



Designing Animated Film Book of *Karmaphala* to Build Awareness of Illegal Logging

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Abstract. Public awareness of the dangers of illegal logging needs to be re-invigorated, given the increasingly severe environmental damage. Animated films can be an effective and interesting educational media to overcome the problems regarding the survival of community which is endangered by the environmental damage. The purpose of this research is to describe the design of an animated film that can make people aware of the dangers of illegal logging. The design of the study consists of the Pre-Production, Production, and Post-Production stages. Pre-production stage includes literature study, observation, data analysis, film script, and asset design. The storytelling concept is based on a cultural approach, namely by presenting the association of the karma law as the basis for the story and Javanese culture as the basis for designing visual and audio concepts. Production stage includes the process of modelling, texturing, rigging, and animating. The Post Production stage includes Compositing, Editing, and Publishing. The concept of karma related to illegal logging is presented through a dark-fairy tale nuanced visualization and types of 3-dimensional cut out animations. The result of the design was a 3D animated film entitled “Book of Karmaphala”.

Keywords: Animated Films · Illegal Logging · Educational Media

1 Introduction

Indonesia is an archipelagic country that is rich in natural resources, especially in the form of forests. Indonesia ranks 8th as the country with the largest forest area in the world in 2020, with its 92 million hectares forests [1]. Forests have a crucial role for the protection of flora, fauna, and even for human survival. However, the rate of deforestation or forest loss in Indonesia is increasingly worrying. According to Forest Watch Indonesia data [2] Indonesia lost 1.4 million ha/year in 2013–2017, an increase from the previous period (2009–2013) which was 1.1 million ha/year. This figure must be suppressed so that the benefits of forests as a source of human life, especially the Indonesian people can be optimized.

Deforestation is basically a human effort to use forests as a resource to support life. [3] states that most of the deforestation is due to forest conversion for industrial activities, and in some places, it is also used for agriculture. Deforestation is indeed necessary, but must be under control and in accordance with applicable regulations. Therefore, illegal deforestation, which actually exploits forests not according to the rules, must be reduced.

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According to [4], the community does not yet have good knowledge in managing forests wisely. Many of them still believe that natural resources are to be exploited for temporary gain. People still do not understand the importance of protecting natural resources, especially forests for future survival. Therefore, interesting information media is needed to build public awareness about the dangers of illegal deforestation.

Animation is a very suitable medium to serve as a medium of information. [5] suggest that animation has given positive results in various studies that utilised animation as a learning medium. Animation is able to illustrate abstract events to be more concrete [6]. This makes the information easier to understand.

Animated film is a model for presenting information that is more interesting through animation media. This is because elements of information are presented more subtly, inserted in the narrative. The audience does not feel patronized, and the message is well received. In animated films, the audience is emotionally involved and loves the characters in it so that the information presented is more embedded in memory [7].

Therefore, this study seeks to design an animated film to raise awareness of the dangers of illegal deforestation. In this way, people who watch this film are expected to become more sensitive to the consequences of destroying forests for their survival in the future.

2 Methods

The research method used is a 3D animated film design method with a qualitative approach. There are 3 main stages, namely (1) Pre-Production, (2) Production, and (3) Post Production stage. In the Pre-Production stage, the process begins with searching and analyzing the data. The data search was conducted through literature studies related to animated films, illegal logging, as well as various aspects that support the design concept. In addition, observations were also made on several animated films that were once popular in Indonesia to determine the main concepts and strategies needed to attract the attention of the audience. The results of the data search were then elaborated and analyzed descriptively. The results of this analysis become the basis in determining the concept of communication, story, visual, and audio.

In the Production stage, the visual concept is developed into a 3D model. This starts from the process of 3D modelling, texturing, to rigging on character elements and several animated environments. The characters and the environment are then animated according to the story script that has been made. The result of the next animation given the previous lighting is finally rendered so that it can be processed to the next stage.

The last stage is Post Production. At this stage, compositing is first carried out, namely the rendering results in the previous stage, then visual effects are given and the visual composition is arranged. Next is the editing process, where the compositing results are compiled and arranged according to the storyline. The last is the publishing process by publishing animated films in media that is easily accessible to the audience (Fig. 1).

Designing 3D Animated Film

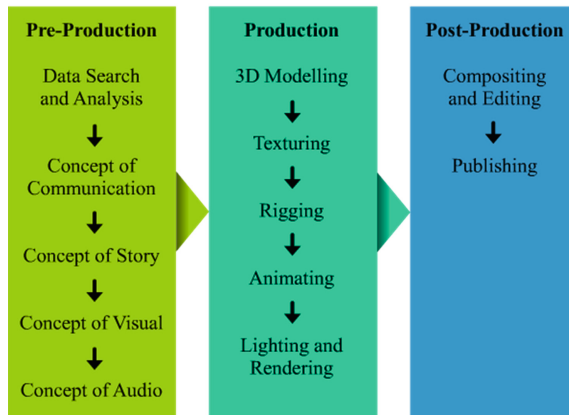


Fig. 1. Design Flow

3 Findings and Discussion

3.1 Pre-production

3.1.1 Data Search and Analysis

In general, the concept implemented in the design of this animated film is a cultural approach. This refers to the results of the literature study and the results of data observations. Case studies were conducted on animated films that were once very popular in Indonesia, namely *Naruto* from Japan and *Upin & Ipin* from Malaysia. These two animated films are unique as they strongly project the cultural aspects in them. The *Naruto* animated film is easily accepted by the Indonesian people [8]. *Naruto* with a ninja theme, is consistent with Japanese cultural content in the past wrapped in fantasy. While *Upin & Ipin* carries the theme of family and friendship, it also presents Malaysian cultural content in everyday life. *Upin & Ipin* has succeeded in presenting the realm of Malaysian culture to be appreciated, especially by the younger generation [9]. In addition, the process of digesting information or learning through culture is also considered more effective. This is because students/audiences not only receive or imitate information but also create meaning, understanding, and meaning from the information they get [10]. This cultural concept is combined with the dark-fairy tale theme to build a scary storytelling feel related to the environmental problems that humans are currently facing.

3.1.2 Communication Concept

In general, this animated film can be a medium of information that can be watched by all Indonesian people. Therefore, the language used in it is Indonesian. The Javanese cultural background was chosen because 40.22% of the Indonesian population is Javanese [11] so that it can be considered that Javanese culture is quite dominant in Indonesia. Meanwhile, the special target of this animated film is teenagers. The presentation of

the story and its visualization are adjusted to the preferences and level of adolescent cognitive development.

3.1.3 Story Concept

Referring to the cultural concept that was aimed to be embedded in this animated film, the concept of karma is considered suitable to convey the story. Karma is a law of reciprocity. The Indonesian people, especially the Javanese, believe in this law as a recompense for every act they do. If humans do bad, then bad things will also happen to them. Therefore, karma is suitable as the basis of the story through the association of the story of human greed in a book called the Book of *Karmaphala*. *Karmaphala* itself is a philosophy in Hinduism that explains the concept of the law of reciprocity (karma).

The story begins with a magical book in a room, on a table lit only by candlelight. Everything that is depicted in the book will become a new form of life, namely paper that seems to be cut to form each image and stands upright on the page of the book where it is drawn according to the size of the image. But the artist had drawn a human in it and the human came to life. At first the man was very happy to have been brought to life among the pictures of trees and beautiful surroundings. But he slowly grew tired of what the artist had created for him. Until he saw a pencil beside the book. The man ran to get the pencil, but he could not get out of the book because anything created from the book could never get out of it. But the human is not at his wits end, he uses the tree as an intermediary so that he can reach the pencil. When he got the pencil, the man tried to make a house. But the house he could draw was very small because there was no place on the page to draw. There were too many trees in the yard so humans had to get rid of them. But there were too many trees he had to tear so he had to burn them faster through the candle flames not far from the book. But when all the trees burned, people began to be very afraid because the fire was not extinguished and began to burn the pages of the book. Man kept running from page to page because the fire kept chasing him. Until humans stop at the last page of the book and can't go anywhere else. Humans try to get out of books and still cannot go out. Until he continued to crawl, holding on to the surface of the table, with his feet still on the book. But when he reached the end of the table, he was scared and made himself pull the book down on the floor. The book is closed and every fire in it is extinguished with the death of the man.

3.1.4 Visual Concept

The characters in this animated film are figures who represent basic human nature. The character's hair is made in a standing style to give the impression that the character has high activities and enthusiasm. This trait is natural to represent human nature which always wants to be better. Curvy moustache characters like antagonist characters. The curved moustache also represents the Javanese who tend to have the impression of being harsh and cruel. This is to build the cruel nature of the character where nature is the victim of its cruelty. Characters wear white clothes to illustrate that humans are basically pure and innocent creatures. But because of his greed, he turned into an evil figure. The character has a fat body and a distended stomach to show the greedy nature of humans. Distended stomach is caused by a high human appetite for food and causes excessive

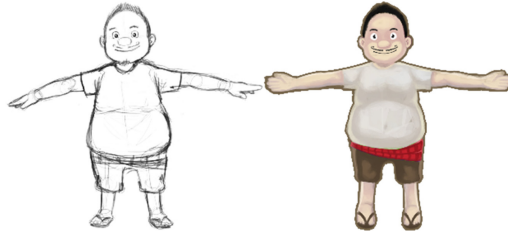


Fig. 2. Character Concept



Fig. 3. Property Concept and Background

body weight. The character wears a scabbard to explain the character's origin. Sarong is an Indonesian cultural clothing, highlighting the origin of the character, who is from Indonesia. This is in accordance with the purpose of making this animated film, which is to show a picture of our attitude as Indonesians towards nature and our environment. The color of the sheath is red. This again confirms the high spirit of character in achieving change. The character wears brown shorts. Brown is the color of the earth element. Humans are actually created from soil, and soil is one of the elements of nature. In essence, humans and nature are one. If a man destroys nature, it means he has destroyed himself. The characters wear sandals to give the impression of simplicity. A human always starts from a simplicity. Obsession makes a life of luxury so that humans could be selfish and greedy (Fig. 2).

The concept of property design and background refers to the elements of Indonesian identity, especially Java. This is as reflected in the design of the house used. The roof of the house is inspired by the typical Javanese roof model, namely *Joglo*. The walls of the house are patterned with trees to reinforce the message of the origin/material of the house, namely from trees. In addition, tree visualization is also inspired by Indonesian trees such as Teak Trees and Coconut Trees (Figs. 3 and 4).

For visualization in the form of writing/words, a combination of common Latin writing for easy reading is used, with Javanese writing. This Javanese writing serves to strengthen the nuances of the cultural background in this animated film. Latin writing uses serif fonts to strengthen its classic feel. Javanese writing uses a Javanese writing symbol type font.

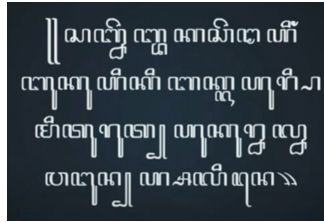


Fig. 4. Concept of Writing/Words

3.1.5 Audio Concept

The audio in this animated film consists of the voice of the narrator/dubber, sound effects, atmosphere, and background music. For the narrator/dubber, a middle-aged male voice character is chosen who is able to narrate the story in a theatrical way. For sound effects and atmosphere to adjust the needs of the scene in the story. For the background music, the characteristics of music that are suitable for teenagers are chosen, combined with several Javanese instruments to strengthen the nuances of Javanese ethnicity.

3.2 Production

3.2.1 3D Modelling

The visual concept that has been created in the Pre-Production stage is then continued to the 3D Modelling stage. The results of the 2D design are entered into the 3D software as a modelling reference. Modelling is using sculpting tools. The style of the 3D model used is in the form of papercut/cut out animation with a combination of low poly hard surface models. This is to support the concept of dark-fairy tale while at the same time adapting to the needs of the story.

3.2.2 Texturing

The next stage is texturing. This stage is the provision of textures and materials to the 3D objects that have been created. First of all, I created the required texture using illustration software. Then the textures are exported and imported into 3D software. Objects are given a texture. Finally, the object material is adjusted to its type.

3.2.3 Rigging

Rigging is the stage of giving bones to the characters and objects to be moved. These bones were given to human characters, trees, houses, and books. Objects that are not moved are not given bones.

3.2.4 Animating

After being given the bones, the characters and objects are ready to be animated. The animation strategy used is the Pose-to-Pose technique. In this technique, the characters and objects that are animated are made to move the keys first and the in-between will be automatically created.

3.2.5 Lighting and Rendering

The final animation that has been finalized is then given lighting. This stage is very important to build the atmosphere of the desired scene. The lighting used is warm nuanced along with the many scenes of flames burning paper. After being given lighting, a shot is then ready to be rendered for processing to the next stage. The rendering result is a PNG sequence.

3.3 Post-production

3.3.1 Compositing and Editing

The results of rendering shots at the Production stage were proceeded to the compositing stage. The compositing stage is the stage of providing additional visual effects, such as the effect of flames, the effect of burned ash, magic effects, etc. After being given effects, the shots are then rendered and then to the editing stage. The editing stage is the



Fig. 5. Animated Render Results

compilation stage by compiling the final shots into the story timeline according to the plot in the script (Fig. 5).

3.3.2 Publishing

The last stage is publication so that animated films can be watched in their best condition. The animated film *Book of Karmaphala* is published on Youtube (https://www.youtube.com/watch?v=eL_AB_Px_O8). This is to make it easier for viewers to access and provide suggestions in the comment column as a basis for evaluation and improvement.

4 Conclusions

This study resulted in an animated film entitled *Book of Karmaphala* which is used a medium to build awareness among Indonesian people about the dangers of illegal deforestation. The general design concept uses a cultural approach wrapped in a dark-fairy tale theme. The film is in Indonesian and is aimed at teenagers. The concept of the story is based on the law of *karma*. The visual and audio concept adapts to the Javanese cultural background. The type of animation produced is 3D cut out animation which is expected to make it easier to describe a scary atmosphere. Future research can be focused on evaluating this media to see the level of its effectiveness to the community in preventing illegal logging and environmental damage.

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