



Development of Interactive E-Learning Using Multimedia Design Model

Ambar Sri Lestari

Islamic State Institute of Kendari, Southeast Sulawesi Indonesia, Indonesia

This research aims to development of interactive E-Learning using multimedia design model in through supporting Adobe Flash Creative Suite 6 in the learning media subject in faculty of education IAIN Kendari. The type of research is research and development using the procedure development model from Luther that includes six phases, there are: concept, design, material collecting, assembly, testing, and distribution. The validation instructional materials adopted a formative evaluation models from Dick and Carey, which includes four phases, namely: evaluation of the expert, individual testing, piloting small groups, and a field test. Number of respondents who review teaching materials is a material experts and media, six students in individual trials, twelve students in a small group test, twenty students in field tests. Data collection instruments are documents and questionnaires. The data analysis technique used is descriptive qualitative and quantitative analysis. The results showed that the validation of teaching materials from the aspect of material showed very good with a percentage of 94%, then aspects of the media showed both categories with a percentage of 80%, and aspects of the users shows very good with a percentage of 94%. Individual test results show very good with a percentage of 87%, a small group of test results showed very good with a percentage of 88%, and the results of field tests showed very good with a percentage of 88%.

Keywords: Interactive Learning Media, E-Learning, Multimedia Design Model.

1. INTRODUCTION

E-learning is a form of learning that now widely applied of education, e-learning has advantages where learning can be done anywhere and anytime without limits of space and time, e-learning can also be made direct/face-to-face (synchronous) or indirectly (asynchronous). Naidu¹ said that “*e-learning would incorporate all educational activities that are carried out by individuals or groups working online or offline, and synchronously or asynchronously via networked or standalone computers and other electronic devices.*” Electronic media is meant here is the computerized technology-based media. E-learning is a network with the ability to update, store, distribute and share teaching materials or information. According to Romi Satrio Wahono,² meanwhile, according to Roblyer and Doering,³ meaning “*multiple media*” or “*a combination of media. The media can be still graphics and photographs, sound, motion video, animation, and/or text items combined in a product Whose purpose is to Communicate information in multiple ways.* It is said that multimedia is a tool that can create dynamic and interactive presentation that combines text, graphics, animation, audio and video images are intended as a means of information and communication. When users get flexibility in controlling it is called interactive multimedia.

Meanwhile, Chapman and Chapman states that *the form of multimedia as a messenger divided into two delivery online and*

offline delivery. Online delivery is multimedia that uses a network to transmit information from one computer or server machine that became the center of a data storage to other networks both within an organization’s local network and the Internet network. Offline multimedia delivery is saved by using a storage device or packaging which can be moved. The storage device must be capable of storing large amounts of data in accordance with the characteristics of multimedia data, such as DVD and CD-ROM. This research is research and development, according to Borg and Gall,⁵ *is the development of research-oriented research to develop and validate the products are used in education.* The research model used is the development of procedural models Luther in Sutopo.⁶ The reason for choosing the model of Luther are presented briefly and clearly explained every step of covering the concept, design, collection of materials, assembly, testing and distribution.

2. STAGES OF RESEARCH

At the stage of application design model of interactive learning media begins with the concept (drafting), design (designing), collecting material (material collection), assembly (manufacture), testing (testing) and distribution (distribution) in Binanto.⁷

2.1. Concept

Description of the concept of the application is as follows:

- (1) Title: Multimedia-based learning media applications.
- (2) Users: Users intended for students, but in general may using by the public.
- (3) Purpose: The purpose of this application is to enable students to understand the course of instructional media with ease and not boring.
- (4) Images: Images used using .png and .jpg format files created using Adobe Photoshop and Adobe Flash. PNG (Portable Network Graphics) is one of image storage format that uses a compaction method that does not eliminate a part of the image (lossless compression). .png Formats using lossless compression to display 24-bit images or solid colors to the media. This format supports transparency in an alpha channel so excellent .png format used on the media or the application made by the researchers.
- (5) Audio: Using a file format .mp3 and .wav taken from www.youtube.com and converted into .mp3 and recordings.
- (6) Video: Using the .swf file format.
- (7) Animation: Animations created with Adobe Flash using 2D charts that will be stored in .swf format. Excess use .swf file is a huge market of animation very varied and more interesting, designers can explore more functions of existing tools in the Adobe Flash software. In addition, the resulting file size, relatively small and can be displayed with a screen size to suit the wishes.
- (8) Use of Color
 - (a) In making the application of the proper use of color is very important, because as a electromagnetic wave that led to the eye is then translated by the brain. Color is also something to do with human emotions and can cause psychological influence. Here are some of the colors and its usage are used in the manufacture of game applications.
 - (b) Blue, often defined as something that has a serenity and confidence.
 - (c) Red, Meaning and melambangkan matches this color strength, and willingness aggressive.
 - (d) Green, these colors show something completely natural and healthy.
- (9) Authoring Software: Adobe Photoshop for image processing, Adobe Flash to create animations.
- (10) Output: Output permianan application is shaped media that can be accessed on the website of e-learning.

2.2. Design

Description of the concept of the application is as follows:

- (1) A storyboard design: A storyboard design stage of the guide describe everything about the look of the application to be built later in the assembly stage (Creation).
- (2) Structure Design Navigation: The navigation structure is useful to illustrate a link from one page to another page.
- (3) Design of State Transition Diagrams (STD): STD is a diagram modeling the behavior (behavior) system based on the definition of the part of the state system. This step is used to describe the performance of the system. There are 3 State Transition diagram of the design of this study media.

2.3. Collecting Material (Material Collection)

Methods of collecting materials needed to meet the needs in making this learning media in the form of text files, images, sound and animation is obtained from various sources.

2.3.1. Material Text

See Table I.

Table I. Material text.

| No | Title of teks | Kind of font | Size (kb) |
|----|-------------------|-----------------|-----------|
| 1 | Title | Alhambra | 89 |
| 2 | Judul | ITC Avant Garde | 126 |
| 3 | Tombol start | ITC Avant Garde | 126 |
| 4 | Tombol before | BD Badrus | 214 |
| 5 | Tombol next | BD Badrus | 214 |
| 6 | Tombol material | BD Badrus | 214 |
| 7 | Conten material | ITC Avant Garde | 126 |
| 8 | Tombol menu Utama | BD Badrus | 214 |
| 9 | Tombol home | BD Badrus | 214 |

2.3.2. Material Picture

See Table II.

Table II. Material picture.

| No | Name picture | Kind of picture | Size (kb) | Resource |
|----|------------------|-----------------|-----------|-----------------------------|
| 1 | Logo | .png | 10.8 | Web university of Kendari |
| 2 | Background | .jpg | 315 | Make in Adobe Photoshop |
| 3 | Foto profil | .jpg | 105 | Foto |
| 4 | Material picture | .jpg | 113 | Website make in Adobe Flash |

2.3.3. Material Animation (Flash dan Video)

See Table III.

Table III. Material animation.

| No | Video name | Kind of video | Size (kb) | Resources |
|----|-------------------|---------------|-----------|---------------------|
| 1 | Tween animasi1 | .swf | 324 | Make in Adobe Flash |
| 2 | AnimasiHome | .swf | 43 | Make in Adobe Flash |
| 3 | Line Animasi | .swf | 342 | Make in Adobe Flash |
| 4 | Movieclip_title | .swf | 74 | Make in Adobe Flash |
| 5 | Movieclip_setting | .swf | 83 | Make in Adobe Flash |
| 6 | Mc_slidemateri | .swf | 25 | Make in Adobe Flash |
| 7 | Mc_introducing | .swf | 79 | Make in Adobe Flash |
| 8 | Mc_supporting | .swf | 14 | Make in Adobe Flash |
| 9 | Mc_btn1 | .swf | 8 | Make in Adobe Flash |
| 10 | Mc_btn2 | .swf | 9 | Adobe Flash |
| 11 | Mc_btn3 | .swf | 65 | Adobe Flash |
| 12 | Mc_btn4 | .swf | 88 | Adobe Flash |
| 13 | Mc_btn5 | .swf | 88 | Adobe Flash |
| 14 | Mc_btn6 | .swf | 88 | Adobe Flash |
| 15 | Mc_btn7 | .swf | 88 | Adobe Flash |
| 16 | Mc_btn8 | .swf | 88 | Adobe Flash |
| 17 | Mc_btn9 | .swf | 88 | Adobe Flash |
| 18 | Mc_btn10 | .swf | 88 | Adobe Flash |
| 19 | Mc_btn11 | .swf | 88 | Adobe Flash |
| 20 | Mc_btnnavigasi | .swf | 128 | Adobe Flash |
| 21 | Symbol | .swf | 67 | Adobe Flash |

2.3.4. Material Sound

See Table IV.

Table IV. Material sound.

| No | Sound name | Kind of sound | Size | Resource |
|----|-------------------|---------------|-----------|--|
| 1 | Wrong-answer | .wav | 207,4 kb | www.soundjay.com |
| 2 | Right edit | .wav | 225,8 kb | www.soundjay.com |
| 3 | Click | .wav | 0,6 kb | www.adobeflash.com |
| 4 | Button-3 | .mp3 | 6,7 kb | www.soundjay.com |
| 5 | Background music | .mp3 | 2423,1 kb | www.classical-music.com |
| 6 | Explain of Materi | .wav | 156,4 mb | Record |

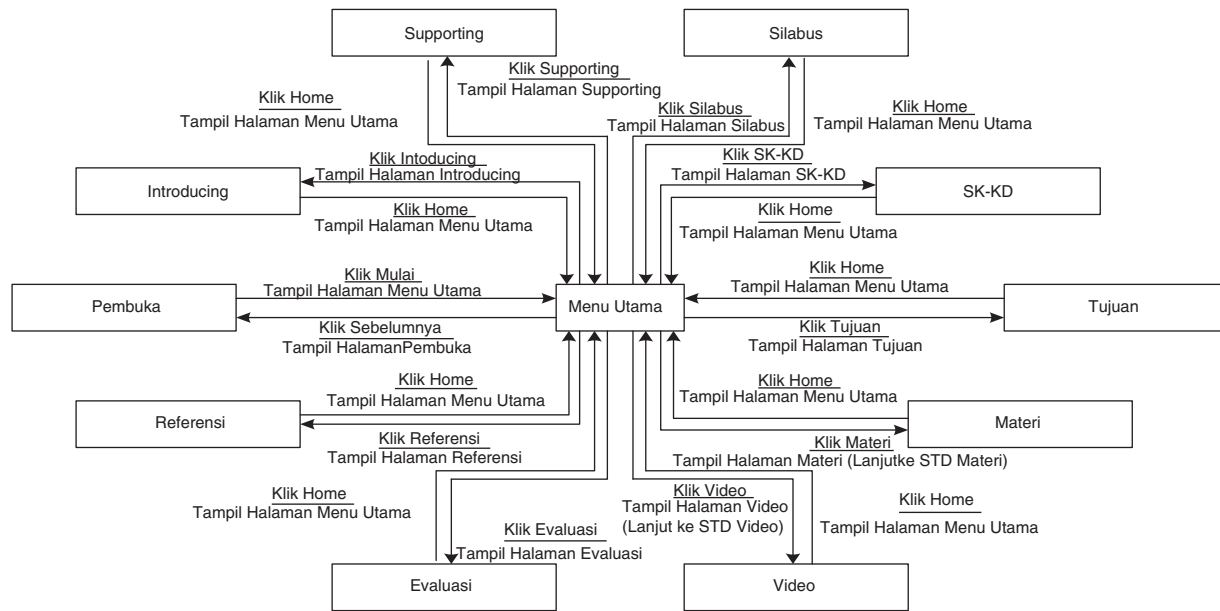


Fig. 1. State transition diagram main menu.

2.3.5. Assembly (Making)

- (1) Layout and Design: At this stage, there is the design process in order to appear friendly user interface. Stages include design background design, page design of the main menu and navigation buttons on every page in this learning these media. Background design using Adobe Photoshop.
- (2) Making the Media: The process of making the overall media created in Adobe Flash, while the basic objects made for media content is as follows.

2.3.6. Testing (Tests)

Testing is an essential part of the software development cycle. Tests conducted to examine the functions in this brain exercise game applications to run properly and in accordance with the design that has been developed previously. This application testing using a type of black-box testing is testing that focuses on the functional requirements of the software with the hope to find out categories such error; function is missing or incorrect, an error of the interface, error of performance or behavior and others.

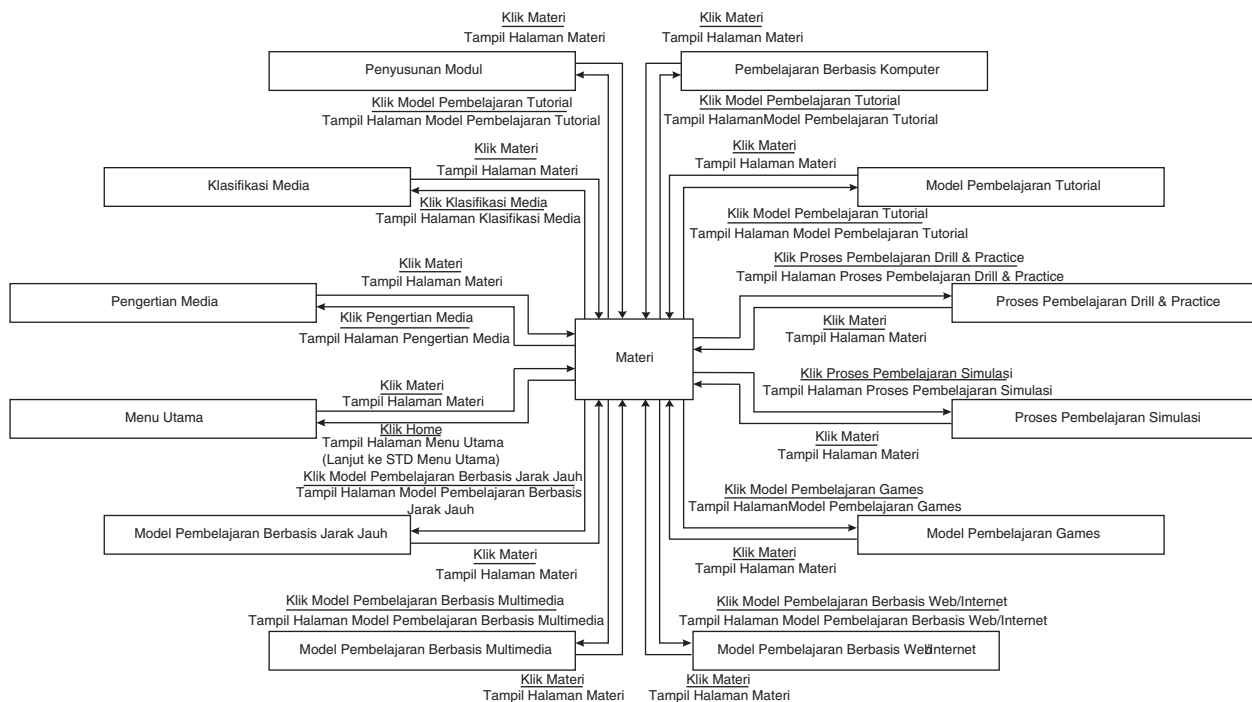


Fig. 2. State transition diagram materi.

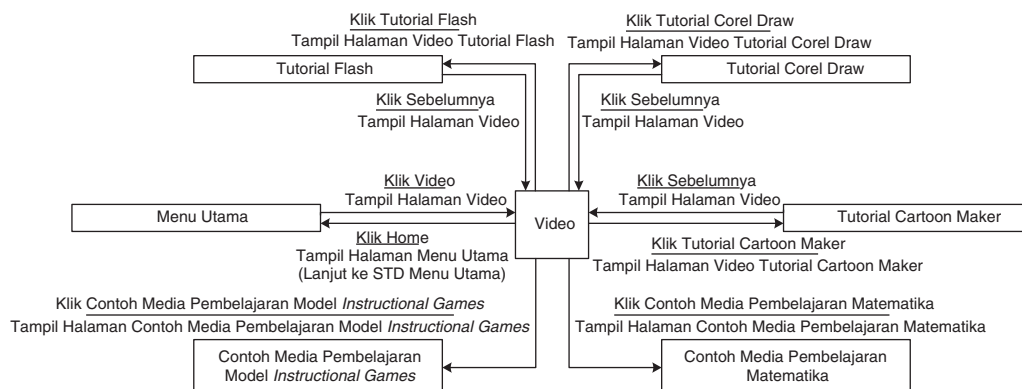


Fig. 3. State transition diagram video.

2.3.7. Distribution

The distribution of the development of interactive learning media will be displayed on the web e-learning in <http://www.elearning-ambarsrilestari.com/>.

3. THE MAJOR ISSUES ADDRESSED IN THE PAPER

E-learning has been widely used in the classroom, learning resources can be made with a very attractive and with the help of supporting technologies such as multimedia applications like Adobe to create animated or interactive quiz so that learning can be done independently by the students. Learning resources can also be classified into several types such as in the form of video to work presentation, writing stored in a blog and a collection of teaching module stored on slideshare, so that the students' work will not be lost and can be read by others to be used as a reference product or writings.

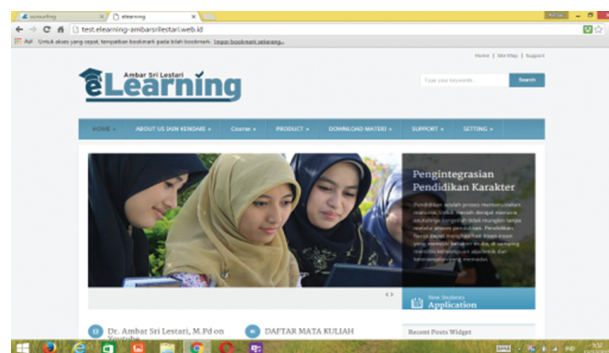


Fig. 6. Web E-Learning.

4. CONCLUSIONS

From the results of this experiment it was concluded that the design of the development of interactive learning media is done in several steps: *First*, the concept stage (concept) which consists of several activities, namely:

- (a) a needs analysis,
- (b) determine the purpose (standard of competence, basic competence, indicators and learning objectives),
- (c) analysis of the characteristics of students, and
- (d) mapping with multimedia learning objects.

Second, the design phase (design) is making a detailed specification of the project architecture, style, and material requirements for the project. The activities carried out at the design stage:

- (a) create a flowchart,
- (b) make the navigation design, and
- (c) create a storyboard.

Third, material collection phase (collecting material) such as image, animation, audio, following the making of video, audio, and others needed for the next stage. *Fourth*, the stage of the manufacturing (assembly) is the stage in which all multimedia objects made by a flowchart, navigation structure and storyboard. *Fifth*, testing (testing) is an activity to ascertain whether the results (teaching materials) is as desired. Testing at this stage performed by the manufacturer itself. *Sixth*, distribution (distribution) is reproduced and distributed products to users in order to evaluate. The results of research or experiments performed are as follows:

- (1) Test matter experts to obtain the level of achievement of 94% with a very good quality,

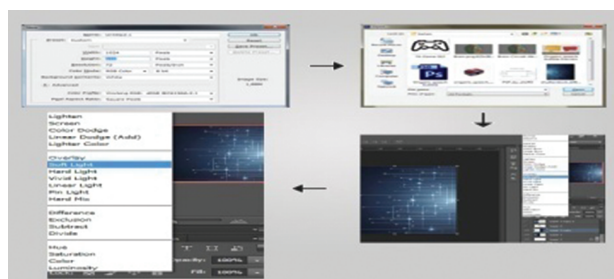


Fig. 4. Assembly step background I.

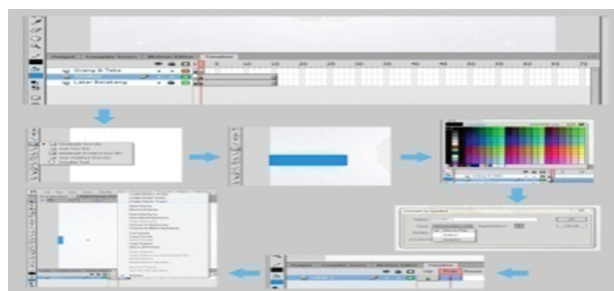


Fig. 5. Step making navigation buttons.

- (2) test media experts to obtain the level of achievement of 80% with good quality, and
- (3) test user/users (students) to obtain the level of achievement of 94%, with an overall perolahan score of 89% is located on qualifying well and does not need to be revised, and performed
- (4) individual testing obtain level of achievement of 87% with a very good quality,
- (5) small group try to obtain the level of achievement 88% and
- (6) field test to obtain the level of achievement of 88% with a very good quality by students.

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References and Notes

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