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# Design of 2D Animation as an Educational Introduction to Butterfly Species for Children

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**ABSTRACT**

Animation is essentially a field of study that combines elements of art and technology. In the world of education in the digital era, animation is widely used as a medium or tool for educating learners (children) because it is considered more engaging in delivering information audiovisually compared to media such as books. On the other hand, while knowledge of technology among children continues to increase, their understanding of biodiversity has significantly declined. One example is their awareness of butterfly diversity, even though butterflies play a vital role in the ecosystem. This research aims to design a 2-dimensional (2D) animation that functions as an educational medium to introduce various types of butterflies to children. The animation is expected to present information in an engaging way, thereby capturing children's interest in learning about biodiversity, especially butterflies. This study uses an animation design method. The project follows a prototype-based development process consisting of design conceptualization and animation production stages. The result of this research is a 2-dimensional (2D) animation titled "Bulan and the Butterflies", which tells the story of Bulan, a young girl, and a small fairy on a journey to learn about different types of butterflies, particularly those found in Indonesia and rare protected species. The conclusion derived from this study is that this 2D animation can serve as an educational tool capable of broadening children's knowledge about butterflies and fostering their enthusiasm for environmental conservation. It can also encourage children's interest in science, insects, and nature from an early age, while strengthening environmental awareness through visual media that is entertaining, educational, enjoyable, and inspiring.

KEYWORDS

Butterfly,
Animation,
2 Dimension,
Education,
Children



## INTRODUCTION

Human life cannot be separated from it's connection to the surrounding environment. According to Charlesworth (2016) in Utara (2024: 278), terminologically, the environment includes everything around us such as air, water, soil, plants, animals, and even humans. These environmental elements are closely related to children's daily lives. Therefore, knowledge about the environment needs to be introduced to children from early age. This is an important step to ensure that future generations grow up with awareness, concern, and ideally the ability to take concrete action to protect the natural environment. Children who possess environmental awareness tend to grow into individuals who are responsible, creative, and innovative in seeking solutions to environmental problems (Utara, 2024: 278). Thus, introducing environmental knowledge to children from an early age can serve as a long-term investment, as it not only helps preserve the environment today but also contributes to creating a better world for future generations.

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Learning about the environment can begin with simple things that children enjoy, such as introducing animals and plants. For example, learning about butterflies, one of the envoironmental elements that not only possess beauaty in their wings but also play an important role in maintaining ecosystem balance. The bright and colorful patters on butterfly wings can easily attract children's interest, as children begin to understand their surroundings through visual perception. Therefore, bright colors become one of the first visual aspect that help them distinguish and categorize shapes (Mourin, 2024: 159). This is evident in how butterflies are often used as characters in children's stories of fairy tales, as they are considered unique insects with strinking colors that can stuimulate and captivate children's interest.

However, behind the beauty of butterflies often depicted in children 's stories, the reality is that butterfliy populations around the world are declining and becoming increasingly rare in human environments. According to a news report from Republika on June 8, 2020, Djunijanti Peggie, Indonesia's first butterfly researcher and author of several books on butterflies, stated that the decline in the population of these insects has already become noticeable. Poor environmental quality caused by climate change or pollution can lead to a decrease in butterfly numbers. Peggie also noted that there are around 17,500 butterfliy species in the world, with about 2,500 of them found in Indonesia. Of these, 26 species are protected, and many others are threatened with extinction. This explanation shows that the decline in butterfly number is not only caused by climate change, but also indicates a lack of awareness and concern among the public regarding butterflies as vitas elements of the ecosystem. Therefore, children as the younger generation need to be introduced to and taught about butterfly conservation from an early age. Starting with wimple steps, such as introducing various species of butterflies, can be an initial way for children to learn about and care for this important insect species.

One of the media that can be used as an educational tool for children to introduce the diversity of butterfly species is 2D animation. Animation itself is an important component of multimedia. Multimedia is a combimnation of various types of media, such as text, images, sound, video, and animation, designed to convey information or provide entertainment in digital form (Afif, 2025: 37). 2D animation is an audiovisual alternative that displays a sequence of images projected into moving visuals that appear alive according to the character of the images (Arsana, 2023: 270). The choice of 2D animation as an educational medium for introducing butterfly species to children is not only based on technological developments in the digital era, but also because using engaging learning media can increase children's learning motivation as well as improve their memory retention (Adistiarachma & Alia, 2025: 50). Interactive animated videos are a type of learning media that have their own unique appeal, as they allow information to be absorbed through multiple senses: hearing and sight (Susanti et al., 2024). Thus, animation can be cinsidered more engaging compared to conventional teaching approaches, as its aesthetic and dynamic visual elements are more effective in capturing children's attention.

In conducting this research, the researcher also reviewed several previous studies that are relevant, particularly those related to the design of 2D animation as an educational medium. The first study, titled "Designing 2D Animation as an Educational Medium About Sea Turtles for Children" conducted by Angelia Lionardi, in 2022, showed that the designed animation succeeded in increasing children's knowledge about sea turtle characteristics (61%); sea turtle predators (54%); and factors causing the extinction of sea turtles (24%). Thus, it can be concluded that after watching the designed animated media, there was a general increase across all variables of children's knowledge about sea turtles. Another study titled "Designing the 2D Animation 'Mentilin the Little Tarsius' as an Effort for Conservation and Community Education on Bangka Island" by Widya Puspita Sari, in 2025 stated that the design aimed to develop an alternative television program in the form of a 2D animated film that emphasizes the conservation of the endemic Mentilin on Bangka Island, while also serving as an educational medium for the local community. The animation successfully incorporated elements of local culture and conveyed messages about environmental awareness in an engaging way. The next study, titled "Designing the 2D Animation 'Robek' as an Educational Medium About Children's Talents and Interest" by Riky Taufik Afif, Muhammad Ihsan Nuruddin, dan Rully Sumarlin, in 2025, showed that the research focused more on the process of creating the animation , which was later

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published across various social media platforms. The results indicated positive responses from the audience.

Referring to the explanations presented above, the comparison between the three previous studies and the current research lies in the fact that all discuss the design the design of 2D animation as an educational medium, but each focuses on a different topic. The first study discusses sea turtles and the reasons for their extinction, the second docuses on the Mentilin, an endemic species of Bangka Island, and the third explores life related to children'a talents and interests. The present research on designing a 2D animation about butterfly species offer novelty in its topic, namely the introduction of butterfly species, particularly rare and protected ones, through the use of 2D animation, which has not been previously studied. The importance of designing a 2D animation about butterflies is based on the fact that butterflies play a crucial role in the ecosystem. Without butterflies, the balance of the ecosystem or environment wound be disrupted and could negatively impact other living beings. Therefore, children as the younger generation need to be introduced to the various types of butterflies to increase their knowledge of biodiversity, nurture curiosity, and foster awareness of the importance of conserving butterflies and their habitats.

The purpose of designing this 2D animation is to serve as an educational medium to introduce various rtypes of butterflies to children. The animation is expected to present information in an engaging way so that it can capture children's attention and interest in learning about biodiversity, especially butterflies. It is also hoped that the creation of this animation can foster children's love for the environment through the beauty of butterflies, emphasizing the importance of environmental education from an early age, which plays a significant role in developing their awareness of the ecosystem.

## METHOD

### 1. Type of Design

This 2D animation design applies the MDLC (Multimedia Development Life Cycle) method, which is used to design and develop a media application that integrates images, sound, video, animation, and other elements (Cahyo dalam Nugraheni et al., 2023: 599). The stages carried out in the design process using the MDLC model are as follows:

1) Concept
   At this stage, the researcher identifies and determines the objectives of the animation design, the target audience, and the educational content to be delivered.
2) Design
   After estabilishing the concept, the next stage is the design process, which includes creating the storyboard, character design, scriptwriting, and other supporting multimedia elements.
3) Material Collecting
   In this stage, all materials needed for the animation design are gathered, such as information about butterflies, animation style, sound effects, movements, and more. The materials are sourced from scientific literature, field documentation, and other relevant supporting data.
4) Assembly
   Once the concept, design, and materials have been collected, the next stage is the implementation or production process of the animation.
5) Testing
   This stage is carried out to evaluate and detect any deficiencies or errors in the animation (Nugraheni et al., 2023). Through testing, the researcher aims to make improvements to the 2D animation before it is distributed.
6) Distribution
   At this stage, the final product, in the form of a 2D animation, is distributed by *uploading it to Youtube* and other social media platforms to be effectively reach a wider audience,. The distributed animation will then be monitored to observe audience responses to the product.

### 2. Design Stages

The design of this 2D animation about butterfly species consist of three stages applied

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throughout the design process. These stages are described as follows:

a) Pre-Production, which is the initial stage of the design process, starting from data collection, concept development for the animation, scriptwriting or storyline creation, character design, background design, and storyboard preparation.
b) Production, which is the advanced stage where the planned concepts are implemented. The production stage consists of *background design, key animation, in betweening, coloring, compositing, sound effects, dubbing,* and *rendering.*
c) Post-Production, which is the final stage of the design process, involving limited testing with children to observe their responses to the 2D animation, presented, assess their level of understanding of the content, and identify their interest or enthusiasm.

### 3. Data Collection Instruments

Data were collected through literature study, observation, and questionnaires. This approach was used to obtain relevant references for designing an animation about various butterfly species. The data collection methods used are as follows:

a) Literature Study
Literature Study is a data collection method carried out by understanding and reviewing theories from various literature sources related to the research topic. This process involves four main stages: preparing the necessary tools and materials, preparing a preliminary list of references to be used throughout the research, managing time effectively during the literature search, and reading and taking notes from the literature to obtain relevant information that supports the research analysis (Adlini, 2022). In this project, the literature study method was used to determine which butterfly species would be featured in the 2D short animation.
b) Observation
Observation is a method of collecting data through direct or indirect observation (Rianto, 2010 dalam Nurfitri et al., 2024). In this project, the observation method was used to study animation styles and movements used in animations, such as how butterfly wings move. This was done by observing and watching various 2D animated videos on YouTube.
c) Questionnaire
The questionnaire was used to determine the art style preferred by children aged 6-12 years old. It was also used to identify which butterflies they preferred to be featured first in the animation.

### 4. Data Analysis Techniques

a) Qualitative Analysis
The results of designing this 2D animation about butterfly species can be analyzed qualitatively based on audience responses. Audience response to the 2D animation is an important aspect in evaluating its effectiveness. The responses are analyzed by observing how children understand the meaning of the media content presented, in other words, how the audience processes the information obtained from the 2D animation about butterfly species.
b) Quantitative Analysis
Quantitative Analysis can be conducted by calculating the percentage or score of children's understanding and enthusiasm toward the 2D animation. This analysis can be carried out by distributing online surveys to the audience or respondents who watched the 2D animation about butterfly species.

## RESULT AND DISCUSSION

### 1. Creation Process

To design a 2D animated work that is effective as an educational tool for introducing different types of butterflies to children, several structured creative methods must be applied. Various aspect of visual content development must be considered to achieve the intended learning objectives. The stages of the production process consist of pre-production, production, and post-production.

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**a. Pre Production:**

1) Concept Development
This stage determines the concept that aligns with the target audience and the theme of the 2D animation.

2) Scriptwriting
The script is created to guide the storyline, determine dialogue, assist with visualizing scenes, and support character development.

3) Character Design
Character, in general, can be defined as a trait or characteristic that distinguishes one object from another. Characters can be recognized through features captured by visual perception (Albani et al., 2023). Visually, character design is often associated with the term cartoon. Typically, it is presented in a simplified form, sometimes appearing abstract. It's visual elements consist of bold lines, solid colors, and exaggerated shapes that highlight the intended character concept. This approach is flexible and highly dependent on the stylistic choices of the designer (Lubis & Budiwiwaramulja, 2020). Character design has the ability to attract the audience's attention, and an effective design can leave a lasting impression. For example, the use of curved lines in a character's form can create a cute or adorable impression, while box-shaped lines tend to make a character appear more aggressive (Arsana, 2023). The character designs in this animation were created by adjusting to the theme and traits of the characters in the animation, and by tailoring the visual style to match the preferences of the target audience.

**Figure 1.** Character Design of Bulan

**Figure 2.** Character Design of Little Fairy

Bulan, as the main character, is a child with a high sense of curiosity, active, and cheerful. She likes her short hair because it makes it easier for her to move and be active more freely. Even so, Bulan enjoys wearing skirts and looking feminine like other young girls. The yellow and orange colors of her outfit were chosen to reflect her bright and cheerful personality. The little fairy has a warm yet shy personality. She loves her natural surroundings and does not like to appear flashy, therefore, a green leaf dress was chosen so she blends in with her environment. Her face and expressions are designed to look gentle and calm, reflecting her quiet and shy nature.

4) Background Design
Created to establish the story's setting and support the overall atmosphere. A background is the space or environment where characters interact with other elements or characters within a film (Pinercoyo, 2022). The background design is made to support and bring the story's atmosphere to life. Two types of backgrounds are presented: a detailed natural background and a simpler background, both used to create a cute and charming mood within the animation.

**Figure 3.** Background Design

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5) Storyboarding
Created as a reference during the animation production process to determine camera angles and composition.

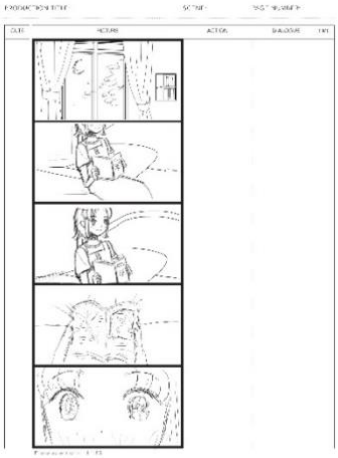

**Figure 4.** Storyboard

**b. Production:**

1) Background
Serves to support and enhance the atmosphere of the story.

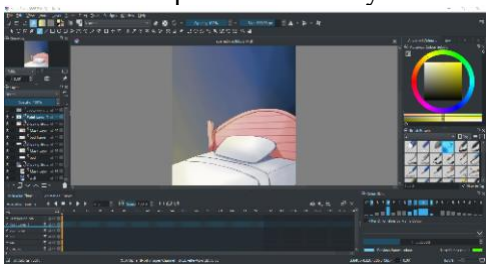

**Figure 5.** Background Creation

2) Key Animation
To determine the important poses called keyframes, which are specific frames that define the position, orientation, or other characteristics of an object at certain moments in the animation.
3) Inbetween
Used to smooth out movements that have been defined in the keyframes.
4) Coloring
The process of adding color to the animation.

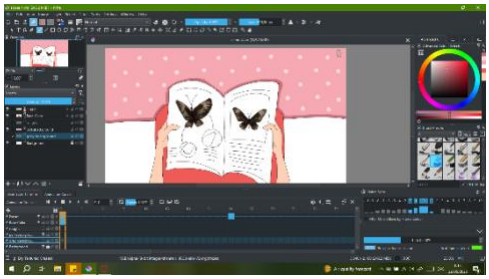

**Figure 6.** Coloring Process

5) Compositing
The process of combining all visual elements, such as characters, backgrounds, visual effects, and lighting.

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**Figure 7.** Compositing

6) Sound Effect
   The process of adding additional sound effect to support action and enhance the atmosphere in the animation.
7) Dubbing
   The process of providing character voices to make the animated characters sound more alive.
8) Rendering
   The final process of converting the animation into a complete visual form that is ready to be displayed or saved as a video.

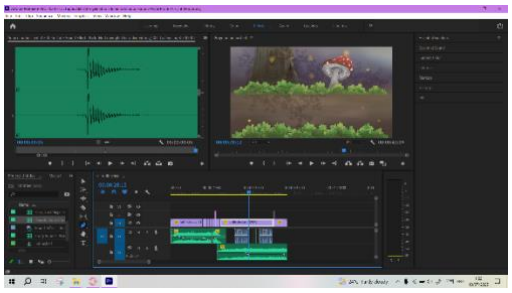

**Figure 8.** Rendering

**c. Post-Production:**

At this stage, the 2D animation that has been developed is still in the post-production phase and has not yet been widely distributed or screened to the public. Future distribution plans will focus on digital platforms such as YouTube and social media to reach a broader and more effective audience. The primary target audience for this 2D animation is children aged 6–12 years, who are currently in primary education.

In addition, the animation is also expected to reach educators, parents, and educational institutions that are concerned with environmental education and nature conservation. The distribution strategy will be designed to match the characteristics of the audience, using visual and narrative approaches that are engaging, easy to understand, and relevant to children's world. A long-term plan is to develop the animation into a series of more than 3 episodes, with a duration of approximately 3–5 minutes per episode, to be uploaded on digital platforms.

Based on observations and discussions with fellow students from the fine arts program, several critical notes were identified regarding the 2D animation being developed. One of the main shortcomings highlighted is the lack of sufficient information and educational content successfully conveyed to the viewers. This is due to the very short duration of the animation, which is only 45 seconds. shorter even than typical trailers, making it difficult to fully develop the intended narrative and message.

**2. Artwork Form**

This project results in a final product in the form of a 2D animated video series consisting of more than 3 episodes, with a duration of approximately 3–5 minutes each. The theme presented is various species of butterflies, and the animation is titled *"Bulan and the Butterflies."* The animation videos will be distributed through digital platforms such as YouTube and other social media.

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## 3. Scene Analysis

This butterfly-themed animation is created to foster children's awareness of the environment, especially butterflies, which function as plant pollinators and indicators of environmental health. The following is an analysis of various aspects involved in the making of the 2D animation "Bulan and the Butterflies."

The scenes in this 2D animation were not created entirely according to the initial storyboard. Several adjustments were made, such as trimming the duration and simplifying the drawing style and animation movements to speed up the production process. These changes were made because the animation is still in the development stage, making time efficiency a primary consideration.

Scene analysis is conducted from a technical perspective based on animation principles, including solid drawing, squash and stretch, timing and spacing, anticipation, slow in and slow out, secondary action, arc, follow-through and overlapping action, straight ahead and pose to pose, staging, exaggeration, and appeal (Sukirman & Irma Yuliana, 2018), and from an aesthetic perspective based on design principles: hierarchy, balance, alignment, emphasis, proportion, movement, negative space, contrast, repetition, variety, and unity (Aulia et al., 2025).

**Figure 9.** Scene 1

**Figure 10.** Scene 2

In the first scene, from a technical perspective based on animation principles, the solid drawing principle is used to avoid a flat appearance. This scene serves to illustrate the time and location setting, nighttime and indoors. Meanwhile, the second scene shows the character reading a book about butterflies in her room, with the application of the solid drawing principle to convey realistic visual quality.


**Figure 11.** Scene 3

**Figure 12.** Scene 4

The third scene shows a glowing light emerging from the book, accompanied by a text sound effect "cring~." The pastel pink background with polka-dot patterns creates a soft and sweet atmosphere. The solid drawing principle is applied through the depiction of the hands, book, and other objects with an understanding of basic shapes and 2D perspective. The appeal principle appears through the choice of soft colors and minimal contrast, while the design principle of pattern is reflected in the polka-dot background.

The fourth scene features the character opening her eyes after a bright light shines from the book. Sparkling eyes and rosy cheeks express amazement as she enters a new place and witnesses the beauty of the Magical Forest. Her hair is illustrated as if being blown by wind coming from the direction of the forest.

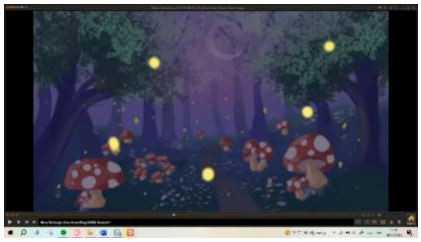

**Figure 13.** Scene 5

**Figure 14.** Scene 6

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The fifth scene depicts nighttime forest atmosphere that feels calm and magical. The staging principle is applied to direct the audience's focus to the large mushroom and fireflies as magical elements. The use of dark purple and blue conveys an imaginative, fairytale-like ambiance appropriate for a night setting. The design principle of contrast is applied through the bright yellow glow of the fireflies, which stands out against the dark background, acting as a light source and enhancing the scene's atmosphere.

In the sixth scene, the staging principle is applied by positioning the fairy facing the main character to guide audience focus. A chibi visual style is used with bright colors, thick lines, and pastel backgrounds to create a cute impression. The dominant pastel yellow on the left helps lead the viewer's gaze toward the main character.

**Figure 15.** Adegan 7

**Figure 16.** Adegan 8

The seventh scene shows a girl walking alongside a small fairy. The staging principle is applied by placing the main character at the center as the focal point, framed by a forest path and large mushrooms. The design principle of contrast is used through higher saturation colors on the characters, making them stand out from the background.

The eighth scene depicts a butterfly flapping its wings. The solid drawing and appeal principles are applied through the detailed textures and symmetrical, visually pleasing wing shapes. The wing movement uses the slow in and slow out principle, with varying speeds to create a natural impression. The staging principle is used by placing the butterfly in the center of a white flower as the focal point, effectively directing viewer attention. The background design is kept simple, sufficient to represent the forest atmosphere without distracting from the main focus. Educational content about this butterfly species, the fairy butterfly, is planned to be included in the next episode.

## CONCLUSION

This 2D animation about butterflies was designed with the aim of fostering awareness among children aged 6 to 12 years so that they can better recognize various species of butterflies, especially those found in Indonesia as well as rare and protected species. The use of digital technology and 2D animation is expected to serve as an educational medium that can broaden children's knowledge about butterflies and inspire them to participate in environmental conservation.

From a production standpoint, this project was completed individually without collaboration or support from a team. This condition poses a risk of hindering the continuity and completion of the project, as well as reducing the quality of the animation, considering that the animation production process—from planning, production, to post-production—is complex, typically not done alone, and requires a considerable amount of time. Therefore, to support the success of further development, it is recommended to seek assistance from others and allocate a longer production timeline so that the process becomes more efficient, the quality of the work can be improved, and the animation can be distributed effectively.

## REFERENCES

Adistiarachma, N., & Alia, D. (2025). The Role of Animated Video Media in Early Childhood Learning. *Incrementapedia : Early Childhood Education Journal*, *6*(2), 49–57. https://doi.org/10.36456/incrementapedia.vol6.no2.a9068

Adlini, M. N., Dinda, A. H., Yulinda, S., Chotimah, O., & Merliyana, S. J. (2022). Qualitative Reasearch Method Literature Study. *Edumaspul: Journal of Education*, *6*(1), 974–980. https://doi.org/10.33487/edumaspul.v6i1.3394

Afif, R. T., Nuruddin, M. I., & Sumarlin, R. (2025). Designing the 2D Animation "Robek" as an Educational Medium About Children's Talents and Interests. *Journal of Animation and Games Studies*, *11*(1), 35–48. https://doi.org/10.24821/jags.v11i1.11088

Albani, S. D., Rachman, A., & Kurniawan, R. A. (2023). Designing 2D Educational Animations Introducing Indonesian Flore and Fauna. *Journal of Muara Social Sciences, Humanities, and Arts*, *6*(3), 599–605. https://doi.org/10.24912/jmishumsen.v6i3.18809.2022

Arsana, Y. (2023). Visualization od 2D Animated Film Superhero Characters "Satria Barong". *Gorga : Journal of Fine Arts*, *12*(November). https://doi.org/10.24114/gr.v12i2.46217

Aulia, R., Swasty, W., & Eka Nastiti, N. (2025). Application of Design Principles in Bandung Food Souvenir Packaging. *Besaung : Journal of Design Arts and Culture*, *10*(1), 117–131. https://doi.org/10.36982/jsdb.v10i1.4354

Lionardi, A. (2022). Designing 2D Animation as an Educational Medium About Sea Turtles for Children. *Nirmana*, *21*(1), 17–28. https://doi.org/10.9744/nirmana.21.1.17-28

Lubis, F. R., & Budiwiwaramulja, D. (2020). Characteristics of Hybrid Design in Metalu's 7 Wonders Comic. *Gorga : Journal of Fine Arts*, *9*(2), 309. https://doi.org/10.24114/gr.v9i2.20161

Mourin, L., Bumisyach Gunta, A., Rifatul, M. ', Naafi', I., Maharani, A. P., Pratama, A. R., & Nurhayati, E. (2024). Exploration of the Influence of Color on Children's Psychological and Mental Development at SDN Kalirungkut 1 Surabaya. *Journal of Social Sciences Research*, *2*(5), 158–161. https://doi.org/10.5281/zenodo.14553753

Nugraheni, A., Rachman, A., & Kurniawan, R. A. (2023). Designing the 2D Animation "Jika Kita Tak Pernah Jadi Apa-Apa" as Motivation for Insecurity About the Future. *Gorga : Journal of Fine Arts*, *12*(2). https://doi.org/10.24114/gr.v12i2.47849

Nurfitri, R., Adaptian, J. A., & Kanthi, Y. A. (2024). Designing a Documentary Video on the Production Process of Sasirangan as an Educational Medium. *Gorga : Journal of Fine Arts*, *13*. https://doi.org/10.24114/gr.v13i01.58733

Sari, W. P. (2025). Designing the 2D Animation "Mentilin Si Tarsius Mungil" as an Effort for Conservation and Community Education on Bangka Island. *ASDKVI*, *2*(3). https://doi.org/10.62383/misterius.v2i3.912

Sukirman, S.T., M. T., & Irma Yuliana, S.T., M.M., M. E. (n.d.). *Basic Principles of 2D and 3D Animation Development Using OpenToonz and Blender*. Muhammadiyah University Press. https://books.google.co.id/books?id=gCbqEAAAQBAJ

Susanti, I. T., Sari, E. N., Merkuri, A., & Wahyudi, A. (2024). The Use of Interactive Animated Video Media to Increase Elementary Student's Learning Interest. *Journal of Primary Education Learning and Teaching*, *7*(2), 121–128. https://doi.org/10.33369/dikdas.v7i2.37366

Utara, A. R., Hapidin, H., & Dwi Utami, A. (2024). Environmental Awareness in Early Childhood. *Pelita PAUD Journal*, *9*(1), 275–281. https://doi.org/10.33222/pelitapaud.v9i1.4358