

Developing Performing Arts Based on SDGs as Learning Media to Stimulate Environmental Awareness in Elementary School Students

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Abstract

Teachers' limited knowledge in integrating environmental education into learning, as well as the lack of learning media that use performing arts with environmental literacy and Sustainable Development Goals (SDGs), have an impact on the low environmental awareness among elementary school students. The findings of this research are expected to increase environmental awareness in elementary school students; therefore, this research was conducted to find out the steps for developing learning media in the form of SDGs-based performing arts, the form of SDGs-based performing arts for elementary school students, as well as the responses of students, teachers, and prospective elementary school teachers about the developed performing arts-based learning media. This research utilizes both qualitative and quantitative data for analysis. The method used in this research is design and development (D&D), referring to the PPE development model (Planning, Production, and Evaluation). The result of this research is an SDGs-based performance art featuring a pianica orchestra and dance performance supported by costumes and props that visualize various alternative energy sources. This performance art receives a positive response from students, teachers, and prospective elementary school teachers as the audience because it is considered capable of combining music performances, dance movements, props, and costumes harmoniously and can communicate about environmental issues easily and enjoyably. It can be concluded that integrating art in environmental education can create a more engaging and immersive learning experience, increasing students' environmental awareness and encouraging them to develop pro-environmental behavior.

Keywords: Elementary School, Learning Media, Performance Art, SDG's.

Introduction

Environmental problems are global problems that occur in almost all countries. Education has a strategic position to build quality human beings responsible for their environment (1, 2). Based on the results of the researcher's preliminary study in several schools in West Java Indonesia, Each school has various programs to foster environmental awareness. However, based on the observation, some conditions are not in line. Based on the observation schools often generate waste through daily activities, including food packaging, paper use, and other disposable items. Many schools overuse lighting systems, do not use renewable energy, and have no green space. The environmental awareness will be related to students' science literacy (3).

Science literacy, especially environmental literacy, is essential to foster environmental awareness

among elementary school students. Environmental awareness in elementary school students refers to the level of knowledge, understanding, and concern that children have about environmental issues (4). This awareness is important in shaping students' attitudes and behaviors towards the environment and their willingness to take action to protect and preserve the natural world (5, 6). By integrating environmental education into school curriculums, teachers can help students develop critical thinking skills and a sense of empathy for our planet (7). This can lead to positive outcomes such as increased participation in recycling programs, reduced energy consumption, and a greater appreciation for the interconnectedness of all living things (6). However, teachers' limited knowledge of environmental education may hinder effective teaching practices (8). Without adequate

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education regarding environmental sustainability, students may lack an understanding of the impact of their actions on the environment.

Teachers need to know how to protect, maintain, and restore the environment and transfer this knowledge to students in an interesting and fun way. Promoting environmental awareness and sustainability effectively and funnily requires diverse and innovative learning media that engage students and foster behavioral change. Based on the researcher's literature review, many previous studies found effective learning media to promote environmental awareness and sustainability such as learning media based on e-booklets that integrate environmental, science, religious, and social (9), games integrated VR/AR applications (10, 11), mobile learning applications (12), social media (13, 14). Some research results also show that the integration of art as a medium to increase environmental awareness among students has shown satisfactory results. Performing arts, such as theater, effectively enhance learning by encouraging cognitive, relational, and emotional engagement (15). In a rural primary school in Botswana, traditional storytelling, dramatization, and visual arts, as demonstrated in a study conducted embed environmental appreciation within learners' contexts, making the learning process more engaging and effective (16). Music can be an effective medium for science communication (17). Through drawing activities, students can express their hopes about their future environment, so drawing can be a medium that helps improve students' emotional connection and sensitivity to environmental issues, and makes them more aware and concerned about the environment (18).

The research that has been conducted requires students' art activities (creation and expression) for the application of environmental education. These studies have not considered that if students play the role of spectators who appreciate works of art, the emotional experiences that arise will be deeper and more effective in building emotional connections and understanding the messages conveyed. Because, performing arts can effectively convey educational messages by emotionally engaging the audience (19). Meanwhile, the Sustainable Development Goals (SDGs) can also be significantly promoted and achieved through performing arts which can engage, enlighten, and

inspire various audiences (20). In addition, the development of art-based media that has been done only focuses on one branch of art partially. learning media in the form of performing arts that combine music, dance, and visual arts with environmental literacy content for elementary school children have not been found. Integrating SDGs into performing arts can help children understand and express issues related to sustainability, thereby building their agency as global citizens in a more sustainable and just world (21). By integrating the SDGs into performing arts, we can create powerful educational experiences toward a sustainable future (20). The role of visual and performing arts in communicating complex scientific concepts and promoting new ways of looking at problems has been recognized by professional ecologists, who found that incorporating music, theater and dance into scientific conferences created an atmosphere conducive to receiving information and encouraged reflection on alternative communication methods (22).

Based on this explanation, in this research, the research team developed learning media in the form of performing arts that contain information about science literacy. This research aims to see how the process of developing learning media in the form of performing arts containing SDG's, see the results of expert validation about of SDG's-based performing arts, describe the form of performing arts containing SDG's, and the results of the implementation of SDG's-based performing arts. The results of this research are expected to stimulate the environmental awareness of elementary school students, so that they can understand and care about environmental issues, and have the awareness to protect, restore, and promote sustainable ecosystem management.

Methodology

The method used in this research is to use design and development (D&D) methods. This research uses the development model PPE (Planning Production and Evaluation) development model developed by Richey and Klein (23). The planning step involved analyzing needs through interviews with teachers, and formulating objectives by conducting a document study of the elementary school curriculum. The output of the activity produced learning objectives, ideas and concepts of performing arts. In the production step, the

researcher began to pour the idea of the art into a storyline. The storyline became the basis for researchers to carry out exploration, improvisation, and performing arts form. Evaluation of performing arts is carried out in 2 steps, namely at the production step through validation activities with experts, and at the

evaluating step when the product is shown to elementary school students, teachers, and prospective elementary school teachers to see the response to the results of media development in the form of performing arts. The steps are depicted in Figure 1 below.

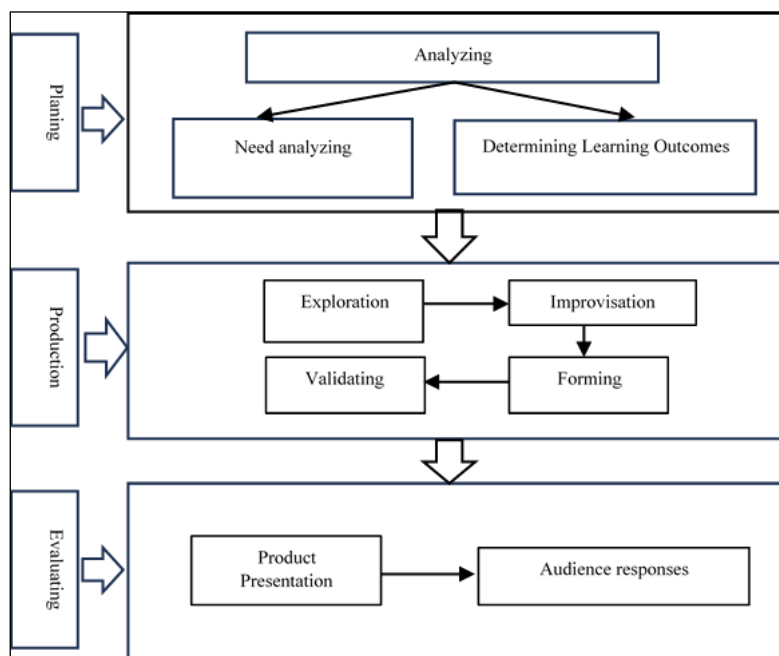


Figure 1: Research Procedures with the PPE Model

The data used in this study are qualitative data and quantitative data. For data collection techniques using interviews, document studies, and respondent questionnaires. The selection of informants was done using purposive sampling technique. Interviews were conducted with performing arts experts to explore views on appropriate forms of performing arts for elementary school students. Interviews were also conducted with elementary school teachers to find out the extent to which students recognize SDGs and what teachers do to introduce SDGs. The quantitative data instrument was a product validation score and a respondent's questionnaire score. While the qualitative instruments are the results of interviews and validator suggestions.

Participants in this study were three validators, consisting of experts in performing art, elementary school teachers and experts in science literacy. Performing arts expert were involved to ensure the artistic and aesthetic aspects of the performance art. Elementary school teachers were involved because they are considered as people who understand the right approach to convey messages

to children (24). Meanwhile, science literacy expert ensure that the environmental information conveyed through the performance is scientifically accurate and relevant so that the message about the importance of protecting the environment becomes stronger and more educational. Other participants in this study were 250 performance audiences consisting of elementary school students, teachers, and prospective elementary school teachers.

The research was conducted at a university in Bandung, Indonesia because it has facilities, resources, and an academic environment that supports educational arts activities, and often presents educational arts in a performance that is open to the public.

Results and Discussion

Performance Arts Development

Process

Needs Analysis: The development of SDG-based artwork begins with planning, according to the research model used. In the planning, researchers collected and reviewed data on the needs to

overcome the problems found in the initial observation by conducting a needs analysis, curriculum analysis, and analysis of the learning media used. Data was obtained from interviews with teachers and through document studies. Interviews were conducted to find out the extent to which students recognize SDG's and what teachers do to introduce SDG's. Furthermore, interviews were conducted to obtain data on learning media

commonly used in materials that correlate with SDGs, especially those related to the environment. The researcher also deepened the information about students' environmental awareness and how the teacher shapes students' environmental awareness. Based on the results of interviews with three elementary school teachers in Bandung City, the interview data are contained in Table 1 below:

Table 1: Results of Interviews with Teachers at the Media Design

Indicator	Teacher's Answer
SDG's	Teachers have never introduced SDG's to students specifically or correlated with the content of learning materials. Teachers are not sure that students are familiar with SDG's. Learning innovations with SDG's content have never been done
Learning Media	Teachers use slide presentations and books as learning media Performing arts learning media has never been used Teachers have never developed learning media in the form of performing arts. Students have never been invited to watch SDGs-laden performing arts either directly or through videos.
Student environmentally awareness	Students in grades 1,2,3 do not yet have their own awareness to protect the environment. While grades 4,5 and 6 already have an awareness of protecting the environment, for example by throwing garbage in its place and being able to carry out activities to clean the classroom or school environment. The attitude of caring for the environment is formed through examples of teacher behavior and teacher advice.

Table 1 provides information that based on the results of the interview, it is known that students have not been introduced to the SDG's. Teachers also have not linked the content of learning materials with SDG's. SDGs is a global action plan in which one of the goals is to encourage awareness of environmentally friendly behavior, so that all individuals can survive and have a sustainable life (25). Therefore, the SDGs are important for students to understand at the elementary school level so that they can realize that their actions can affect environmental, social, and economic conditions in the present and future (21, 25). Thus, learning innovations that are based on SDGs need to be done. The learning process through art makes learning less boring (26–28). Based on interviews, teachers only use learning media in the form of presentation slides or books and have never used learning media in the form of performing arts. Thus, the innovation of learning media in the form of performing arts will be a new way to stimulate students' environmental awareness and introduce students to the SDGs.

The content of the material contained as the basic idea in the learning media in the form of

performing arts is done through document studies, namely by analyzing the curriculum. The selection of materials for learning media design is an important step in the media development planning process (29). Based on the results of curriculum analysis, science and social subjects in Phase B (Grades 3-4) and Phase C (Grades 5-6) contain learning outcomes that are aligned with SDG's goals, especially those related to the environment. In Phase B, the aligned material is found in the material on preserving natural resources as an effort to mitigate climate change. This material is sustainable with the material in Phase C learning outcomes, namely the material on energy-saving efforts and the use of alternative energy sources from existing resources as an effort to mitigate climate change. From these two learning outcomes, researchers made alternative energy sources material as a basic idea in developing artwork as a learning medium to stimulate an attitude of environmental care. In some countries, the content of energy sources has been widely used to achieve SDGs goals (25, 30, 31). The content of the energy source will be developed in the form of a pianica orchestra accompanied by vocals, cajon, keyboard,

acoustic guitar, bass, and dance performances that use fine art in the costumes and dance properties. The combination of music, dance, and visual arts is expected to provide an informative and aesthetic presentation. The process of utilizing music can be done through listening activities, producing/playing music, and creating music integrated with movement (32). Thus, music that contains environmental issues is expected to be utilized as a means to convey information. In dance performances, there are symbols displayed through movement, costumes, makeup and property that have meaning, so that a dance work can contain a story/message (33). The pianica was chosen because it has the same layout as a piano although with a shorter range, besides that it is also a musical instrument that is widely used by teachers to teach musical instruments in elementary schools. Thus it is hoped that this performance can provide an aesthetic experience that suits the musical preferences of elementary school children.

Performance Art Creation

This SDGs-based art creation involved 45 prospective elementary school teacher who acted

as artists and creators in the performance. By engaging in performance creation, future educators can explore innovative ways to convey knowledge and facilitate students' learning experiences (34). In the production, researchers began to develop works of art by referring to the steps of creating dance works according to Alma Hawkins in her book *Moving from Within: A New Method for Dance Making* (1991, 35), namely exploration, improvisation, and forming. This theory is used because dance is a performing art, so this theory is suitable for use.

In the initial stage of exploration, researchers formulated story ideas that would be poured into artworks. At this stage, the researcher looks for inspiration for story ideas by reading literature about alternative energy sources, as well as issues regarding energy sources. After obtaining information, the creators consisting of choreographers, composers, and curators who joined this research held discussions to formulate the storyline and write it in the form of a storyline. The storyline created by the research team before conducting exploration activities can be seen in Table 2 below.

Table 2: Storyline of SDG's Based Performing Arts

Scene	Story Idea	Setting	Duration	Performers
1 Introduction to energy sources	<ul style="list-style-type: none"> Introducing various sources of energy 	Fun, Excited	4 minutes	30 pianica players 6 combo players 9 dancers
2 Coal and oil	<ul style="list-style-type: none"> Recounting the power of coal and oil Recount the crisis of coal and oil Describe the human confusion without coal and oil. 	Fun and over Sad	6 minutes	32 pianica players 7 combo players 6 dancers
3 Solar energy	<ul style="list-style-type: none"> Describe the role of the sun Describing the characteristics of the shining sun Describing the sun as a source of energy for solar panels 	Cheerful	5 minutes	30 pianica players 7 combo players 8 dancers
4 Hydropower	<ul style="list-style-type: none"> Depicts the soft, flowing, rumbling, undulating characteristics of water. Depicting a water turbine as a source of energy 	Cheerful	5 minutes	29 pianica players 8 combo players 8 dancers
6 Bio energy	<ul style="list-style-type: none"> Describes the strong, lush, sturdy characteristics of plants. Describing the role of plants as a source of biomedical energy. 	Cheerful to sad	5 minutes	30 pianica players 7 combo players 8 dancers
5 Wind Energy	<ul style="list-style-type: none"> Describes the gentle characteristics of the wind. Describing the role of windmills as a source of energy. 	Quiet	5 minutes	30 pianica players 7 combo players 8 dancers

The storyline contained in Table 2 serves as a guideline in creating dance movements, song lyrics, melodies and properties that must be made, so that the process of creating works becomes clearer and more directed. Exploration activities of movement, music and visual works are carried out at different times. Along the way, all creators continue to coordinate so that each element created has harmony. Therefore, the maturity of the concept or story idea is needed from the beginning of the creation of performing arts to facilitate the work of the entire artistic team (33, 36).

In the exploration of finding movement, the choreographer uses various stimuli to present movement ideas (37). The story idea that has been contained in the storyline becomes an ideational stimulus used at the beginning of exploration activities (38). Other stimuli used are visual stimuli, by viewing various dance videos that carry the theme of the environment from the YouTube and TikTok applications. Based on the ideas that have been made and based on the videos that have been observed, the choreographer begins to move all his limbs to find movement motifs. The choreographer also tried to use various properties such as fans, cloth, and scarves, to find movement ideas.

Motion exploration was done scene by scene. This activity was carried out for 4 weeks and resulted in a variety of pure and meaningful movements by the story idea. After getting a variety of movements, the choreographer began to do imitation activities with the dancers, then improvised movements by looking for various possible combinations of movements that had been obtained from the exploration stage. In the improvisation stage, the choreographer develops movements in terms of space, time, and energy (39), to find the range of motion, level of motion, tempo, and intensity of energy following the message and emotion to be conveyed. This improvisation activity continues while adjusting to the accompanying music.

Like the process of creating dance movements, the idea of creating music is based on the storyline that has been made. The initial stage in the music creation process is to create a song lyric. Lyrics in a song are language symbols used by composers in expressing feelings to make it easier for listeners to digest a piece of music (40). In this research, lyric

is a way to convey information about natural resources and alternative energy sources verbally. The inspiration for the lyrics is taken from the global narrative about the importance of protecting the environment as well as concrete examples of small actions that students can take in their daily lives. The lyrics used are designed with simple language so that students can easily understand and internalize important concepts in protecting the environment lyrics created are not only to be enjoyed for their aesthetic value but also to educate, inspire and motivate action (41). The mood of the song is carefully crafted through the use of chords and tonalities chosen to support the message and emotion conveyed in each section of music (42).

After having a variety of movements, lyrics, and melodies, the final step is forming. In this activity, the choreographer arranges a series of movements into a complete dance work and processes various group dance compositions, such as forming floor patterns, group dance designs, and adjusting movements to musical accompaniment. In the final stage of music creation, the composer arranges the music that has been obtained from each scene so that it becomes a complete piece of music that can also be used as dance accompaniment music. At this stage, the shape and size of the property that will be used in the performance is also determined. As well as the fashion design that will support the performance. This needs to be prepared so that all aspects of the performance can communicate the message about alternative energy sources.

Validation Results

After the SDGs-based artwork as an environmental learning media was validated by 3 experts, namely artists, elementary school teachers and experts in the field of science literacy. This is done to support the interaction between musicians, teachers, and audiences that needs to be done to have an impact on the results of the learning process (43). Each expert was asked to rate 13 statements covering the suitability of the content to the learning objectives. Each expert was given a scale score range of 1-5. Scale 1 means strongly disagree, 2 means disagree, 3 means neutral, 4 means agree and 5 means strongly agree. The results of validation from 3 experts on 10 proposed statements can be seen in Table 3 below.

Table 3. Validation Questionnaire Results

No	Questions	Score (Artist)	Score (Teacher)	Score (Science Expert)	Average
1	Content contains important messages related to environmental SDGs.	5	4	5	4.7
2	Content materials are in accordance with the learning objectives	4	5	4	4.3
3	Performing arts can explain basic environmental concepts to students.	4	5	4	4.3
4	The performing arts content invites students to think critically about environmental issues.	5	4	5	4.7
5	The message conveyed in the performing arts is relevant to current environmental realities.	4	5	4	4.3
6	Performing arts motivate students to take concrete actions to protect the environment.	4	5	4	4.3
7	Messages in performing arts promote sustainability values to students.	5	4	5	4.7
8	Performing arts materials encourage students to discuss solutions to environmental problems.	4	4	4	4.0
9	Performing arts conveys the importance of environmental conservation to students	5	5	4	4.7
10	Performing arts content contains accurate and relevant information on environmental SDGs.	4	5	4	4.3

Based on Table 3, it can be seen that the highest score of validation results is in statement numbers 1, 4, 7 and 9 with an average score of 4.7. This indicates that the performing arts content is considered effective in containing important messages related to the SDGs, motivating students, and conveying the importance of environmental conservation. Meanwhile, the lowest scores were found in statements number 8 with an average score of 4.0, indicating that there is room for improvement in encouraging students to engage in environmentally friendly activities. Based on this, the creator team reviewed the story ideas that had been designed, then added story ideas for the initial scene and the final scene. Additional story ideas in the initial scene are human behavior that uses non-renewable energy sources, symbolized by fossil-fueled car property. Additional story ideas at the end of the scene are humans who switch to using alternative energy, symbolized by electric car property. The addition of stories and properties is expected to be a simple example of problems and solutions that humans can do today as a form of pro-environmental attitude.

Overall, the validation results from the three experts show that the developed artworks are per the learning objectives and can be used as learning media to increase environmental awareness in students. According to the learning practitioners,

the content contained in the performance artwork successfully integrated messages related to SDGs and environmental conservation, this has shown the potential of performing arts to make abstract concepts more concrete and relevant for elementary school students (21, 26, 27, 36).

SDGs-based Performing Arts: The presentation of the SDGs-based artwork that has been created and validated is presented in a performance witnessed by elementary school teachers, elementary school students and prospective elementary school teachers. This artwork was performed for 30 minutes by presenting dance performances and pianica orchestra simultaneously in a performance artwork. The basic concept of this artwork depicts the impact of the prolonged use of non-renewable energy or fossil energy, such as petroleum and coal, then introduces alternative energy that comes from nature and can be utilized continuously, such as the sun, water, plants, and wind.

To visualize this idea, the choreographer uses gestures (meaningful movements) that describe each type of energy source. For example, movements that explore wide blue skirts to help visualize the movement of water, the formation of fan formations as a visualization of windmills as energy sourced from the wind. However, pure motion is still used to provide aesthetic value in the

dance movement. The communication of the message is also supported by the use of property and clothing that illustrates the characteristics of each energy source. For example, the use of fabric fans to illustrate wind energy, or as shown in Figure 2, the use of solar panel props as a symbol of energy sourced from the sun.

The artwork employs various types of costumes that represent the characteristics of each energy source. For instance, Figure 3 illustrates the utilization of costumes crafted from dried leaves to symbolize plants as a biomass energy source.



Figure 2: Solar Panel Property as a Visualization of Solar Energy Sources



Figure 3: Costumes that Visualize Biomass Energy Sources

Dance and music can be tools for social engagement (44). Supporting movements and lyrics in this performance also strengthen the process of communicating messages about alternative energy sources (32). The tonality used is adjusted to each message to be conveyed, major chords are used from the beginning to the chorus. A calmer and more reflective compositional atmosphere is used at the end of the scene. Music

can provide the affective components of environmental education, such as emotions and values, which are critical to fostering a connection with environmental issues (17) for this reason, at the end of the scene there is a change in major tonality to minor tonality to add emotional depth about human anxiety if coal and petroleum run out. The change in tone is illustrated in Figure 4 below.

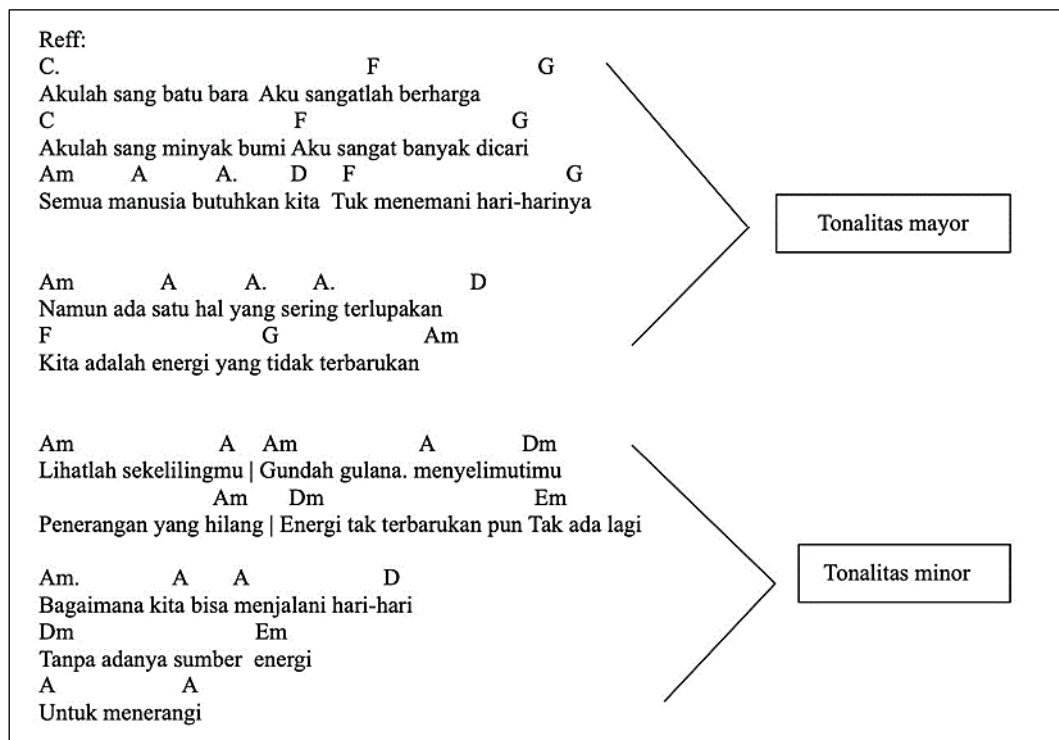


Figure 4: Tonal Changes in Coal and Oil Scene Lyrics

In Figure 4, lines 1-3 the song lyrics describe the importance of coal as a valuable source of energy and is sought after by humans to fulfill their daily needs. This section uses a major tone to portray a sense of pride in the important role of coal as an energy resource that supports human life. However, the lyrics in lines 4 and 5 convey the concern that coal is a non-renewable resource, which will one day run out. The lyrics in lines 6 - 10, provide a more somber atmosphere, and minor tones are used to support a more sad or worried atmosphere about a future without enough energy, the lyrics in this section emphasize the threat of an energy crisis that could occur if humans continue to rely on non-renewable energy, and remind of the importance of finding more sustainable energy solutions for the future.

The well-planned integration of visual art and musical elements, including the appropriate use of major and minor chords, serves to enhance the

effectiveness of educational messages on sustainability, by creating a deep emotional experience and motivating audiences to act (45, 46)The use of appropriate tonalities and musical structures can significantly influence the understanding and reception of messages (47), By harnessing the power of music, it can be used to communicate environmental issues more persuasively. It is no surprise that music is able to make the atmosphere sometimes become sad or happy when music is played because music has properties that involve emotional sympathetic responses (46), The message that is sent is always accompanied by structured and systematically arranged tones, so music is one of the unique media connecting and sending messages.

Audience Response to SDGs-Based Performing Arts: Based on the results of a questionnaire distributed to 250 audiences, the combination of music, dance, props, and costumes used in the

performance received a positive assessment. The audience assessed 4 indicators, namely the relevance of the artwork to the SDGs, the ability of each element to convey messages about environmental care, the ability of the artwork to motivate the audience to an attitude toward

environmental care, and the artistic quality of each element of the performance. These indicators are spread over 15 questions. Audience assessed with a score range of 1 to 5. The audience's assessment of the performance art witnessed can be captured in Figure 5 below.

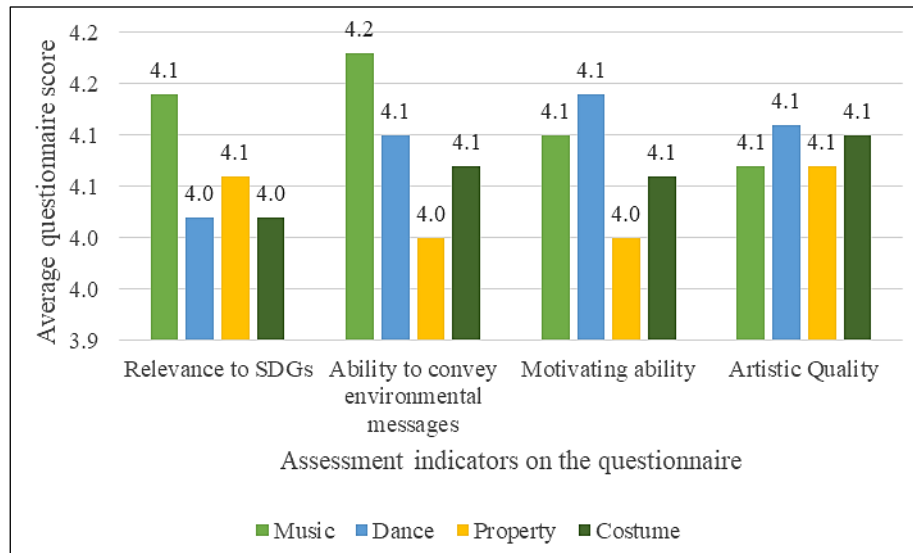


Figure 5: The Result of the Audience's Response

Figure 5 shows that these elements effectively convey environmental messages to the audience. Based on the results of the audience assessment, music is considered to have a higher relevance to the SDGs compared to other elements. The delivery of messages about the environment is also easier to understand through music. In other indicators, dance is considered more capable of motivating and has a higher aesthetic value. However, when looking at the average assessment results, both music, dance, props, and costumes received very positive assessments, as evidenced by the absence of an average score below 4.00. This shows that all audiences agree that the performance art created has relevance to the SDGs, can convey messages about the environment, can activate the audience to have an attitude of environmental care and has good aesthetic quality. Elements of the performing arts, such as music, and dance, along with the use of props and costumes, play an important role in conveying messages related to the environment and sustainability (48). The audience responded very positively to this approach, which is considered to be able to create an educational experience and inspire real action to protect the environment. In learning, it is not only the knowledge aspect that is emphasized, but the ability to think, affective and behavior about the

environment is also the main measure of success (49). This approach to environmental stewardship through art educates and inspires students to be proactive in facing environmental challenges, in line with the goals of education for sustainable development (28, 50).

Testimonials given by one audience member in the questionnaire stated that the combination of dance movements, props, and costumes were considered harmoniously integrated and effective in conveying the message. This indicates that the integration of visuals and movement succeeded in building a strong narrative that was easily understood by the audience. Overall, these results support the argument that performing arts, particularly music, dance movements along with props and costumes, can be a powerful medium in raising awareness and promoting pro-environmental actions, in line with development goals. The arts can play an important role in promoting awareness, encouraging innovation and inspiring action towards sustainable development (27, 28). Performing arts creation serves as a pathway for active and lifelong learning experiences (43). The findings from this study contribute to the growing literature on the role of performing arts in education, especially in promoting environmental awareness of primary school students.

Conclusion

The integration of arts in learning to achieve the SDGs is a more engaging and impactful approach, which can be adopted to address complex sustainability challenges. The study revealed that the artworks were designed with consideration for the needs and learning objectives aligned with the Sustainable Development Goals (SDGs). The creation process of the artwork involved three stages: exploration, improvisation, and formation. Expert validation indicated that the developed art performance met the educational objectives and could serve as an effective learning medium to enhance environmental awareness among students. This SDGs-based performance art features a pianica orchestra and dance elements, supported by costumes and props that depict various alternative energy sources. The performance has received positive feedback from students, teachers, and prospective elementary school educators, who appreciate its successful integration of musical performances, dance movements, props, and costumes, and its ability to communicate environmental issues in an engaging and enjoyable manner.

Overall, the integration of arts into environmental education not only enriches the learning experience but also fosters a deeper emotional and cognitive connection with environmental issues, thus promoting sustainable behaviors and attitudes among students. The integration of art into environmental education has been shown to create an atmosphere conducive to receiving information and contemplating alternative communication methods, as evidenced by the implementation results of this research, where appreciators stated the developed performance art was useful for understanding scientific concepts and promoting new perspectives on environmental care attitudes. It is hoped that fostering environmental awareness in students through performance art can empower them to become environmentally conscious citizens who strive to impact the world around them positively.

Abbreviation

SDGs: Sustainable Development Goals.

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Author Contributions

Non Dwishiera CA: Conceptualization, Methodology, Data Collection, Writing & Editing. Ari Arasy Magistra: Data Analysis, Visualization, Writing – Review & Editing. Ira Rengganis: Project Administration, Funding Acquisition, Review and Editing. Mela Darmayant: Investigation, Resources, Review & Editing. Sendi Fauzi Giwangsa: Review & Editing. Neni Maulidah : Review & Editing.

Conflict of Interest

The authors declare that there are no conflicts of interest regarding the publication of this paper. All opinions and findings presented are based on independent research and have not been influenced by any organization or funding agency.

Ethics Approval

The study was conducted by ethical guidelines, and all participants provided informed consent before participation in the research.

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