

## **CHAPTER III**

### **RESEARCH METHODOLOGY**

#### **A. Research Type**

The model of this research is research and development. Development research is a process of developing and validating products used in learning processes (Asim, 2001: 1). Research and development defined research development as a kind of purpose to result in the products and ended with evaluation process (Sugiyono, 2008:297).

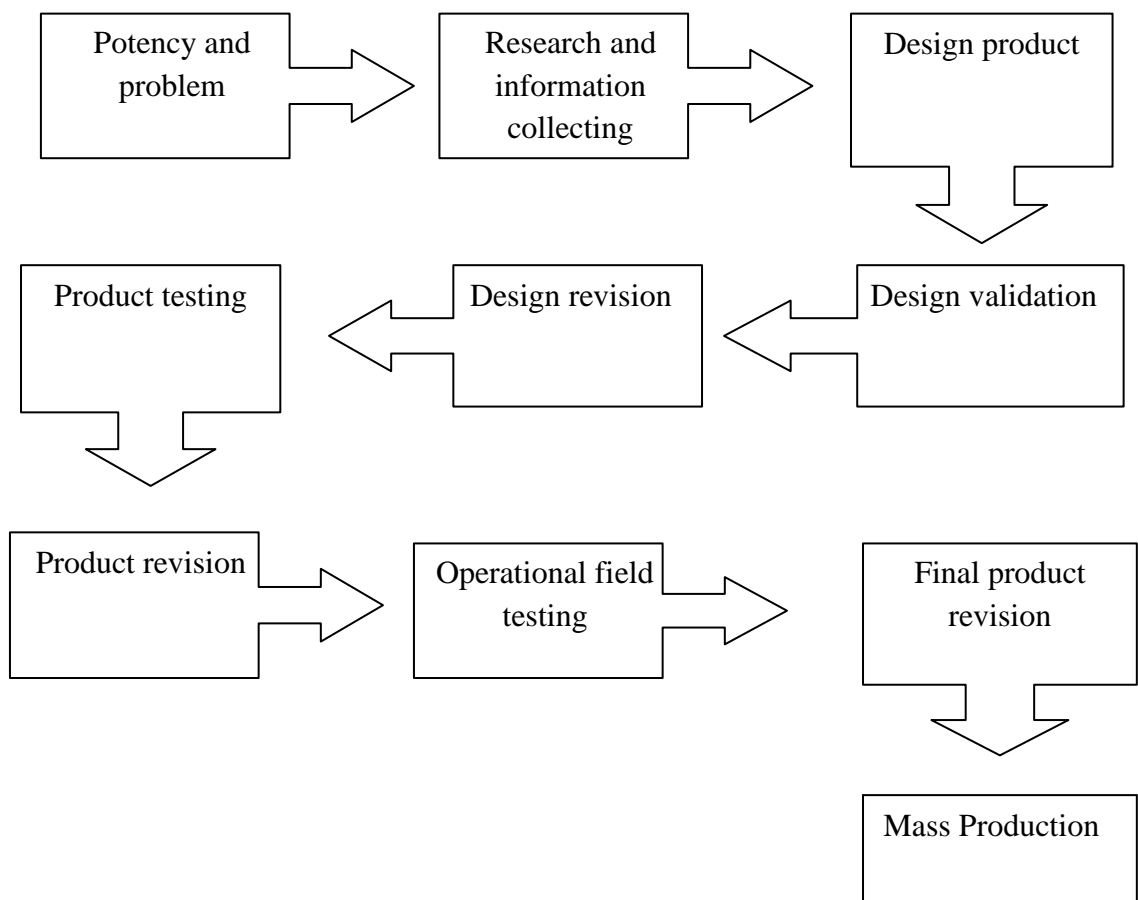
It can be concluded that research development is a process to develop or make software and hardware products that can be used in education activity, begins with need of assessment, continued with development process, then finished with with product revision and dissemination.

Development is the implementation from another design model learning system. Model is something that imagine opinion pattern whereas system learning model usually imagine step by step in effective and efficient activity.

In order to develop a computer-based instructional multimedia product for accounting subject, the model is used to adopt Brog and Gall's version (1989) by adapting instructional design developed by Dick and Carey (2001: 6-8), and the design of computer-based learning by Criswell (1989: 50).

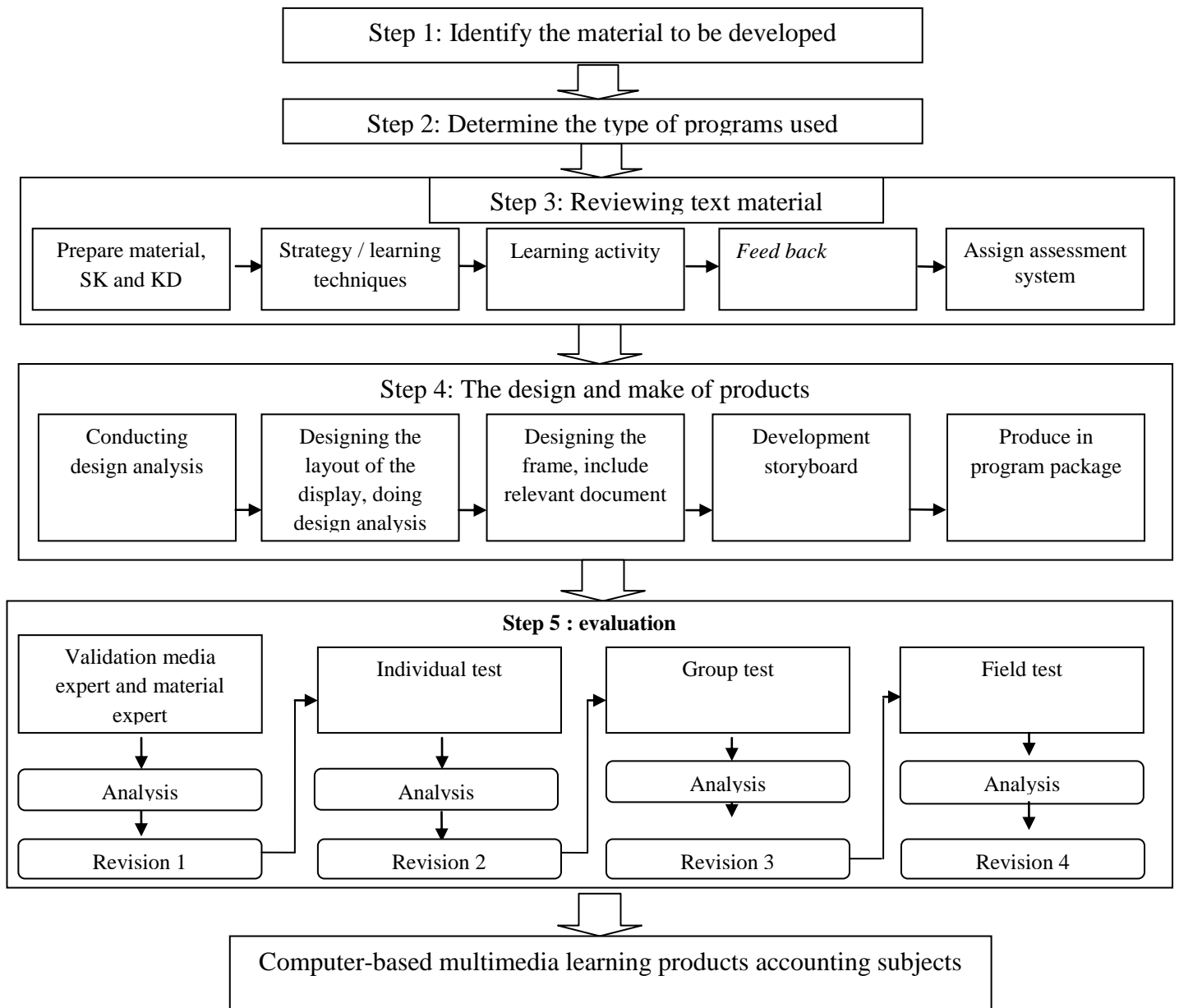
Actually, there are 10 step in R&D process, they are : Potency and problem, Research and information collecting, Design product, Design validation, Design revision, Product testing, Product revision, Operational field testing, Final product revision, Mass Production (Sugiyono, 2008:298)

Figure 1. Step using research and development method (10 steps)



Flowchart of the processes of development and computer programming multimedia learning as the modification of a wide range expert opinions can be illustrated in Figure 2.

Figure 2 Flowchart of computer-based multimedia learning product



## **B. Research Design**

The procedures of this study are divided into two parts: the development of computer-based learning multimedia and the evaluation. Procedures for the development of computer-based learning program include:

1. Developing computer-based learning multimedia
  - a. Identify accounting material researcher will develop.
  - b. Determining the type of program or application to use.
  - c. Reviewing the manuscript of accounting materials.
  - d. Developing computer-based instructional storyboards for accounting.
  - e. Creating computer-based learning product for accounting.
2. The evaluation of computer-based learning multimedia for accounting
  - a. Constructing learning multimedia quality assessment instrument.
  - b. Ask media and material experts to assess and evaluate the feasibility of multimedia learning.
  - c. Finalizing a multimedia learning product.

## **C. Site and Time of Research**

The research will be conducted at SMAN 15 Bandar Lampung in Turi Raya, Tanjung Senang, Bandar Lampung. The span of research time ranges from October 1-31, 2013.

## **D. Subject and Object of Research**

In the research and development, it will be conducted three test steps: one-on-one test, small group test, and field test. Sadiman (2007: 183)

described a number of tests involving two students, small group trials as many as 9-20 students, and in field trials involving 30 students. Hence, researcher determined that the object of study include: two experts on test validation, 6 people on one-on-one test, 15 students in a small test group, and 35 students on a field trial. Object of this study is the feasibility of computer-based instructional media for accounting subject for high school students from the aspects of content or material, display, and programming.

#### **E. Definitions of Operational Research Variable**

Determination of research variables is very important in the research process, where those will be noticed by researcher during research and in the preparation of report. The following research variables include:

##### **1. Computer-Based Accounting Learning Media**

Computer-based learning media is a medium used to convey messages or materials created by merging images, sounds, and texts and learning materials to be delivered. The use of computer-based learning media can complement the information and skills that are not obtainable through conventional teaching. In addition, students can obtain a stronger memory because media presented is more interactive and engaging students in the process.

##### **2. Learning Motivation**

Learning motivation is desire or urge to learn. Someone who has a strong study motivation will constantly and fervently follow the spirit of

learning activities. Motivation to study is a factor as the basis of students' desire to learn. Learning motivation can be improved with the influence of encouragement from outside. To find Increased motivation measurement using a questionnaire was given before and after the research and then converted using the number 5 scala *Likert* question form.

## **F. Data Collection Techniques**

Data collected in this study includes quantitative and qualitative data. Qualitative data are about the development process of learning media in the form of criticism from material and media experts. Quantitative data are data subject within research in the form of expert's assessment on data media, material and experts in students questionnaire. Data from the study of students' motivation also includes quantitative data. There are two techniques used in the collection of data in this study, questionnaire and interview.

### **1. Questionnaire**

Question form or questionnaire is a set of questions or written statement to the respondent to answer (Sugiyono, 2008: 142). According to Arikunto (2006: 151), questionnaires are a number of written questions used to obtain information from respondents within the meaning of the private, or reports about things that are known. This method is used to obtain more complete data about students' opinions and experience in using computer-based learning media for accounting. To obtain data about students' motivation, a questionnaire containing questions related to the

students' learning motivation is used and its calculations using 5 points Likert scale. The questionnaire is expected get relevant data.

## 2. Interview

Interview is used by asking students several questions to obtain their responses in the forms of opinions and impressions during they use computer-based learning media when they study accounting. Interview questions are developed by researcher. Interview is performed after students use computer-based learning media. Interviews are also conducted to obtain input from students on multimedia forms of learning they need and deem as fun. Interview will useful to provide additional information related to the media development and learning motivation.

## **G. Research Instruments**

### 1. Questionnaire

In this study, questionnaire was used to assess the feasibility of computer-based learning media and improving students' learning motivation. After material review ended, students are given further measurement instruments in the form of questionnaires or assignment list containing personal abilities, skills, or attitudes after experiencing the learning process. The measurement of learning success showed a positive response to the media and computer-based learning supports the achievement of learning objectives. Questionnaire is drawn and developed

according to experts breakdown of the review on theoretical study. The measured aspects are as follows:

- a) Quality content or material of computer-based learning media products

Table 1. The quality assessment instruments of lattice material multimedia by materials expert

No	Sub aspect	Indicator	No items
1	Presentation material	Clarity basic competence indicators, and the purpose of learning	1
		Compliance with basic competence	2
		The suitability of the material with indicator	3
		Truth definitions and concepts	4
		Sequence concept	5
		Deepening material	6
		The accuracy of the pictures and illustrations are presented with material	7
		Appropriateness of examples to clarify the content	8
2.	Learning	The clarity of the material to be understood	9
		Ease of material to be learned	10
		The influence of learning media to students' motivation	11
		The ability to encourage student motivation	12
3.	Completeness of tests	The suitability of the training and evaluation provided by material	13
		The suitability of the exercise with the purpose of learning	14
		Sufficiency the number of actual exercises	15
		The suitability of providing feedback (feedback or reinforcement)	16
		Accuracy of the answer keys with reserved the exercise presented	17
		The level of difficulty of the question in accordance with the competence	18
4.	Language	Conformity with students' level of language development	19
		Standard term used	20
		The language is easy to understand	21
		the effectiveness of the use of the phrase	22
		the clarity of the instructions correctly	23

Source : Septiani (2012: 65-67)



## b) Display the quality of computer-based learning media products

Table 2. The display of rating instruments of multimedia quality assessment by media expert

No	Sub aspect	Indicator	No item
1	a) A clue use of programs	Clarity instructions use of programs	1
	b) Clarity text or letters	Read the text or writing	2
	c) Quality of color	The color selection and composition skills	3
	d) Quality of picture	Selection of image quality and accuracy	4
	e) Quality of <i>layout</i>	structuring and drafting layout	5
	f) Animation quality	Animation serve	6
	g) Quality <i>background</i> and <i>sound effect</i>	The clarity of sound and music support resources	7
	h) Quality graphics	The quality of a visual display or graphic	8
2.	a) Quality <i>user interface</i>	The ease of using the menu shown	9
	b) Quality memory <i>usage</i>	Speed when program executed	10
	c) <i>Compability media</i>	the completeness of the displayed features	11
	d) Quality function use of programs	Easy use of the buttons on the program	12

Source: Deswinta (2010 : 53)

## c) The quality of material and computer-based learning media

Table 3. Rating instruments for students' assessment about accounting material and learning medium developed

No	Sub aspect	Indicator	No. Item
1.	Presentation material	The clarity of the material	1
		Ease of material learned	2
		Easy to learn	3
		Clarity a menu that is learned	4
		The clarity of the instructions the selection menu	5
		The clarity of the instructions work problem	6
		Variation of learning materials	7
		Forms problem	8
		Level of difficulty problem	9
		Clarity of writing	10
		The usefulness of the image	11
		The usefulness of video	12
2.	Learning	The clarity of the material to be understood	13
		The amount of material being studied	14
		Easy to learn	15
		A series of material	16
		Clarity material	17
		Clarity of instructions work on exercise	18
		Exercises for understanding the material	19
		Clarity of language	20
		The response to the correct answer	21
		The response to the correct wrong	22
3.	Media Display	Clarity of instructions in working	23
		Clarity of writing	24
		The clarity of the picture	25
		Color Written	26
		Color picture	27
		Background color	28
		Display each slide	29
		Musical accompaniment	30
		Freedom to choose the menu	31
		The using button	32
		Navigation	33
		Interaction	34

Source : Septiani (2012 :65-67)

- d) Aspects of learning motivation by using a sheet of computer-based learning media assessment

Table 4. Rating instruments of learning motivation

Sub Aspect	Indicator	No item
Intrinsic	Diligently studied accounting to get high score	1
	Understanding all task realated to accounting	2
	Important is completing the accounting tasks no matter what the outcome	3
	Search latest resources to support the accounting subject	4
	Relax remains important being pursued accounting task	5
	Overcome all problem in learning process	6
	Discuss the task rather than chatting	7
	Disappointed if get lower accounting score	8
	Challenged to work difficult task	9
	Satisfied if finished maximum	10
	Work the task maximum	11
	No matter if the task work not maximum	12
	Not Confident finish the task from teacher	13
Extrinsic	Interested in trying programs of their own accord	14
	Want to know more the content of learning multimedia	15
	The material and exercises presented easy to understand	16
	Use tools to finished the task	17
	Learning accounting using media more fun	18
	learning media more attractive than the conventional	19
	Can play while learning with computer-based learning media	20
	Computer-based learning needs to be more frequently used	21
	Hours subjects felt more quickly when taught using instructional media	22
	Interest in the material presented in the form of multimedia	23
	Response cheerful pops up every time the correct answer further enhance the spirit to continue learning	24
	The value that appears each finished with more test drive the spirit to try again	25
	Multimedia improve the motivation to more active studying accounting	26
	The spirit of learning is more increased	27
	The program presented is easy to use	28

Source: Sardiman (2006) ,Deswita (2010)

e) Scoring guidance

There are five strata of alternative answers, strongly agree has 5 scores, agree has 4 scores, enough has 3 scores, disagree has 2 scores, strongly disagrees has 1 score. The scoring is expressed in the following table:

Table 5 alternative answers score statement

Alternative answers	Score to statement
	Positif statement (+)
Strongly agree	5
Agree	4
Enough	3
Disagree	2
Strongly disagree	1

f) Aspects of attraction, known as direct observation and question form is given to the students

After students completed filling out questionnaires distributed, interview process is held. Type of interviews used is not structured. Researcher perform interview by asking some questions prepared previously. Usually, questions arise spontaneously in accordance with the dynamics of conditions surrounding interviews (Sanipah, 1991: 63). Researcher chose unstructured interview to created relaxed, friendly, and flexible atmospheres with respondents.

## H. Data Analysis Techniques

Sukarjo (2005: 52) states that the classified the quality of media developed research need to collect, manage, give the score and convert the points score into five scale.

1. Actual average ( $\bar{X}$ ) =  $\frac{\sum x}{n}$  , If x is actual score and n is number of cases
2. Standard Deviation (SB) =  $\sqrt{\frac{\sum x^2}{n} - (\bar{X})^2}$  if (  $x = X - \bar{X}$ )

Next provisions would be allocated to change score in 5 point scales as follows:

1. Maximal score = 5
2. Minimal score = 1
3. Mean ( $\bar{X}$ ) =  $\frac{1}{2}$  (maximum score + minimum score)  
=  $\frac{1}{2}$  (5+1)  
= 3
4. Standard Deviation (SB) =  $\frac{1}{6}$  (maximum score – minimum score)  
=  $\frac{1}{6}$  (5-1)  
= 0.67

After studying these media programs, data acquired analysis and researcher will revise product testing. Hence, researcher will know whether media products developed are effective for use in learning activities or not. Whether it can improve students' learning motivation or not. The resulting product is revised based on inputs from various phases of evaluation (media experts, material experts, teachers, test trial phase 1, phase 2, and phase 3).

Table 6. The conversion rate on a 5 points scale

Value	Category	Formula	Calculation
A	Very Good	$X > \bar{X} + 1,80 \text{ SBi}$	$X > 4,2$
B	Good	$\bar{X} - 0,6 \text{ SBi} < X \leq \bar{X} + 0,6 \text{ SBi}$	$3,4 < X \leq 4,2$
C	Enough	$\bar{X} - 0,6 \text{ SBi} < X \leq \bar{X} + 0,6 \text{ SBi}$	$2,6 < X \leq 3,4$
D	Not Good	$\bar{X} - 1,80 \text{ SBi} < X \leq \bar{X} - 0,60 \text{ SBi}$	$1,8 < X \leq 2,6$
E	Very Not Good	$X \leq \bar{X} - 1,80 \text{ SBi}$	$X \leq 1,8$

Notes:

$\bar{X}$  = Ideal Mean Score

$\text{SBi}$  = Ideal Standard Deviation Score

$X$  = Actul score

In order to understand whether the quality of products are worthy or not, researcher used minimum judgment “B” criteria which is categorized as “good”. If appraised media is expressed as “worthy”, it deserves as a medium of learning. Then media can increase students’ motivation. If each indicator gets mean score which is categorized “very good” ( Osa Maya Kurniadani, 2012 : 70)