoog, de Jong, and de Vries (1994) which presented in Figure 4. This model is addressed to develop software design. The concrete examples of this model principle are used to developing educational simulations and developing expert system. The authors adopt "web structure" as their model identity which facilitates parallel and nonlinear software methodology development. This model provides iterative process in implementing it depends on the user taking place.
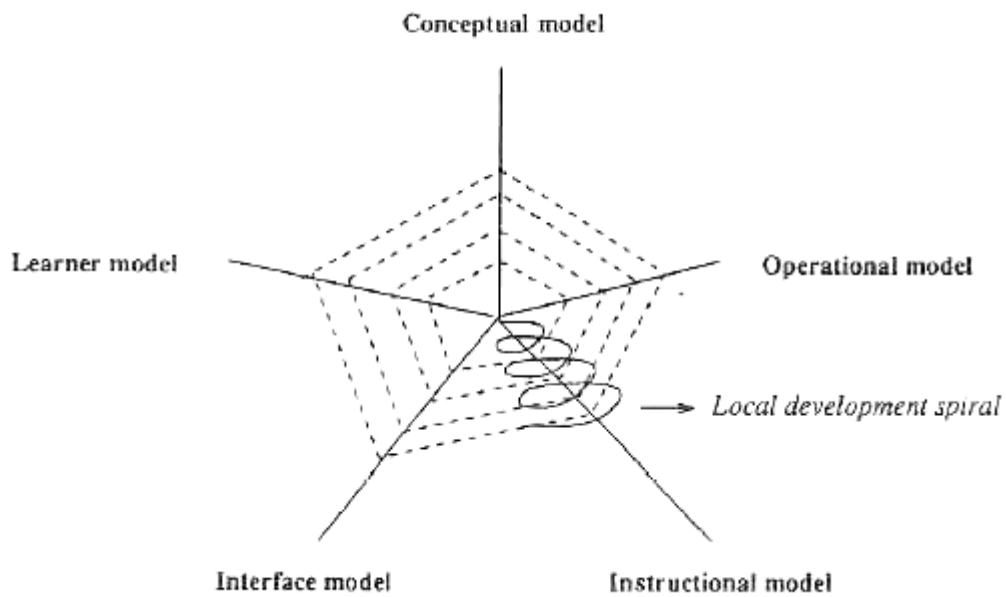
Figure 4. The de Hoog, de Jong, and de Vries Model

The web structure is separated by axes for five partial products namely
conceptual model, operational model, instructional model, interface model, and
learner model. The dotted lines in this model show the interdependent among five
partial products (Gustafson and Branch, 2002:36). The conceptual model and
operational model give representation towards what the learners should to know at
the end of training session. The instructional model contains instructional function
(instructional measurable for the learners like whether or not they can present
explanation and finish specific assignments) relates to the educational simulation.
The interface model consists of graphical objects, windows, etc which may enable
the learners to interact with the simulation. The learner model store the
information about learners.

For each axe which is gone around by spiral (only one spiral is shown in Figure 4) comprises of four components: specificity, compliance, quality, and integration. The s*pecificity* means the outcome should be specific based on the partial product requirements. The *compliance* means that the partial product which is developed should not be contradicted with the external requirement. Two main groups of compliance requirement are: 1) Educational environment requirements. The educational software should be developed based on the specific education setting. The relevant factors in educational environment are school policies, instructional prerequisite, and educational materials. 2) Hardware and software requirements. It explains about the hardware and software are needed in developing educational software. Some relevant factors relates to this requirements are computer speeds, storage capabilities, display medium, and other electronics medium. The *quality* means measuring the quality of product development outcome based on its consistent towards its previous state. The *integration* means the relationship between different partial products should be consistent and coherence. Taking example instructional model which asks the learner to understand about decomposition, the interface model should not be contradicted with the goal of instructional model. Finally, when the users work on partial products is called local development; meanwhile, when they work on the whole process, it is called as global development.

2.4.1.3 Nieveen (1997)

The third product-oriented ID model by Nieveen (1997) can be seen in Figure 5. To enhance the quality and efficiency of curriculum materials development, the goal of this model is producing computer based Electronic

Performance Support System (EPSS) in multiple versions. Practically, this model has been implemented to produce educational materials rather than for business and industry training program. In Holland (as the origin of this model was created), her model has been applied in numerous schools to create lesson material and course distribution.
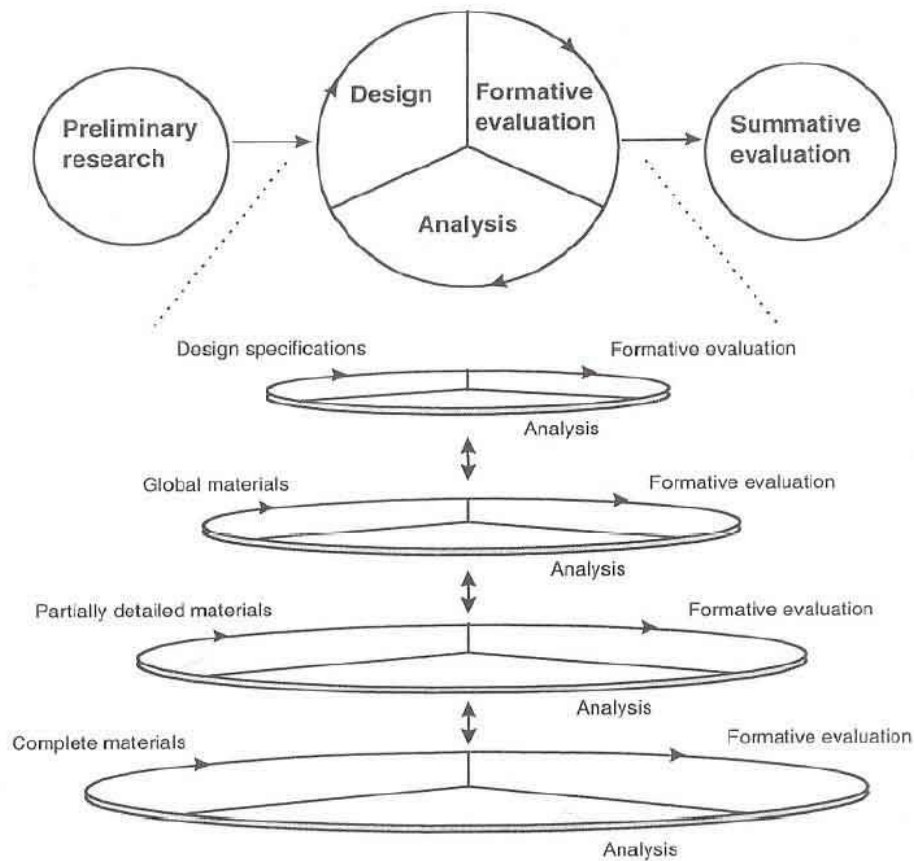

Figure 5. The Nieveen Model

Starting activity in Nieveen's model is preliminary research about what will be needed in producing materials. Then, it is continued with the iterative cycle which consists of three activities: analysis, design, and formative evaluation. This iterative cycle has four levels activity to do. The first level should generate design specification that has been evaluated formatively by designing team.

Global materials as the result of second level are evaluated formatively by expert appraisal. The third level, partially detailed materials are prepared with holding the appraisal from expert then small-scale tryout is conducted. The fourth level, complete materials is prepared and addressed to expert for getting appraisal. After that, the complete product is tested in small group and tryout in large group. If the materials have been distributed to general use in various settings, the summative evaluation is conducted.

2.4.1.4 Seels and Glasgow (1997)

The other product-oriented model is from Seels and Glasgow (1997). The author states that their model is applicable for beginning student in instructional design. The two generic phases inside of this model are *project management* and *diffusion* (Seels and Glasgow, 1997: 176-179) which can be seen in Figure 6. The project management consists of three phases, i.e. need analysis management, instructional design management, and implementation and evaluation management; meanwhile, the diffusion is ongoing process.
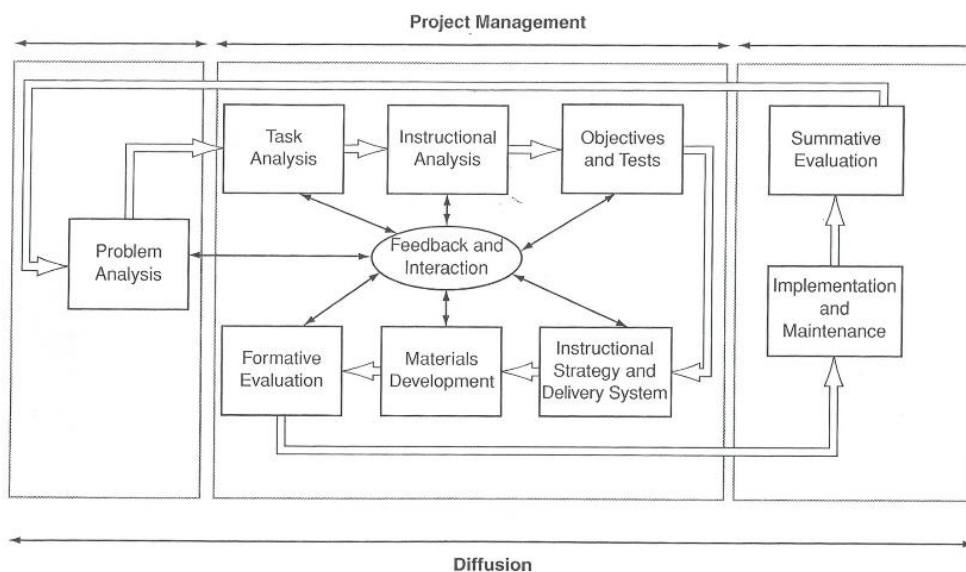

Figure 6. The Seels and Glasgow Model

The *first phase* (need analysis) is used to finding problem which involves several questions relates to the need assessment (goals), performance analysis (instructional requirements), and context analysis (constraints, resources, and learner characteristics). Doing task analysis, instructional analysis, and writing objectives and test are possible to do concurrently at the *second phase* of project management. Design, development, and formative evaluation are the other activities that can be occurred concurrently at this phase. The authors note that the steps at the second phase of project management can be done in order (linear fashion) or happened concurrently, but the process is iterative. It means that the steps are possible to return to the previous step with some adjustment based on the data demand. The users also possible to do the next step before the previous step finish and come back to the previous step when they are ready. The main point of the steps at this second phase is offering flexibility. The sequence steps at this phase finish when the user gets satisfactory from the result of formative evaluation. In addition, instructional design management is interdependent or interactive phase which is indicated by connecting the six steps toward the oval centred (feedback and interaction) through each double arrow (Gustafson and Branch, 2002:43). Implementation as part of *third phase* in project management refers to the process transferring the product to the real life. To conduct this step at least the users have provided the support system and materials, disseminated the project or product and ensured if the instructor and learner have trained to use the new technology. After doing implementation, the opinion from other parties is obtained. As impact, summative evaluation is conducted.

Diffusion, as the other phase in Seels and Glasgow model means promoting or persuading someone to adopt and maintain the project which is made by the researcher. This phase is ongoing process that may occur in all process of project management. One of the diffusion strategies is designing user-friendly product as innovation and giving its obvious benefits. The Seels and Glasgow framework relates to ADDIE is listed in table 2.1.

Table 2.1: ADDIE Model Framework by Seels and Glasgow (1997)

ADDIE	Seels and Glasgow	Questions Answered
1. Analysis	1. Need Analysis	What is the problem? What are the parameters of the problem?
	2. Task and Instructional Analysis	What should the content be? What are the prerequisites?
2. Design	3. Objective and Assessment	What should be assessed and how?
	4. Instructional Strategy	How should instruction be organized?
	5. Delivery System Selection and Prototyping	What will the instruction look and sound like?

3. Development	6. Materials Development	What should be produced?
	7. Formative Evaluation	What revisions are needed?
4. Implementation	8. Implementation and Maintenance	What preparation is needed?
5. Evaluation	9. Summative Evaluation	Are the objectives achieved?
	10. Diffusion and Dissemination	Has the innovation been disseminated and adopted?

In addition, Branch (2009) introduces ID models that also contains of five general phases, i.e. *Analysis, Design, Develop, Implement*, and *Evaluate* that known as ADDIE. The author states that the application of this model priors intentional learning that requires the students to be active (student centred), innovative, authentic, and inspirational. Also, this model is appropriate for developing educational products and other learning sources (Branch, 2009: 2). The ID model by Branch (2009) can be seen in Figure 7. Inside of five general phases, Branch explains the procedure in each phase as presented in table 3.1.
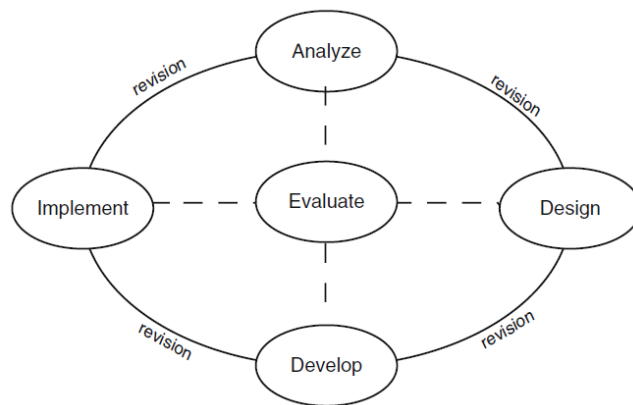
Figure 7. The Branch Model

Table 3.1: ADDIE Model Framework by Branch (2009)

	Analyze	*Design*	*Develop*	*Implement*	*Evaluate*
Concept	Identify the probable cause for a performance gap	Verify the desired performances and appropriate testing methods	Generate and validate the learning sources	Prepare the learning environment and engage the students	Assess the quality of the instructional products and processes, both before and after implementation
Common Procedure	1. Validate the performance gap 2. Determine instructional goals 3. Confirm the intended audience 4. Identify required resources 5. Determine potential delivery 6. Compose a project management plan	7. Conduct a task inventory 8. Compose performance objectives 9. Generate testing strategies 10. Calculate return on investment	11. Generate content 12. Select or develop supporting media 13. Develop guidance for the students 14. Develop guidance for the teacher 15. Conduct formative revisions 16. Conduct a Pilot Test	17. Prepare the teacher 18. Prepare the student	19. Determine evaluation criteria 20. Select evaluation tools 21. Conduct evaluations
	Analysis Summary	*Design Brief*	*Learning Resources*	*Implementation Strategy*	*Evaluation Plan*

Based on the ID models above, the researcher adapted and adjusted the

model by Branch with some consideration. First, activities in each step are well

explained. Second, the author states that this model is appropriate to facilitate

innovative learning, authentic learning, inspirational learning, and facilitate learning that focused on the students (student centred). The model is also applicable to develop educational product or other learning resources. Third, the module is designed with discovery learning principle based on SCL (Student Centred Learning) approach. The implementation of discovery learning contains some principles that could elicit student centred or active learning (this point is discussed later). Relate to the learning sources, the researcher facilitates the student with module that is provided in paper based and in digital form. These learning sources hoped to be able to increase their motivation in learning and ease them in understanding the materials. Therefore, the ID model by Branch (2009) is applicable in this study.

2.4.2 Need Analysis

Haque (2014) defines need analysis as process gathering information about what, why, and how language skill should be developed by involving learners, teachers, and language course. Two general frameworks for conducting need analysis according to Hutchinson and Waters (1987:54) are analyzing target needs and learning needs.

2.4.2.1 Target Needs

Target needs comprise three important term domains, i.e. necessities, lacks, and wants. *Necessities* is type of needs which gather data about what the learner needs to know in order to work effectively based on the target situation demand. The term of *lack* is determined by a view about what the learner has already known so that the instructor could make decision about specific learner's weaknesses. The term of *wants* relates to the conflict or crash of the learners'

perception (to be motivated doing something in a course) and interest perception of the other parties, such as course designer and instructor. While the result of necessities and lacks are gotten, considering what the learner's want is a thing which cannot be ignored because it relates to their motivation in attending the class.

2.4.2.2 Learning Needs

Hutchinson and Waters (1987:60) make analogy the target needs as a journey with the lack as starting point, necessities as the final destination, and want as dispute feeling on the way to reach the final destination. Correlating with target needs which look for what the student needs, learning needs help the instructor to define *how* the learners reach the particular need. In the other words, learning needs help the instructor to find a way of reaching final destination from the students' lack as starting point.

2.4.3 Design

Arkun and Akkoyunlu (2008) defines design phase as a process relates to the how information will be learnt, the result from the previous phase (analysis) is used in design phase. Sequence activities in this phase are writing objectives, developing test items, planning instruction, and identifying resources (McGriff, 2000). In designing the content of digital Basic Writing module, the researcher adjusted it based on the crucial component below.

2.4.3.1 Curriculum

The curriculum which is used in higher education is *SNPT* (Standard Nasional Perguruan Tinggi). To reach the goal of education with learning outcome basis, inside of teaching learning process should change the way in

implementing learning paradigm, i.e. from Teaching Centred Learning (TCL) to Student Centred Learning (SCL). Sailah, et al (2014) explain that students are able to reach the learning outcome through of learning process which prioritizes not only in developing creativity, capacity, personality, and learners' needs but also developing self-independence to find the knowledge. Learners should be stimulated to have high motivation and work hard to get optimum learning result. The transformation of learning paradigm from TCL to SCL comprises some components. The first is knowledge. Knowledge, which is regarded as final product, is not transferred directly from lecturer to learner, but it is regarded as the result of student' reconstruction or transformation after they learn. The second is study. When the learners study, they do not stand as passive-receptive actor of knowledge, but they are active actor to find and construct the knowledge. The third is learning process. Lecturer is not delivered the materials fully, but he participates with the learners to construct the knowledge.

TEAL (2010) defines student-centred learning as an approach in learning where the heart of learning environment is focused on learners' responsibility and activity because they are not only choose what will be studied but also how and why. In addition, Collins and O'Brien (2003) reveal that student-centred instruction stands as an instructional approach where the students influence the content, activities, materials, and pace of learning because it places the learner in the centre of learning process. The instructor provides learners opportunities to learn independently or from other students and coach them for the skill that should be mastered. Some of positive effects by implementing it in teaching learning

process are: increasing students' motivation to learn, increasing student capacity to get more knowledge, and making the students have deep understanding.

Supporting the way in implementing SCL learning paradigm, the researcher adapts *discovery learning* principle in designing Basic Writing module content. Discovery learning is active learning where the student is formed to develop higher-level skill in building deep understanding towards the material major concepts (Castronova, 2000).

According to *Badan Pengembangan Sumber Daya Manusia Pendidikan dan Kebudayaan dan Penjamin Mutu Pendidikan – Kementrian Pendidikan dan Kebudayaan* (2012) discovery learning consists of six steps to be implemented in teaching learning process. Those steps are stimulation, problem statement, data collection, data processing, verification, and generalization. In *stimulation* step, teacher serves something which cause the students confuse. Teaching learning process can be started by giving the students questions, command to read a book, and other learning activities which guide to the preparation of problem solving. To make the students have motivation to inspect their confusion, teacher goes on to the material that will be delivered without giving generalization. The function of stimulation step here is used to providing the condition of learning interaction which is able to develop and help the students to explore the teaching learning materials. After finishing with stimulation step, teacher gives opportunities to the students for identifying the relevant problems with the learning materials as many as they can in *problem statement* step. Then they are asked to choose one of the questions and make the hypothesis.

Data collection, as the third step in discovery learning, answers the questions or proves the wrong or right answer towards the hypothesis. Student is given the opportunities by the teacher to collect the relevant information. It can be reading literature, observing object, doing interview with source, making experiment, etc. In *data processing* step, all of the data which have been obtained from the previous step (data collection) are processed, disordered, classified, tabulated, and interpreted to get the valid result.

The fifth discovery learning step, *verification*, requires the students to investigate the wrong or right answer which has been stipulated with alternative result and then connect with the result from data processing. The existence of verification step is proposed to ensure the process of learning is good and creative. It can be proved if the teacher gives opportunities to the student to find a concept, theory, and rule or basic understanding through of relevant examples which is faced by the students in their life-experience. G*eneralization*, as the last step in discovery learning, is a step to make conclusion which can be used as general principle and transpire to all of the similar events by considering the result of verification. In the other words, the result of verification determines the principles in making generalization.

Andriyani (2007) also states six steps in conducting discovery learning. First, in *stimulation* step, teaching learning process started by giving questions by the teacher to the students which cause them stimulate to think about it, read books, and other learning activities that guide to the problem solving preparation. Second, in *problem statement* step, students are given opportunity to identify the relevant problems towards particular material as many as they can. From those

questions, they choose a question then formulate into hypothesis. Third, in *data collection* step, students collect the relevant data as many as possible to prove the hypothesis that has been stated is right or not. Fourth, in *data processing* step, students process the data from interview, observation, and other activities that have been conducted from data collection step then interpret all of the data. Fifth, in *verification* step, students inspect accurately to prove the wrong or right hypothesis which have been stipulated and connected with the result finding from data processing. Sixth, in *generalization* step, students make a conclusion as general principle which can be transpired to all of similar events by considering the result of verification.

Similar to the previous experts, Riyanto (2009) explains six steps of discovery learning. The first step, *stimulation*, teaching learning process is started by the teacher asks question to the students or give command to them for reading or listening problem explanation. Then in *problem statement* step, students are given opportunities to identify every problem that they find then choose one of the problems. Usually, the selected problem is the most interesting one or has flexibility to solve. After that, they formulate the hypothesis or temporary answer for the question. To answer whether or not the hypothesis is right, students are given opportunities to the relevant information in *data collection* step. It can be from reading literature, observing object, conducting interview, or doing experiment by themselves, etc. In *data processing* step, all of the data from data collection is processed, disordered, classified, tabulated, calculated with the particular way, and interpreted to get the valid result. Based on the data processing step, students check their hypothesis that has been stated is proved or not in

verification step. *Generalization*, as the last step in discovery learning requires the students to conclude or make generalization towards the particular materials that they have learned.

Based on the similar expert's argument as aforementioned, the implementation of discovery learning inside of the module is explained as follows. The first step, *stimulation* provides direct example in daily life to make the learners easily correlate and guide them in solving the problem in the next step. The second step, *problem statement* provides some questions which should be solved by learners. It can be worked individually, in pairs, or in group. In this step, learners are asked to state their own hypothesis based on the questions stipulated. Next, at the *data collection* step, learners will be asked to do the real action to prove their hypothesis is right or not by doing some activities, such as reading literature or writing based on the task given to gather the relevant information. As the continuum step of discovery learning, inside of *data processing* step is designed to ask the learners for delivering the result of their thought based on the result at the previous step. It can be group presentation or individual consultation where the learners are hoped to be able to process and then interpret the data or information to get the valid result. The fifth step, *verification,* contains direct explanation relates to the task that has been assigned to the students. The last step, *generalization,* consists of brief summary and principle or main concept relates to the material discussed. The general six steps inside of discovery learning is presented in Figure 8.
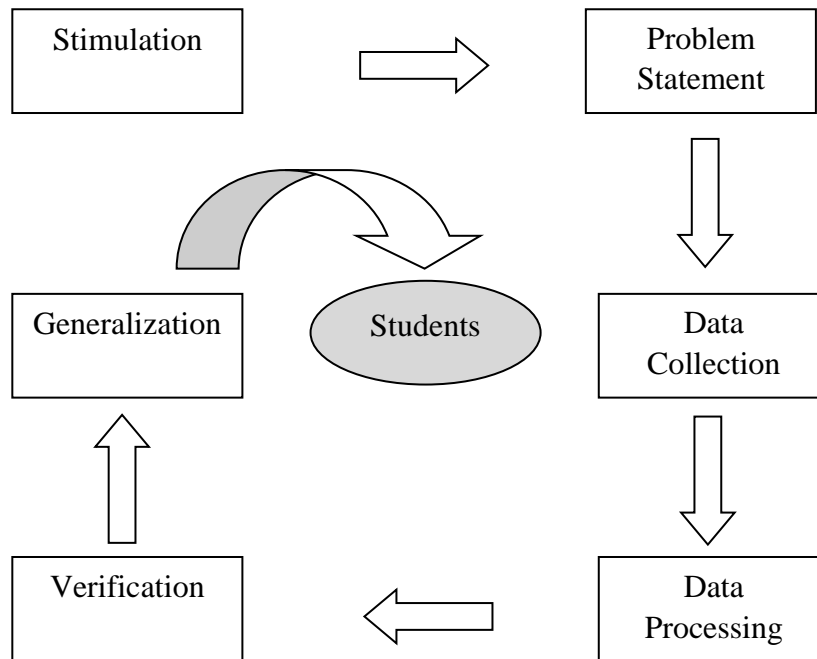
```
   Stimulation   ⟹   Problem
                       Statement

                          ⟱

Generalization   Students   Data
                            Collection

     ⟰                        ⟱

  Verification   ⟸   Data
                      Processing
```

Figure 8. Discovery Learning Model by Mukharomah (2015)

2.4.4 Development

Development phase integrates the output of analysis and design phase to develop learning material by including exercises as output (Muruganantham, 2015). To produce instruction and learning media, developer may require hardware and relevant software (McGriff, 2000). In development process, the researcher developed paper based module and Basic Writing application. To develop digital Basic Writing module, the researcher used some software developments, such as Adobe Photoshop, Corel DrawX5, IcoFX, JDK, App Inventor, App to Market, and Bluestacks App Player.

2.4.4.1 Adobe Photoshop

Adobe Photoshop is developed software by Adobe System that primary used to edit images. It has fourteen versions from 0.63 to 14.0. Rouse (2015) reveals that this software provides many image editing features. It uses layer-

based editing system that enables image creation and altering with multiple overlays that support transparency. Shadows and other effects can be added to the layers. This program is used by photographers, graphic designers, video game artists, advertising and meme designers. Because of the flexibility offered in Adobe Photoshop, the researcher used Adobe Photoshop CS5 EXTENDED (12.0 version) to design the components of application user interface.

2.4.4.2 CorelDRAW

CorelDRAW is vector graphics editor software that is developed by Corel Corporation. The basic working of vector is panting point by point to the page so that when the user reduces or increase the size of vector graphic, the image will not be distorted (CorelDRAW X7 User Guide). CorelDRAW provides many features for users in editing graphics, i.e. colour balancing, adding special effects (3D), and it is capable to work with multiple layers and multiple pages. The first CorelDRAW version (1.0) was developed in 1990; meanwhile the newest version (CorelDRAW Graphics Suite X8) was developed in 2016. The researcher used CorelDRAW Graphics Suite X5 (the sixteenth version) to design the application logo.

2.4.4.3 IcoFX

IcoFX is icon and cursor creation software that is developed by IcoFX Romanian-based Software Company (Kovrig, 2005). It allows editing multiple formats of icon and cursor that support for transparency (West, 2008). IcoFX eases the users to import and convert any images become an icon. Also, it is possible to convert one format to another, for instance, from a Windows icon to an Android icon. IcoFX has 19 versions. The first version (1.6.4) was developed in

2010. The newest version (2.12) was developed in 2015. The researcher used

IcoFX 2.9 to do some adjustment with the application icon that has been designed.

2.4.4.4 JDK (Java SE Development Kit)

Java Development Kit (JDK) is a software development environment

released by Oracle Corporation which is used to develop Java application

(Techopedia). The function of this software is used to bridging the developers to

work in an Integrated Development Environment (IDE). The JDK software is

provided in various platforms. The supported platforms are: Windows, Linux,

Solaris, and Mac. The basis of Android application runs on Java programming

language (Holla and Katti, 2012). Practically, other Android application software

developments require Java installation. To ensure the process of developing

Android application is working effectively, installing JDK is necessarily needed.

The researcher used the newest version of JDK, namely Java SE Development Kit

8.

2.4.4.5 App Inventor

App inventor is a brand of website that provides free facility to the third

parties or people who want to develop their own Android application. The App

inventor users are not only software engineers but also educators (Friedman,

2015). This website is managed under *Google* license. The old version of App

Inventor is App Inventor Classic. The newest version, MIT App Inventor 2, was

used by the researcher to develop Android application. The website can be

accessed on ai2.appinventor.mit.edu.

2.4.4.6 App to Market

App to Market is software by Hossein Amerkashi that is used to make the digital certificate of developed Android application from App Inventor. The function of the certificate makes the application does not read as debug (trial) application in Android device. The features of App to Market are providing information details about the developer that will be written inside of the certificate and some adjustment to the developed application such as target minimum SDK, screen with no title bar, screen with action bar, screen no title bar-full screen, screen orientation, etc. The newest version, App to Market 4.1, was used by the researcher to sign the Basic Writing application.

2.4.4.7 Bluestacks App Player

This software is developed by BlueStacks Company that produces Bluestacks App Player and GamePop. Bluestacks App Player is an emulator to run Android application on the PC (Personal Computer). In the other words, Bluestacks App Player is software that can be turned in PC (Personal Computer) as virtual Android device. However, this program does not change users' computer operating system (from Windows or Macintosh operating system to Android operating system). This software is completely risk free and it can be used freely (Sharma, 2016). Bluestacks App Player has vaious version started from 0.63 to 2.5.90.6347. The researcher used the newest version Bluestacks App Player to run the developed Basic Writing Application besides using real Android device.

2.4.5 Implementation

Implementation is a process to practice the product of learning (materials) with the actual learners to know the impact in real world context (Welty, 2007; Arkun and Akkoyunlu, 2008). The data from implementation step is used as reference to revise the product in the next step.

2.4.6 Evaluation

The role of evaluation phase is determining the product adequacy and verifying its content materials whether or not filling the learning objective and learner needs (Kulvitiene and Sileikiene, 2006; Arkun and Akkoyunlu, 2008). The evaluation phase can be conducted both of formative and summative by using questionnaire, group discussion, and interview (Passerini and Granger, 2001).