3D Animation Learning Media Regarding The Teachings Of Kanda Pat Sari

Gede Ngurah Yoga Pramana, Oka Sudana, Gusti Made Arya Sasmita

Information Technology Study Program, Faculty of Engineering,
Udayana University, Bukit Jimbaran, Bali, Indonesia
ngryogap@gmail.com

Information Technology Study Program, Faculty of Engineering,
Udayana University, Bukit Jimbaran, Bali, Indonesia
agungokas@unud.ac.id

Information Technology Study Program, Faculty of Engineering,
Udayana University, Bukit Jimbaran, Bali, Indonesia
aryasasmita88@gmail.com

Abstract: The Balinese have a variety of cultures and traditions. Most of the culture contained in it is the teachings of Hinduism. Kanda Pat Sari is one of the teachings of Hinduism that is inherent in Balinese culture. The Balinese Hindu community applies the Kanda Pat Sari teachings to birth ceremonies which are performed using sacred facilities and rituals. The teachings of Kanda Pat Sari are teachings that have begun to be forgotten due to the development of the times so the teachings of Kanda Pat Sari need to be preserved by developing 3D Animation Learning Media Regarding the Teachings of Kanda Pat Sari. The application is designed using 3D animated videos and ceremony tools as a source of information provided on the application. The method used in this research is Design and Development Research (DDR). Data collection in making learning media is done through interviews with informants, initial observations, questionnaires, books and other sources of information. The results obtained through this research result that the learning media application is useful for users to learn the teachings provided in the form of animated videos more easily. The application is also equipped with pictures of the ceremonial facilities needed to help the user understand the information provided.

Keywords: Learning Media, Kanda Pat Sari, Culture, Animation.

1. Introduction

Balinese people know a variety of cultures and traditions. Balinese culture and tradition mostly influenced by the teachings of Hinduism. Religious ceremonies are one example of tradition accompanied by ceremonial facilities to support the course of the ceremony [1]. The Balinese who embrace Hinduism recognize the ceremony of birth and death. The ceremony is one of the three monthly ceremony to welcome the birth of a baby who was three months old. Hindus in Bali believe that humans are born with four siblings called Kanda Pat [2]. In general, people in Bali know four types of Kanda Pat, one of which is the teachings of Kanda Pat Sari. Kanda is a speech or can also be called a story and can also be called supernatural powers. Pat has a meaning of four. Sari has the main meaning. So it can be concluded that Kanda Pat Sari are the four main types of teachings regarding supernatural powers, virtues and propriety. Kanda Pat is also taught in Javanese culture known as "Sedulur Papat Kalima Pancer". Pancer means ourselves. This teaching discusses humans are born into the world not alone, but with four siblings namely Kanda Pat. The teachings of Kanda Pat Sari consist of four parts namely Anggapati, Mrajapati, Bhanaspati, and Bhanaspati Raja. The four parts are spread to humans (Bhuwana Alit) and earth (Bhuwana Agung). Kanda Pat Sari teachings are the teachings that have started to wonder for very limited resources available. Kanda Pat Sari's learning media is only sourced from books and other printed media, so we need another media that can provide information more easily and interactively by utilizing smartphone media. Modern learning media about the teachings of Kanda Pat Sari are made to make it easier for users to understand the information provided in a more interactive way so that learning media about the teachings of Kanda Pat Sari are expected to support the preservation of the teachings of Kanda Pat Sari. Making learning media has been done before, including research on 3D Animation Video Introduction to Customary Houses and Riau Islands Musical Instruments, Development of 3 Dimensional Learning Media in Mathematics Subjects for Students with Mental Disabilities, Learning Applications to Create a Rhombus with 3D Model Animation, Development of Interactive Animation Media 3 (Three) Dimensions as Teaching Aids for Science Subjects, Design of Collaborative Video Conference E-Learning Models Based on Learning to Get Effective and Efficient Learning Results, Development of 3 Dimensional Animated Film Life in Prehistoric Times, and Analysis and Implementation of Mel Script for Lighting And Rendering on Robocube 3D Animated Film. Research on 3D Animation Video Introduction to Traditional Houses and Musical Instruments of the Riau Islands uses the cel-shading rendering technique to speed up the rendering process because the cel-shading technique can reduce complex texture colors to be more solid [3]. Development of 3 Dimensional Learning Media in Mathematics Subjects for Students with Mental Impairments aims to help children with special needs to be able to more easily understand mathematics in a more interactive way. The application uses the Research and Development (R&D) development method and ADDIE development model consisting of analysis, design, development, implementation and evaluation [4]. Learning Application to Create a Rhombus with 3D Model Animation aims to provide information about the types and techniques of making diamond through 3D animation. Research methods carried out include defining problems and problem boundaries, collecting data and literary studies,

creating scenarios, creating objects and characters, making sounds, merging animations, testing systems and analyzing the results of system testing, and drawing conclusions [5]. Development of 3-Dimensional Interactive Animation Media as Science Teaching Aids is a research that aims to minimize the use of visual aids, especially on science subjects [6]. The Design of E-Learning Model Based on Collaborative Video Conference Learning To Get Effective and Efficient Learning Results discusses the making of learning systems between students and teachers using Collaborative Learning methods based on TAM (Technology Acceptance Model) and Naives Bayes Classification (NBC) to measure satisfaction levels [7]. Development of 3 Dimensional Animated Film Life in Prehistoric Period tells about life in prehistoric times which is divided into 4 periods, namely the period of hunting and gathering simple food (Paleolithicum), the hunting and gathering of advanced food (Mesolithicum), the farming period (Neolithicum) and perundagian (Palaeometallic) [8]. Analysis and Implementation of Mel Script for Lighting and Rendering in 3D Animated Film Robocube uses the MEL script method so as to make the process of working on 3D animation in terms of lighting and render settings more effective [9]. Results of previous studies show that there has been no research on the introduction of the teaching of Kanda Pat Sari animation-based learning media in Bali. The instructional media application is designed to be equipped with three-dimensional animated video features, offer features that contain images along with descriptions of ceremonial facilities from the teaching section of Kanda Pat Sari, and features about providing information about the learning media of Kanda Pat Sari's teachings. The application is expected to make it easier to understand the contents of the teachings and the means used in the implementation of the ceremony and be able to become a media supporting the preservation of Indonesia's cultural heritage, especially for Balinese Hindus.

2. Research Methodology

Making an application through several stages or methods described in a research flow. The research flow is processed so that it can be intended as a reference in making applications. These stages include;

1. Defining the problem and limiting the problem so that it can be raised in a study
2. Data collection and literature study are carried out by collecting information through books and scientific journals that have been officially published. Collecting data through distributing questionnaires to Balinese respondents and to experts who understand the teachings of Kanda Pat Sari.
3. Making scenarios which include making storyboards to determine the animated storyline.
4. Making objects and characters in accordance with the scenario that has been made. Making objects and characters using Blender tools.
5. The process of making sound recording (recording) sound in accordance with the storyboard.
6. Merging animations that include 3D character animations, sound dubbing Kanda Pat Sari learning animations that have been made to fit.
7. Testing the system and analyzing the results of the overall system testing by conducting trials to determine the feasibility of learning media

applications made. Tests are also conducted to detect any errors that might still be present in the system. Errors found in the system are then corrected until no more errors are found. Applications that have been implemented are tested by giving questionnaires to respondents.

8. Making conclusions and publish the results of applications that have been made.

2.1 Overview

The learning media provided are in the form of 3D animations that can help application users understand the contents of the teachings of Kanda Pat Sari. The animation was made based on sources explaining the teachings of Kanda Pat Sari along with the Kanda Pat Sari section. The features provided in the Kanda Pat Sari learning application consist of two main features consisting of 3D animation features and also banten features. The offer feature provides information to application users regarding the ceremonial facilities used in ceremonies addressed to each section of Kanda Pat Sari. The application is made based on mobile so that application users can easily understand and use the application more efficiently.
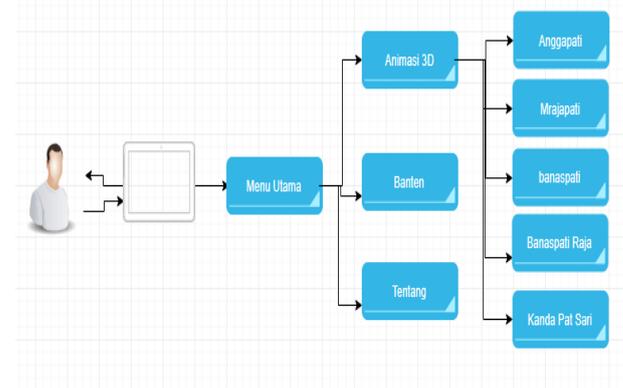

Figure 1: System Overview

Figure 1 is an overview display of 3D Animation Learning Media Regarding the Teachings of Kanda Pat Sari. The features contained in the system include animated video features using 3D objects, the offer feature explains the ceremonial facilities that support the teachings of Kanda Pat Sari and features about making applications. The features contained in the system can present information in the form of 3D animated video information, images and text.

3. Literature Review

Literature study is a set of basic theories used in a study. Literature study is used as a theoretical or rational framework in a study. Literature study is used as a foundation in developing 3D Animation Learning Media Regarding the teachings of Kanda Pat Sari, namely Multimedia, the Teachings of Kanda Pat Sari and Animation.

3.1 Learning Media

Learning media are all teaching tools that are used to help convey subject matter in the teaching and learning process so as to facilitate the achievement of learning objectives that have been formulated. The best type of learning media is audio visual media, which includes audio media (can be heard) and visual media (can be seen). Learning media can be used to stimulate thoughts, feelings, attention, and

learning abilities so that it can encourage the learning process [10].

3.2 Kanda Pat Sari

Kanda Pat Sari in Hinduism is the main teachings about magic, supernatural power and propriety which in the summary of Kanda Pat Sari is stated that when humans are born into the world, at the same time they are born or followed by Sanghyang Panca Mahabutha, who was born together with the Sanghyang Tiga Sakti. Sanghyang Tiga Sakti amor ring Bhuwana Agung, he (Tri Sakti) is worshiped by all living creatures in this world and is also worshiped in Kahyangan Tiga Temple, namely Desa Pura, Puseh Temple, Pura Dalem. Sanghyang Panca Mahabutha is becoming practicing in all corners of the world. As the preserver of the world and all mahasakti is infinite. If he is worshiped, believed, and impregnated, then he can move into the body. Can provide a path to wisdom, authority, supernatural powers, supernatural powers, marriages, and glory [11].

3.3 Animation

Animation is a collection of images that are processed to produce movement. Animation embodies the illusion of movement by displaying a sequence of images that change at a high speed. Animation making techniques can be described as a result of rapidly developing information and communication technology.

3.4 Blender

Blender is an OSS (Open Source Software) that can be used on a variety of OS (Operating System). Blender can be used to create 3D visualizations, stills and videos. The incorporation of a real-time 3D engine allows the creation of interactive 3D content. Blender has a variety of uses including modeling, animating, rendering, texturing, skinning, rigging, weighting, non-linear editing, scripting, composite, and post production. Blender is an open source software so users are free to modify the source code for personal or commercial purposes.

3.5 Unity

Unity is an application that is used to develop multi-platform games that are designed to be easy to use. Editor on Unity is made with a simple user interface. The programming languages used at Unity are Javasciprt, C # and Boo. Making an application using Unity by defining each level as a scene.

4. Results and Discussion

The results and discussion section discuss the achievements of the study. The results and discussion are divided into the results and discussion of the system and analysis of user satisfaction. Results and discussion are presented in the form of descriptions, graphs and images.

4.1 Application Interface

Figure 2: Display Application Home

Figure 2 is a display interface of 3D Animation Learning Media Regarding the Teachings of Kanda Pat Sari. The application interface has various features that can help users to get information about the teachings of Kanda Pat Sari through 3D Animation Features, Banten Features, and About Features

4.2 Video Feature

Figure 3: 3D Animated Video Features

Figure 3 is a display of 3D Animated Video Features. The 3D Animation feature is a learning animation video about the teachings of Kanda Pat Sari using three-dimensional objects. The animated video contains a dialogue between the teacher and student. Subtitles were added to clarify the contents of the dialog.

4.3 Description Banten Feature

Figure 4: Banten features

Figure 4 is a Banten Feature display consisting of several offer images and descriptions. The offer feature displays offerings or facilities in outline. Banten shown is a means needed in worship of the four parts of Kanda Pat Sari.

4.4 Analysis of Research Results

Previous research entitled Development of Web-Based Interactive Learning Media with the Utilization of Video Conference discusses the creation of a valid, practical, and effective learning system. 3D Animation Learning Media Research Regarding the Teachings of Kanda Pat Sari uses different video objects as learning media because it uses three-dimensional objects that are packaged in the form of animated videos so that they can provide information more attractively and efficiently. 3D Animation Learning Media Regarding the Teachings of Kanda Pat Sari is packaged in the form of a mobile application making it easier for users to access information through smartphone devices. Another study entitled 3D Video Animation Introduction to Customary Houses and Kepri Musical Instruments is research aimed at introducing Customary Houses and Kepri musical instruments, while 3D Animation Learning Media Regarding the Teachings of Kanda Pat Sari can provide different information about the teachings of Kanda Pat Sari originating from culture Hindu community in Bali in the form of three-dimensional animation.

4.5 User Satisfaction Analysis

Measurement of user satisfaction or user experience on a system can be done with a variety of methods, one of which is the questionnaire data collection method. Questionnaires are inexpensive and highly efficient tools for achieving quantitative measures of a system's user experience. The test was conducted on 60 respondents, given to 55 teenagers and 5 adults who learned the lessons from the teachings of Kanda Pat Sari (expert). The method used is a questionnaire data collection method. The components of the questionnaire consist of several questions listed in Table 1.

Table 1: Respondents' Ratings of the System

Number	Question
1	The system can run well and efficiently on mobile devices.
2	Users feel comfortable with an attractive display system.
3	The system workflow is simple and easy to use.
4	The contents of Kanda Pat Sari's teachings are in accordance as they should.
5	This media is easier to understand and the material presented is complete.
6	Learning media increase interest and enthusiasm for learning.
7	Support users in learning the teachings of Kanda Pat Sari.
8	The information contained in the system is useful.
9	In general, the system is in accordance with the expectations and needs of users.
10	3D Animation Learning Media Regarding the Teachings of Kanda Pat Sari deserve to be the latest learning media in learning the teachings of Kanda Pat Sari.

Table 1 is a table of respondents' assessment of the application in order to measure how satisfied the respondent is with the application. Respondents give a range of values from 1 to 5 for each question on the questionnaire. The results of the user satisfaction questionnaire can be seen in Figure 5.
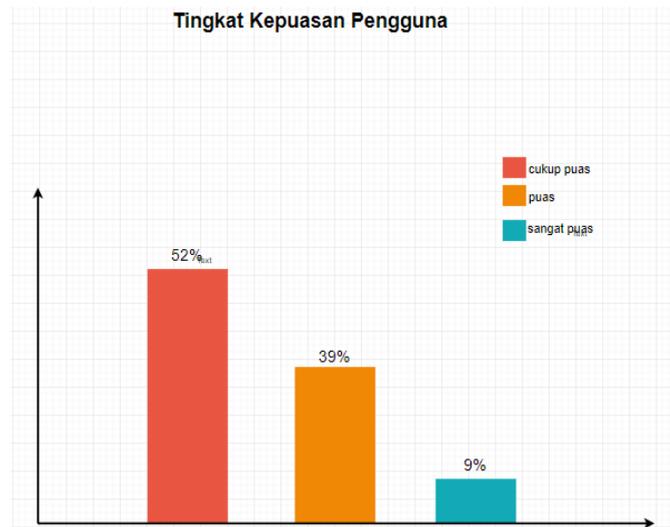

Figure 5: The level of application user satisfaction

Figure 8 is a diagram showing the percentage of questionnaire results from the level of user satisfaction with 3D Animation Learning Media Regarding the Teachings of Kanda Pat Sari. The satisfaction level obtained by 52% stated that they were quite satisfied, 39% said they were satisfied, and 9% stated that they were very satisfied, so that the average level of user satisfaction in the system was 88% from 60 respondents.

5. Conclusion

3D Animation Learning Media Regarding the Teachings of Kanda Pat Sari can help convey information in the form of animation so as to make the information conveyed more interesting. Kanda Pat Sari Learning Application Development in the form of 3D Animation can facilitate application users in accessing information about the contents of Kanda Pat Sari's teachings that can be accessed through mobile devices. Testing of 55 respondents, 52%, said they were quite satisfied, 39% said they were satisfied, and 9% said they were very satisfied. The average level of satisfaction of respondents in the system based on the level of satisfaction obtained is equal to 88%. Animation testing shows that 3D Animation Learning Media Regarding the Teachings of Kanda Pat Sari can help users in providing information and facilitate learning about the teachings of Kanda Pat Sari, based on the average level of satisfaction obtained.

References

[1] I Wayan Gde Wiryawan, Ketut Sukawati Lanang P.Perbawa, I Wayan Wiasta, "Hukum Adat Bali Di Tengah Modernisasi Pembangunan Dan Arus Budaya Global," Jurnal Bakti Saraswati, vol. 04, no. 02, pp. 2088-2149, 2015.

[2] Ida Bagus Benny Surya Adi Pramana, "Studi Komparasi Ajaran Kanda Pat Padepokan Sastra Jendra Dan Kanda Pat Perguruan Seruling Dewata," Jurnal UNHI, pp. 978-602-52255-1-2, 2018.

[3] Jianfranco Irfian Asnawi, Afdhol Dzikri, "Video Animasi 3d Pengenalan Rumah Adat Dan Alat Musik Kepri Dengan Mengunakan Teknik Render Cel-Shading," Jurnal SIMETRIS, vol. 7, no. 2, pp. 2252-4983, 2016.

[4] Luh Lina Hartariani, Luh Putu Eka Damayanthi, I Made Agus Wirawan, I Made Gede Sunarya, "Pengembangan Media Pembelajaran 3 Dimensi Pada Mata Pelajaran Matematika Untuk Siswa Penyandang Tunagrahita (Studi Kasus: Siswa Kelas D2/Semester 2 SLB C Negeri Singaraja)," Jurnal Pendidikan Teknologi dan Kejuruan, vol. 13, no. 2, pp. 2541-0652, 2016.

[5] Nyoman Artha Wijaya, A. A. K. Oka Sudana, Putu Wira Buana, "Aplikasi Pembelajaran Membuat Ketupat dengan Animasi Model 3D Berbasis Android," Jurnal Merpati, vol. 4, no. 01, 2252-3006, 2016.

[6] Usman Channy Affandi, Hari Wibawanto, "Pengembangan Media Animasi Interaktif 3(Tiga) Dimensi sebagai Alat Bantu Ajar Mata Pelajaran IPA Kelas VII menggunakan Blender Game Engine," Jurnal Teknik Elektro, vol. 7, no. 2, pp. 141414, 2015.

[7] Sulis Sandiwarno, "Perancangan Model E-Learning Berbasis Collaborative Video Conference Learning Guna Mendapatkan Hasil Pembelajaran Yang Efektif Dan Efisien," Jurnal Ilmiah FIFO, vol. 8, no. 2, pp. 2085-4315, 2016.

[8] Putu Yudia Pratiwi, I Gede Mahendra Darmawiguna, I Made Gede Sunarya, "Pengembangan Film Animasi 3 Dimensi Kehidupan pada Zaman Prasejarah," Jurnal KARMAPATI, vol. 5, n. 1, pp. 2252-9036, 2016.

[9] Rangga Pramudia, Meyti Eka Apriyani, Sandi Prasetyaningsih, "Analisis Dan Implementasi Mel Script Untuk Lighting Dan Rendering Pada Film Animasi 3d Robocube," Jurnal Ilmiah Komputer dan Informatika, vol. 5, no. 1, pp. 2089-9033, 2016.

[10] Achmad Buchori, Rina Dwi Setyawati, "Development Learning Model Of Charactereducation Through E-Comic In Elementary School," International Journal of Education and Research, vol. 3, no. 9, pp. 2411-5681, 2015.

[11] I Wayan Yendra, "Kanda Empat Sari Sakti Tanpa Guru," Surabaya, 2007.