Development of Animated Video Learning Media for Energy Saving Behavior at Robbani Tutoring in Ogan Ilir Regency

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Oktober l 2023 Vol. 8, No.4
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Development of Animated Video Learning Media for Energy Saving Behavior at Robbani Tutoring in Ogan Ilir Regency

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Abstract : The aim of this research is to develop learning media for animated videos of energy saving behaviour at Robbani Tutoring in Ogan Ilir Regency. The model suggested by Thiagarajan in terms of defining, designing, developing and disseminating (the 4-D model) is used as a development model. The data were collected by means of questionnaires and interviews. The results of this study indicate that validation from linguists obtained a percentage score of 88.8% with a very feasible category, media experts obtained a percentage score of 90% with a very feasible category, and material experts obtained a percentage score of 97% with a very feasible category. The results of one-to-one trial showed an overall percentage score of 79% with a very practical category and the same was true for the small group trial, which scored 89% in that category. Therefore, it is considered that it is feasible and practical to use the animated video product of energy saving behaviour as a learning media in science subjects for students to learn about energy saving behaviour.

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Introduction

Energy is the power (force) to carry out a process of action. The Lord of the Universe created energy as the main form that was first offered in the process of creating the universe. (Amrullah, 2020). Energy has contributed to the development of human civilization, even in modern times energy remains one of the most important factors in technological progress, economic growth, and daily life. Outlook Indonesia's Energy (2021) states that restrictions on the movement of community activities due to the COVID19 pandemic caused energy consumption in 2020 to decrease in total to reach 118.3 MTOE (Million Tonne of Oil Equivalent), accounting for 11% decrease compared to 2019. As the economy and other sectors recover from the pandemic, total final energy consumption increased again by 9% from 2020 to 2022. The estimated increase in final energy consumption by the end of 2022 reached 129 MTOE, almost back on par with 2019 energy consumption. Further Outlook Indonesia's Energy (2021) states that final is dominated by fossil energy, which is nonrenewable energy, compared to new and renewable energy. Apart from Indonesia, over the past few decades the consumption of non-renewable energy around the world has also increased significantly. Excessive energy consumption can cause various problems, both for the environment and for

Oktober l 2023 Vol. 8, No.4
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pp. 730-736

human health. Such as greenhouse gas emissions that can cause adverse climate change, air pollution that can cause various health problems, and can cause energy resources to run out.

To deal with the problem of excessive energy consumption in Indonesia, it is necessary to save energy by accustoming responsible behavior in efficient energy use (Husin et al., 2023). According to the Vice Chairman of the Expert Council of the Indonesian Electricity Society, Utomo (in Rasmani, 2019) that the Indonesian people's understanding of energy-saving behavior is still not widespread, because most people have the perception that Indonesia has abundant energy resources. Education about energy-saving behavior needs to be further instilled in Indonesian society, especially in the younger generation. The younger generation is the right target, because the impact of energy-saving behavior is not only valid for the present but also for the future. In fact, energy challenges in the future are predicted to be even more severe. Education about energy-saving behavior can be taught as early as possible in the family, because the family is the first environment for a person to grow and develop. Education about energy-saving behavior also needs to be taught in formal and non-formal education. This is in line with the statement from Ministry of Environment Hidup (2012) that since 1984, environmental learning has been included in the curriculum, one of which is found in the subject of Natural Sciences (IPA).

To instill responsible and wise behavior towards energy, educators need to use learning media so that students can understand more easily. One of the good media used to instill energy-saving behavior in students is animated videos. As stated by Muslimin (2017) that video animation is an activity in which images that are inanimate objects are moved to appear alive, therefore animated videos are able to explain a theory or practice that is difficult to explain through other media, so as to encourage active participation of students in learning activities. Based on the survey results on seventh grade junior high school students at Robbani Tutoring, it shows that students have learned about energy saving, but have not been able to familiarize themselves with saving energy. Learners are identified as still behaving wastefully of energy, so it can be seen that learners do not fully understand the concept of energy saving. This is supported by the science subject tutor that there are indeed obstacles for students in understanding learning materials. Often students tend to not understand the material that has been explained by the tutor, even though they have used various learning methods. Robbani Tutoring uses learning media in the form of modules and textbooks, as well as videos if needed. However, video learning media is very rarely used, because so far students have not been able to focus and understand the content of the material in the video shown. Therefore, a research is needed to develop animated video learning media for energy-saving behavior at Robbani Tutoring in Ogan Ilir Regency.

Research Method

This reserach uses a type of research and development. The model used in this research and development is a model put forward by Thiagarajan (in Sugiyono, 2020), namely the 4-D model (define, design, development, and dissemination). This model is recommended in the

Oktober l 2023 Vol. 8, No.4
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pp. 730-736

development of learning media, besides that the development procedure on this model is described in detail and systematically. The define stage is the stage to analyze and formulate learning objectives. The design stage is the stage for designing products using several software. The development stage is the stage to test the feasibility and test the product. The dissemination stage is the last stage of disseminating the product. The subjects in this study included three validators, one science subject tutor, and nine students of 7th grade junior high school students at Robbani Tutoring. Data collection was done using questionnaires and interviews. Data analysis in this study is divided into two, namely expert validation questionnaire data and tutor and learner questionnaire data. The analysis was carried out using a Likert scale to measure the attitudes, opinions, and perceptions of a person or group of people (Hamzah, 2019). This scale consists of several statements or questions characterized by different answer options, such as very good, good, not good, and very bad. The assessment score table using the Likert scale is as follows:

Table 1. Likert Scale Rating Criteria

Score	Criteria
4	Very Good
3	Good
2	Not Good
1	Very Not Good

Result and Discussion

This research uses the type of research and development with the 4-D model. The product developed is an animated video learning media for energy-saving behavior. The define stage consists of three main steps, namely initial analysis, learner analysis, and formulation of learning objectives. In the initial analysis, it was found that tutors did not utilize learning media in the form of videos, because students were often unable to focus and understand the videos shown. In line with the opinion of Agustina et al., (2022) that video learning media needs to be in accordance with the needs of students so that it can increase learning motivation and make it easier to understand the material. Furthermore, in the analysis of students, it was found that students still did not understand the concept of energy saving, so education about energy-saving behavior needs to be further instilled, especially in the younger generation. As for the opinion Husin et al., (2023) which supports that education is carried out as an effort to habituate energy saving in oneself which starts from everyday life. Researchers also analyzed the needs of students for learning video media. Then the learning objectives can be formulated into: (1) understanding the limited energy sources used in everyday life, (2) understanding the concept of energy saving in everyday life, and (3) applying energy-saving behavior in everyday life.

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Oktober l 2023 Vol. 8, No.4
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pp. 730-736

The design stage consists of two main steps, namely media format selection and initial product design. The product designed refers to the 2013 Curriculum and a format that adapts to the needs of students, namely learning using animated video media that has a duration of ≤ 5 minutes with learning material containing theory and examples. This is in line with the opinion of Wandhiro (2020) that the duration of animated videos as learning media should only be 3-5 minutes. Next is to realize the appearance and main format of the product physically, so that it becomes the initial product design. The procedure for making the product begins with compiling a script, designing characters/characters, creating a scene/setting scene, creating learning video content with material that adjusts the script that has been compiled, creating a title display, question display, and closing display, and the last is filling the character's voice. Making animated videos uses several software, namely *Animaker*, *Canva*, and *Adobe Podcast*. The material about energy-saving behavior contained in the video is in line with the opinion expressed by Kaiser and Wilson (in Amrullah, 2020) that energy-saving behavior is divided into three, namely reducing energy consumption by doing everything as efficiently as possible, caring for items that require energy, and using alternative energy.

The development stage is the stage where the initial product design will go through validation/feasibility testing by experts. Validation is carried out by experts consisting of linguists, media experts, and material experts. This is in line with the opinion of (Nurrizalia et al., (2023) which states that the evaluation of learning media is carried out by three validators, namely material content, language, and media experts. The results of data analysis obtained from linguist validation showed that the learning media product of energy-saving behavior animation video reached a percentage score of 88.8% with a very feasible category. Furthermore, the results of data analysis obtained from the validation of media experts show that the learning media product of animated video of energy-saving behavior reaches a percentage score of 90% with a very feasible category. Then the results of data analysis obtained from the validation of material experts show that the learning media product of animated video of energy-saving behavior reaches a percentage score of 97.5% with a very feasible category. Based on the validation results of the three validators above, it can be seen that the animated video of energy-saving behavior obtained an average percentage score of 92% with a very feasible category and can run trials after going through product improvements.

The improved product can be said to be the final product that is suitable for testing. The implementation of the trial was carried out by showing an animated video of energy-saving behavior, then distributing questionnaires to seventh grade students at Robbani Tutoring. The product trial of energy-saving behavior animated video learning media was carried out in two ways, namely one-to-one trials and small group trials. The results of data analysis obtained from individual trials by students showed that the learning media for animated videos of energy-saving behavior reached a percentage score of 79% with a very practical category. Then the results of the data obtained from the small group trial by students showed that the animated video learning media for energy-saving behavior reached a percentage score of 89% with a

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Oktober l 2023 Vol. 8, No.4
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pp. 730-736

very practical category. The results of the trial data analysis can be seen in the following diagram:

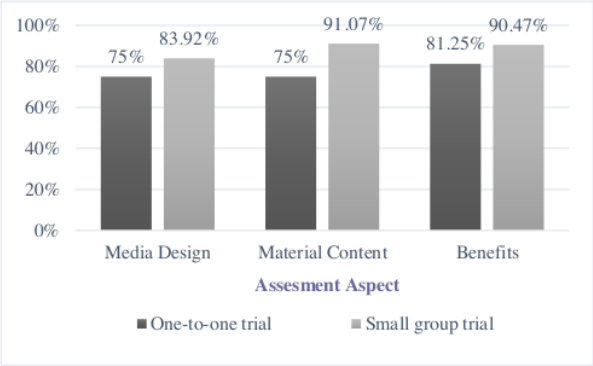

Figure 1. Diagram of Learner Trial Results

As for when the animated video was shown, learners seemed enthusiastic and focused on watching the video. Learners were also able to answer all the questions contained in the video correctly. This finding shows that the learning media of energy-saving behavior video animation is able to make learners understand the concept of limited energy, energy saving and energy-saving behavior well. So it is hoped that students can get used to energy-saving behavior in everyday life, such as reducing energy consumption by doing everything as efficiently as possible, caring for items that require energy, and using alternative energy. This is in line with research Wulandari et al., (2019) that environmental animation videos can cause learning interactions and help students find answers through explanations of the facts obtained, so as to make students understand the characteristics of energy sources, reduce energy waste through the use of alternative energy and make students care about energy in everyday life. Another opinion that supports these findings states that energy saving is closely related to behavior change (Husin et al., 2022). Then the results of data analysis obtained from product trials by tutors showed that the learning media for animated videos of energy-saving behavior reached a percentage score of 82.5% with a very practical category.

Based on the results of the validation and trial above, overall the animated video of energy-saving behavior is said to be feasible and practical to be used as learning media in science subjects on energy-saving behavior material by students on an ongoing basis. In line with research Agustina et al., (2022) that the results of validation tests and trials that show the product is valid and practical, so it is feasible to use as media in learning. These results also show that the use of animated video learning media that suits the needs of students has an important role in helping the learning process at Robbani Tutoring. This is supported by the results of research Putri et al., (2023) that the use of animated videos as learning media can support the learning process, because there are images that help educators in explaining the material to students. As for other opinions that support these findings, namely as expressed by

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pp. 730-736

Kustandi & Sutjipto (2013) that animated video is a medium that can be used as a tool in the learning process because it is able to arouse cognitive, feelings and motivation of students through moving visuals and audio narration, and serves to explain the meaning of the message conveyed in achieving learning objectives.

The dissemination stage is the last stage. Product dissemination is carried out on a limited basis by providing animated video learning media documents in the form of CDs to Robbani Tutoring in Ogan Ilir Regency. In addition, the product can also be accessed through the Youtube site with the aim of providing opportunities for other users to adopt the product. Here is the *Youtube* link to access the animated video of energy-saving behavior: *https://youtu.be/l0mTLbauO8I*.

Conclusion

The research on the development of animated video learning media for energy-saving behavior used the 4-D model by Thiagarajan. Product validation was carried out by three experts, namely linguists, media, and material experts who reached an average percentage of 92% with a very feasible category and could carry out trials after improvement. The trial was carried out in two stages, namely the one-to-one trial which showed an overall percentage score of 79% in the very practical category and likewise with the small group trial which scored 89% in that category. Therefore, it is expected that Robbani Learning Guidance students can get used to energy-saving behavior in everyday life, because the animated video of energy-saving behavior has been considered feasible and practical to be used as learning media.

Recommendation

It is necessary to test the effectiveness of animated video learning media products of energy-saving behavior for students. In addition, it is recommended to develop animated video learning media with other materials or develop using other better software and applications.

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pp. 730-736

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