

## CHAPTER II LITERATURE REVIEW

### 2.1 Literature Review

According to Susilo, Anitah, & Yamtinah, (2017), Learning media are all things that contains learning material such as textbooks, modules, real objects, newspapers, interactive videos, multimedia systems that allows one to use them to study in sequence. Teaching supported by technology offers many opportunities to include various extraordinary possibilities such as contributing to the development of environmental skills. The use of technology as a learning media was chosen because it would have the same effect when compared to using the actual tool. By using a learning media, students who are difficult to understand and passive in subjects can become more active and improve the quality of their learning.

In Yunus & Rakib, (2016) journal, the use of books is unsupportive during the learning process so that the understanding or mastery of the material is less than optimal until they use a learning medium such as Edmodo. By using this learning media, the quality of learning increases because it can facilitate interaction between students and subject matter, as well as interactions between students and teachers and with fellow students such as exchanging ideas, files, activity agenda, and assignments. By using this learning media, teachers can provide learning wherever and whenever without being related to space and time.

In Riyanto & Singgih, (2015) research, they use augmented reality technology as a learning media because they were able to increase user understanding and increase interest in learning about planets. In making these learning media, researchers used the Multimedia Development Life Cycle (MDLC)

method. By using MDLC Method, the making process of the multimedia system that the authors operate become more easier and structured.

In the making of Augmented Reality about human digestive organs, researchers used the Unity application as a tool to build the learning media. With Unity 3D game engine, researchers can realize the virtual world into the real world and can transform these objects into 3D objects, so the learning method is not monotonous and children become motivated to find out more, such as knowing the names of organs and descriptions of each organs without the need for props (Saputro & Saputra, 2015).

In the making of Solar System Learning Applications for Basic School, researchers use Unity so that they can make the process and state of the solar system significantly by displaying planetary shapes, how planets rotate and evolution by explaining in the form of animation and sound. The advantage of Unity is that it can also be used on other platforms such as Unity Web, Windows, Mac, Android, iOS, XBox, Playstation 3 and Wii (Sartika, Tambunan, & Telnoni, 2016).

With the theory that has been submitted in the previous paragraph, then we draw conclusions contained in Table 2.1 as follows.

**Table 2.1** Literature Review Conclusions

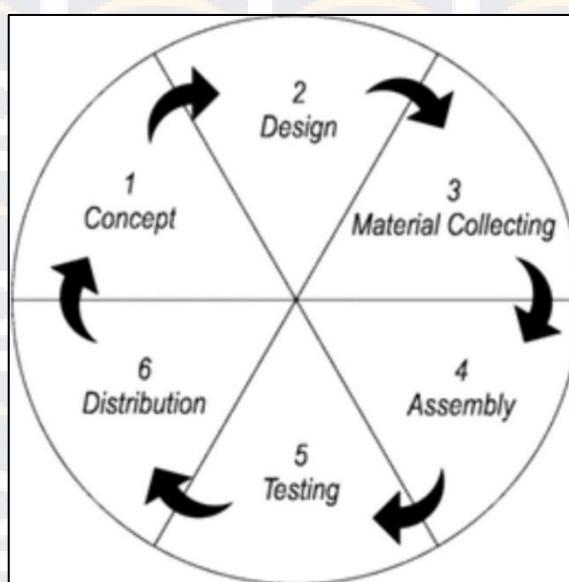
No	Name	Year	Conclusion
1	Joko Susilo, Sri Anitah, Sri Yamtinah.	2017	The use of technology as a learning media was chosen because it would have the same effect when compared to using the actual tool. By using a learning media, students who are difficult to understand and passive in subjects can become more active and improve the quality of their learning.
2	Muchtar Yunus, Muhammad Rakib.	2016	By a learning media, the quality of learning increases because it can facilitate interaction between students and subject matter, as well as interactions between students and teachers and with fellow students such as exchanging ideas, files, activity agenda, and assignments.
3	Riyanto, Singgih S.R	2015	By using MDLC Method, the making process of the multimedia system that the authors operate become more easier and structured.
4	Rujianto Eko Saputro, Dhanar Intan Surya Saputra.	2014	With Unity game engine, researchers can realize the virtual world so the learning method is not monotonous and motivating people to find out more.
5	Yuni Sartika, Toufan Diansyah Tambunan, Patrick Adolf Telnoni.	2016	Unity can also be used on other platforms such as Unity Web, Windows, Mac, Android, iOS, XBox, Playstation 3 and Wii.

Based on the results of previous research, researchers will create a learning media project to assist in improving the quality of learning and facilitate interaction between user and subject that proved to run well in Susilo et al., (2017) and Yunus & Rakib, (2016) research, using Multimedia Development Life Cycle (MDLC) method as done by Riyanto & Singgih, (2015), using Unity game engine such as research conducted by Saputro & Saputra, (2014) and will be running on Windows platform such as Sartika et al., (2016) research.

## 2.2 Theoretical Basis

### 2.2.1 Multimedia Development Life Cycle (MDLC)

According to Riyanto & Singgih, (2015), MDLC is a suitable system design method in designing multimedia-based systems. Multimedia Development Life Cycle consist of six parts, namely the concept stage, the design stage, material collection stage, assembly stage, testing stage, and distribution (Sundari, 2016).



**Figure 2.1:** Stages of MDLC Development

These stages must be carried out sequentially as follows:

#### 1. Concept Stage

The Concept Stage is part of deciding the purpose and to whom multimedia is addressed. In addition to deciding the type of system (presentation, interactive) and the purpose of the application. The principle of method in making is also decided in this section. The output of this section is usually in the form of a narrative document to convey the objectives of the project to be achieved.

## 2. Design Stage

Covering the style, project architecture, appearance and needs of material or material for the application. The specifications are designed to be as detailed as possible so that in the next step, collecting and assembly materials, new decisions are not needed anymore, generally using storyboards to make descriptions of each display by entering all multimedia objects.

## 3. Material Collection Stage

Is the collection of material needed in the design. These materials are in the form of graphic, clip-art, video, animation, audio files. this part can be done in parallel with the assembly step.

## 4. Assembly Stage

Is part of the design of all multimedia models or materials being made. project design based on design steps. for example storyboards, navigation structures or flow charts.

## 5. Testing Stage

This stage is carried out after the assembly by opening the project and seeing whether there is an error or not. this step can be referred to as the testing step of the alpha version where testing is carried out by the researcher, then beta testing is performed involving the user. The purpose of this section is to prove whether the project design outcomes are adjusted as previously expected or not.

## 6. Distribution Stage

In this section the project will be saved into a storage facility. This section can be said as an evaluation part for improving the finished product to make it better. The evaluation output can be used as input for the concept section in the next product.

MDLC is also a derivative of the classic software development method known as waterfall. The method consists of seven stages which are then changed and adapted to the development of multimedia-based software. The advantages of the method are, the method is the same as the waterfall method, so that it can be easily understood and implemented, then the steps are clear and easy to implement because it can also be developed on a small scale (Binanto, 2015). In designing physics learning media for the first junior high school based on Interactive Multimedia, Widada & Rosyidi, (2017) used the Multimedia Development Life Cycle method. By using this method, the development runs smoothly and easily because it is in order, well-planned and easy to understand and implement.

### 2.2.2 Multimedia

Multimedia is one technology that combines images, text, sound, video and animation into an information system that is very useful in delivering messages, promotions and information provided to the audience used to provide a positive image or view of related parties who want the product or company more widely known to the public in a positive way (Sunarya, Kusumaninggar, & Syahputra, 2017).

According to Santoso, (2014), Multimedia becomes a part of life as an interesting publication and documentation tool. Multimedia is a combination of

several media such as images, text, audio, video and animation so that the information presented to the public will be clearer and more effective. There are five multimedia elements that are as follows:

1. **Text**

Text is the most easily stored and controlled multimedia. Text can form words, letters, or narrations in multimedia that present the language. In general there are four types of text that is printed text, text scans, electronic text and hypertext (Saputra, 2014).

2. **Images**

The reason for using images in presentations or multimedia publications is that they can easily grab attentions and reduce boredom compared to text.

There are two types of images, bitmap images and vector images. Bitmap image or a raster image is a collection of pixels arranged on a square box. Vector image is an image formed from the line, line thickness, content and location of the image (Haryanto, Purba, & Gunadi, 2016).

3. **Audio**

Audio is a variety of sounds in digital form such as sound, music, narration and so forth that can be used for background sound. Audio in multimedia can be in the form of narration, song, and sound effect to clarify the information submitted. The types of audio formats are .aiff (audio interchang file format), .au, .snd, .ra (real audio), .rm, .mp3 (MPEG audio Layer 3), .mof (Quicktime Movie), .swa ( Shockware Audio), .ASF (Advance Streaming Format) (Kausar, Sutiawan, & Rosalina, 2015).

#### 4. Animation

Animation is the use of computers to create motion on the screen. Exposure sequence of images that each unit has a little difference to produce a continuous movement. There are several kinds of animation such as cell animation, frame animation, sprite animation, track animation, spline animation, vector animation, character animation, computational animation, and morphing animation (Saputra, 2014).

#### 5. Video

Video is a recording, processing, storage, transfer, and reconstruct of still images by presenting scenes in motion electronically. There are four different forms of video in multimedia applications such as live video feeds, videotape, videodisc, and digital video (Kharisma, Kurniawan, & Wijaya, 2015).

According to Darmawan et al., (2016) multimedia is divided into 2:

##### 1. Linear Multimedia

Is a multimedia that can be operated without any controller or device and only runs sequentially, for example television and movies.

##### 2. Interactive Multimedia

Is a multimedia that equipped with a controller tool that can be operated by the user to choose what is desired for the next process, for example interactive multimedia learning and gaming applications.

#### 2.2.3 Learning Media

Media is an introduction or intermediary message from the person sending to the person who receives it. Learning media is a tool, method or process used to

convey information from information providers to recipients of information (Falahudin, 2014). Learning media is a tool in the learning and teaching process. Anything that can be used to stimulate the mind, attention, feelings, and abilities or skills of the learner so that it can encourage the occurrence of learning processes or learning activities. The limits of this learning media are quite extensive and in-depth by encompassing the notions of resources, human beings and the environment when the methods used from the learning or training objectives (Saputro & Saputra, 2015).

Learning media gives positive impacts on the learning process, that is, being able to increase motivation in learning, adding variety in learning, facilitating the learning process for students, giving conclusions that are systematic, able to stimulate students to analyze and think, and create learning conditions and situations without feeling stressed (Romadlon, Suwandi, & Rakhmawati, 2016). Learning media comes in various forms. In introducing typical Indonesian food, Irsyadi & Maisyaroh, (2016) uses an educational game application as a learning medium. The application makes it easy for people to learn about Indonesian special dishes, get to know the ingredients needed and how to cook these foods.

#### 2.2.4 Unity

Unity application is an image, graphics, sound, input processor that is intended to make a game, although not necessarily for games. Unity's advantage is that it can be used to design 2D and 3D based games, FPS games, simulation games and Augmented Reality software, it can also be used in designing games that require an internet connection, conversion support to Android, Blackberry, Iphone, Windows, Flash, Linux. It can be published on various platforms, although Unity

needs a license to be published on certain platforms. Unity also able to publish into Standalone (.exe) and web-based for free users (Nugroho & Pramono, 2017). In Saputro & Saputra, (2014) research, by using Unity to develop a learning media about human digestive organs, they can realize organs such as Esophagus, stomach, intestines and colons into real world in form of Augmented Reality (AR). With this, learning becomes easy and interesting for the childrens.