



**EFFECTIVE LIGHTING IN 2D ANIMATION BASED  
ON STEVEN UNIVERSE**

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**Bachelor of Applied Arts with Honours  
(Design Technology)  
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# **EFFECTIVE LIGHTING IN 2D ANIMATION BASED ON STEVEN UNIVERSE**

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53508

This project is one of the requirements for  
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Final Year Project Report

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## **ABSTRACT**

Lighting is the most basic special effect that should be considered when enhancing the look of the animation. By adding a proper lighting, it can create depth and volume into the character and also creating more believable environment in animation (n/a, 2017). The purpose of this study is to study how the lighting enhance and affecting the mood in fantasy 2D animation. The importance of this study is to how to create the effective lighting in flat 2D animation. This study will be conducted by using quantitative method. The researcher will be compare the type of light and effects of mood in animation. Researcher also will be observed some cartoon series in terms of light and the mood. This study will be used as a reference for future research.

### ***Abstrak***

*Pencahayaan adalah kesan khas paling asas yang perlu dipertimbangkan apabila dalam meningkatkan reka bentuk animasi. Penggunaan pencahayaan yang sesuai dapat mewujudkan penegasan antara karakter dan persekitaran dalam animasi (n / a, 2017). Tujuan kajian ini adalah untuk mengkaji bagaimana pencahayaan meningkatkan dan menjejaskan mood dalam animasi 2D fantasi. Kepentingan kajian ini adalah bagaimana untuk mencipta pencahayaan yang berkesan dalam animasi 2D rata. Kajian ini dijalankan dengan menggunakan kaedah kuantitatif dimana penyelidik akan membandingkan jenis cahaya dan kesan mood dalam animasi. Penyelidik juga akan membuat pemerhatian dalam beberapa siri kartun dari segi cahaya dan suasana. Kajian ini akan digunakan sebagai rujukan untuk kajian masa akan depan.*

# CHAPTER 1

## INTRODUCTION

### 1.0 Overview

Chapter 1 discusses about the lighting in 2D animation based on Steven Universe. Creates lighting in 2D animation is the focus in this research. This chapter also include background study, problem statement, research questions, aim and objectives, hypothesis and significant of study.

### 1.1 Background Study

According to n.a (2010) in their online article entitled 'What is the Difference Between 3D and 2D Animation', 2D animation is a traditional method that has been exist since late 1800s. Traditionally, for the 24 frames per second, the artist has to draw the character's pose, followed by slightly different -pose until finish. These were put together in and then paint into the clear plastic called 'cels'. Today, most of 2d animation were created using computer software such as Toon Boom and Adobe Flash.

Steven Universe is American animated television series for Cartoon Network create by Rebecca Sugar, ii is a story about a young boy named Steven who live in the fictional town of Beach City with the three magical humanoid aliens (Crystal Gems)- Amethyst, Garnet And pearl. The series first aired on November 4, 2014 in Cartoon Network channel. The theme of the series is love and family and books, comics and video games based on the series have been released. The series is still continuing in season 5. Researcher was inspired by how the colour in the animation creates the lighting in flat animation. From the animation

series the use of the colour is quite simple where most of the colour pallets in the animation is pastel colour and some mixture of dark and bright colour too. The researcher were inspired by the using of the mix of dark and bright colour to crate contrast and lighting on the background which enhance the mood of the scene. Researcher would like to apply the same technique to crate the lighting in 2D animation.

Lighting is the light arrangement to achieve certain effect. Lighting plays an essential role in life action movies as well for creating an animation. Carter (2016) stated that during ancient time, it was very hard to enhance the animation's mode through lighting as it was a simply black and white drawings. Compare to nowadays, it was easier for animators to add moods and feelings into their animation where we can see most of today's animation is high quality three-dimensional computer-generated images.

Zagobelna (2014) stated that the picture without the light there was nothing. However, with proper lighting can create moods and feelings in the images Thus, the light can develop mood and communicates the story's narratives by means of visual ques. According to Sakolova and Fernandez (2015), light is another main environmental factor that influence the audience. Bright Light and luminance distribution contributes to affects moods and emotions.

Furthermore, creating the believable lighting in animation is a goal to achieve to create good 2D animation. Producing a good lighting is not easy as the researcher need to observe how the lights work in real world. Hence, from this study, the related future information about the effective lighting in 2d animation based on Steven Universe series will be studied.

## **1.2 Problem Statement**

Knez and Niedenthal (2008) proposed that light and shade can be used as an emotion base-line, controlling the audiences' responses and also create the great effects. Many researchers agree that the mood in the layout of animation can be affected by the lighting. However, element of lighting is mostly use in film and 3D animation and least focus on 2D animation. Until today, there is no specific guide to create lightings in 2D animation as the resource and the information related is limited. Hence, researcher would like to mimic the lighting from 3D animation into 2D animation.

## **1.3 Research Questions**

- (i) What is the type of lighting that is use in 2D animation?
- (ii) How the lighting can effect the mood in fantasy 2D animation?
- (iii) How to create an effective lighting for fantasy 2D animation?

## **1.4 Aim and Objectives**

- (i) To identify the type of lighting that is use in 2D animation.
- (ii) To study how the lighting can affect the mood in fantasy 2D animation.
- (iii) To apply the lighting to enhance the mood in fantasy 2D animation.

## **1.5 Research Hypothesis**

Applying the effective lighting based on Steven Universe TV series in 2D animation can create a fantasy mood.

## **1.6 Importance and Significance of Study**

The research is use to identify the optional way to create lighting and how it works in 2D animation. The animation title is 'Hidden Valley' and will be created by using Adobe Photoshop, Adobe After Effect and other software. The animation will have action element and lighting will be added to enhance the mood of the scene. This study is important and helpful for the animation industry as a guideline. The animators also can create the great lighting effects in to the 2D animation. The further research is recommended to the future researcher as the guideline for their research reference and also improve this study.

## **1.7 Summary**

This chapter introduced the study and details that will be held by researcher. Several problems in the research has been identified and researcher also able to explained the purposed of this research. This chapter also briefly explained the title of this research which effective lighting in 2D animation is based on Steven Universe. Besides, this chapter also explained about the importance of this research. By going through this chapter, the idea's flow of the research clearly defined.

## **CHAPTER 2**

### **LITERATURE REVIEW**

#### **2.0 Overview**

Chapter 2 discuss about the previous research by the authors to support this research topic which is about effective lighting in 2D animation. A few researches have been collected and revised for future understanding of the research topic.

#### **2.1 2D Animation**

2D animation is a traditional method to creates a movement in two-dimensional space. Based on Bai (2000) 2D animation is the art of timing and space, which is control the beat, rhythm and tempo of the motion. To create a good animation, there is twelve basic principle of animation such as squash and stretch, timing, secondary action, arc and etc.

During the old days, the magic lantern is used to project a series of images which creates the motion. a set of images were projected with the magic lantern since its invention by Christiaan Huygens in 1659. Beside magic lantern, there are also several machines that is used to create animation such as zoetrope and phenakistiscope.

Traditional animation is a hand drawn animation which also known as cel animation. According Mareno (2014), this technique is done by hand where the artist will draw the illustration of the motion consequently in frame by frames. Animation consist of character design, background, design, assets, composition and others. Today, the 2D animation has been developed in terms of software, techniques and devices as Mareno stated that there

are many different ways to create animation with different techniques and devices. Hence, researcher would like to apply the same technique as Mareno by digitally drawing consequently the motion frame by frame to create 2D animation.

## **2.2 Lighting**

Farrar (2003) stated lighting is the most powerful factors for creating specific mood or feelings. Variations in mood can be achieved by using several lighting techniques. However, it also depends on the type of genre of animation and the story. An example of lighting techniques is black background and strong backlight presenting the character or subject in silhouette which suggested a mystery, suspense and loneliness.



**Figure 1: Dark Background and Strong Backlight Lighting Technique In Hotel Transylvania Movie**

Grodal (2008) mentioned that lighting is most essential tools to create effects in film animation. Lighting also used to influence audience's attentions. The lighting will be modified the animation's quality in the mind of viewers in form of general moods that affect the audiences. Dynamic type of lighting was often used in to the certain layout to catch audience attention and also help to set the mood in the scene.

Marcer (2014) stated that lighting is a tool to set a mood, direct the viewer attentions and also provided the information. By applying a proper effects, techniques and type of lighting in the layout, could alter the emotion impact of the viewer. The appliance of colours in lighting also plays powerful role to set a mood. It can be seen in happy ending scene which using the lighting change from dark colour to bright colour. Hence, for the research objective, researcher would like to apply the lighting into the 2D animation to set the mood and enhance the scene into fantasy mood.

### **2.3 Types of Lighting**

Lighting is part of essential element in animation. The mood and emotions can be created through the performance of the lighting (Basa, 2009). The amount and the sharpness of the shadow can be modified to achieve the certain quality of lightings. The quality of the lighting also will enhance the mood and feelings as well as plot in the animation.

According to Poland (2002) audience will be experienced a film lit in the noir style which is with highly shadowed, dark, contrasting images with feeling of suspense, depression and mystery. Poland also classified the lighting style and the emotion impact from the lighting style. The lighting style can be classified into two types. Lists below showed the classification by Poland.

a) High-key lighting

High key lighting distributes light fairly similarly throughout the frame such as in a daylight scene. This type of lighting can be seen in genre from comedy to human interest drama or light-hearted adventure. This type of lighting enhanced positive mood such as happy, funny and sense of safety.



**Figure 2: Different Scene with High Key Lighting in Finding Dory, Sing Movie and Disney Short Film 'Feast'**

b) Low-key Lighting

Low-key lighting is a technique where the majority of the frame is dominated by deep shadow. Some almost entirely black with subject lit brightly from the front. This kind of lighting often used in noir and ghoulish animation. This lighting style stimulates suspense, danger and loneliness.



**Figure 3: Different Scene with Low-Key Lighting in Death Note Series, Big Hero 6, Spirited Away, Caroline And Kung Fu Panda Movie**

For the research aim, the researcher would try to mimic the lighting style from the feature film into the 2d animation. Throughout the process, the researcher will be more understand in creating the effective lighting in 2D animation.

## **2.4 Colour**

Researcher also add the colour as part of the research because colour plays vital role in animation to creates moods and storytelling. The purpose of colour in animation is to enhance the look of the animation as well as adding moods. According to Animation Mentor (2014), lighting and colour can improve the scene in film through the numerous colour's pallets, tones, contrast and hues. The techniques are known as colour scripting. The variety of colour scheme matched with the moods and emotional beats as well as the story arc in film.

Based on Calahan (2002), colour also can balance the element in emotion. The good colour composition can suggest a that everything is happy while the unbalance colour composition creates awkward feeling and also to creates tension in film. Leong (2014) stated that the selection of the colour may affects the viewer's perception about the animation.

Researcher would add some colours into the lighting. It helps the researcher to enhance the scene as well as the mood in animation.

## **2.5 Summary**

This chapter discussed about the lighting, and colours. To make a good animation, the lighting is a one of the main factors to consider about as it improved the mood and feeling. This chapter also discuss on the type of lighting style. It also helped in story narrative as well as the quality from the view of audience. Besides, the appliance of the lighting has to be match with the plot and the genre of the animation. From the previous research, it was helpful for researcher to understand the research topic and also as a guideline.

## CHAPTER 3

### RESEARCH METHODOLOGY

#### 3.0 Overview

This chapter describe the method and the process used to collect the data and information about the research topics. The data has been collected will be used as a reference for researcher to create a better lighting in animation.

The qualitative method will be applied in this project such the lighting composition and the type of lighting in the film to create the lighting in the 2D animation. Researcher also using a previous research studies and also searching some online articles to get more information about effective lighting in animation. The researcher also will use Adobe Photoshop and Adobe After Effects to mimic the lighting that is being used in films.

#### 3.1 Primary Resources

Primary resources are used for deeper understanding about the research topic based on the visual analysis. The source gives more details about the animation in term of visual concept and theory as the resources are the main source of the process. This resource also main resource for inspiration.