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Implementation of a 3D Animation Production Pipeline for a Psychological Well-Being Trailer : Visualizing Self-Acceptance Using Autodesk Maya

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ABSTRACT

Purpose: This study aims to investigate the implementation of a structured 3D animation production pipeline in the creation of a 3D animation trailer themed around psychological well-being with a self-acceptance dimension. The research addresses the lack of academic studies that specifically discuss the technical and procedural aspects of 3D animation trailer production, as most previous works emphasize narrative messages or educational outcomes rather than the production workflow itself.
Methods: A practice-based research approach was applied by implementing a three-stage animation production pipeline consisting of pre-production, production, and post-production. Pre-production included concept development, scriptwriting, storyboard and concept art creation, and dubbing. The production stage involved material collecting, studio setup, and keyframe-based animation using Autodesk Maya. Post-production comprised frame-by-frame rendering using Arnold, compositing and editing with Adobe After Effects, internal evaluation, expert-based beta testing, and publishing via YouTube. All stages were systematically documented to ensure clarity and reproducibility.
Result: The results show that the implemented pipeline enabled efficient task distribution, consistent visual quality, and accurate synchronization between animation and audio across 15 scenes with a total duration of 97 seconds. Internal evaluation confirmed that all scenes met predefined technical, visual, and narrative standards. Furthermore, expert-based evaluation by media professionals yielded a feasibility score of 92% across five aspects: animation quality, camera movement, lighting, sound design, and narrative timing. These findings indicate that the proposed pipeline effectively supports short 3D animation trailer production by reducing workflow ambiguity and improving coordination between visual and audio components.
Novelty: The novelty of this research lies in its detailed and reproducible documentation of a 3D animation trailer production pipeline that integrates a fantasy-based narrative as a conceptual foundation for self-acceptance. This study provides a practical workflow reference that can be adapted for future academic, educational, and creative animation projects.

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1. INTRODUCTION

The development of animation production has increasingly emphasized the importance of a structured workflow or pipeline to ensure consistency, efficiency, and visual quality. In 3D animation, a well-defined pipeline (pre-production, production, and post-production) plays a crucial role in managing assets, narrative visualization, and technical execution [1]. This structured approach becomes even more significant when animation is used to convey abstract and internal concepts, such as psychological conditions, which require symbolic and imaginative visual representation rather than literal depiction [2].

Fantasy has long been recognized as an effective thematic approach in visual storytelling, particularly for representing internal conflicts, emotional struggles, and character transformation. Through fantasy elements such as magical settings, symbolic creatures, and exaggerated transformations, abstract psychological states can be translated into concrete visual forms [3][4]. From a production perspective, the fantasy genre allows greater flexibility in character design, environment creation, lighting, and visual effects, making it suitable for exploring the capabilities and implementation of a 3D animation pipeline [5]. Therefore, the use of a fantasy theme in this study is not primarily intended as a narrative focus, but as a production strategy to support visual experimentation and pipeline implementation.

Several previous studies have examined the use of animation to communicate psychological or self-development themes. A practice-based study on a 2D animation titled *Jagadhita* explored the representation of the Balinese local wisdom concept of *Rwa Bhineda* as a reflection of self-acceptance among Generation Z. The research successfully demonstrated how cultural duality could be visually represented through narrative and character symbolism [6]. Another study developed a 2D animated video titled *Self Control: Mastering the Inner-Beast*, aimed at educating adolescents about emotional regulation using cutout animation and a design thinking approach. While the research provided detailed evaluation results regarding audience reception and message effectiveness, the production discussion primarily revolved around content delivery and visual clarity [7].

Research on 3D animation has also addressed self-acceptance themes through environmental design. A study focusing on the creation of 3D animation environments representing the self-acceptance process of individuals with physical disabilities emphasized how spatial arrangement, accessibility, and environmental mood could support storytelling [8]. Other studies have highlighted the successful implementation of specific development methods, such as the Multimedia Development Life Cycle (MDLC), in producing 2D animations adapted from literary works. These studies demonstrated that structured methods can effectively support animation production and audience engagement [9]. Additionally, research on the use of animated videos in educational contexts has shown that animation can significantly enhance motivation and engagement [10].

Based on the review of previous studies, it can be identified that most existing research emphasizes message delivery, audience impact, or thematic interpretation, while relatively few studies focus on how the animation production pipeline is implemented, especially in 3D animated trailers. Furthermore, studies that involve psychological themes rarely examine how such themes influence production decisions at each pipeline stage. This indicates a research gap in documenting and analyzing animation production as a systematic process rather than merely a narrative or educational outcome.

Therefore, this research aims to address this gap by focusing on the implementation of a 3D animation pipeline in the production of an animated trailer, using the self-acceptance dimension of psychological well-being as a conceptual foundation and fantasy as a visual-production approach. The novelty of this study lies in its emphasis on production workflow analysis, demonstrating how a fantasy-based visual concept supports pipeline execution, asset development, character transformation, and visual effects within a trailer format. The main research problem addressed is how a structured animation pipeline can be effectively implemented to support the production of a 3D animated trailer that visualizes abstract psychological concepts through fantasy-based design.

2. METHOD

This research employs a practice-based research method using a structured 3D animation production pipeline. Practice-based research is appropriate for this study as it emphasizes knowledge generation through the systematic execution and documentation of creative production processes. The animation pipeline applied in this research is divided into three main stages: pre-production, production, and post-production, which are commonly adopted in professional and academic animation workflows. The pipeline structure used in this study follows established animation production frameworks reported in previous research, with adaptations made to suit the scope and objectives of a short 3D animated trailer [11][12]. Figure 1 illustrates an adapted

standard 3D animation pipeline tailored to visualize abstract psychological concepts through a fantasy-based visual approach. Each stage of the pipeline is described in terms of its procedures, tools, and outputs to ensure clarity and reproducibility.

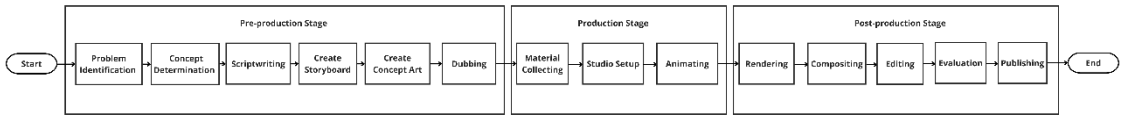

Figure 1. Research Method adapted from Animation Production Pipeline

1) Pre-production Stage

This stage focuses on conceptual development and planning, which serves as the foundation for the entire animation pipeline. First, problem identification is conducted to determine the main production challenges, particularly in visualizing abstract psychological concepts within a short trailer format. Based on this identification, the research objectives are defined to guide the creative and technical direction of the project. Next, concept determination is carried out by establishing the fantasy theme, narrative direction, visual style, and character transformation concept. This step ensures that all subsequent production decisions align with the intended visual and emotional tone. The scriptwriting process translates the concept into a structured narrative, defining key scenes, actions, and transitions. Following this, a storyboard is created using Figma to visualize shot composition, camera movement, and scene sequencing. The storyboard functions as a visual blueprint for the production stage. Concept art is also developed in Figma, focusing on character design, environment mood, color schemes, and lighting references. This step helps standardize visual assets and minimize inconsistencies during production. Finally, dubbing is performed to record voice and narration elements. The recorded audio serves as a timing reference during animation, particularly for scene pacing and emotional emphasis.

2) Production Stage

The production stage involves the realization of planned assets and animations based on the outputs of pre-production. Material collecting is conducted by sourcing supporting assets from online platforms that provide free-license or royalty-free resources. These materials include textures, sound references, and supplementary visual elements, ensuring legal and ethical use in production. Next, the studio setup is created by constructing 3D environments and configuring lighting systems to match the visual mood defined in the concept art. Environment layout and lighting placement are designed to support the fantasy atmosphere while maintaining visual clarity. The animation process is carried out using Autodesk Maya, following standard animation principles. Character movement, transformations, and camera animations are implemented based on the storyboard and synchronized with the dubbed audio. Rigging and animation workflows follow conventional practices as referenced in animation literature, with adjustments made only to accommodate the specific needs of the trailer format.

3) Post-production Stage

The post-production stage focuses on visual refinement and final output preparation. Rendering is performed to generate final image sequences from the animated scenes. Render settings are adjusted to balance visual quality and computational efficiency, following standard rendering practices. The rendered sequences are then processed through compositing and visual effects (VFX) using Adobe After Effects. This step includes color correction, visual enhancements, and the addition of fantasy-based effects to emphasize character transformation and magical elements. Sound design is integrated to enhance emotional impact, including background music, ambient sounds, and effect layering. The audio components are synchronized with visual elements to ensure narrative coherence. Next, editing is conducted in Adobe After Effects to arrange scenes, refine timing, and finalize the trailer structure. An internal evaluation is then performed by the production team to assess technical quality, visual consistency, narrative flow, and audio synchronization before final release. The final output is exported according to standard digital video formats. Finally, publishing is carried out by distributing the completed trailer through selected digital platforms, making it accessible for evaluation and documentation purposes.

3. RESULTS AND DISCUSSIONS

1) Pre-production Stage

The pre-production stage produced a complete set of conceptual and planning outputs that guided the entire animation process. These outputs included problem identification and research objectives, a finalized story concept and script, as well as a storyboard and concept art developed using Figma to define visual composition, character design, environment mood, and lighting references. In addition, dubbing and voice recordings were completed to establish timing and emotional cues for the animation, ensuring narrative consistency before entering the production stage.

A. Synopsis

A synopsis is a concise narrative summary that presents the core storyline, characters, and key events of a visual work [13]. In animation production, the synopsis plays an important role as a conceptual reference that guides the development of the script, storyboard, and visual assets. It helps ensure narrative coherence across production stages and serves as a shared understanding among the production team regarding the story direction, emotional tone, and thematic focus. In this research, the synopsis functions as a foundation for visual planning and production decisions rather than as a literary analysis. The animated trailer tells the story of an old wizard, The Misbrew, who lives in isolation deep within a fog-covered forest. As a solitary figure, the wizard devotes his life to experimenting with magic, hoping that his latest potion will become his greatest creation. With careful precision, he pours various magical ingredients into a cauldron. Initially, the potion remains calm, suggesting control and confidence. However, the experiment unexpectedly fails as the potion suddenly reacts violently and vanishes, leaving the cauldron empty.

From the seemingly empty cauldron, a small slime creature slowly emerges. At first, the wizard reacts with hesitation and uncertainty. Over time, as the slime displays innocent and playful behavior, the wizard begins to feel a renewed sense of hope and emotional connection. This moment reflects the wizard's initial step toward self-acceptance, as he starts to acknowledge his own limitations and unexpected outcomes rather than striving for perfection. The narrative then reaches its climax when the slime abruptly transforms into a larger, monstrous form with glowing red eyes, releasing uncontrolled magical energy. This transformation symbolizes the wizard's internal conflict, his fear of failure and his inability to fully accept the consequences of his actions. Through this fantasy-based visualization, the story highlights the theme of self-acceptance, emphasizing that confronting and accepting one's imperfections is an essential part of personal growth.

B. Storyboard

A storyboard is a visual planning tool used in animation production to represent the sequence of scenes, camera movements, visual composition, and audio cues before entering the production stage. It plays a crucial role in translating the written script into visual form, allowing the production team to anticipate timing, shot continuity, and narrative flow [14]. The storyboard for *The Misbrew* 3D animation trailer was developed using Adobe Illustrator and Figma. These tools were used to sketch scene compositions, define camera angles, and organize shot sequences in a clear and structured layout. The storyboard consists of a total of 15 scenes, with each scene systematically detailed into scene number, shot description, shot type, visual action, dialogue, audio or sound effects, and timing. This structured format allowed the production team to clearly understand the relationship between visual actions, camera movement, and audio elements before the animation process began. The storyboard outlines the narrative progression from the introduction of the fantasy environment to the climax of the character transformation, providing guidance for animation, lighting, and camera setup during the production stage. The completed storyboard is attached and presented as shown in Figure 2.

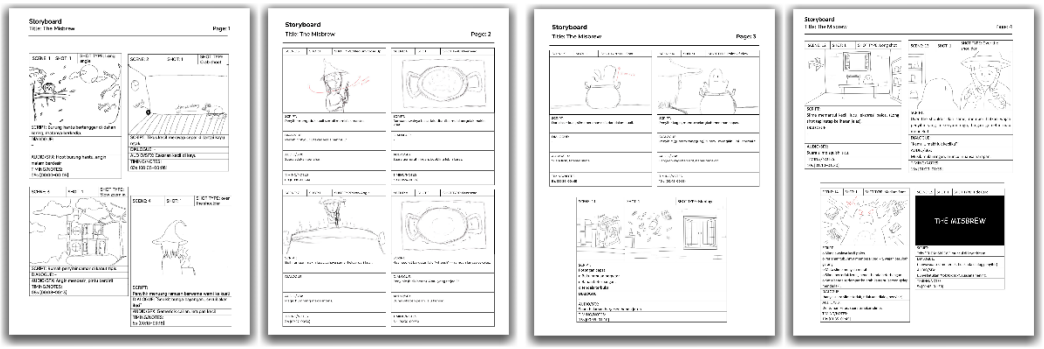

Figure 2. Storyboard of "The Misbrew"

C. Concept Art

Concept art is a visual development output used in animation production to define the overall visual style, color palette, character appearance, environment atmosphere, and lighting mood before entering full production. It functions as a visual guideline that helps maintain consistency in design decisions and

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reduces ambiguity during asset creation and animation [15]. In this research, the concept art was developed by refining the storyboard into a fully colored 2D visual representation. The previously created storyboard panels were enhanced with color, shading, and basic visual details to better communicate the intended mood, fantasy atmosphere, and emotional tone of each scene. This process allowed the visualization of lighting direction, color harmony, and contrast, which later informed the 3D environment setup and lighting design during production. The concept art for *The Misbrew* trailer consists of a total of 15 scenes, covering both environment and character visualizations. Environment concept art includes key settings such as the foggy forest, the wizard's house, and the interior laboratory, while character concept art focuses on the wizard, slime, and supporting elements. By visualizing each scene in advance, the production team was able to maintain visual consistency across assets and ensure alignment between narrative intent and technical execution. The finalized concept art served as a primary reference for translating the 2D visual plan into 3D assets and animations. The completed concept art is attached and presented as shown in Figure 3.

Figure 3. Concept Art of "The Misbrew"

D. Dubbing

Dubbing is the process of recording voice dialogue to support storytelling, timing, and emotional expression in animation. In the animation production pipeline, dubbing plays an important role as an audio reference that guides character performance, scene pacing, and synchronization during animation and editing. Early-stage dubbing is commonly used as a temporary or guide track to assist animators in aligning visual actions with spoken dialogue [16]. In this research, the dubbing process was performed by the production team using a smartphone as a recording device. The recorded dialogue was intended as a guidance track rather than a final audio output, providing reference for animation timing and post-production editing. The recorded dialogues include: *"Sedikit bunga bayangan... secuil akar ilusi...", "Ayo... ciptakan keajaibanmu...", "Apa... yang terjadi?", ""Hmm... mungkin... ini... normal?",* and *"Kamu... makhluk kecilku?"*. These voice recordings supported the animation process by helping define emotional cues and transitions, and were later refined during the post-production sound design and editing stages.

2) Production Stage

The production stage resulted in the creation of core visual assets and animated sequences based on the pre-production references. This stage produced 3D environments and lighting setups that supported the fantasy atmosphere, along with animated characters and camera movements developed using Autodesk Maya. Supporting materials such as textures and assets sourced from free-license online platforms were integrated to enhance visual detail while maintaining legal compliance.

A. Material Collecting

Material collecting is the process of gathering visual assets and supporting materials required for animation production. This stage is important to ensure efficiency while maintaining visual quality and legal compliance, particularly in the use of third-party resources [17]. In this research, 3D character assets for the wizard, slime, owl, and mouse were obtained from Sketchfab using models available under free-license or royalty-free terms. These assets were selected based on visual suitability and compatibility with the intended fantasy theme. In addition to character models and environment, texture materials were also obtained from free online sources under permissible licenses to support surface detailing and realism. Meanwhile, the environment assets, including the wizard's house and forest setting, were created by the production team to ensure consistency with the narrative atmosphere and visual style defined in the concept art. All materials used in the production process are presented as shown in Figure 4. This combination of sourced and custom-made assets supported both production efficiency and creative control during the animation process.

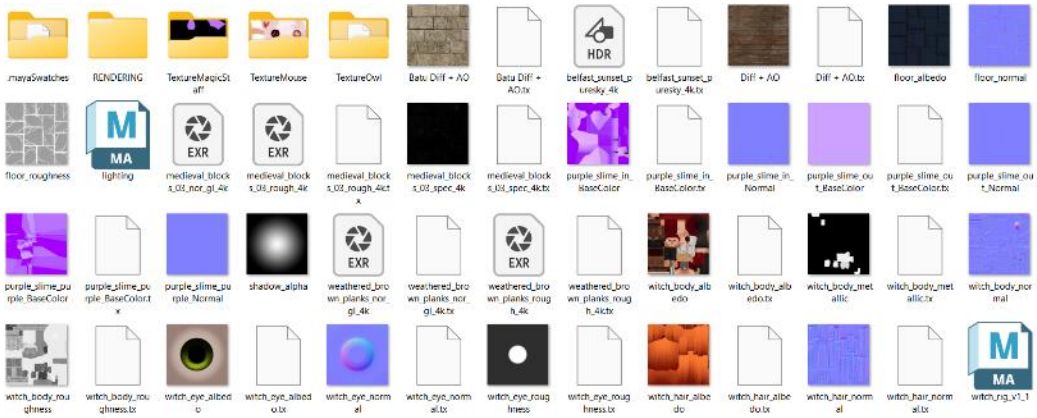

Figure 4. Material Collecting of "The Misbrew"

B. Studio Setup

Studio setup refers to the process of organizing all production assets within a single working environment to ensure consistency and efficiency during animation. This stage is essential for maintaining uniform scale, lighting, and spatial relationships between characters and environments. In this research, all character and environment assets were integrated into a single Autodesk Maya project file as a centralized studio setup. Within this setup, assets were organized into separate groups and layers, such as characters, environments, props, cameras, and lighting, to facilitate easier management and editing. Rigged characters, environment models, and animation controllers were clearly separated to avoid interference during the animation process. This structured organization allowed each team member to focus on specific animation tasks while working within the same scene context, ensuring consistency in lighting, camera placement, and environmental layout across all shots. By using a shared and well-organized studio setup, animation tasks could be efficiently distributed among team members without compromising visual coherence throughout the production process. The completed studio setup is presented as shown in Figure 5.

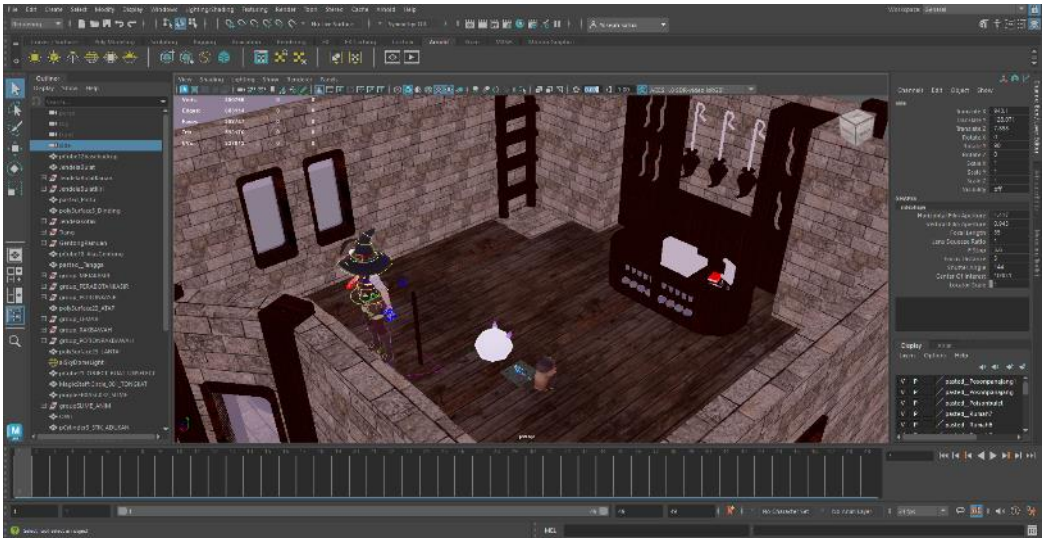
Figure 5. Studio for "The Misbrew"

C. Animating

Animation in this research was created using a keyframe-based approach in Autodesk Maya. Keyframes were applied to define the main poses, movements, and transformations of characters, as well as camera motion within each scene. The dubbing audio recorded during the pre-production stage was imported into the animation timeline and placed on the audio track as a temporal reference. Key poses were positioned at specific frame numbers corresponding to the onset of dialogue, pauses, and changes in vocal intensity

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visible in the audio waveform. This technical alignment ensured that character actions, facial expressions, and camera movements occurred at predetermined frames synchronized with the dubbing timeline, so that character actions, facial expressions, and camera movements were temporally aligned with the dialogue waveform displayed in the animation timeline. As a result, the pacing and timing of each scene could be consistently controlled across the animation timeline. The animation was produced at a fixed frame rate of 24 frames per second (fps), where the duration of each scene directly determines the total number of frames required by multiplying the scene duration (in seconds) by 24. This relationship provides a clear technical basis for managing timeline length, placing keyframes, and maintaining synchronization accuracy between animated motion and audio cues. Table 1 summarizes the duration of each animated scene together with the corresponding total number of frames calculated at 24 frames per second. This calculation served as a technical reference for determining animation-timeline length, keyframe placement, and synchronization precision between animated motion and audio cues across all scenes.

Table 1. Scene Duration and Frame Calculation

Scene	Duration	Total Frames
1	4 seconds	96 frames
2	19 seconds	456 frames
3	16 seconds	384 frames
4	5 seconds	120 frames
5	6 seconds	144 frames
6	4 seconds	96 frames
7	4 seconds	96 frames
8	7 seconds	168 frames
9	2 seconds	48 frames
10	5 seconds	120 frames
11	4 seconds	96 frames
12	2 seconds	48 frames
13	9 seconds	216 frames
14	5 seconds	120 frames
15	5 seconds	120 frames
Total	**97 seconds**	**2,328 frames**

3) Post-production Stage

The production stage resulted in the creation of core visual assets and animated sequences based on the pre-production references. This stage produced 3D environments and lighting setups that supported the fantasy atmosphere, along with animated characters and camera movements developed using Autodesk Maya. Supporting materials such as textures and assets sourced from free-license online platforms were integrated to enhance visual detail while maintaining legal compliance.

A. Rendering

Rendering is the process of generating final visual images from a 3D scene by calculating lighting, textures, materials, and camera perspectives. In animation production, rendering is a crucial stage as it transforms animated scenes into image sequences or video outputs that represent the final visual quality of the work [18]. In this research, rendering was performed in Autodesk Maya using the Arnold renderer. Prior to rendering, cameras were set and adjusted in each scene to match the storyboard and animation timing, ensuring proper framing and visual continuity. Rendering was conducted frame by frame at a resolution and quality level suitable for a trailer format. Arnold was used to calculate lighting, shadows, and material interactions to achieve a consistent fantasy atmosphere. The output of this process was a sequence of rendered frames, which were then prepared for compositing and post-production processing. An example of the rendering output from scene 11 is presented in Figure 6.

Figure 6. Rendering Result of Scene 11

B. Compositing

Compositing is the process of combining rendered visual elements into a unified shot to enhance visual quality and atmosphere. This stage involves integrating multiple layers, adjusting color balance, adding visual effects (VFX), and refining lighting to ensure visual consistency and narrative clarity within each

scene [19]. In this research, compositing was carried out by each team member for their assigned scenes before proceeding to the editing stage. Using Adobe After Effects, the rendered frames from Autodesk Maya were imported and processed to apply color correction, lighting enhancements, and magical visual effects in accordance with the fantasy theme. This decentralized compositing workflow allowed each team to refine the visual details of their scenes independently, ensuring readiness and consistency prior to final assembly by the editor. An example of the compositing output from scene 8 is presented in Figure 7.

Figure 7. Compositing Result of Scene 8

C. Editing

Editing is the process of assembling all composited scenes into a coherent and continuous animation sequence. This stage focuses on arranging scene order, adjusting timing and transitions, and ensuring narrative flow in accordance with the storyboard and animatic [19]. Editing plays a crucial role in shaping the pacing and emotional impact of the trailer. In this research, the editing process was conducted using Adobe After Effects by the designated editor. All composited scenes from each team were imported and arranged based on the predetermined scene duration and frame calculations. Visual continuity between scenes was refined through timing adjustments and transitions, resulting in a finalized trailer structure that clearly conveys the storyline and thematic message of self-acceptance before proceeding to sound design and final publishing. The editing process is shown in Figure 8.

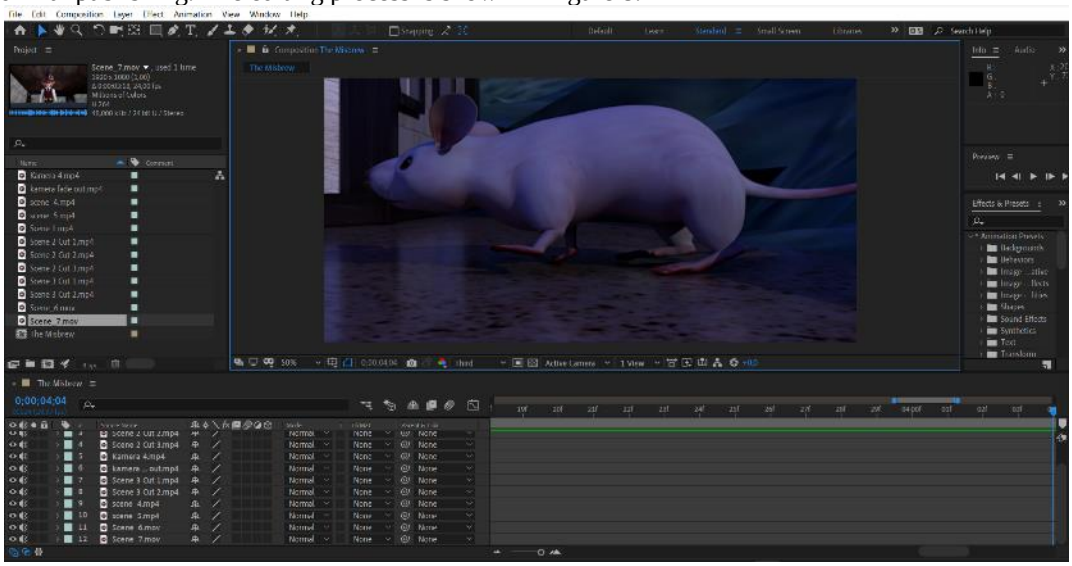

Figure 8. Editing Process in Adobe After Effect

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D. Evaluation

Evaluation is conducted internally by the production team before the animation is published. This stage aims to ensure that each scene meets the technical, narrative, and aesthetic standards defined during the pre-production phase. The evaluation focuses on identifying technical inconsistencies, timing issues, and visual or audio elements that require refinement, so that the final output is cohesive and aligned with the intended fantasy atmosphere and self-acceptance theme. The evaluation aspects are categorized into the following codes: AN (Animation Quality), which assesses motion smoothness and keyframe consistency; CM (Camera & Composition), which evaluates camera movement, framing, and visual clarity; LT (Lighting & Rendering), which examines lighting consistency and render quality; SD (Sound & Dubbing), which checks synchronization and audio clarity; and NT (Narrative & Timing), which evaluates scene flow and pacing.

In addition to referring to functional and alpha testing frameworks, the internal evaluation criteria applied in this research are grounded in commonly accepted animation production standards. These standards emphasize indicators such as character motion quality, camera composition accuracy, lighting coherence, audio–visual synchronization, and narrative pacing as core technical benchmarks in academic and professional animation practice. Accordingly, the internal evaluation instrument in this study was designed as a technical quality assurance framework, rather than a psychological or behavioral measurement tool.

The evaluated aspects were adapted and further developed from functional testing and alpha testing criteria proposed in previous studies [20], [21], and adjusted to the specific characteristics of the 3D animation trailer produced in this research. This adaptation ensures that the evaluation not only verifies technical functionality but also assesses narrative delivery and emotional coherence. Each scene is reviewed based on these aspects to determine its readiness for the publishing stage. The internal evaluation results are presented in Table 2.

Table 2. Internal Evaluation Results per Scene

Scene	AN	CM	LT	SD	NT	Notes
1	✓	✓	✓	✓	✓	Establishing mood successfully
2	✓	✓	✓	✓	✓	Motion and timing are consistent
3	✓	✓	✓	✓	✓	Atmosphere supports fantasy setting
4	✓	✓	✓	✓	✓	Dubbing synchronized with action
5	✓	✓	✓	✓	✓	Camera movement enhances tension
6	✓	✓	✓	✓	✓	Lighting emphasizes magical effect
7	✓	✓	✓	✓	✓	Animation transition is smooth
8	✓	✓	✓	✓	✓	Visual impact is clear
9	✓	✓	✓	✓	✓	Character introduction is effective
10	✓	✓	✓	✓	✓	POV shot supports narrative
11	✓	✓	✓	✓	✓	Montage pacing is appropriate
12	✓	✓	✓	✓	✓	Character expression is readable
13	✓	✓	✓	✓	✓	Emotional tone is conveyed well
14	✓	✓	✓	✓	✓	Climax scene is visually strong
15	✓	✓	✓	✓	✓	Ending title is clear and concise

As shown in Table 2, all scenes successfully met the predefined technical and narrative readiness indicators, demonstrating consistent quality-control results across the entire animation trailer. After passing the internal evaluation stage, the animation trailer was further evaluated through beta testing by media experts with a minimum of three years of professional experience in the 3D animation industry. This expert evaluation aimed to assess the overall quality of the trailer from an industry perspective, focusing on animation performance, visual composition, lighting, sound design, and narrative timing. The assessment was conducted using a Likert scale ranging from 1 (Strongly Disagree) to 5 (Strongly Agree) [22]. The results indicate that the trailer achieved a high level of acceptance across all evaluated aspects. The highest scores were obtained in animation quality, camera movement, sound design, and narrative timing, reflecting strong synchronization between visual and audio elements as well as effective storytelling flow. Lighting aspects received slightly lower but still positive scores, suggesting good atmospheric consistency with minor potential for enhancement. Overall, the expert evaluation produced an average score of 4.6 out of 5, corresponding to a feasibility percentage of 92%. These expert-based evaluation outcomes indicate that the implemented production pipeline not only supported technically feasible short-animation production, but also generated a final visual output that aligns with professional standards in terms of animation quality, staging, audio–visual synchronization, and narrative pacing. Accordingly, the produced 3D animation trailer can be considered to meet professional quality standards and is suitable for publication and further dissemination. The beta testing results are presented in Table 3.

Table 3. Results of Beta Testing by Media Experts

Aspect	Statement	Score
Animation (AN)	Character and object animations in the trailer are displayed with smooth and consistent movements	4
	Overall animation quality supports emotional delivery and narrative flow	5
Camera Movement (CM)	Camera movements are well designed and enhance visual storytelling	5
	Camera angles and scene transitions support the trailer's narrative flow	5
Lighting (LT)	Lighting is used consistently to build mood and atmosphere	4
	Lighting design highlights fantasy elements and visual depth	4
Sound Design (SD)	Sound effects and background music are well synchronized with visuals	5
	Dubbing and audio elements support character actions and emotional nuance	5
Narrative Timing (NT)	Scene duration and pacing maintain audience engagement	5
	Scene transitions are smooth and support narrative continuity	4
Total Score		46
Maximum Score		50
Feasibility Percentage		92%

E. Publishing

Publishing is the final stage of the animation production pipeline, where the completed trailer is distributed to the intended audience. In this research, the final animation was published on YouTube as the primary distribution platform. YouTube was selected due to its wide accessibility, cross-platform compatibility, and ability to reach a global audience without limitations of time or location. In addition, YouTube supports high-resolution video playback, provides analytical features such as view count and audience engagement metrics, and allows content to be easily shared across various social media platforms [23]. These advantages make YouTube an effective medium for showcasing animation works and evaluating audience response. The published animation trailer can be accessed through the following link: s.pnj.ac.id/TheMisbrew.

4) Discussions

The adapted animation production pipeline applied in this research demonstrates how a structured workflow can effectively manage the complexity of producing a 3D animation trailer. By dividing the process into pre-production, production, and post-production stages, the pipeline provided clear task boundaries and responsibilities for each team member. This structure minimized ambiguity during decision-making, particularly in the early stages of concept development, storyboard creation, and dubbing. As a result, creative ideas related to the fantasy theme and the concept of self-acceptance could be translated into visual plans more efficiently, ensuring that production goals were clearly defined before technical execution began.

During the production stage, the adapted pipeline played a crucial role in maintaining consistency across assets and animation outputs. The centralized studio setup in Autodesk Maya allowed all characters and environments to be managed within a unified scene structure, facilitating coordination among animators. The use of keyframe-based animation synchronized with pre-recorded dubbing ensured accurate timing and expressive character movement from a technical perspective. It is important to note that the effectiveness discussed at this stage refers to observable technical outcomes, such as timing accuracy, motion consistency, and audio–visual alignment, rather than audience perception or psychological impact.

In the post-production stage, the adapted pipeline supported a smooth transition from rendering to compositing, editing, evaluation, and publishing. Internal evaluation conducted prior to publishing functioned as a quality control mechanism focused on technical quality, narrative coherence, and aesthetic consistency, including animation smoothness, camera composition, lighting, sound synchronization, and scene pacing. This evaluation did not measure psychological responses or the impact of the self-acceptance theme on viewers, as no audience-based testing was conducted. Therefore, the psychological well-being theme in this research functions primarily as a conceptual and narrative foundation that guides visual storytelling, rather than as an empirically tested outcome. Overall, the adapted pipeline proved effective in improving coordination between

visual and audio components, reducing workflow inefficiencies, and producing a coherent 3D animation trailer suitable for academic and creative documentation, while also highlighting opportunities for future studies to incorporate audience-centered psychological evaluation.

4. CONCLUSION

This research concludes that the implementation of a structured and adapted animation production pipeline can effectively support the creation of a 3D animation trailer with consistent technical quality and coherent narrative flow. As stated in the Introduction, this study aimed to address the limited discussion in previous research regarding the practical production process of 3D animation trailers within an academic and practice-based context. The results and discussions demonstrate that dividing the workflow into pre-production, production, and post-production stages enabled clearer task distribution, improved coordination among team members, and reduced ambiguity during decision-making throughout the production process.

The findings indicate that the applied pipeline successfully facilitated key production activities, including storyboard development, keyframe-based animation synchronized with dubbing, frame-by-frame rendering, compositing, editing, and internal evaluation. Furthermore, expert-based beta testing conducted by media professionals with experience in the 3D animation industry showed a feasibility score of 92% across five evaluation aspects, namely Animation Quality, Camera Movement, Lighting, Sound Design, and Narrative Timing. This result indicates that the produced trailer meets high technical and aesthetic standards and validates the effectiveness of the proposed pipeline in supporting short-form 3D animation trailer production.

However, it is important to emphasize that the evaluation conducted in this research focuses on technical quality, visual consistency, and narrative structure rather than measuring psychological impact. Although the theme of psychological well-being with a self-acceptance dimension is central to the narrative design, it functions primarily as a conceptual and symbolic foundation for visual storytelling and has not been empirically tested in terms of audience psychological outcomes.

Future research is encouraged to extend the proposed production pipeline by incorporating audience-based evaluation methods, such as user experience testing, emotional response measurement, or psychological assessment instruments, to examine narrative effectiveness and audience perception. Accordingly, this study does not attempt to empirically evaluate psychological well-being or audience emotional change, as the self-acceptance theme is applied purely as a conceptual and narrative foundation. Additionally, the proposed pipeline can be adapted for other animation formats, including educational media, interactive content, or longer-form narrative animations. Overall, this research provides a practical, structured, and reproducible workflow reference for students, educators, and practitioners in the field of animation production.

CREDIT AUTHORSHIP CONTRIBUTION STATEMENT

Author1: Project Manager, Animator, Material Collection. **Author 2***: Research and Development, Content Conceptualization, Animator. **Author 3**: Animator, Video Editing, Voice Acting. **Author 4**: Animator, 3D Modeller. **Author 5**: Storyboarding, Concept Art, Animator. **Author 6**: Storyboarding, Concept Art, Animator. **Author 7**: Supervisor.

DECLARATION OF COMPETING INTERESTS

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

DATA AVAILABILITY

The data supporting the findings of this study are available from the corresponding author upon reasonable request.

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