

## CHAPTER II THEORETICAL BASIS

### 2.1 Literature Review

In a study made by Harris (2018), he created a commercial video and use color grading on it with color theory and color psychology in mind. He states that color theory and color pshycology is a term that cannot be used interchangeably, but they are related. Color theory is the used of colors that are usually specify by the color wheel and by the fact that any color can be formed using the three primary colors. Color psychology grew after color theory, it focuses on how colors and human perception or behaviour is connected. It tells how color can make human feel different kind of feeling and emotions unconsciously. He also discussed that using the process of color correction and color grading, color can deliver a visual storytelling that are unique and makes viewer understand what story being told at the moment. The process of color correction and grading includes the manipulation of hue, saturation, luminance, exposure, and RGB (Red, Green, Blue) system.

According to Chan, Lee, & Roy (2015), color is connected to a film and image mood. Viewers can tell the genre difference by looking the color scheme that are used in the movie. Warm color and vivid tone tend to represent romance movie, action films usually using teal and orange looks, and animated movie tend to use a flashier or vibrant color and larger color dynamics. The result of his study, he was able to correctly classify 13 out of 14 movies using combine clustered histogram and color dynamics. The movies were consisting of four genres which were horror, animation, romance, and action.

According to Sulaiman, Nasiruddin, & Aziz (2017) study, video tutorials have been the most relevance method in teaching and learning process through e-Learning because it is including cognitive goals, affective, and psychomotor. They also said that video tutorial really has become an attractive and effective medium to be used in teaching and learning either in photography class or others. Based on their study and the integration data from their observation, interviews,

and visual analysis, it is shows that the highest priority that needs to be considering in development of a good video tutorial is language.

In a study created by Pradipta & Andajani (2017), research and development method is a method that are used to create a certain product. They used research and development method to create a motion-building program in the form of a guidebook for parents of children with cerebral palsy. They develop this program with the thought that children spend more time with their parents at home compared at school or teraphy institution. Because of the role of parents are so important, the development of this program was carried out to make the parents' role effective in dealing with cerebral palsy children, in an effort to maximize the purpose of the program. The result of this study is that they produce a good quality product for the parents of cerebral palsy children.

According to Hemphill & Markcs (2019) study, Davinci Resolve is used as a color correction and color grading software for indie movies. Many indie films director, DP, and colorist choose Davinci Resolve as their color grading software and matching color from different shots. The film that use Davinci Resolve as their grading tools are Madeline's Madeline, Suspiria, and We the Animals.

**Table 2.1** Literature review

<b>Author</b>	<b>Year</b>	<b>Remarks</b>
Michael J. Harris	2018	Colors can deliver a visual storytelling that are unique and make human feel different kind of feeling and emotions unconsciously.
Chan, Lee, & Roy	2015	Color is connected to a film and image mood and viewers can tell the genre difference by looking the color scheme.
Sulaiman, Nasiruddin, & Aziz	2017	Tutorials in form of video have been the most relevant method in teaching and has become an attractive and effective medium
Pradipta & Andajani	2017	Research and development method is a method that are used to create a certain product

Author	Year	Remarks
Hemphill & Markcs	2019	Davinci Resolve is used as a color correction and color grading software.

Based on those five studies done by the writer above, color grading is used to deliver visual storytelling that are unique (Harris, 2018) and color is connected to a film or image mood (Chan et al., 2015), thus we will be producing a tutorial video about how to do color grade film according to the moods, as an effective and useful way to learn (Sulaiman et al., 2017). Research and development method is used in this project to create the tutorial video (Pradipta & Andajani, 2017) and we will be using Davinci Resolve to color and edit the footage (Hemphill & Markcs, 2019).

## 2.2 Theoretical Basis

### 2.2.1 Research and Development

The method used in this project will be the research and development method. Research and development method is a research method commonly used to create or make a certain product and test it's effectiveness (Prambayun, Suyanto, & Sunyoto, 2016). According to (Pramono, Suyanto, & Sofyan, 2017), research and development can also be define as a purpose of creating and developing a product, whether it's a technology product, materials, organization, methods, and tools. Research and development method is not used to develop or produce a new theory.

In Pramono et al. (2017) study, they used research and development method to make comparison about the editing method used by 2D animator in animating, which is frame by frame and expression method. They used interview method and literature study method to collect the data that were needed for the research. After they collect the data they needed, they developed their own animation scene and used both editing methods in their process of making the animation scene. The result was by using expression method, the render preview played faster which are in 25fps real time, while frame by frame method resulting

in 16-22 fps. And the file size that were rendered using expression method are smaller than frame by frame method, which are 72.5MB to 203.7MB.

### 2.2.2 Multimedia

Multimedia is a unification of media's element which are text, image, audio, animation, and video (Hanafri & Rohmawati, 2014). Multimedia can also be defined as synchronizing elements of media with the help of computer (Kharisma, Kurniawan, & Wijaya, 2015). The elements of multimedia are as follow:

1. Text

One of the most easily stored and controlled multimedia elements is text (Kharisma et al., 2015). Text is also the easiest form of multimedia that can be understood by people (Hanafri & Rohmawati, 2014). The most frequently encountered text file format is \*.txt.

2. Image

Image is a multimedia element that can present and summarize complex data in a more simple and efficient way (Kharisma et al., 2015). Image can also be used as background text to enhance text. The most common example of graphic format is \*.jpg.

3. Audio

Audio is everything that can be heard and without audio, multimedia is only called unimedia (Kharisma et al., 2015). Audio is very important and useful, for example in business and game applications (Hanafri & Rohmawati, 2014). Examples of audio file formats are \*.wav, \*.dat, \*.midi, and \*.mp3.

4. Animation

Animation is the use of computers to produce motion on the screen (Kharisma et al., 2015). In multimedia, animation is also the main source of dynamic action (Hanafri & Rohmawati, 2014). There are simple animations that appears in two-dimensional space (2D) and realistic animations that appears in three-dimensional space (3D).

## 5. Video

Video is one of the audio-visual media that is most often used as a communication medium. Video can function as a communication medium or explaining a message (Hanafri & Rohmawati, 2014).

Examples of video file formats are \* .avi, \* .mov, \* .mp4, and \* .mpeg.

Multimedia can attract the attention and interest of the audience. In addition, the presentation of information by multimedia is very effective, because multimedia can be seen and heard. According to Praheto, Andayani, Rohmadi, & Wardani (2017), there are several advantages of multimedia, including:

1. Presentation of information using several media at once.
2. Can stimulate many senses at once, therefore called as multi-sensory.
3. Improve the quality of information delivery.
4. Can be linear or interactive.

According to Darmawan, Setiawati, Supriadie, & Alinawati (2017) multimedia can be categorized into 2 types. The first is linear multimedia, which is multimedia that can only be seen and enjoyed, not equipped by any controller or tools, for example a film. The second is interactive multimedia, which is multimedia which can be used by users because it is equipped with tools. Users can also interact to manage the multimedia. Examples of interactive multimedia are learning multimedia and game applications.

### 2.2.3 Cinematography

Cinematography is a technique of taking pictures followed by combining all existing images and footage into a composition that tells a story (Purnawati & Suyanto, 2016). Film or cinema is a product or work of cinematography, the result of the combination of a person abilities or group of people in the mastery of technology, art, communication and management. According to Risata & Maulana (2016), in taking pictures there are shooting sizes that must be considered, which are:

1. Extreme Long Shot (ELS)

Types of pictures that show the subject and their environment. This shooting makes the subject look smaller because it aims to prioritize the orientation of the environment and surrounding conditions.

2. Long Shot (LS)

Extensive shooting where the image shows the subject as a whole without any cut off part of the frame.

3. Medium Long Shot (MLS)

Type of shooting where the limit of shooting starts from below the knee to the top of the head.

4. Medium Shot (MS)

Types of shooting with a narrower area, starting from the waist to the head.

5. Close Up (CU)

Close Up is a shooting that starts from the area below the shoulder to the head.

6. Big Close Up (BCU)

Big Close Up is a shooting that starts from the bottom of the chin to the forehead.

7. Extreme Close Up (ECU)

Extreme Close Up shooting is a type of shooting that only shows specific regions or sections. Usually used to display parts of the face that are considered dancing such as eyes, nose, or lips.

In taking pictures, there are also shot classes which are the type of shooting used when making videos or films. According to Cutting & Candan (2015), there are 15 shot classes as follows:

1. Multiple Character Shot

Taking pictures that involve many characters at once in one shot or one frame.

2. Shot / Reverse-Shots (SRS)

Taking pictures of a character who is in a dialog with another character not seen in the frame.

3. Over-the-shoulder

Taking pictures that usually involve certain parts of the character's body as a foreground and show the opposite character in front of him.

4. Reaction Shot

Shooting that focuses on the reaction of characters who are in dialogue or experiencing certain events.

5. Mediated SRS

Capturing pictures of conversations between characters by telephone, intercoms, or other analog devices.

6. Inserts

Shooting focused on an object or body part of the character, but the head of the character is not shown.

7. Cutaway

A shot that cuts a sequence (A) to another sequence (B) that is not directly related to the previous sequence (A).

8. Montage Shots

A collection of several shots of an object, character, or place that is still the same and arranged according to the concept.

9. Point of View (POV)

Taking pictures taken from the point of view of the character itself.

10. Action Shot

Action shots are shots that involve actions such as car racing, accidents, or explosions.

11. The Solo Shot / Single Shot

Shooting only for a character who is staying at a place but does not involve movement or dialogue.

12. Moving-character shot

Taking pictures that follow the movement of the characters that are in the frame.

13. Moving-vehicle shot

Taking pictures that follow the movement of the vehicle that is in the frame.

14. Environmental Establishing Shot

Shooting using wide-angle to display the surrounding environment such as scenery, exterior and interior of the building.

15. Combination Shot

Shooting that combines several other types of shooting such as a character who is running (moving-character shot) chasing a car (moving-vehicle shot).

In shooting, there are 3 basic aspects of camera settings, commonly referred to as the exposure triangle (O'Connor, Smith, & James, 2017). The 3 aspects are:

1. ISO

ISO is an abbreviation of the International Organization for Standardization. ISO is related to the ability of the sensor to capture available light. High ISO will produce brighter images, but accompanied by noise which is also increasingly visible if the ISO is higher. Noise in an image can reduce image quality.

ISO also affects the dynamic range of a sensor, which means the ratio between the maximum and minimum light intensities. Optimal dynamic range will produce images that are very sharp and very detailed. The higher the ISO, the dynamic range that will also be decreased.

2. Aperture

Aperture describes the opening of the lens which is denoted by the letter f. The higher aperture produces a brighter image because the aperture of the lens becomes larger so that there's more light obtained or pass through. Conversely a smaller aperture will produce a darker image because of the small lens opening which made less light enter the lens.

3. Shutter speed

Shutter speed is how long the sensor from the camera is exposed or left open, denoted by the second (s). If the shutter speed increases, the image will darken because the sensor is only left open for a fraction of a

second. If the shutter speed is slow, the image will be brighter because the sensor is left open long enough so that the light entering the sensor is collected more.

Shutter speed also affects motion blur. If the shutter speed is fast, the image taken will look still and more static even if the object being shot moves fast. Conversely, if the shutter speed is slow then the picture taken will look blurry.

#### **2.2.4 Color Grading**

One of the most important phase of a movie post-production is color grading, where the experts or the colorist will alter the color, look, and feel of the footage so that it visually expresses the idea of the director (Duchêne et al., 2017). The color grading process has two important tasks. First of all, footages that were captured under different circumstances or different light source temperatures needs to be adjusted to attain a consistent appearance. More crucially, colorists can change the footage colors globally or locally to guide the focus of the viewer, create a particular atmosphere and translate the version of the director into an image.

According to Harris (2018), color grading is the process of enhancing or altering the colors of a motion picture digitally in post-production. Color grading incorporate both color correction and the manipulation of the image to achieve an artistic look or style. Color grading is important in movies, implementing color into a video productions or film can raise its production value higher. Several aspects of color grading such as hue, saturation, luminance, additive colors, and RGB (Red, Green, Blue) system are all important for a movie. After an overall color grading is done, there is something called secondary color grading which is also important for a movie. Secondary color grading is a grading applied after an overall color grade. It is used to manipulate specific parts of an image versus the manipulation of the image overall and sometimes it's used to fix slight inconsistencies.

There is a stage in color grading where we must match all the exposure from every shot, it is called color matching. Color matching is where the colorist

is in charge with the challenge of matching the color from one shot to another shot where the settings were different, or maybe the light condition were different, and a reshoot is not possible (Rodriguez, Vazquez-Corral, & Bertalmio, 2018). These situations might come to pass and it's the colorist duty to fix the problems. Usually, it goes unseen and feel seamless because of the skills and the experience of the colorist in alter or repair the exposure and the colors of multiple shots, until the shots look exactly the same.

Halim, Agung, & Cahyadi (2019) created a documentary film about a new dance called Rampongan Tiger dance in Blitar. The author made this documentary film so that the Rampongan Tiger tradition in Blitar can be known and conserved, and other filmmakers can be motivated to do the same, which is to conserved traditional tradition. They color grade their documentary film using Adobe Premiere Pro CC 2017 and the documentary film is distributed through social media. The used of color grading in this documentary film made the film feel more alive and professional, distinguish it from a normal ungraded video. In the end of the film, they try to make the society and other filmmakers to have more awareness, so that this dance can be preserved for the people of Blitar and for the people of Indonesia. So that other culture and tradition also can be preserved, and by that, all the historical value will not be lost and be forgotten.

Pratama & Soewito (2015) made a documentary film about gamelan selonding. The purpose of this documentary is to give a comprehensive information about gamelan selonding and inspire the younger generation in Bali to care and proud of Bali culture. They used natural color with some "faded effect" where the blacks in the video are reduced, but the contrast of the highlight and shadow is still preserved. Adjustments were made to several parameters namely temperature slider or warm/cool slider, exposure, contrast, 3-way colorista, curve, pop, and saturation. These parameters are modified in such a way that the desired faded effect is obtained.

### **2.2.5 Tutorial Video**

Tutorial videos are a video that are displayed that contains knowledge to help understanding an instructional material or certain topic, as a form of guidance or additional teaching material (Dwi Septyaning Putri & Kustini, 2018).

According to Key & Paskevicius (2015) study, tutorials in the form of video are proved to be more effective. In their study, they provide tutorials in form of video to provide important theory and demonstration for Chemistry. They made total of eighteen short videos with the length of 2-7 minutes. The result is 83% of the student that did view the videos are proved that they gained a deep understanding of the materials that are given. And 88% of the student had increased confidence entering the class. The study also supports that tutorials in form of video are an effective and useful way to enhance student learning experience, providing a dynamic learning experience beyond written laboratory manual. With the tutorial video, additional benefits may also be provided to students with learning disabilities or English as a second language (ESL), with an appropriate use of captioning and the benefit for the students to pause or replay the video.

According to (Martin & Martin, 2015), video tutorials can help meet a variety of learning styles, preferences, and abilities. Video tutorials can adjust according to the viewers. It has the controls of start, stop, pause, fast-forward, and rewind. Students will be able to control the pace of the video accordingly and have the ability to skip or revisit content.

### **2.2.6 Multimedia Development Life Cycle**

According to Pertiwi & Syahrul (2017), multimedia development life cycle or MDLC is a development method that has 6 stages, which are as follow:

1. Concept

In this stage, we are determining the concept of the project, purpose of the project, the type, the language that will be used, and the target audience. We decide what it will be and how long the duration of the final video that we desire.

2. Design

In this stage, we made the storyboard of the project. Storyboard of each scene will be made and it will show the order of the video and explaining what will happened in each scene.

3. Material Collecting

In this stage, we will take all materials that we needed, whether is the image, video, or audio for the final video. The materials can be obtained from internet or will be made by ourselves, for example if we want to take the footage we desired.

#### 4. Assembly

In this stage, this is where all of the materials that will be made collected in one place, and ready to be assemble into a specific media or product. In this project the software that will be used to combine all of the media that are avaliabe is Davinci Resolve.

#### 5. Testing

In testing stage, the product that had been created will be tested and there's two type of testing. First is alpha test, it's a method where the functionality of each scene like the sound and image is proper or not. If there is a malfunction then the creator will fix it, if there's no malfunction, we will continue to beta test. Beta test is a test where the viewers or users will be given a questionnaire and they will answer.

#### 6. Distribution

After all process and test had been done, the product will be distributed according to the creator desire. It can be distributed into social media like YouTube if it's a video, publish it into AppStore, store it on a CD, or publish it on website.

In Permata & Destaria (2018) study, they used MDLC as the method to develop multimedia learning application and test it's functionality. It is showed that the functionality test went well with the specification of the phone minimal using Android OS version Lollypop.

## 2.3 Tools used

### 2.3.1 Mirrorless Cameras

Mirrorless camera as the name suggests is a camera that does not have a mirror like DSLR cameras in general, and there is no optical viewfinder or optical viewfinder. Mirrorless cameras were created to reduce the weight and dimensions of the camera because DSLRs are generally very large and heavy (Kang & Song, 2017). The mirrorless camera was first introduced in mid-2008 by Olympus and

Panasonic, then in 2010 it was followed by Samsung, Sony, and Fujifilm. Light and small size of the mirrorless camera can be achieved because there is no mirror or pentaprism in the mirrorless camera body so that the light goes directly to the camera sensor. The results obtained and processed by the camera sensor are the results that will be displayed in the camera's LCD or electronic viewfinder. According to Kang & Song (2017) the size of the sensors used in mirrorless cameras also varies, including the following:

1. Full Frame

Full Frame is the biggest sensor size on mirrorless, 36mm x 24mm. The full frame size is arguably the same as the 35mm film format and has a size that is 2 times bigger than APS-C. Cameras that use a full frame sensor do not have a crop factor, meaning that what the camera displays on the LCD or EVF is the result that will be obtained. A full frame sensor when combined with a large diaphragm lens will produce a very shallow and good depth of field.

2. APS-C (Advance Photo System type-C)

APS-C is the sensor most widely used in cameras today from Canon, Nikon, Fujifilm, and Sony. APS-C sensor sizes are usually 23.6mm x 15.8mm, but not all APS-C sensor sizes are the same. For example, the size of Canon 22.2mm x 14.8mm while the Sony 23.5mm x 15.6mm. Generally speaking, APS-C sensors have a crop factor of 1.3x to 1.7x.

3. Four Thirds

This sensor has a size 4 times smaller than a full frame sensor, which is 17.3mm x 13mm. Four Thirds has a 2x crop factor which means the focal length will be multiplied by 2. Companies that still use this sensor on their cameras are Olympus and Panasonic.

4. 1 "

Announced in 2011 by Nikon, the size of this sensor is 13.2mm x 8mm with a crop factor of 2.7x.

The camera that I use in doing this practical work is the Sony A7 III, which is a mirrorless full frame camera. The specifications of the Sony A7 III are as follows:

Model	: ILCE-7M3K
Lens Mount	: Sony E-Mount
Number of Pixels	: 24.2 megapixels
Sensor Type	: 35mm Full Frame Exmor R CMOS sensor
Sensor Size	: 35.6 mm x 23.8 mm
Video Size	: 4K / 24p PAL, 4K / 30p NTSC, FHD / 120p
Drive speed	: 10 FPS continuous shooting
Focus Type	: Fast Hybrid Auto Focus (phase-detection AF)
Memory card slots	: Dual slot, slot 1 with UHS-II compliant
Weight	: 650 g

### 2.3.2 DaVinci Resolve

DaVinci Resolve is an NLE application from Blackmagic Design. Davinci Resolve is a popular industry nonlinear editing software that allows the editorial team to edit, color grade, and sound mix a sequence of images or movies (Lowe, 2019). Previously, Davinci Resolve only used as a color grading software and most often used by large production companies (Burgess, Dimmock, & Romphf, 2016). According to Hasche, Karaschewski, & Creutzburg (2018), the main features contained in Davinci Resolve are as follows:

#### 1. Media Tab

In the media tab, the user can manage media needed in user production such as video and audio neatly arranged. Users can create "bin" to classify video and audio in certain categories. Users can also edit the metadata from video or audio and provide a description.

#### 2. Edit Tab

In the edit tab, users can open more than 1 timeline and edit freely between timelines. In editing the tab also, the user is given 1 special track for making subtitles. Then in the edit tab there is Resolve FX Keyframes function to facilitate the creation of animation and control the effects that

already exist. In editing the tab, the user is given the freedom to choose how many cameras to display. Davinci Resolve supports up to 16 multi-camera grids that can be opened in one project.

### 3. Fusion Tab

Fusion is a new feature that only exists in Davinci Resolve 15. This feature gives users a tool for creating quality visual effects, animations, and motion graphics.

### 4. Color Tab

Color is arguably the main advantage of Davinci Resolve because before becoming a NLE-based program, Davinci Resolve was a special program for color grading. However, in Davinci Resolve 15, Blackmagic Design brings a new feature called Super Scale. Super Scale makes images that used to be 4K or 8K HD. Then there are Share Nodes which can link grading from various clips.

### 5. Fairlight Tab

In Davinci Resolve, Fairlight gets several new features. First is the Automatic Dialog Replacement where Fairlight can automatically replace audio that has been dubbed with audio in the video. Then there are the Audio and Video Scrollers where users can view video and audio so they can sync.

Davinci Resolve is used as the main application for editing company profile videos because this application has everything needed to edit a video, ranging from basic cutting, animation, sound, and color.