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RESEARCH ARTICLE OPEN ACCESS

Producing the Short Film "Hidup Mahasiswa yang Berubah" (A Changing Student Life) Using One-Take Cinematography and Color Grading

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ABSTRACT

Integrating cinematographic techniques and color grading into short-film production requires coordination between narrative development, camera movement, and post-production. This study aimed to document the implementation of one-take cinematography and color grading in the short film Hidup Mahasiswa yang Berubah (A Changing Student Life) and evaluate audience perceptions of the completed film. The film was developed using the Multimedia Development Life Cycle (MDLC), comprising six stages: concept, design, material collection, assembly, testing, and distribution. Production involved scriptwriting, storyboard development, video recording, editing, audio synchronization, color correction, and color grading using Adobe Premiere Pro 2020. Audience evaluation was conducted using a ten-item questionnaire completed by 20 students at Samarinda State Polytechnic. Responses were analyzed using weighted scores and percentage indices. The item-level evaluation indices ranged from 82% to 87%, while the overall indices for camera work and story and for color grading were both 84%. According to the study's predefined classification, these results were categorized as "Very Good." The study contributes an applied account of integrating one-take cinematography and color grading within an MDLC-based production workflow, supported by descriptive audience feedback. The findings provide practical guidance for student filmmakers, although the small sample and absence of controlled comparisons limit generalizability and prevent causal conclusions about the effects of individual techniques.

Keywords:
one-take cinematography; color grading; short-film production; Multimedia Development Life Cycle (MDLC); audience evaluation; audiovisual storytelling.

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INTRODUCTION

Short Films

Short films constitute a distinct form of audiovisual storytelling that requires filmmakers to communicate narratives through carefully selected scenes, concise dialogue, and purposeful visual composition (Sofyan et al., 2022, p. 148). Unlike feature-length films, short films operate within a limited duration, making narrative economy and the coordination of cinematic elements particularly important. Raskin (2014) examined the differences between short-film and feature-film storytelling and proposed a narrative model that accounts for the distinctive characteristics of short-form cinema. This perspective highlights the importance of selecting narrative events and visual elements that contribute directly to the development of a story. In short-form production, this selectivity extends beyond the script to the visual language itself, since camera movement, framing, and color decisions must reinforce the same narrative priorities within a compressed runtime (Barua et al., 2025, p. 969; Gan et al., 2023, p. 104798) . Within this constraint, one-take cinematography demands that camera movement, staging, and lighting changes be planned in advance so that each continuous shot advances the story without relying on editorial compression (Han & Han, 2021).

For student filmmakers, short-film production also presents practical challenges involving script development, location selection, camera operation, sound recording, editing, and post-production (Heil, 2000; Prokopic, 2021, p. 2). These activities must be coordinated to maintain narrative coherence and achieve the intended visual quality. Consequently, short-film development requires not only creative storytelling but also a structured production process that connects the initial concept with the final audiovisual product.

The short film *Hidup Mahasiswa yang Berubah* (*A Changing Student Life*) addresses a contemporary educational issue by portraying a student who uses an artificial intelligence (AI) website to complete academic assignments without adequately considering the consequences. Yang et al., (2023) The film uses cinematographic techniques and color grading to support its narrative development and communicate the intended message. This production provides a context for examining how selected visual techniques can be integrated into a structured multimedia development process and evaluated through audience feedback.

Cinematography

Cinematography is a fundamental component of film production because it determines how narrative information is presented through moving images. Its practical application involves the coordination of camera angles, shot sizes, composition, camera movement, and visual continuity(Paiva, 2005, p. 71; Purnama, 2022, p. 33). Omie & Mutia (2020), in their study of wedding videography, identified camera angles, shot types, composition, continuity, and cutting as important elements of cinematographic practice. These elements influence the presentation of subjects, the organization of visual information, and the continuity of filmed actions. Camera angles establish the viewer's perspective, while shot sizes determine the degree of visual detail and the spatial relationship between subjects and their surroundings(Mengis et al., 2016, p. 297; Wu et al., 2018, p. 4). Composition organizes visual elements within the frame, using principles such as the rule of thirds, headroom, looking room, and walking room. Camera movement and continuity further influence how viewers follow actions and interpret relationships between characters and their environment. Editing then determines how recorded material is arranged into a coherent audiovisual sequence(Kachkovski et al., 2019, p. 951; Smith et al., 2012, p. 109).

The effectiveness of cinematography depends on the relationship between these elements and the narrative purpose of a scene. A technically smooth camera movement, for example, does not necessarily communicate the intended meaning if framing, actor movement, and scene composition are poorly coordinated(Fisher, 2021, p. 27; Jimenez, 2020, p. 5). This consideration becomes particularly important when a film employs continuous camera movement because the production team must maintain visual coherence throughout the recording.

Accordingly, this study examines cinematography as an integrated production practice rather than as a collection of isolated camera techniques. The analysis focuses on how camera movement, framing, composition, and continuity are implemented in selected scenes of *Hidup Mahasiswa yang Berubah*, particularly those recorded using the one-take technique.

Color Grading

Color grading is a post-production process used to establish the visual appearance of a film by adjusting color temperature, saturation, contrast, and tonal relationships. It should be distinguished from color correction, which primarily addresses technical inconsistencies such as differences in exposure and white balance between shots (Gibbs, 2018, p. 1; Samus, 2017). Although the two processes are related, color grading also serves a narrative function by helping filmmakers maintain a coherent visual style and differentiate the atmosphere of individual scenes. The relationship between color and emotional interpretation has received attention in psychological and audiovisual research. Wexner (1954) experimentally examined associations between color hues and mood-related terms, providing early evidence that people associate particular colors with different mood descriptions. More recently, Cao et al. (2024) investigated the combined effects of film color and editing on emotional perception using behavioral and neuroimaging experiments. Their findings support the importance of examining color in the context of other audiovisual elements rather than treating it as an isolated variable. Furthermore, Jonauskaitė & Möhr, (2025) reviewed 128 years of psychological research linking colors and emotions. Their review identified recurring associations between color attributes and emotional dimensions while highlighting the need to distinguish conceptual associations from experienced emotional responses. These findings indicate that color may contribute to how viewers interpret a film, but its effects should not be assumed to be universal or independent of narrative context. In practical filmmaking, color grading can therefore be used to distinguish scenes, establish visual continuity, and support changes in narrative atmosphere. However, the selection of cool or warm tones does not, by itself, demonstrate that viewers will experience a particular emotion (Imani, 2023). The perceived effectiveness of a color treatment depends on its interaction with scene content, character behavior, lighting, and other audiovisual elements (Zhang et al., 2020, p. 658). In this study, color correction and color grading are applied during post-production to support the visual presentation of *Hidup Mahasiswa yang Berubah*. The analysis considers how color adjustments are implemented in selected scenes and how viewers evaluate the film's color treatment. This approach connects the technical process of color adjustment with its intended narrative function without presuming a causal emotional effect.

One-Take Technique

The one-take technique involves recording a scene or sequence continuously without an internal edit during the take (Pop, 2018, p. 118). It is related to, but should be distinguished from, the long take and the single-shot film. A long take is characterized by extended shot duration, whereas a single-shot film is generally presented as one continuous shot across the entire work. In contrast, a film that uses one-take sequences may contain multiple takes and conventional edits between sequences. These distinctions are important because the duration and continuity of a shot represent different production and aesthetic considerations. Feijó, (2024) examined the expressive potential of highly choreographed long takes and discussed how camera mobility and coordinated action can shape the spatial and temporal organization of cinematic scenes. Continuous shots can allow camera movement, actor performance, and mise-en-scène to develop together (Coëgnarts, 2019, p. 136; Troiani &

Campbell, 2015). Nevertheless, producing such sequences requires careful preparation, including camera-path planning, actor blocking, timing, framing, and coordination among production personnel. Errors during recording may require the sequence to be repeated, particularly when the intended continuity cannot be achieved through editing (Aimaretti, 2016, p. 6; Singleton-Turner, 2021).

The one-take technique therefore presents both creative opportunities and technical constraints. It can preserve the continuity of an action and create a sustained visual perspective, but these characteristics do not automatically make a sequence more engaging or narratively effective (Jovanović, 2023, p. 19; Serrano et al., 2017, p. 2). Its suitability depends on the scene's objectives, the production team's capabilities, and the relationship between camera movement and storytelling.

In *Hidup Mahasiswa yang Berubah*, the one-take technique is applied to selected scenes to maintain continuity as the main character moves between locations and interacts with other characters. The technique is examined in relation to camera movement, scene transitions, and the organization of visual action. This study does not treat the entire film as a single uninterrupted shot. Instead, it documents the use of continuous takes within a film assembled from multiple recorded sequences.

Multimedia Development Life Cycle (MDLC)

The Multimedia Development Life Cycle (MDLC) provides a structured framework for developing multimedia products through six stages: concept, design, material collecting, assembly, testing, and distribution(Afrianti & Musril, 2021, p. 3). The concept stage establishes the purpose and scope of the product (Aman et al., 2023, p. 427; Saputra & Retnoningsih, 2020, p. 155). The design stage translates the concept into a production plan, while material collecting involves gathering the assets required for development. Assembly integrates these assets into the intended product, testing evaluates its technical and functional quality, and distribution delivers the completed product to its intended audience. Kumala et al. (2021) applied MDLC to develop multimedia e-learning materials for primary school students. Their study demonstrates how the six-stage framework can organize the development and evaluation of multimedia products. However, educational multimedia and narrative film production have different production requirements. Short-film development involves activities such as scriptwriting, storyboarding, location planning, camera blocking, recording, audio synchronization, editing, and color grading (Castillo et al., 2021; Reyna et al., 2017, p. 311). Therefore, applying MDLC to film production requires adapting its general stages to the specific technical and creative demands of audiovisual storytelling.

In the present study, MDLC is used to organize the production of *Hidup Mahasiswa yang Berubah*. During the concept and design stages, the narrative, script, storyboard, and visual approach are established (Kurniasari et al., 2023, p. 20; Permana et al., 2021, p. 8). Material collecting involves preparing the video, audio, and other resources required for production (Ikhwan & Nasution, 2022, p. 2569; Permana et al., 2021, p. 8). The assembly stage includes selecting footage, arranging scenes, synchronizing audio, and performing color correction and grading (Permana et al., 2021, p. 8; Safian et al., 2024, p. 133). The testing stage evaluates the completed film through technical checks and a questionnaire, while the distribution stage concerns publishing the final video for its intended audience. The use of MDLC provides a transparent structure for documenting the production process. It also connects technical implementation with audience evaluation, allowing the study to describe both how the film was developed and how viewers assessed the completed product.

Research Gap, Objectives, and Contributions

The preceding literature establishes three relevant foundations for this study. Research on short-film storytelling emphasizes the importance of narrative economy and purposeful scene selection (Raskin, 2014). Research on cinematography and long takes highlights the roles of composition, continuity, camera mobility, and coordinated performance in constructing visual sequences (Feijó, 2024; Omie & Mutia, 2020). Research on color and emotional perception demonstrates that visual attributes may contribute to audience interpretation, although these relationships depend on the context in which color is presented (Cao et al., 2024; Jonauskaitė & Möhr, 2025). Meanwhile, MDLC provides a structured process for multimedia development, as demonstrated in educational multimedia research (Kumala et al., 2021). These studies provide complementary insights, but they address different aspects of audiovisual production. The literature considered here does not directly establish how one-take cinematography and scene-specific color grading can be integrated within an MDLC-based workflow for a student-produced narrative short film and then evaluated through audience feedback (Wei, 2023). The research gap addressed in this study is therefore applied and contextual: documenting the integration of these techniques within a structured production process and describing viewers' evaluations of the resulting film. To address this gap, the study develops *Hidup Mahasiswa yang Berubah* using the MDLC framework and examines the implementation of one-take cinematography and color grading in selected scenes. It also evaluates audience perceptions through a questionnaire administered to 20 students at Samarinda State Polytechnic. The study addresses the following research questions: 1) How are one-take cinematography and color grading implemented in selected scenes of *Hidup Mahasiswa yang Berubah*? 2) How do student viewers evaluate the film in terms of narrative clarity, message delivery, camera work, perceived engagement, and color grading? 3) What practical insights can be derived from the MDLC-based production process and the descriptive analysis of audience responses?

This study makes two principal contributions. First, it provides a documented account of integrating one-take cinematography and color grading into an MDLC-based short-film production workflow. Second, it presents descriptive evidence of audience perceptions that can inform reflection on the film's narrative presentation, camera work, and color treatment. These contributions are intended to support practical knowledge in student filmmaking and audiovisual production education.

The scope of the conclusions is limited by the study's design. The questionnaire involves 20 students and does not include a controlled comparison between alternative cinematographic or color-grading treatments. Accordingly, the findings can describe the production process and respondents' evaluations, but they cannot establish that one-take cinematography or color grading independently causes greater audience engagement or particular emotional responses. Further research involving larger samples, validated measurement instruments, and comparative experimental designs would be needed to investigate these effects more rigorously.

MATERIALS AND METHODS

Materials, Equipment, and Research Conditions

Production Materials and Equipment: The production resources included a script, storyboard, recorded video and audio, dubbing materials, and camera-support equipment. A tripod and gimbal were identified in the production plan. The available production records do not specify the camera model, lens, sensor, recording resolution, frame rate, microphone, lighting configuration, or recording-environment conditions; these specifications are therefore not inferred.

Software and Production Documentation: Celtx was used to prepare the screenplay. Storyboarder and its Shot Generator feature were used to plan shots and visualize scene composition. Adobe Premiere Pro 2020 was used for editing, audio synchronization, color correction, and color grading with the Lumetri Color tool. Production documentation included screenshots and scene timecodes from the editing workflow. No sensor-based measurements or calibrated imaging instruments were reported.

Participants and Data Sources: Audience evaluation involved 20 students from multiple study programs at Samarinda State Polytechnic, with five students selected from each participating program. The available records do not specify the recruitment procedure, participant demographics, eligibility criteria, or sampling method beyond program representation. The production process was documented through observation and screenshots, while audience responses were collected using a structured questionnaire.

Study Design and MDLC Framework

This study used a development-oriented research design to produce the short film "Hidup Mahasiswa yang Berubah" and to describe audience evaluations of the completed film. The Multimedia Development Life Cycle (MDLC) structured the production workflow. The study did not include a controlled comparison of alternative cinematographic or color-grading conditions.

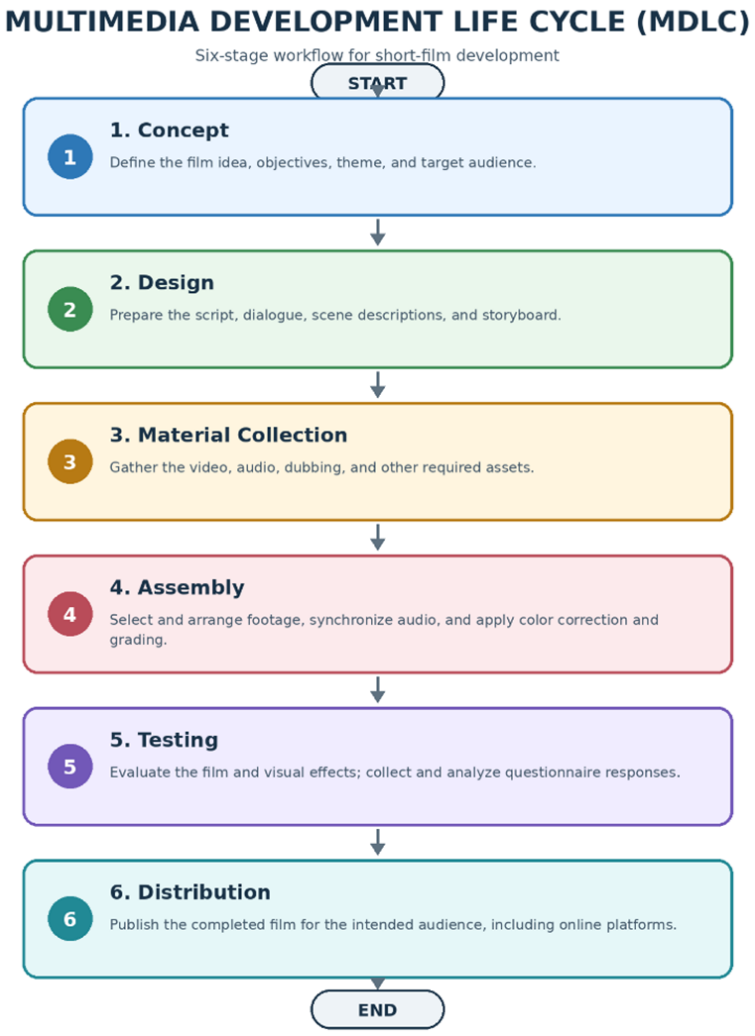


Figure 1. Figure 1. Stages of the Multimedia Development Life Cycle (MDLC)

The MDLC workflow comprised six stages: concept, design, material collection, assembly, testing, and distribution. These stages were adapted to the practical requirements of short-film production, from story development and planning to post-production and publication (Kumala et al., 2021).

MDLC-Based Film Development Procedure

Concept

The concept stage defined the film as a short moral narrative about a student who misuses technology. The team established the theme, premise, camera-work approach, and intended color treatment. The concept and production choices are summarized in Table 1.

Table 1. Concept Description

Film Type	Moral film
Format	Short film
Title	Hidup Mahasiswa Yang Berubah
Theme	A student who misuses technology
Premise	Tara, a student of average academic ability, discovers an AI website that can help with her coursework and uses it without considering the consequences.
Camera-work Concept	A tripod and gimbal are used to obtain smooth, high-quality footage.
Color-Grading Concept	Adjust the video colors to match the mood intended for the audience.

Design

During the design stage, the script and storyboard were prepared to align the dialogue, scene order, camera movement, and composition. These materials provided the production plan for filming and post-production.

Script Development

The screenplay was written in Celtx and included character dialogue and scene descriptions. Figure 2 presents the resulting script.

"Hidup Mahasiswa yang berubah"
Seorang mahasiswa Tara yang kecerdasan yang rata-rata, namun dia menemukan website AI untuk membantunya mengerjakan tugas kuliahnya, dia punmenggunakannya tanpa memikirkan timbal baliknya

SCENE 1 INT. KAMAR TARA

Melihatkan seroang mahasiswa yang sedang belajar untuk mengerjakan ujian yang akan datang, dia sangat fokus mengerjakan tugasnya sampai larut Malam

MONOLOG TARA
"Namaku Tara, aku seorang mahasiswa di semester keenam. Aku mungkin tidak selalu menjadi yang Terbaik di Kelas, namun Aku tetap bersemangat dan berusaha keras untuk mencapai prestasi yang baik"

TARA
"wah ini materi mayan susah juga ya, aku harus bener-bener kuasain ni materi biar nilaiku gak anjlok"

Dan kamera melihatkan komplikasi tara sedang mengerjakan tugasnya hingga selesai lalu siap-siap kekampus

SCENE 2 INT. KAMPUS

Onetake

Tara berjalan dilorong kampus, dia pun menyapa teman-temannya lalu duduk dimejanya mempersiapkan diri untuk ujian

TARA
"Wah bakal ujian nih, mudahan aja soal-soalnya gabakal susah"

Saat Ujian Tara Melihat Kiki menggunakan website yang dia tidak ketahui

TARA
"Wah Kiki buka apaan tuh kok bukan web Kiki"

tara sedang mengerjakan ujiannya, ketika ujiannya selesai dia pun melihat nilainya, namun nilai yang ia dapatkan adalah nilai rata-rata, dia pun ngelah nafasnya, lalu dia mengingat saat waktu ujian dia melihat temannya Kiki mengerjakan ujian dengan santai

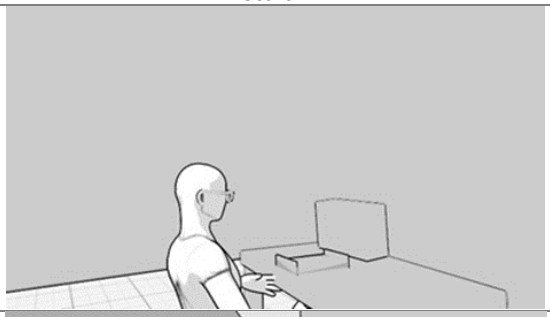
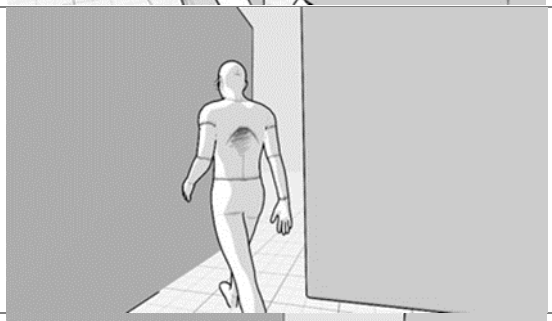
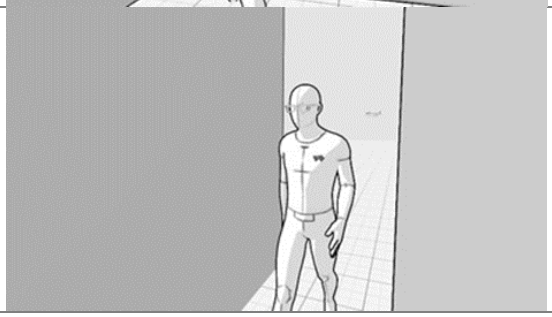
Created using Celtx

Figure 2. Script

Storyboard Development

Storyboarder and its Shot Generator feature were used to plan shot composition, camera angles, and scene layouts before recording. The storyboard served as a visual reference for coordinating camera movement and character action. Selected storyboard frames are presented in Table 2.

Table 2. Storyboard

Image	Description
Scene 1	
	Tara is sitting in front of her laptop, working on an assignment.
	Tara leaves to take a break, and the camera follows her from behind.
	The camera follows Tara as she leaves her bedroom.

Material Collection

The material-collection stage involved preparing the video, audio, dubbing, and other production assets required for recording and post-production.

Video Recording

Recording was planned to follow the script and storyboard. The recording process is documented in Figure 3. The available records do not report the camera settings, number of takes, or recording duration for each shot



Two shot approaches were used according to scene requirements: continuous one-take sequences for camera-following actions and static shots where a fixed viewpoint was intended. A tripod and gimbal were identified as camera-support tools in the production concept.

Figure 3. Video Recording Process

Assembly and Post-Production

During assembly, the footage was imported into Adobe Premiere Pro 2020 and organized into the narrative sequence. Post-production included footage selection, audio synchronization, color correction, and creative color grading.

Footage Selection: Footage was reviewed and selected for consistency with the script and planned sequence. The selection process is shown in Figure 4. The study records do not describe a formal selection rubric or independent review procedure.



Figure 4. Video Selection

The selected clips were arranged to correspond to the sequence of events specified in the script.

Footage Arrangement and Audio Synchronization

The clips were arranged according to the script, and the recorded audio was synchronized with the video using the Audio Synchronizer tool. The arrangement process is shown in Figure 5.



Figure 5. Video Arrangement

Color Correction and Grading

Color correction was performed before creative grading to reduce visible inconsistencies between clips. Lumetri Color was used to adjust color temperature and saturation. The correction process is illustrated in Figure 6.

(1) Before correction	

(2) After correction	

Figure 6. Color Correction

Figure 6 compares the footage before and after color correction. The Lumetri Color tool was used to adjust saturation and color temperature. Scene-specific settings and timecodes are reported in the Results and Discussion section.

Testing

The testing stage included a technical alpha check of the scenes and visual effects. A separate questionnaire-based audience evaluation was conducted with 20 students; the evaluation procedure and scoring rules are detailed in Sections 2.5 and 2.6.

Distribution

The final stage prepared the completed film for publication to its intended audience. Figure 7 documents the distribution stage. The available records do not specify the publication date, final platform, or online-viewing metrics.

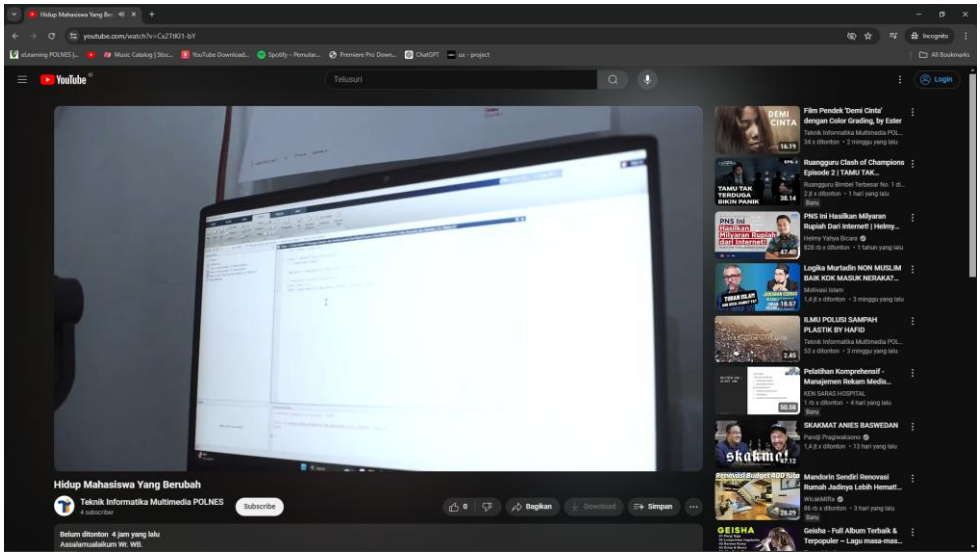


Figure 7. Distribution

Process Parameters and Measurement Procedures

The documented production parameters were the shot approach (one-take or static), selected scene timecodes, camera movement, color temperature, saturation, and adjustment-layer opacity. Scene timecodes were taken from the editing timeline, and the reported color values were read from the Lumetri Color settings. For the documented color transition, adjustment-layer opacity was increased from 0% to 100%. These values describe production choices rather than independently manipulated experimental factors. The study did not report camera calibration, color-chart measurements, objective image-quality metrics, or measurement-uncertainty estimates; therefore, the evaluation focuses on the documented production workflow and audience ratings rather than instrument-based image performance.

Validation and Performance Evaluation

Technical validation consisted of an alpha test intended to check whether the scenes and visual effects operated as expected. The study report states that the tested features met the test scenarios, but the full test checklist, number of test cases, and identity of the tester were not documented. Audience evaluation involved 20 students and a ten-item questionnaire covering overall satisfaction, storyline clarity, message communication, camera-work techniques, use of the one-take technique, perceived audience involvement, overall color grading, monotonous color tone, colorful tones, and communication of emotion through color. Responses were recorded using a five-point Likert scale. No control group or comparison film was used; therefore, the evaluation describes audience perceptions rather than isolating the effects of individual techniques. The resulting rating criteria for the short film "Hidup Mahasiswa yang Berubah" are presented in Table 3.

Table 3. Rating Intervals

Mean rating	Category
4.3–5.0	Very Good
3.5–4.2	Good
2.7–3.4	Fair
1.9–2.6	Poor
1.0–1.8	Very Poor

Data Analysis and Reproducibility

Each questionnaire response was assigned a numerical weight: 5 for Strongly Agree, 4 for Agree, 3 for Neutral, 2 for Disagree, and 1 for Strongly Disagree. For each item, the weighted score was calculated by summing the products of the response weights and their frequencies. Table 4 lists the five response weights used in the item-level calculations.

Table 4. Likert-Scale Response Weights

No	Response	Weight
1	Strongly Agree (SA)	5
2	Agree (A)	4
3	Neutral (N)	3
4	Disagree (D)	2
5	Strongly Disagree (SD)	1

The percentage index was calculated using the following equation:

$$I\ (\%) = [X / (N_max \times n)] \times 100 = \frac{X}{SkorIdeal}$$

The resulting index was interpreted using the percentage intervals in Table 5.

Table 5. Evaluation Index Intervals

Index (%)	Result
0%–19.99%	Very Poor
20%–39.99%	Poor
40%–59.99%	Neutral
60%–79.99%	Good
80%–100%	Very Good

In this calculation, $X = \Sigma(N_i \times R_i)$, where N_i is the weight assigned to response category i and R_i is the frequency of that response category. N_max is the maximum response weight (5), and n is the number of respondents (20), making the maximum possible weighted score 100. The analysis was descriptive and used item-level weighted scores and percentages; no inferential statistical tests were performed. The available records do not document the statistical software/version, questionnaire validation or reliability testing, missing-data or outlier procedures, or ethics-review and informed-consent procedures. These details should be verified from the original study records rather than inferred.

RESULTS

Film Analysis

This section discusses the application of the one-take technique and color grading in selected scenes. The analysis is illustrated in Figures 8–14.

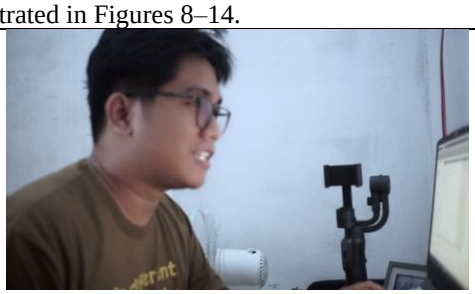


Figure 8. Opening Scene

Figure 8 shows a one-take sequence at 00:00:27:09, beginning with Tara sitting at her desk and continuing as she leaves for her bedroom. The color grade uses a cool tone, with Temperature set to −36.5 and Saturation set to 82.4. This treatment creates a somber appearance intended to convey the character's sense of being overwhelmed before her change in attitude.



Figure 9. Camera Facing Kiki



Figure 10. Camera Facing Tara

Figures 9 and 10 use a cool color tone during a conversation between Tara and Kiki. At 00:02:54:06, Figure 9 shows the camera facing Kiki; at 00:03:03:02, Figure 10 shows the camera facing Tara.



Figure 11. Color Before the Transition

Figures 11 and 12 show a scene that combines one-take cinematography with color grading. The color transition begins at 00:07:34:23 and ends at 00:08:05:12. The opacity of the adjustment layer is increased from 0% to 100%. Figure 12 shows the resulting color tone after the transition.



Figure 12. Color After the Transition



Figure 13. Conversation Between Kiki and Her Friends

Figure 13 shows a one-take sequence with color grading at 00:08:50:05. The scene begins as Tara leaves the room, with the camera following her until she joins a conversation with her friends. The color is adjusted to a warm tone, with Temperature set to 15.2 and Saturation to 128.3. This treatment creates a cheerful appearance intended to represent the character's happiness and change in attitude.



Figure 14. Final Scene

Figure 14 shows a one-take sequence at 00:15:19:14. The camera follows Tara from outside the room until she sits at her desk. The color is adjusted to a warm tone, with Temperature set to −36.5 and Saturation set to 82.4, to convey the character's regret over her actions.

Testing

An alpha test was conducted using a questionnaire about the short film. The questionnaire was intended to determine whether the film met expectations. Responses were analyzed using a Likert scale ranging from "Strongly Disagree" to "Strongly Agree." The rating-interval formula was used to establish the interpretation criteria.

$$JarakInterval = \frac{Skortertinggi - Skorterendah}{Jumlahkelasinterval}$$

The resulting rating criteria for the short film "Hidup Mahasiswa yang Berubah" are presented in Table 3.

Table 3. Rating Intervals

Mean rating	Category
4.3–5.0	Very Good
3.5–4.2	Good
2.7–3.4	Fair
1.9–2.6	Poor
1.0–1.8	Very Poor

After data collection, the Likert scale was used to analyze the responses. The five response categories were assigned weights according to Table 4.

Table 4. Likert-Scale Response Weights

No	Response	Bobot
1	Strongly Agree (SA)	5
2	Agree (A)	4
3	Neutral (N)	3
4	Disagree (D)	2
5	Strongly Disagree (SD)	1

Interval analysis was used to interpret the Likert-scale results. The following formula was used to calculate the total Likert score.

$$Y \times 100\% = \frac{X}{SkorIdeal}$$

The final index value was evaluated using the rating intervals presented in Table 5.

Table 5. Evaluation Index Intervals

Index (%)	Results
0%–19.99%	Sangat Buruk
20%–39.99%	Kurang Baik
40%–59.99%	Neutral
60%–79.99%	Good
80%–100%	Very Good

The alpha test assessed film features, including whether the scenes and visual effects functioned as expected. All features met the test scenarios. The testing session is shown in Figure 15.



Figure 15. Film Testing

At the testing stage, a questionnaire was used to measure audience satisfaction with "Hidup Mahasiswa yang Berubah." Before distribution, the researcher prepared a set of questions for viewers to answer. The questionnaire items are summarized in Table 6. After the questionnaires had been completed by 20 respondents, the responses were tabulated and analyzed to evaluate the short film. Table 6 presents the results for the first question, which concerned viewers' overall satisfaction after watching the film.

Table 6. Results for Questionnaire Item 1

Question No.	Description	Scale Value (N)	Respondents (R)	N × R	Index (%)
1	Strongly Agree	5	7	35	84%
Agree	4	10	40		
Neutral	3	3	9		
Disagree	2	0	0		
Strongly Disagree	1	0	0		
Total:	20	84			

$$Y = \frac{84}{20} \times 100\% = 84\%$$

Responses to the first question, concerning overall satisfaction with the film, produced an index of 84%.

Table 7. Results for Questionnaire Item 2

Question No.	Description	Scale Value (N)	Respondents (R)	N × R	Index (%)
2	Strongly Agree	5	7	35	83%
Agree	4	9	36		
Neutral	3	4	12		
Disagree	2	0	0		
Strongly Disagree	1	0	0		
Total:	20	83			

$$Y = \frac{83}{20} \times 100\% = 83\%$$

Responses to the second question, concerning the clarity of the film's storyline, produced an index of 83%.

Table 8. Results for Questionnaire Item 3

Question No.	Description	Scale Value (N)	Respondents (R)	N × R	Index (%)
3	Strongly Agree	5	9	45	84%
Agree	4	6	24		
Neutral	3	5	15		
Disagree	2	0	0		
Strongly Disagree	1	0	0		
Total:	20	84			

$$Y = \frac{84}{20} \times 100\% = 84\%$$

Responses to the third question, concerning whether the film communicated its intended message, produced an index of 84%.

Table 9. Results for Questionnaire Item 4

Question No.	Description	Scale Value (N)	Respondents (R)	N × R	Index (%)
4	Strongly Agree	5	8	40	85%
Agree	4	9	36		
Neutral	3	3	9		
Disagree	2	0	0		
Strongly Disagree	1	0	0		
Total:	20	85			

$$Y = \frac{85}{20} \times 100\% = 85\%$$

Responses to the fourth question, concerning the film's camera-work techniques, produced an index of 85%.

Table 10. Results for Questionnaire Item 5

Question No.	Description	Scale Value (N)	Respondents (R)	N × R	Index (%)
5	Strongly Agree	5	8	40	82%
Agree	4	6	24		
Neutral	3	6	18		
Disagree	2	0	0		
Strongly Disagree	1	0	0		
Total:	20	82			

$$Y = \frac{82}{20} \times 100\% = 82\%$$

Responses to the fifth question, concerning the use of the one-take technique, produced an index of 82%.

Table 11. Results for Questionnaire Item 6

Question No.	Description	Scale Value (N)	Respondents (R)	N × R	Index (%)
6	Strongly Agree	5	8	40	83%
Agree	4	7	28		
Neutral	3	5	15		
Disagree	2	0	0		
Strongly Disagree	1	0	0		
Total:	20	83			

$$Y = \frac{83}{20} \times 100\% = 83\%$$

Responses to the sixth question, concerning viewers' sense of involvement while watching the film, produced an index of 83%.

Table 12. Results for Questionnaire Item 7

Question No.	Description	Scale Value (N)	Respondents (R)	N × R	Index (%)
7	Strongly Agree	5	7	35	83%

Agree	4	9	36
Neutral	3	4	12
Disagree	2	0	0
Strongly Disagree	1	0	0
Total:	20	83	

$$Y = \frac{83}{20} \times 100\% = 83\%$$

Responses to the seventh question, concerning the overall color grading, produced an index of 83%.

Table 13. Results for Questionnaire Item 8

Question No.	Description	Scale Value (N)	Respondents (R)	N × R	Index (%)
8	Strongly Agree	5	7	35	83%
Agree	4	9	36		
Neutral	3	4	12		
Disagree	2	0	0		
Strongly Disagree	1	0	0		
Total:	20	83			

$$Y = \frac{83}{20} \times 100\% = 83\%$$

Responses to the eighth question, concerning the use of a monotonous color tone, produced an index of 83%.

Table 14. Results for Questionnaire Item 9

Question No.	Description	Scale Value (N)	Respondents (R)	N × R	Index (%)
9	Strongly Agree	5	11	55	87%
Agree	4	5	20		
Neutral	3	4	12		
Disagree	2	0	0		
Strongly Disagree	1	0	0		
Total:	20	87			

$$Y = \frac{87}{20} \times 100\% = 87\%$$

Responses to the ninth question, concerning the use of colorful tones in the color grading, produced an index of 87%.

Table 15. Results for Questionnaire Item 10

Question No.	Description	Scale Value (N)	Respondents (R)	N × R	Index (%)
10	Strongly Agree	5	8	40	82%
Agree	4	7	28		
Neutral	3	4	12		
Disagree	2	1	2		
Strongly Disagree	1	0	0		
Total:	20	82			

$$Y = \frac{82}{20} \times 100\% = 82\%$$

Responses to the tenth question, concerning the communication of emotion through color grading, produced an index of 82%.

The same calculation procedure was applied to all ten questionnaire items. The resulting percentages are summarized in Tables 16 and 17.

Table 16. Percentage Results of the Alpha Test

Question No.	Index (%)
1	84%
2	83%
3	84%
4	85%
5	82%
6	83%
7	83%
8	89%
9	87%
10	82%

Table 17. Overall Results

Category	Result	Overall Result
Camera Work and Story	84%	84%
Color Grading	84%	

As shown in Table 17, the overall evaluation of the short film "Hidup Mahasiswa yang Berubah" was classified as "Very Good."

DISCUSSION

Interpretation of the Principal Findings

The evaluation indicates that the completed short film was generally received positively by the 20 participating students. The item-level indices ranged from 82% to 87%, while the overall indices for camera work and story and for color grading were both reported as 84%. Under the study's

predefined classification, these values fall within the "Very Good" category. This classification should be interpreted as a descriptive summary of the respondents' ratings, not as evidence of statistical significance or proof that the film is superior to alternative productions. The study did not include a comparison film, a control condition, or inferential statistical testing.

The highest item-level index concerned the use of colorful tones (87%), followed by camera-work techniques (85%). Overall satisfaction and message delivery each reached 84%, while the one-take technique and the communication of emotion through color each received 82%. This pattern suggests that respondents generally accepted the film's visual presentation, but their ratings were somewhat less strong for the specific use of one-take cinematography and for the ability of color grading to communicate emotion. Because the questionnaire was descriptive and its psychometric properties were not reported, these differences should not be interpreted as reliable differences between underlying constructs.

The item concerning a "monotonous color tone" requires particular care. Agreement with a negatively worded item may indicate a perceived limitation rather than a positive evaluation. Unless the item was reverse-coded or its wording explicitly measured the avoidance of monotony, its percentage should not be grouped uncritically with positively worded quality indicators. Future reporting should state the exact wording of each item and clarify the direction of scoring.

One-Take Cinematography and Visual Continuity

The production analysis shows that continuous takes were used in selected sequences, including scenes in which the camera followed the main character between locations and into conversations. Such sequences can maintain temporal continuity and allow camera movement, actor blocking, and mise-en-scène to develop together. This is consistent with Feijó (2024) analysis of highly choreographed long takes, which emphasizes the coordination required to sustain complex camera movement and performance. The relatively high, but not maximal, rating for the one-take technique (82%) is compatible with audience acceptance of the approach; however, it does not demonstrate that the technique independently increased immersion or engagement. Immersion-related claims in the study would require direct measurement, and the questionnaire items used here did not isolate the contribution of the long-take approach from the broader visual design, so any link between the technique and engagement remains a hypothesis for future testing, as studies of immersive film suggest that such effects depend on multiple sensory and narrative factors rather than on camera structure alone (Cannavò et al., 2023, p. 1823; Jackson et al., 2025, p. 9; Yilmaz et al., 2023, p. 1160851). Accordingly, future studies should combine self-report with continuous physiological and attentional measures to determine whether long-take sequences shape viewers' emotional engagement independently of editing rhythm and mise-en-scène (Hammond et al., 2023, p. 33; Hinde et al., 2018, p. 54).

This qualification is important because long takes do not automatically produce a more engaging or coherent viewing experience. Yilmaz et al. (2023, p. 1160851) argues that the aesthetic value of mobile long takes may depend on how camera and mise-en-scène arrangements change during a shot, rather than on continuity alone. In the present film, the one-take approach is therefore best understood as a production choice whose effectiveness depends on the relationship between camera path, actor movement, framing, and narrative purpose. The questionnaire did not compare these scenes with edited alternatives, so it cannot determine whether viewers would have responded differently to conventional cutting. Viewers' responses to edited sequences in comparable immersive films have been shown to depend on how spatial continuity and attention are managed across cuts, so a controlled comparison would be needed to isolate the effect of the long take itself (Aznar et al., 2023, p. 1173715; Wals et al., 2026, p. 604). Such a comparison would also need to account for the fact that viewers' attention in continuous shots is guided less by cuts than by camera motion and blocking, which may change how the scene is processed even when the narrative content is held constant (Hutson et al., 2017, p. 70; Levin & Simons, 1997, p. 502; Smith & Santacreu, 2016, p. 323). From a practical perspective, one-take sequences are most likely to function well when the camera route, actor blocking, timing, and transitions are rehearsed and aligned with the storyboard. They may perform less effectively when movement distracts from dialogue, framing becomes unclear, or production constraints prevent consistent execution. These are process implications derived from cinematographic principles and the production account, not experimentally tested outcomes of this study.

Color Grading and Audience Interpretation

The color-grading results suggest that viewers noticed and generally accepted the film's visual treatment. The highest score for colorful tones (87%) indicates a favorable response to the use of color variation, whereas the lower score for communicating emotion through color (82%) suggests that visual variety and emotional legibility should be treated as distinct objectives. A film can use visually noticeable color changes without necessarily communicating a clear emotional meaning to every viewer. This distinction provides a useful direction for subsequent production refinement. Such refinement would benefit from pairing the questionnaire with a direct test of whether specific colour choices are read as intended, since audiences' emotional interpretation of editing and visual rhythm has been shown to vary considerably across viewers (Lindborg & Friberg, 2015, p. 23; Markhabayeva & Tseng, 2024, p. 9). The findings are consistent with the broader view that color can contribute to audiovisual interpretation, but they do not establish a causal emotional effect. Cao et al. (2024) used controlled behavioral and neuroimaging experiments to investigate interactions between film color and editing and found that the combined presentation can influence emotional perception. Their experimental design differs substantially from the present questionnaire-based evaluation. Accordingly, the current results do not confirm the same mechanism; they provide context-specific descriptive evidence about how viewers rated one completed film. Because the questionnaire measured perceptions rather than the viewers' underlying emotional responses, the present data

cannot show whether the colour choices produced the intended affective effects, and such a claim would require physiological or neuroimaging measures alongside self-report, as recommended for future cinematographic research (Huttunen, 2022, p. 288; Lotman et al., 2023, p. 190).

The systematic review by Jonauskaitė & Möhr (2025) identified recurring associations between color attributes and emotional dimensions while also showing the breadth and complexity of color–emotion research. The scene descriptions in this study assign cool tones to somber or regretful moments and warm tones to a cheerful interaction(Zhang et al., 2023, p. 323). These choices represent the filmmakers' intended meanings, not direct measurements of viewers' emotions. The questionnaire item on emotional communication provides only a general perception rating and cannot show whether individual viewers experienced the intended emotion or why they interpreted the colors in a particular way. Color grading should therefore be treated as a contextual narrative decision rather than a universal color-to-emotion rule. For future iterations, the team could document the grading settings for each scene, compare the intended emotional function with viewer explanations, and assess consistency across shots using a reference display or color chart. Such procedures would strengthen reproducibility and help distinguish technical color consistency from audience interpretation. The current study did not use calibrated imaging measurements or a controlled comparison of grading alternatives.

Contribution of the MDLC Workflow and Practical Implications

The main methodological contribution is the documented application of the six-stage MDLC framework to a student-produced narrative short film. The framework connects concept development and storyboarding with material collection, assembly, testing, and distribution. This extends the practical use of a multimedia development framework previously applied in contexts such as educational multimedia Kumala et al. (2021) to an audiovisual storytelling task. The contribution is an applied workflow and a record of production decisions, rather than a new development model or evidence that MDLC is more efficient than alternative workflows.

The reported alpha test indicates that the film's features met the stated test scenarios. However, because the test checklist, number of test cases, acceptance criteria, and tester independence were not reported, the strength of this validation cannot be independently assessed. Similarly, no production-time, cost, reshoot, workflow-efficiency, or comparative-quality measurements were collected (Aggarwal et al., 2021, p. 81). The study therefore does not demonstrate increased productivity or reduced production costs (Ahn et al., 2022, p. 11). Manufacturing performance, energy use, material efficiency, and environmental impacts are outside the scope of this film-production study and cannot be inferred from the available evidence. For student film projects, the practical value of MDLC is that it offers an explicit sequence for organizing creative and technical tasks and for retaining documentation at each stage. The approach is most useful when the script, storyboard, scene assets, edit decisions, color settings, and testing criteria are recorded consistently (Robin, 2016, p. 24). Its benefits would be harder to evaluate where stage outputs are not documented or where testing is limited to an informal overall judgment.

Limitations, Validity, and Generalizability

Several limitations constrain the interpretation of these findings. First, the audience evaluation involved only 20 students from one institution, with five students represented from each participating study program. The recruitment method and participant characteristics were not fully documented. The results should therefore not be generalized to all students, general audiences, or professional filmmakers. Second, the study used a single completed film and did not compare alternative camera techniques, grading conditions, or versions of the narrative. It cannot isolate the contribution of one-take cinematography from color grading, story content, editing, acting, sound, or other production elements.

Third, the questionnaire's validity and reliability were not reported, and the analysis relied on weighted percentages without confidence intervals or inferential tests. The "Very Good" category depends on the study's chosen score intervals; it is not an independently validated measure of film quality. Fourth, the alpha test is insufficiently documented to support a detailed assessment of technical reliability. Fifth, camera specifications, recording conditions, color calibration, and measurement uncertainty were not available, limiting technical reproducibility. The color settings and scene descriptions should also be checked for internal consistency before publication.

Finally, the audience ratings are self-reported perceptions. They do not directly measure attention, emotional state, comprehension, learning outcomes, or behavior. Potential response bias and the influence of the questionnaire wording cannot be ruled out. The item-level scoring for the question about monotonous color tone must be interpreted according to its exact wording, and the corresponding summary-table value should remain consistent with the response frequencies.

Future Research and Overall Contribution

Future studies could strengthen the evidence by recruiting a larger and more diverse sample, reporting participant selection and ethics procedures, validating the questionnaire, and publishing the full item wording and scoring direction. A comparative design could present equivalent scenes with and without one-take cinematography or with alternative color grades while holding narrative content and other production factors as constant as possible. Such a design would better separate the effects of individual techniques from the combined effect of the film as a whole. Objective production records, independent technical review, calibrated color references, and transparent test criteria would also improve reproducibility.

In summary, the study demonstrates that one-take cinematography and color grading can be implemented within an MDLC-based student film workflow and that the resulting film received generally favorable descriptive ratings from the participating students. It qualifies, rather than confirms, stronger claims in the literature: continuous

shots and color treatment have expressive potential, but their effects depend on execution and context. The original contribution lies in documenting this applied production process and its audience evaluation. Claims about causal emotional effects, broad generalizability, industrial productivity, or environmental benefits require additional evidence and are not supported by the present design.

CONCLUSION

This study developed the short film *Hidup Mahasiswa yang Berubah* using the Multimedia Development Life Cycle (MDLC) and documented the implementation of one-take cinematography and color grading in selected scenes. The production process followed six stages: concept, design, material collection, assembly, testing, and distribution. The results demonstrate the practical application of these techniques within a structured short-film production workflow.

The questionnaire evaluation involved 20 students at Samarinda State Polytechnic. The item-level evaluation indices ranged from 82% to 87%, while the overall indices for camera work and story and for color grading were both 84%. According to the study's predefined classification, these results fall within the "Very Good" category. The highest item-level score was recorded for the use of colorful tones (87%), whereas the one-take technique and the communication of emotion through color each received 82%. These findings indicate generally favorable audience perceptions of the completed film. However, they do not establish that either technique independently improves audience engagement or produces specific emotional responses.

The principal contribution of this study is an applied account of integrating one-take cinematography and color grading within an MDLC-based production process, supported by descriptive audience-evaluation data. The findings provide practical reference for student filmmakers in organizing production activities and evaluating the visual presentation of short films. Nevertheless, the study is limited by its small, single-institution sample, the evaluation of only one film, the absence of a controlled comparison, and the lack of reported evidence regarding questionnaire validity and reliability. Consequently, the findings should not be generalized beyond the study context without further investigation.

Future research should involve larger and more diverse participant samples, validated evaluation instruments, and comparative designs that examine alternative cinematographic and color-grading treatments while controlling other production factors. More detailed documentation of camera settings, color parameters, production procedures, and testing criteria would also improve reproducibility. These steps would provide stronger evidence for evaluating the respective contributions of cinematography and color grading to audience perception and short-film quality.

DECLARATIONS

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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 study.

CRediT Author Contributions

Rhenal Ahmad Syam: Conceptualization, Methodology, Investigation, Data Curation, Formal Analysis, Writing: Original Draft Preparation.

Agusdi Syafrizal: Supervision, Methodology, Validation, Writing, Review and Editing.

M. Zainul Rahman: Supervision, Resources, Validation, Writing

Data Availability Statement

The data supporting the findings of this study consist of the questionnaire responses collected from 20 students at Samarinda State Polytechnic and the documentation of the short-film development process. Anonymized questionnaire data may be made available by the corresponding author upon reasonable request, subject to applicable institutional requirements and participant confidentiality.

Code and Software Availability

No custom computational code or software algorithms were developed for this study. The film was produced using Celtx for screenplay development, Storyboarder and its Shot Generator feature for storyboard preparation, and Adobe Premiere Pro 2020, including the Lumetri Color tool, for video editing, audio synchronization, color correction, and color grading. These tools were used as production software rather than as components of a newly developed computational system.

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