Designing a 3D Animation-Based Tutorial Video for Preserving the Traditional Games of Congklak

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Abstract

Congklak is one of the traditional games that has become an important part of Indonesia's cultural heritage. The game entertains and teaches social values, strategic thinking, and basic skills such as counting. However, along with the development of technology and the emergence of modern games, the popularity of congklak has faded, especially among the younger generation. This research aims to develop a 3D animation-based tutorial video as a medium for preserving congklak by integrating traditional elements and modern technology. The research method utilizes a Research and Development (R&D) approach with a Multimedia Development Life Cycle (MDLC) framework. The results indicate that the developed animation video effectively engages young generations, raises cultural awareness, and provides broad accessibility through digital platforms. This study concludes that 3D animation can be an effective tool for preserving traditional games such as congklak.

Keywords:

Introduction

Congklak, known by various names across the Indonesian archipelago—such as dakon in Java and jongkok in Sumatra—is a traditional game that has been played for centuries. This game uses a perforated board, small seeds or stones, and involves two players who compete strategically to collect as many pieces as possible into their own "home" pits. More than a simple pastime, congklak carries educational and social values: it sharpens arithmetic skills, hones strategic thinking, and strengthens interpersonal bonds between players [1].

However, in the modern era, traditional games like congklak are increasingly sidelined by digital entertainment. This shift raises concerns about the potential loss of cultural heritage embedded in these games. Therefore, preserving congklak becomes crucial—particularly through digital means that resonate with younger generations [2].

This study aims to develop a 3D animation–based video tutorial as an educational and preservation medium for the congklak game. By leveraging contemporary technology, this research intends to offer an interactive learning experience, raise awareness among young people about traditional culture, and encourage the continued practice of congklak in the digital age.

Moreover, advancements in multimedia technology have opened new avenues for cultural preservation. 3D animation—now widely embraced in both educational and entertainment contexts—provides a visually engaging format that is easily understood by learners of all ages. Through 3D animation, explanations about congklak can be presented in a dynamic, interactive manner, allowing the information to reach a broader audience, including children and teenagers who are generally more accustomed to digital media than to playing traditional games in person [3].

Furthermore, digital learning approaches have been proven effective in boosting user interest and comprehension of a concept [4]. A 3D animation–based video tutorial can systematically present congklak's rules,

demonstrate game strategies in an appealing way, and weave in historical context and cultural values. Thus, this project serves not only as a source of entertainment but also as an educational tool that introduces and revitalizes congklak among today's youth [5].

Table Example:

Literature Review)

1. Development of a 3D Animated Video for the Traditional Game Petak Benteng to Enhance Children's Motor Skills

   This study outlines how a 3D animated video was created for the traditional Indonesian game Petak Benteng, with the goal of improving children's motor skills. The researchers employed a Research and Development (R&D) approach[6].

2. Preserving the Cultural Heritage of Congkak through Character Design for Children

   Using a qualitative approach—including interviews, observations, and literature review—this study produced a 2D animated character that was deployed across various communication channels as a means of keeping the Congkak game alive for younger audiences[7].

3. Leveraging Digital Media to Preserve Traditional Games in the Bebekan Selatan Community of Sepanjang City

   This research addresses the community's limited use of digital media to safeguard its traditional games. The project team worked to integrate digital tools into preservation efforts and encouraged local children to engage directly with these games, aiming to revive the social and developmental benefits that traditional play provides[5].

4. Developing the 3D Animated Film "Tude The Movie – Bayu's Phone Disappears While Playing Deduplak"

   This project set out to produce a 3D animated film centered on the Balinese traditional game Deduplak. By applying a Research and Development (R&D) methodology, the team created a fully realized animation that showcases this local game's cultural value[8].

Research Methods

The development of a 3D animation–based video tutorial for the congklak game combines a Research and Development (R&D) approach with the Multimedia Development Life Cycle (MDLC). R&D was chosen to make sure the final product is genuinely useful and relevant for its intended users, while MDLC serves as the main framework for organizing the technical stages of animation development [13].

The research and development process follows these steps:

A. Needs Analysis: We start by reviewing existing literature and references on congklak—its rules, cultural significance, and potential audience. This analysis helps identify which elements need to appear in the video tutorial, such as how the congklak board is laid out, how the seeds look, and which gameplay strategies to highlight.

B. Prototype Development: Using the insights from the needs analysis, we design an initial 3D animation prototype following the MDLC approach [14], which is broken down into six main stages:
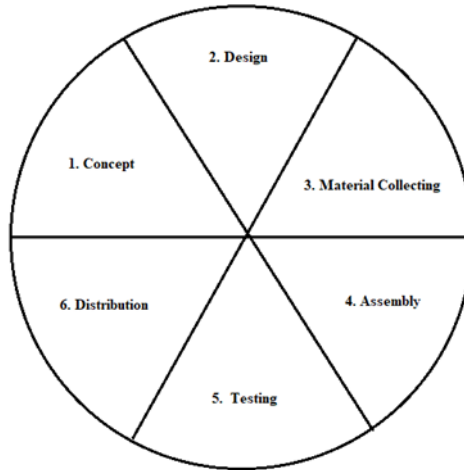
Figure 1. MDLC Method

1. Concept: Define the project's goals, target audience, and functional requirements for the congklak tutorial. At this point, we also consider how 3D animation can grab the attention of younger viewers.
2. Design: Create storyboards and 3D models of the congklak board, seeds, and other visual elements. This stage also involves planning the interactive flow and weaving in educational content [15].
3. Material Collecting: Gather all relevant visuals, audio clips, and data related to congklak—including typical game patterns, official rules, and traditional cultural elements.
4. Assembly: Bring the design to life by building the 3D animation in Autodesk Maya 2019, adding narration, sound effects, and background music.
5. Testing: Review the finished animation to ensure the video plays as intended, remains engaging, and is easy for the target audience to understand.
6. Distribution: Upload and share the tutorial video on digital platforms like YouTube, then collect feedback to guide further improvements.

C. Evaluation and Revision: Feedback gathered during the testing phase is used to refine and polish the animation.
D. Final Production and Distribution: The completed video tutorial is widely shared across digital channels, helping preserve congklak culture through modern media.

By combining R&D with MDLC, we ensure the end product isn't just technically solid but also engaging, relevant, and effective at reintroducing congklak—especially to today's younger generation.

Results and Discussion

During the creation of the tutorial video, several stages were carried out, from gathering data on congklak game patterns and crafting a storyboard to producing the animation using Autodesk Maya 2019. The processing of visual elements involved detailed design work to ensure that traditional cultural characteristics were preserved. In addition, the narration was specifically written to convey information effectively to users. The development of a 3D animation–based tutorial for the congklak game resulted in content that is informative, engaging, and relevant for younger audiences. The outcomes include:

a. Interactive Visualization: The 3D animation successfully depicts the congklak board, seeds, and game simulation with high detail. These visual elements are designed to capture users' attention and make it easier to understand the rules.

b. Informative Narration: The video is accompanied by narration that explains the origins of congklak, its rules, and basic strategies in simple, easy-to-understand language.

c. Cultural Awareness Enhancement: The video blends traditional elements—such as wood motifs and gamelan music—with modern components, creating an experience that is both educational and entertaining.

d. Wide Accessibility: By distributing through the digital platform YouTube, this video can be accessed by various audiences, both domestically and internationally, supporting cultural preservation efforts. The animation video can be viewed at: https://youtu.be/sTzPTSCYdYs

e. Positive Feedback: Trials with a small group showed that the video effectively introduces congklak to children and teenagers, many of whom expressed interest in trying the game firsthand.

f. 3D Animation Implementation

Figure 2. Implementation in Autodesk Maya 2019
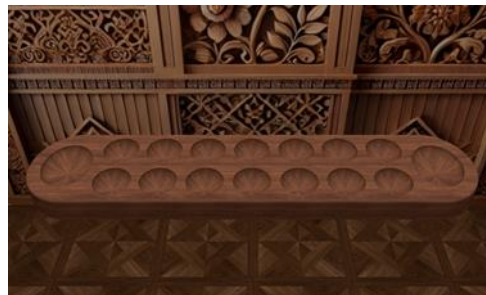
g. Game Component Animation

Figure 3. Congklak Board Animation

Figure 4. Congklak Seed Animation

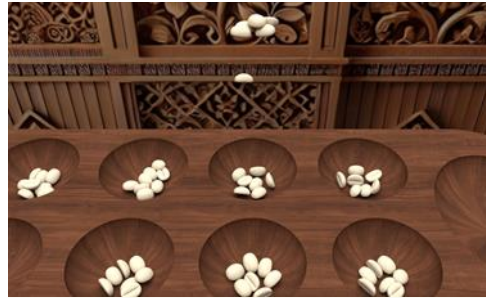h. Animation of Rules and Game Strategies

Figure 5. Animation of Rules and Game Strategies).

Conclusions

1. Innovative Preservation Approach

By combining Research and Development (R&D) with the Multimedia Development Life Cycle (MDLC), this project ensures both technical quality and real-world relevance. The R&D framework guarantees that the tutorial meets users' needs, while MDLC structures each development stage—from concept to distribution—so the final video remains both functional and engaging.

2. Comprehensive Development Process

The project began with a thorough needs analysis of congklak's rules, cultural values, and target audience. This informed the design of detailed storyboards and 3D models, which were then brought to life in Autodesk Maya 2019. Iterative testing and user feedback guided refinements at every step, resulting in a polished tutorial that accurately reflects traditional gameplay.

3. High-Quality Visual and Narrative Elements

The 3D animation delivers an interactive visualization of the congklak board, seeds, and gameplay strategies with exceptional clarity. Carefully crafted narration explains the game's origins, rules, and basic tactics in straightforward language. Traditional motifs—such as wooden textures and gamelan music—are seamlessly woven into the animation, preserving cultural authenticity while maintaining contemporary appeal.

4. Broad Accessibility and Engagement

By publishing the tutorial on YouTube, the project makes congklak easily available to both domestic and international audiences. Early testing showed that children and teenagers found the video both informative and entertaining, with many expressing a desire to play congklak in person. This wide reach supports ongoing cultural preservation by introducing the game to users who might never encounter it otherwise.

5. Positive Feedback and Cultural Impact

Feedback from pilot groups indicates that the tutorial effectively raises awareness of congklak and its cultural significance. Viewers not only learn how to play but also gain an appreciation for the game's historical roots. These results demonstrate that digital media can serve as a powerful bridge between traditional culture and modern audiences.

6. Recommendations for Future Initiatives

Given the success of this project, similar 3D animation–based tutorials should be created for other traditional Indonesian games. Expanding this digital preservation effort will help ensure that cultural heritage remains alive and relevant for successive generations, while also fostering pride and understanding of Indonesia's rich traditions.

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