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Three-Dimensional Animation Design for the Local History Animation "The Origins of Banjarmasin City"

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Abstract. The preservation of local history in the digital era requires innovative and interesting media, especially for the younger generation. This study documents the process of designing and producing a 3D animated film entitled "The Origin of the City of Banjarmasin" using Blender software. The project development method includes four main stages: historical exploration, pre-production, production, and post-production. The project produced a short animated film consisting of four key scenes that represent the thematic narrative of Banjarmasin's history, starting from life in a river village to its evolution into a modern city. In production, a hybrid approach is used by combining manual 3D modeling and the utilization of asset templates from open source for efficiency. The results of this project show that Blender is an effective tool for creatively visualizing historical content. 3D animation has proven to have strong potential as an educational medium to revitalize and convey local cultural heritage visually, interactively, and attractively to the digital generation. Three-dimensional visualization allows audiences to experience the historical atmosphere more deeply than conventional media, while opening up more engaging and memorable learning opportunities.

Keywords. 3D animation, blender, local history, banjarmasin, educational media

INTRODUCTION

The preservation of local historical and cultural values is an important pillar in shaping the nation's identity and character. In this digital era, the dissemination of historical information no longer relies solely on conventional narratives but can be enhanced through interactive visual media, such as 3D animation (Eliza et al., 2024; Olliem, 2024). The city of Banjarmasin, known as the "City of a Thousand Rivers" and possessing strong historical roots related to river civilization and the establishment of the Kingdom of Banjar, is one of the regions rich in this heritage.

In an effort to revitalize the understanding of local history, especially among the younger generation, our team designed a 3D animation for the production of an animation entitled "The Origin of the City of Banjarmasin". This designed animation is presented through four key scenes that represent the historical journey of the city of Banjarmasin, starting from the life of the coastal people of the river to its modern evolution., covering the historical journey of the life of the coastal people of the river, the arrival of the Prince of the Ocean, to the evolution of the modern city of Banjarmasin. Each segment is integrated with a comprehensive historical narrative, thematic character design, relevant natural and cultural visuals, and atmospheric supporting sound effects (Umam & Musliyana, 2024).

In the context of 3D animation production, there are various software available that have their own advantages. Autodesk Maya is known as an industry standard with powerful advanced rigging and simulation capabilities, but requires a fairly expensive paid license (Chen, 2024). Cinema 4D offers a user-friendly interface and good integration with motion graphics software, but it also requires a significant financial investment. Autodesk 3ds Max excels at architectural visualization and game asset creation, but it's limited to the Windows platform and requires licensing fees. On the other hand, Blender comes as a completely free open-source solution with a very active community of developers. Although once considered less professional, Blender has experienced rapid development and is now used in various professional film and animation productions (Hadi et al., 2021).

The decision to use Blender in this study was based on several strategic considerations. First, as open-source software, Blender requires no licensing fees so it is perfect for educational contexts and projects with budget constraints. Second, Blender provides a comprehensive toolset covering modeling, texturing, rigging, animation, rendering, and compositing in one integrated platform. Third, extensive documentation and a large community of users make the learning and troubleshooting process easier. Fourth, Blender's compatibility with a wide range of file formats allows for flexible integration with assets from other sources, which is particularly relevant to the hybrid approach implemented in the project.

The production of this 3D animation utilizes a combination of graphic asset templates and 3D modeling using Blender (Hadi et al., 2021). Storyboarding plays a vital role in structuring storylines and visual compositions, while Blender is used extensively for the development of 3D assets, including characters, environments, and transitions (Chen, 2024). The process also includes the creation of narrative elements, the addition of sound effects, and the application *of shaders* and lighting to create an authentic historical atmosphere.

This research aims to document the process of designing 3D animation and producing visual assets for the historical animation "The Origin of the City of Banjarmasin". The main focus lies in exploring the effectiveness of Blender and storyboarding as an educational and engaging medium in conveying local history through 3D animation.

METHODS

The research method used in the study entitled "3D Animation Design for the Production of Local History Animation 'The Origin of the City of Banjarmasin' Using Blender" is a qualitative descriptive approach combined with creative product development methods. The qualitative descriptive approach was chosen because the focus of this research is to describe and analyze in depth the design and production process of 3D animation, from the conceptualization stage to the final result (Hall & Liebenberg, 2024).

The product development method is composed of four main stages, which are interrelated, as shown in Figure 1 below.:

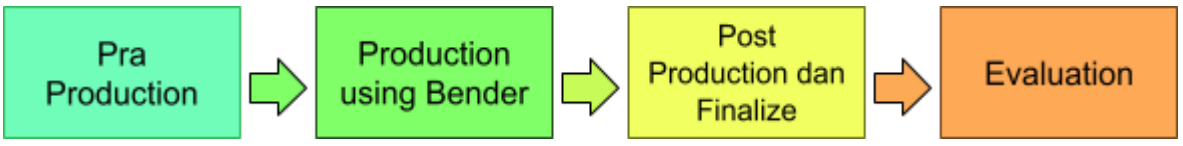


Figure 1. Stages of 3D Animation Production (Source: Adapted from industry-standard animation production methodologies)

Stage 1 - Pre-Production (Concept Design)

This stage focuses on planning and laying the conceptual foundation for the entire animation. The activities carried out include : historical exploration and references, story and storyboard development, visual asset design. In the **historical exploration and references** activity, data collection was carried out through literature studies from online sources about the history of the Kingdom of Banjar, as well as adapting oral stories of the community as narrative references. Visual observations of geographical conditions such as rivers and lanting houses are also carried out to strengthen visual authenticity. At **story and storyboard development** activity**,** collected historical stories are then compiled into a narrative plot. This process is visualized through a storyboard detailing the visual composition, camera angle, and plot of the scene, which is then developed into four key scenes presented in this study (Federico Manuri, Andrea Sanna, Marco Scarzello, 2023). In **visual asset design** activity, design for the characters and environments implemented in the animation. The process begins with creating an initial sketch to determine the shape, visual style of the character, combined with modifications from existing 3D templates. This approach is commonly used in pre-production pipelines because it allows for time efficiency while maintaining aesthetic consistency between the characters and the environment (Zhang, 2023).

Stage 2 - Production (Visual Implementation)

The production stage is the core of technical implementation, where all visual concepts are realized into digital assets using Blender software (Ainiyah et al., 2020). There are 3 activities in this stage, they are modeling and texturing, rigging and animation, and composition and lighting. In the **modeling and texturing activity,** three-dimensional (3D) models are created for all visual assets, including human characters, boats, and stilt houses. The team applied a hybrid approach by combining manual modeling from scratch and the use of 3D templates from open source that were modified to fit the cultural background of Banjarmasin. After the modeling is complete, each asset is textured using the shading and UV mapping features in the Blender to achieve the desired visual style (Carrozzino et al., 2016). In the **rigging and animation activity,** Character assets that have been modeled are then given a digital bone structure (rigging) so that they can be moved. The animating process is carried out by moving the rig based on the frames on the Blender timeline, following the direction of the scene from the storyboard (Xu et al., 2022). In the **composition and lighting activity,** each scene is assembled by combining 3D assets and 2D-based background elements, such as images of the sky and trees, to efficiently add visual depth. The lighting settings are carefully arranged to create an authentic atmosphere, such as sunlight and water reflections. Sound effects such as water flow and wind are also added to build a more immersive atmosphere (Sugiarto & Widiastuti, 2020).

Stage 3 - Post-Production (Finalization)

This stage focuses on uniting all the elements that have been produced into a complete animated film. At this stage, the rendering and editing process is carried out. Each scene that has been completed is then rendered in high resolution (HD) to maintain visual quality. The renders of each scene are combined in video editing software like Capcut. Tempo adjustments, transitions between scenes, and synchronization of voice narration and background music are done at this stage.

Stage 4 - Quality Evaluation

Evaluation is carried out to measure the quality and suitability of the final result with the initial goals of the project. The final results of the animation are evaluated by the lecturer in charge of the course. The assessment covers the visual, narrative, and technical aspects of the resulting animation. The production team also conducts internal reflection to identify strengths, weaknesses, and potential improvements from the results achieved. The input from this evaluation process is a reference in improving the project (Sousa, 2023). The evaluation results showed that the animation received a positive assessment, particularly in terms of visual quality and narrative accuracy. The lecturer in charge noted that the use of Blender effectively captured the historical atmosphere of Banjarmasin, with detailed 3D environments and character designs that aligned well with the project's cultural objectives. These evaluation outcomes are further discussed in the Results and Discussion section.

RESULTS AND DISCUSSION

This chapter describes the final result of the 3D animation design "The Origin of the City of Banjarmasin". The resulting product is a short animated film consisting of four key scenes, which visually narrates the historical journey of the city of Banjarmasin. The entire production process, from modeling to scene creation, is done using Blender software.

1. Animation Production

This project succeeded in producing a 3D animation work in four scenes that represent the historical narrative of Banjarmasin visually and thematically. The resulting animation not only serves as a historical documentation medium, but also as an educational tool that can increase audience engagement and understanding of local cultural heritage. Through immersive three-dimensional visualization, this animation manages to relive important moments in the history of Banjarmasin in a more interesting and easy-to-understand way than conventional delivery methods. The use of visual elements such as representative character modeling, authentic environments, atmospheric lighting, and sound effects that support the narrative, together create a powerful and memorable storytelling experience. This is in line with the research of Bhatti et al. (2017) which states that multimedia learning through 3D animation can increase retention and comprehension compared to traditional learning mediums.

The production process utilizes Blender as the main software. Some assets, such as urban characters and buildings, are obtained from open-source templates that are then modified to suit the historical and cultural context of Banjarmasin. This hybrid approach allows teams to optimize production efficiency without sacrificing visual quality and narrative authenticity. Furthermore, this production experience shows that 3D animation has great potential as a medium to revitalize and convey local historical content. Through a combination of modern technology and traditional cultural narratives, this animation manages to bridge the gap between past and present generations, creating new ways to preserve and transmit cultural heritage to a digital generation that is more familiar with visual and interactive content (Sousa, 2023).

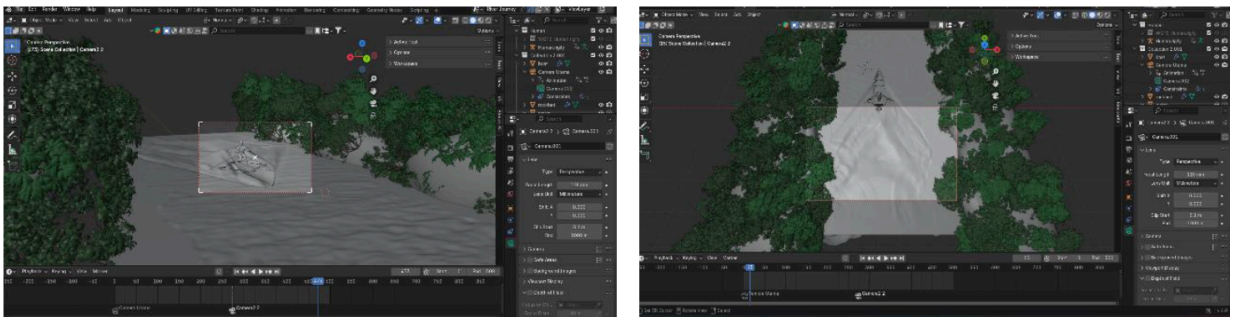
2. Scene Visualization

Here are the visual details of the four scenes that became the final result of this animation project.

Scene 1- Early Life in the River Village

The animation opens with a scene of a boat being rowed by one person, down a vast river among dense forests. This scene effectively introduces the natural setting of Banjarmasin as the "City of a Thousand Rivers" and focuses attention on the journey of individuals who became the forerunners of a civilization. Technically, this scene uses the top camera angle with a Focal Length of 118 mm to achieve a

cinematic and slightly compressed result. The water surface is moderately simulated with a wavy texture to give the impression of a river flow. The trees on both sides of the river are 3D objects that are duplicated to efficiently create the impression of a dense forest (Figure 2.a).



a) b)

Figure 2. Early Life in the River Village. a) Top-angle view of a boat being rowed down the river among dense forests, b) Close-up perspective showing the river environment and forest surroundings.

Scene 2 - The Atmosphere of a Traditional Village by the River

After the initial journey, the storyline continues by showing a community village that has been built on the water's edge. This scene shows wooden stilt houses (lanting houses) and simple piers, which depict the architecture and social life of the Banjar people at that time. The placement of the village with a mountainous background aims to set the setting and introduce the audience to the river civilization that is the foundation of the city. This scene is built in Blender using 3D modeling techniques to create key assets such as stilt houses, docks, and boats. To add scale and visual depth, a model of the mountain is placed in the background. This process demonstrates the basic skills of modeling and scene composition to build a world that conforms to historical concepts. Two different angles of this scene are shown in Figure 3.

a) b)

Figure 3. The Atmosphere of a Traditional Village by the River. a) View from angle 1, b) View from angle 2.

Scene 3 - Historical Turning Point at the Pier

The animation closes with a dusk scene on a wooden dock, where a large European sailing ship is docked. This scene represents a crucial historical moment, most likely symbolizing the arrival of traders or the colonial era that significantly influenced the historical route of Banjarmasin. The use of the twilight time gives it a dramatic feel, as if it marks the end of an era and the beginning of a new chapter. The technical highlight of this scene is the use of lighting and atmosphere. The lighting feature on the Blender is used to create warm and dramatic colors of the twilight sky, as well as its reflection on the surface of the water. Detailed 3D ship models take center stage, demonstrating capabilities. modeling complex

objects. The composition between the boat, the dock and the twilight background is arranged to achieve maximum emotional impact, as shown in Figure 4.

Figure 4. Historical Turning Point at the Pier – 3D scene of a European sailing ship docked at a wooden pier at dusk.

Scene 4 - Evolution Towards Modern Banjarmasin

The third scene makes a narrative leap into the present, featuring a visualization of the city of modern Banjarmasin. This scene is filled with highways, high-rise buildings, and the hustle and bustle of the city. The presentation of this scene creates a sharp contrast to the previous two scenes, visually showing the end result of the city's long evolution from a simple village to an urban center The creation of these complex urban scenes uses a hybrid approach. We as a production team combine the use of open-source urban 3D asset templates with manual modification and styling within Blender. This technique allows teams to efficiently build detailed urban environments; templates are used as the basis for buildings and streets, while layout styling, adding specific details, and placing complementary assets are done manually to create unique and vibrant compositions, as visualized in Figure 5.

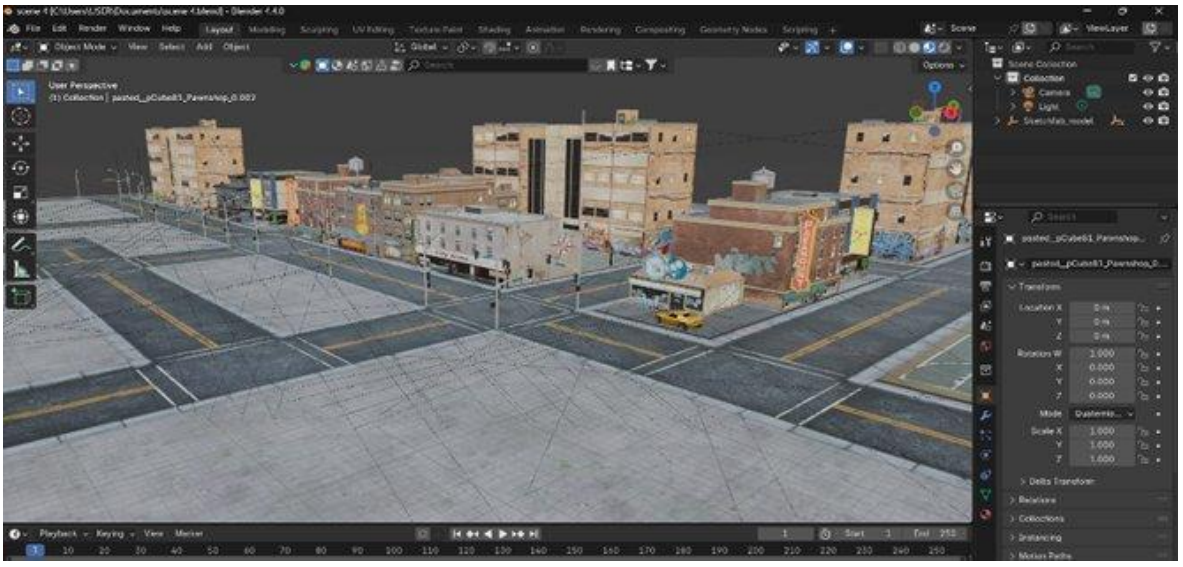


Figure 5. Evolution Towards Modern Banjarmasin – 3D urban scene with highways and high-rise buildings rendered in Blender.

3. Evaluation Results

The quality evaluation stage was conducted by the course lecturer, covering the visual, narrative, and technical dimensions of the final animation. Overall, the animation received a positive assessment. In terms of visual quality, the lecturer noted that the scenes demonstrated effective use of Blender's lighting and texturing tools, particularly evident in Scene 3 (Figure 4), where the twilight atmosphere was successfully rendered to convey a dramatic and historically significant mood. The 3D character and environment models were assessed as culturally appropriate and aesthetically consistent across all four scenes.

From a narrative perspective, the four-scene structure was considered effective in conveying the historical journey of Banjarmasin in a logical and engaging sequence – from early river village life (Scene 1 and 2, Figure 2 and 3), through the historical turning point of foreign arrival (Scene 3, Figure 4), to the evolution of the modern city (Scene 4, Figure 5). The internal team reflection also identified areas for potential improvement, including adding more character animation and refining scene transitions for a more seamless storytelling flow. These findings confirm that 3D animation, particularly when produced using Blender with a hybrid asset approach, serves as a highly effective and accessible medium for educational historical content (Sousa, 2023; Bhatti et al., 2017).

CONCLUSION

This research successfully designed and produced four key scenes from the historical animation "The Origin of the City of Banjarmasin" using Blender software. The hybrid approach, combining open-source asset templates with manual modeling, proved effective in achieving high-quality visual outputs with efficient use of resources. The evaluation results, supported by visual evidence and lecturer assessment, confirmed that 3D animation is a highly effective medium for revitalizing and conveying local historical content in an engaging and immersive way. Through the combination of digital technology and cultural narratives, the four produced scenes successfully demonstrate how 3D visualization enables audiences to experience historical atmosphere more deeply than conventional media. Furthermore, this study shows that Blender, as open-source software, provides accessible tools for producing educational animations without expensive licensing costs. Thus, 3D animation serves not only as a medium for documentation and preservation, but also as a catalyst for transforming history and cultural learning in the digital age.

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