

Motion Graphics Containing Education For Sustainable Development; A Research Development of Instructional Media for Elementary School Students

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Abstract

The emergence of issues of species extinction, pollution, scarcity, and others need to be addressed by everyone, including educators. One solution is the use of motion graphics-based learning media. This research was conducted to describe design development, design validity, and the effectiveness of motion graphic designs with content related to Education for Sustainable Development. The research method used is Design-Based Research. The stages of this research include identifying and analyzing problems for initial development needs, designing motion graphics media designs, implementing, reflecting, and making the final product. This research was conducted at the UPI Campus Tasikmalaya partner school. The results of the study found that motion graphics which contain Education for Sustainable Development are very useful as a medium for learning the functions of attention and affection significantly. Motion graphics duration of no more than 3-5 minutes is sufficient to focus students' attention on learning more deeply about human activity with a sustainable perspective. However, it was also found that this short duration limits the richer educational content related to Education for Sustainable Development, so it is recommended to use motion graphics in combination with learning media and other teaching materials.

Keywords: Education for Sustainable Development, Motion Graphics, Elementary Schools, Learning Media

INTRODUCTION

The progress of human civilization has greatly influenced the natural environment and human life itself. The rapid development of technology and industry raises the need for higher natural carrying capacity. However, it is commonly known that nature has a growth rate that is different from technological and industrial developments. Themes and issues of natural destruction, environmental pollution, species extinction, water scarcity, food crises, to internal and inter-ethnic conflicts should be responded to immediately by all parties. Fritjof Capra proposed the idea of reforming our society and communities, be it political society, economic community, academic community, especially the education community (Segara, 2015). This is what later led to the emergence of the concept of Education for Sustainable Development. On the other hand, the national education curriculum is felt to have content that is relevant to Education for Sustainable Development. Thus, there is potential to support the idea of

Education for Sustainable Development to be disseminated to students at all levels of education throughout Indonesia, especially in elementary schools.

Education for Sustainable Development in its delivery and dissemination also requires learning media that are relevant and interesting so that students can receive these ideas as a whole and can touch all student learning modalities. Indeed, this thinking also applies to themes other than Education for Sustainable Development, but today's socio-economic-environmental conditions increasingly show the importance of the concept of Education for Sustainable Development. Efforts that offer understanding and depth of meaning regarding Education for Sustainable Development are through the development of interactive, interesting, and easy-to-understand learning media for students. One of the learning media with these characteristics is motion graphics.

Motion graphics can also be defined as a piece of digital photograph or recording that produces the illusion of movement or rotation, and is generally combined with audio for use as multimedia. The concept of motion graphics distinguishes between static graphics and moving graphics but with a display that changes from time to time (Betancourt, 2012). All forms of experimental or abstract animation can be said to be motion graphics, although this concept generally refers more to commercial applications of animation in video, interactive applications, film or television. Motion graphics are the method to talk to the audience, and can increase the depth of the message in a relatively short time, about 10 seconds up to 6 minutes (Kim et al., 2020; Yaakob et al., 2021). Motion graphics can give messages through music and pictures in a manner simultaneous; the usual used in commercials, sequence TV titles, lay out concepts, and share videos that communicate the product. In the world of learning itself, modern digital-based motion graphics are used after the digital ecosystem influences classification learning Media. In the classic classification of learning media, there are 5 types of media, namely visual media, audio media, audiovisual media, realia media, and reading/text media. But since computing and digital technologies were developed in the 1980s, these classifications have become more flexible and open (Russell et al., 2013).

The shorter the duration of showing motion graphics, the better and superior it will be said, and its effectiveness will decrease if the duration is longer. Not only that, the use of everyday language in motion graphics narration is preferred, for example introducing everyday conversations, or short monologues as a brief but precise embodiment of one's thoughts in describing perspective or affective.

The emergence of the Covid-19 pandemic has replaced and deconstructed all aspects of human life, learning is no exception. Closing learning activities in schools until the implementation of a limited face-to-face learning policy clearly results in learning loss (Andriani et al., 2021; Donnelly et al., 2021; Maulyda et al., 2021). Even so, there is a tendency for teachers, lecturers and researchers to pay more attention to using digital resources as learning components. This increase has actually occurred since 2015, but there was a significant increase at the end of 2020 (Setiadi, 2021). However, the emergence of a tendency for social media to become a learning platform is an interesting phenomenon. This caused by changing the treatment on social media which is actually used as a medium of communication and spreading entertainment content changes its function to become a learning medium (Setiadi, 2021). Unfortunately, educational content itself tends to be developed sporadically and is designed in a less methodical and scientific manner. Meanwhile, the creation of audiovisual content that is expected to function as learning media does not all refer to the functions, elements, and types of good learning media.

The term "media" comes from Latin, the plural form of the word "medium". The definition of media itself is very broad, and the specific definition of learning media is media that is used as an intermediary and material for learning activities. Learning media includes media that can be used efficiently in a planned learning process. There are four types of learning media functions, including attentional, affective, cognitive, and compensatory (Batubara, 2021; Arsyad, 2013). Learning media includes not only electronic learning media and requires technological features, but also simple forms such as slides, pictures, teacher-made diagrams, real objects and visits outside the classroom (Widyastuti et al., 2022). Besides, learning media also used for stimulate thoughts, feelings, concerns and will study participant educate so you can push the occurrence of a learning process that is intentional, purposeful and under control (Oka, 2022).

The Education of Sustainable Development Program launched by UNESCO and in learning will be more focused on several issues. For example, the themes befall efforts to overcome disaster risks, climate change, poverty alleviation, biodiversity, and the concept of environmentally friendly consumption. Education for Sustainable Development has 3 comprehensive main pillars covering ecology, economy, and social. For example, there is a clean water crisis that causes the price of clean water to increase, after which people who are at a low economic level will continue to be poor and other social problems will arise. Therefore, the concept of Education for Sustainable Development wants to help balance these three pillars.

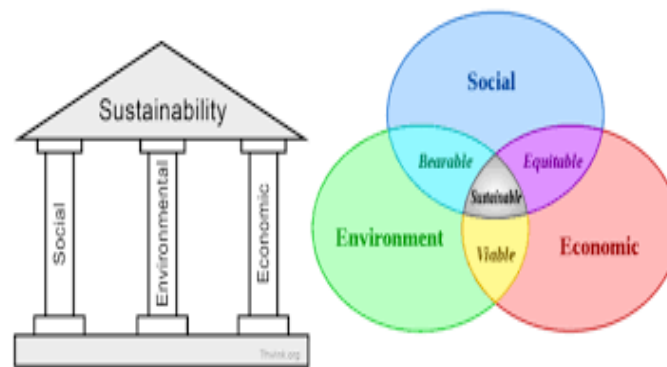


Figure 1. The concept of Education for Sustainable Development

Based on these three pillars, it can be seen that there is a link between inseparable aspects of supporting Education for Sustainable Development. It is intended that all aspects of the implementation of Education for Sustainable Development can be scrutinized, not just using one aspect. Sustainable development means that the needs of the current generation can be met without compromising the needs of the next generation. In other words, development is very important so that human needs can be met and people's quality of life can be improved (Anderson & Smith, 2022).

This research is limited to learning in elementary schools for competencies, materials, and learning themes that are relevant to Education for Sustainable Development. However, this study did not examine the methods, techniques and learning models used. This is so that research can focus on the development of motion graphics as a learning medium for elementary schools. The formulation of the research problem includes: 1) How is the process of developing motion graphics as a learning medium within the framework of Education for Sustainable Development?; 2) How is the validation of motion graphics products as learning media within the Education for Sustainable Development framework?; 3) How is the effectiveness of motion graphics as a learning medium within the Education for Sustainable Development framework?

METHOD

This study uses the Design Based Research method (DBR). Design Based Research is a systematic study of designing, developing and evaluating educational interventions such as programs, strategies and learning materials, products and systems as solutions to address complex problems in educational practice, which aims to increase our knowledge about the characteristics of these interventions as well as the design and development process (Campanella & Penuel, 2021; Cresswell, 2018). The research procedure for developing motion

graphics as an Education for Sustainable Development instructional media is shown in Figure 2. This research planned to be conducted for 3 cycles, for ensure development this motion graphics design could increase interest of student regarding Education for Sustainable Development.

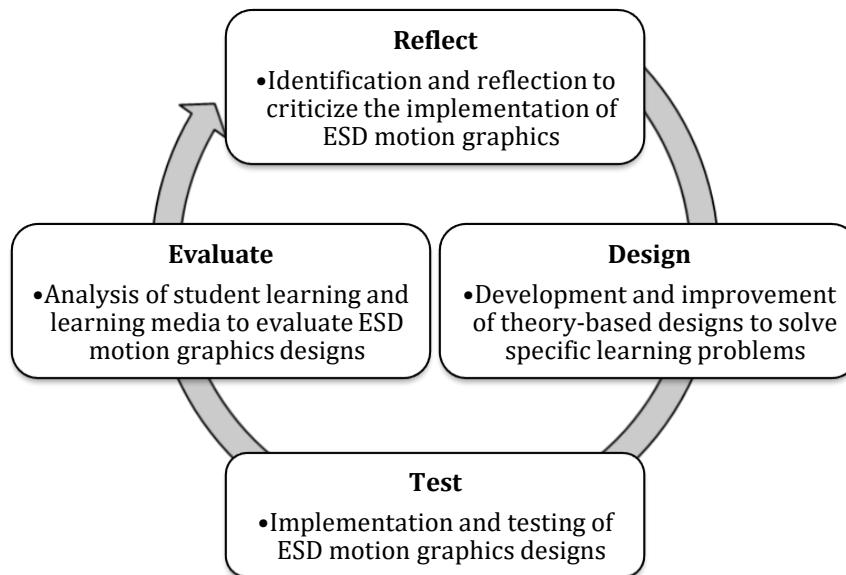


Figure 2. The research procedure for developing motion graphics as an education for sustainable development instructional media (cyclical)

The data collection instrument in this study aims to produce and record qualitative data. The data collection instruments to be used include: 1) Observation techniques, using observation sheets, to observe behavior when students watch motion graphics containing Education for Sustainable Development; 2) Interview techniques, using unstructured interviews, to explore the responses, understanding, and interests of students and teachers regarding motion graphics with Education for Sustainable Development content; and 3) Questionnaire, to measure the usability of motion graphics media on the interests, understanding, and behavior of students and teachers related to the topic of Education for Sustainable Development. The research subjects were students and teachers in three partner elementary schools of the S1 Teacher Education Study Program Elementary Schools of the Indonesian University of Education, Tasikmalaya Campus. This research will be carried out from April 2022 to October 2022.

RESULTS AND DISCUSSION

Results

At the analysis and identification stage, the research team made observations regarding the learning media used in schools, particularly in the form of videos and animations. It is known that in learning the teacher has never made his own motion graphics media. Some teachers make learning media in the form of learning videos that display the teacher directly, so it is quite risky if the teacher doesn't remember the video script to be used. However, teachers are quite used to using animated learning media found on YouTube. The widespread use of videos on YouTube also has drawbacks, including learning videos that are out of sync with what the teacher wants to teach that day. At this stage an analysis of ESD points with the curriculum is also carried out. It was found that there are 3 aspects in ESD and 5 markers that are in accordance with the curriculum in the odd semester span of the 2022/2023 academic year and can be used as topics in making motion graphics media.

At the design stage, 5 material texts, 5 motion graphics scenarios, and 1 motion graphics development outline were prepared. This design document is translated into 5 motion graphics products with a duration of about 2-4 minutes. The applications used are Canva (for composing motion pictures), Audacity (editing and refining sound quality), and Anchor (combining the narrator's voice with background music).

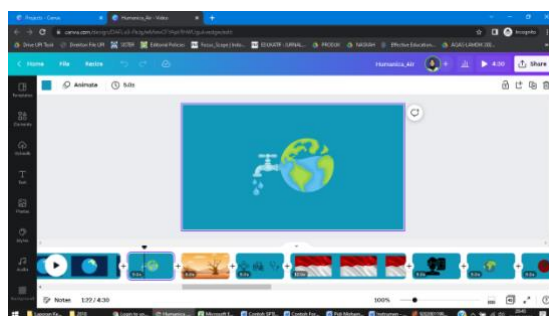


Figure 3. Motion Graphics Making Process

Trials were carried out at school in learning and after learning. Test this motion graphics also carried out in 3 cycles, where each cycle focused on Education for Sustainable Development indicators. On each cycle conducted observation during trials going on. After whole cycle succeed taken, students given sheet questionnaire for recognize the effectiveness of motion graphics against behavior student. Results observation for 3 cycles the served on Table 1, meanwhile results questionnaire served in Table 2.

Table 1. Recapitulation of Observation Results

No.	Observed aspects	Frequency (average)	Information
1.	Attention	3.56	Students are interested from the start of the show to the end

2.	Affection	3.67	Student interest in the information presented and continues to the teacher's explanation of the material
3.	Cognitive	2.67	Explanation of concepts is not verbalistic, but does not contain complete material because of the short duration
4.	Compensator	3,33	Students can overcome the limited time to concentrate because the duration of the show is short and displays basic information about the material

Table 2. Student Questionnaire Recapitulation

No.	Statement	Attitude Scale (Mean)
1.	I'm interested in watching motion graphics videos from start to finish	4.08
2.	I am interested in applying the knowledge gained from video motion graphics	2.48
3.	I pay attention to the material presented	4,44
4.	I noted important things about the material presented	2,16
5.	I'm interested in watching motion graphics videos again	4.64
6.	I easily understand the material presented in motion graphics	3.56
7.	I am bored with the material presented	2.52
8.	I get distracted while watching motion graphics videos	0.88
9.	I have no interest in applying the knowledge gained from video motion graphics	1.60
10.	I only watch motion graphics videos without taking down important things about the material presented	1.00
11.	I don't want to watch motion graphics videos anymore	0.32

Discussion

The process of designing motion graphics is relatively easy, because the product has a short display duration. Meanwhile, the teacher's expertise in recording sound, composing moving images, and compiling images with sound at a basic level is sufficient to create motion graphics (Kim et al., 2020; Yaakob et al., 2021). Even so, motion graphics have been proven in several studies to have succeeded in providing depth of meaning of a message, information, or learning.

The use of motion graphics in learning has a significant influence on students' attention and affection. However, the increase in cognitive learning outcomes is not due to motion graphics, but to subsequent learning. This is because the duration of motion graphics is limited to 10 seconds to 6 minutes (Kim et al., 2020; Yaakob et al., 2021). This short duration does not allow all information to be contained in the motion graphics. Even so, the use of motion graphics as a learning medium can function as a stimulus to strengthen students' motivation to

explore more. Motion graphics have a greater ability to be developed by teachers to re-increase students' motivation and interest in learning after going through a pandemic (Andriani et al., 2021; Donnelly et al., 2021; Maulyda et al., 2021). This is due to the fact that it is relatively easy to make compared to making animations and films which require more resources and time. Combining motion graphics with other learning media and methods will also increase the flexibility of teaching and learning (Russell et al., 2013).

CONCLUSION

The process of designing motion graphics is relatively easy, with basic digital skills and short viewing duration. The design begins with creating narrator/dialogue scripts and scenarios, recording and editing the narrator/dialogue voices, mixing and matching moving stock images with sound and background music, as well as the preview process before being converted into video. A motion graphic product is said to be valid if its duration does not exceed 4 minutes, uses everyday language in conveying information presenting information and its meaning in depth, as well as using interesting visual and audio elements. The effectiveness of motion graphics is very significant in increasing students' attention and affection in learning.

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