# DESIGNING LEARNING MEDIA FOR BATAKNESE CUISINE USING MULTIMEDIA DEVELOPMENT LIFE CYCLE (MDLC) METHOD

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## Abstract

*Learning media are generally defined as tools, methods, and techniques that are used sequentially to channel messages and learning information so that communication and interaction between lecturers and students can be more effective in the process of education and teaching. With the advancement of technology, learning media are no longer limited in form and number and can be easily used in the teaching process. Thus, learning media is an important part of the education process, and is one aspect that must be mastered by each teacher to be able to carry out its professional functions. The purpose of this research is to design a learning media for Bataknese Cuisine using Multimedia Development Life Cycle (MDLC) method. The result of this study is Bataknese Cuisine learning application developed and built using Unity software. This application design is expected to provide information and teach the user about Bataknese Cuisine.*
*Keywords: Learning Media, Bataknese Cuisine, Unity, MDLC.*

## Abstrak

Media pembelajaran secara umum didefinisikan sebagai alat, metode dan teknik yang digunakan secara berurutan untuk menyalurkan pesan dan mempelajari informasi sehingga komunikasi dan interaksi antara guru dan siswa dapat menjadi lebih efektif dalam proses pendidikan dan pengajaran. Dengan kemajuan teknologi, media pembelajaran tidak lagi terbatas dalam bentuk dan jumlah dan dapat dengan mudah digunakan dalam proses pengajaran. Dengan demikian, media pembelajaran merupakan bagian yang penting dari proses pendidikan dan merupakan salah satu aspek yang harus dikuasai oleh setiap guru supaya dapat menjalankan fungsinya secara profesional. Tujuan dari penelitan ini adalah untuk merancang media pembelajaran tentang masakan Batak menggunakan metode *Multimedia Development Life Cycle* (MDLC). Hasil dari penelitian ini merupakan aplikasi pembelajaran masakan Batak yang dikembangkan dan dibangun dengan *software* Unity. Aplikasi ini diharapkan dapat membantu menyediakan informasi dan mengajar pengguna tentang masakan Batak.
**Kata Kunci:** Media Pembelajaran, Masakan Batak, Unity, MDLC.

## 1. INTRODUCTORY

Learning media are generally defined as tools, methods, and techniques that are used sequentially to channel messages and learning information so that communication and interaction between lecturers and students can be more effective in the process of education and teaching. Thus, learning media is an important part of the education process, and is one aspect that must be mastered by each teacher to be able to carry out its professional functions. A well-designed learning media will greatly help students achieve the goals of learning (Ramdhani & Muhammadiyah, 2015).

With the advancement of technology, learning media are no longer limited in form and number and can be easily used in the teaching process. This can be seen in one of the E-learning applications, Edmodo. With Edmodo, 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 (Yunus & Rakib, 2016).

MDLC or Multimedia Development Life Cycle is a project development method that is suitable for developing multimedia systems. In MDLC there are six phases, namely the concept stage, design stage, material collection stage, assembly stage, testing stage, and the distribution (Wulur, Sentinuwo, & Sugiarso, 2015). 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).

Every community has certain characteristics that govern the way someone life is called customs. Customs, traditions, and cultural values possessed by a tribe, in fact affect the eating habits and variations of food, as well as the way they are presented. Batak tribe is one of the tribes in North Sumatra, Indonesia which has unique customs. Batak tribes themselves have several types, namely the Karo Batak tribe, the Simalungun Batak Tribe, the Pakpak Batak Tribe, the Toba Batak Tribe, the Angkola Batak Tribe, and the Mandailing Batak Tribe. Batak custom values food as a source of life starting from birth, marriage, and death. Food greatly describes the condition of a society's status in Batak customs. Bataknese foods is very diverse and has many meanings in its making (Petra, 2016).

Based on the studies above, i will design a learning media for bataknese cuisine and then make this report with the title **"Designing Learning Media for Bataknese Cuisine Using Multimedia Development Life Cycle (MDLC) Method".**

Problem restrictions are the scope of project creation. In this project, the scope consists of:
1. How to make a learning media about Bataknese Cuisine using Unity?
2. How to apply the MDLC method (Multimedia Development Life Cycle) to create a learning media?

The purpose of this project include:
1. To find out how to make a learning media using Unity.
2. To understand how to apply MDLC method (Multimedia Development Life Cycle) to create a learning media.
3. To fulfill one of the requirements to graduate bachelor's degree.

## 2. 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.

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 easier and more 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).

## 2.2. THEORETICAL BASIS
### 2.2.1 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 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.

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 attention 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).

**2.2.2   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.

**2.2.3   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).

**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.

## 3. METHODOLOGY

### 3.1. Design Method

For the designed output not to deviate from the goals, a method is required as a guide for us to carry out the research. We use Multimedia Development Life Cycle (MDLC) as our method in doing this research. According to Riyanto & Singgih, (2015), the process of designing multimedia systems with Multimedia Development Life Cycle method has six stages namely Concept stage, Design Stage, Material Collecting Stage, Assembly Stage, Testing Stage, and Distribution. These six stages are not structured in practice and able to change positions, but Concept Stage must be done first.

### 3.2. Problem Analysis

Learning media defined as tools, methods, and techniques that are used sequentially to channel messages and learning information so that communication and interaction between lecturers and students can be more effective in the process of education and teaching. A well-designed learning media will greatly help students achieve the goals of learning.

Customs, traditions, and cultural values possessed by a tribe affect the eating habits and variations of food, as well as the way they are presented. Each customs have their own unique food such as Batak tribes.

Batak tribe is one of the tribes in North Sumatra, Indonesia which has unique customs. Batak tribes themselves have several types, namely the Karo Batak tribe, the Simalungun Batak Tribe, the Pakpak Batak Tribe, the Toba Batak Tribe, the Angkola Batak Tribe, and the Mandailing Batak Tribe. Batak custom values food as a source of life starting from birth, marriage, and death. Food greatly describes the condition of a society's status in Batak customs. Bataknese foods is very diverse and has many meanings in its making.

Multimedia Development Life Cycle is a project development method that is suitable for developing multimedia systems. 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. We conducted a learning media design about Bataknese Cuisine using Unity game engine. The result of the assembly is in form of a learning application that will display learning videos, information, and recipes of each food.

### 3.3. Device Requirements

In the making of the learning media, we use:

### 3.4. Application Design

The design and development of Bataknese Cuisine learning media application are described as follows:

#### 3.4.1  Concept

To design a good learning application, it must have some criteria such as attractive, easy to use, complete and useful material for teaching. Software used in the making of this application are Unity Game Engine and Adobe Premiere CS6.

#### 3.4.2  Design

The following is the storyboard of Bataknese Cuisine learning application, divided into:
1. Main menu Storyboard
2. List of Menu Storyboard
3. Main Dishes Storyboard
4. Snacks and Beverages Storyboard
5. Spices and Seasonings Storyboard

6. Quiz Storyboard

### 3.4.3 Collecting Material

The following are the data needed in designing Bataknese Cuisine learning application:
1. Assets
2. Audio

### 3.4.4 Assembly

The making of Bataknese Cuisine learning application starts from assets editing, making UI and coding.

1. Assets editing

In editing the assets, we use Adobe Premiere CS6 application to edit the videos and audios that will be used. The tools we used in editing namely:
   a. Selection Tool. Used for various types of command keys.
   b. Track Select Tool. Used in choosing a track in the sequence.
   c. Ripple Edit Tool. Used to erase or shorten a clip.
   d. Rate Stretch Tool. Used to increase or decrease the framerate.
   e. Razor Tool. Used to cut a clip.

2. Making UI

In making the UI for the learning application, we use Unity Game Engine application by creating a new scene. In the scene, make a canvas as the place to put assets and buttons for navigation.

3. Coding

For some buttons to work, we need to add a script in the button. To add a script, first you must code one yourself. By adding a new component, Unity will open a software development program in your computer to code in. We use C# programming language to do the coding for next, back, quit and play/pause buttons.

### 3.4.5 Testing

The learning application that has been designed will be tested whether the contents are in accordance to the storyboard, can the application run on the platform and can the buttons function properly. The application will be exported into .exe format.

| Panel | Description |
|-------|-------------|
| 1 | Testing whether the contents in accordance to the storyboard. |
| 2 | Testing whether the application run on the platform. |
| 3 | Testing whether the buttons in the application function properly. |

### 3.4.6 Distribution

In this stage, the Bataknese Cuisine learning application program that has been designed and tested will be distributed in .exe format.

## 4. IMPLEMENTATION

### a. Application Implementation

The implementation stage is the stage where the research output titled "Designing Learning Media for Bataknese Cuisine Using Multimedia Development Life Cycle (MDLC) Method" will be installed and opened. In the making of this learning application, first I gather the assets or materials such as information about Bataknese Cuisines, the recipes, pictures, videos, and background music. Then, I use Adobe Premiere CS6 to edit the videos and combine it with background music.

After the videos are done, I use Unity 2D to start developing the learning application. First, I made the UI by placing Canvas and Panel to place the background and objects. Then, I make some buttons to navigate through the application. For the buttons to work, I must do coding by using C# programming language in Visual Studio. First, I add the new component in the inspector for the button in Unity. After that, it will open a programming software to do the coding. After done with the coding, I set the button function with the code I made before.

This learning application consists of 6 pages:

1.  Main Menu Page

    This page contains the application's title with Menu and Quit buttons which are made using LiberationSans SDF font type from Text Mesh Pro, Font Sizes 70pt for the title, 55pt for the Menu button, 50pt for the Quit button, FFC757 to FFA34A color gradient from top to bottom for the title, menu and quit buttons. Adding color tint transition effect for the Menu and Quit buttons that show a darker color when highlighted and clicked. I use a green background for the panel and decorate it with PNG objects that are related with cooking such as vegetables and kitchen utensils. For the buttons, I use LoadScene function in Menu Button to make it go to the List of Menu page and quit function for the Quit button to exit the application when clicked List of Menu Page

2.  Main Dishes Page

    This page contains Main Dishes names with pictures that work as buttons and Back button. Using LiberationSans SDF font type to make the names of each dish and Back button, font size 30pt for dishes names and 40pt for Back button. Using FFC757 to FFA34A color gradient from top to bottom for dishes names and Back button. I also use the same green background and PNG for this page.

3.  Snacks and Beverages Page

    This page contains Snacks and Beverages names and pictures that works as buttons. For the dish name and back button, I use LiberationSans SDF font type, font size 25pt for dish names and 40pt for Back button. Using FFC757 to FFA34A color gradient from top to bottom for dishes names and Back button. I also use the same green background and PNG for this page. Each dish picture that works as a button will take you to its descriptions and Back button will go to Menu page by using LoadScene function in it. In the description page, I use LiberationSans SDF font type, font size 30pt for dish names, 10pt to 15pt for the description and 40pt for Back button. Using FFC757 to FFA34A color gradient from top to bottom for dish name and Back button. As for the description, I use white font color for easier to read. The Back button will take you to Snacks and Beverages page Spices and Seasonings Page

4.  Quiz Page

    This page contains quizzes, each question has four options related to Bataknese Cuisine. I use LiberationSans SDF font type, font size 30pt for the question, answers, and Back button. For the question and back button, I use FFC757 to FFA34A color gradient from top to bottom. I also add the effect for the answers and back button which will show a darker color when highlighted and clicked. Each question page has one right answer and each of the answer button will take you to the right answer page by using LoadScene function in it.

After the development is finished, the application is built using Unity and stored in a folder. The output of this research is in form of .exe format which can be opened on Windows platform.

## 4.2 Testing Table

Bataknese Cuisine Learning Media tested by the author. The success of the testing is summarized in Table 4.1:

**Tabel 4.1** Testing Table

| Panel | Descriptions | Status |
|-------|--------------|--------|
| 1.1 | Whether the contents of Main Dishes is in accordance to the storyboard. | Succeed |
| 1.2 | Whether the contents of Snacks and Beverages is in accordance to the storyboard. | Succeed |

| | | |
|---|---|---|
| 1.3 | Whether the contents of Spices and Seasonings is in accordance to the storyboard. | Succeed |
| 1.4 | Whether Quiz is in accordance to the storyboard. | Succeed |
| 2 | Whether the application run on the platform. | Succeed |
| 3 | Whether the buttons in the application function properly. | Succeed |

### 4.2 Implication

The result of the project is Bataknese Cuisine learning application. This application contains the information, recipes, and videos on how to make Bataknese dishes. With this application, it can help in introducing Bataknese cuisine to the public, provide knowledge and fun way to learn about Bataknese typical dishes. People can become more interested in local specialties and cultures so they will try to preserve it, also introducing the uniqueness of the cuisine to people abroad can make it famous outside and attract tourists to visit.

### 5. CLOSING

a. **Conclusions**

Based on the research carried out by the author on the topic "Designing Learning Media for Bataknese Cuisine Using Multimedia Development Life Cycle (MDLC) Method" can be concluded as follows:

1. The Issues that form basis of this research is the lack of introduction and understanding about Bataknese Cuisine.
2. The research can be done using Multimedia Development Life Cycle (MDLC) method which consists of 6 stages namely Concept, Design, Material Collecting, Assembly, Testing, Distribution Stage.
3. By using Adobe Premiere CS6, the assets were edited and then inserted into the application by using Unity.

4. The result of the study is Bataknese Cuisine learning application that was built with Unity Game Engine into Windows platform. It showed that the design had been prepared in accordance to the author's plan.
5. This learning media design can introduce and explain Bataknese Cuisine to the public.

b. **Recommendations**

In the making of this learning application, limitations are unavoidable and that became recommendations for the next research. Some advice that can be given are:

1. Make another variety of cuisine from different places.
2. The next design can be developed into Augmented Reality (AR) or Virtual Reality (VR).

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