INTERACTIVE WORDWALL GAME MEDIA IN SCIENCE LEARNING FOR GRADE V ELEMENTARY SCHOOL

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Abstract

This research was conducted with the aims to: (1) develop interactive learning media for science lessons for grade V elementary schools, (2) evaluate the relevance of using interactive learning media in science lessons in grade V elementary schools, (3) describe students' interest in online game-based Wordwall media in thematic learning of science content in grade V elementary schools. The research used the ADDIE method which has five research stages, namely analysis, design, development, implementation, and evaluation. Initial product development consists of media expert validation and material expert validation. The result is that the development of Wordwall media at the user stage obtained very good results.

Keywords: Interactive; Learning Media; Wordwall.

Abstrak

Penelitian ini dilaksanakan dengan tujuan untuk menciptakan sarana pembelajaran yang bertujuan untuk: (1) mengembangkan media pembelajaran interaktif pada pembelajaran IPA kelas V SD, (2) menyebarkan relevansi penggunaan media pembelajaran interaktif pada pembelajaran IPA di kelas V SD, (3) mendeskripsikan ketertarikan siswa terhadap media wordwall berbasis game online pada pembelajaran tematik muatan IPA di kelas V sekolah dasar. Penelitian menggunakan metode ADDIE yang mempunyai lima tahapan penelitian yaitu analisis, desain, pengembangan, implementasi, evaluasi. Pengembangan produk awal terdiri dari validasi ahli media dan validasi ahli materi. Hasilnya pengembangan media Wordwall pada tahap pengguna mendapatkan hasil yang sangat baik.

Kata Kunci: *Interaktif; Media Pembelajaran; Wordwall.*

INTRODUCTION

At the elementary school level, Natural Sciences (IPA) is one of the subjects that requires experiments and observations. Natural Sciences (IPA) is a subject that discusses things or phenomena that occur in the universe that are arranged based on the results of experiments and observations carried out by humans (Agustina, 2018). The science learning process emphasizes providing direct experience to develop student competencies (Ritonga et al., 2020). In science learning, especially in

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elementary schools, various skills need to be practiced, especially process skills (Agusti, 2022).

Science teaching and learning activities require media to help maintain continuity, help students understand the subject matter, and encourage students to participate actively in learning (Aldi, 2023). For this reason, educators should strive to create a creative, effective, and interesting science learning process so that the learning foundation is more conducive and focused.

Based on the results of initial observations that have been carried out at SD Negeri 2 Panyutran, Pangandaran Regency on Tuesday, February 14, 2023, it is known that the school is still using the 2013 curriculum except for classes I and IV which have implemented an independent learning program. Teachers utilize information and communication technology to deliver material, for example, using learning videos on YouTube. However, in delivering the material, teachers only rely on textbooks and use image media as tools in explaining the material without visualizing its interactions. This condition causes students to have difficulty in learning the material in the science content of class V Theme 6 Heat and Its Transfer Subtheme 1 Temperature and Heat which is considered difficult to understand because the media used is not interesting enough which makes it difficult for students to understand and absorb teaching materials and understand the concepts in the material so that they become more passive.

This problem can be seen in various learning activities in the classroom, where students often only become passive listeners without showing active participation such as asking, answering questions, or participating in discussions and experimental activities. These obstacles include a lack of teaching aids and students who pay less attention to the teacher when explaining the material, meaning that interaction between the teacher and students is still low (Mursyid et al., 2019).

One of the effective efforts to make science content interesting to learn is to develop interactive web-based learning materials that meet the basic needs of teaching materials (Rini, A., Dodit, S., 2018). The development of 21st-century learning media currently uses digital technology under the development of the

times. In the regulations of the Ministry of Education and Culture, it is proposed that one of the principles of learning is to pay attention to the use of technology to improve the efficiency and effectiveness of learning in the world of education (Pratama, LD, Lestari, W., & Bahauddin, 2019).

Learning media is a tool that is utilized and used to convey information and become an intermediary tool in the learning process to facilitate the delivery of learning materials to develop cognitive, psychomotor, and affective knowledge (Sudarsono, S, 2021). According to Dewi, N., Murtinugraha, RE, & Arthur (2018), interactive learning media is a teaching material that is useful as an intermediary and can be used in teaching and learning activities where the sender and receiver of information are encouraged to have conversations with each other. Web-based teaching materials are widely used in the learning process to make it easier for teachers to deliver material more effectively (Nupus, H., Triyogo, A., & Valen, 2021). Web-based learning media is a teaching material used as an aid in teaching and learning activities by operating web-based software that contains learning content including titles, objectives, materials, videos, and learning evaluations (Muslim, 2013) (Yunita, & Susanto, 2020).

Therefore, this study formulates a research problem in the form of how to develop learning media in the form of interactive Wordwall games in science learning. The purpose of this study is to develop learning media in the form of interactive Wordwall games in science learning. The learning media that will be created is website-based. One of the web applications circulating on the internet is the Wordwall web application (Novyanti,. Happy, I., Widia, 2022). Wordwall is an application used as a learning medium that aims to be a learning resource, media, and assessment tool that is fun for students because students can see the scores they get after completing the quizzes in the game (Darniyanti et al., 2023). Alternatively, Wordwalls can be used to facilitate more engaging learning. To engage students more in the learning process, teachers can use Wordwalls as interactive and creative tools. Interactive quizzes, true/false word boards, flashcards, puzzles, matching games, and features on the Wordwall pages are ways that students can assess their learning (Hidayah & Eka, 2024).

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The Wordwall web application was chosen because it is quite easy to use and easy to access by students. The teaching aids created will be in the form of a simple game where students are asked to follow instructions and choose the correct answer (Arsyad, 2017). Wordwall media can create beneficial interactions for students (Ahmad, 2024). Wordwall application media because with this media there are many variations of game types such as Random Wheel (Random Wheel). True or false (True or false), Missing Word, Random Cards (Random Cards), Find the Match (Find the match), Match Up, Whack-a-Mole, Group Short, Hangman, Anagram, Open the Box, Wordsearch (find words), Balloon Pop, Unjumble, Labelled Diagram, and Gameshow Quiz (Shelvia Amanda, 2024).

A previous researcher, Pratama, LD, Lestari, W., & Bahauddin, (2019) took a sample of 20 fourth-grade students who are learning using the Wordwall application with the results of the study showing that the use of Wordwall media in fourth-grade science learning can increase students' interest and motivation to learn. So, it is hoped that by using interactive wordwall game media, learning will be more interesting in its delivery, and can stimulate sympathy or motivate students to be more enthusiastic and interactive. Furthermore, the study (Pradani, 2022) stated that there was a change in students' perspectives after using Wordwall media for learning. This change can be observed through indicators of student activity and observation assessments, such as: (a) student activity when taking lessons online, evidenced by attendance, (b) student activity when collecting assignments on time, and (c) questions about the material. This study found that the use of Wordwall as a medium in learning science for grade IV can increase students' interest and desire to learn.

METHOD

This research is a type of research and development, especially research that aims to develop interactive game media based on hardware-based Wordwall web applications. Temperature and Heat in the subject of science for grade V. The population in this study was Panyutran 2 Elementary School, the sample in this study was grade V students.

The Researchers used the ADDIE model in this study. According to Branch (2009), The ADDIE model has five stages of development, namely analysis, design, development, implementation, and evaluation. Several steps taken by researchers in research using the ADDIE model are (1) analysis, researchers conduct needs analysis in the science learning process to determine the right problems and solutions. Researchers also identify problems that occur in the learning process, identify products that are under the target, and thoughts about the product to be developed. (2) Design, the design stage is the stage of designing the concept of the product to be developed. (3) Development, development is the process of making the design a reality. At this stage, researchers carry out product design realization activities. (4) Implementation, implementation is a product trial as a real step to implement the product. (5) Evaluation, namely the process of seeing whether the product made is successful, in accordance with initial expectations or not.

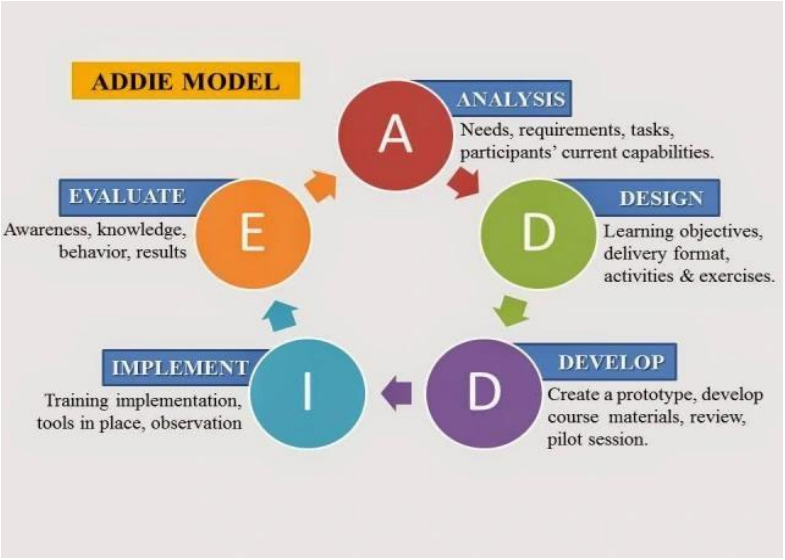

Figure 1 ADDIE Model

This study used observation data collection techniques, interviews, written tests, questionnaires, and documentation. The analysis technique used qualitative and quantitative analysis. Indicators/grids of the research instruments are in the form of User Instruments (Teachers): the comfort of use, level of possible interest, and motivation of students when used in learning both individually and in class.

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FINDINGS AND DISCUSSION

The analysis stage was initially carried out when the researcher found that most students were unable to answer questions and had very low scores for fifth-grade students on the Temperature and Heat material. The data of information related to student needs and student abilities in learning science concepts of temperature and heat was obtained from interviews with several fifth-grade students.

The researcher asked several questions to students such as, how is science learning on temperature and heat material? How is the student's understanding of the terms in the material? Are learning resources sufficient? Is learning fun? The results of interviews with students showed that learning the concept of temperature and heat contains many terms that are not yet understood, relies on textbooks, and the media used is monotonous or boring. The condition of science learning so far has been taking place without adequate learning media, learning becomes abstract and difficult for students to understand, and the lack of learning media reduces student learning motivation. the gap in understanding between theory and practice is getting bigger, and teachers have difficulty measuring student understanding accurately. To overcome these problems, there needs to be media that can help the teaching and learning activities of teachers and students to improve student learning outcomes. Therefore, it is necessary to develop learning media, interactive games, and learning media that support science learning, as well as temperature and warmth materials (Dewi, Murtinugraha, & Arthur, 2018).

Creativity and innovation in learning media need to be applied to create joy and motivation for students. When students start to lose their enthusiasm and motivation to learn, the teacher's job is to restore their interest and motivation. Researchers do several things at the design stage. The design stage begins with thinking about how to include heat and temperature into learning materials in the form of interactive games using the Wordwall web application because it is easy to use and access. The design stage begins with selecting the type of media to be developed. The media to be developed is an interactive game based on the Wordwall web application. The goal of this game is that students must be able to

sort groups of heat energy sources, insulators, and conductors in the game. As a game manager, teachers can monitor students' game results using the existing scoreboard. Wordwall can be used as teaching materials and assessment tools for teachers and students. Wordwall also provides several examples of teacher creations that can help new users to be creative. This learning media can also be understood as a web application used to create fun puzzle-based games. In addition, Wordwall can also be used to design and review learning assessments. Developing interactive game teaching materials that will be used as learning media using the game concept, namely learning while playing, using learning materials that are interesting for students so that it will increase the interest of fifth-grade students in studying the scientific literature on temperature and heat. (Ditania, Aren, & Riduan, 2021).

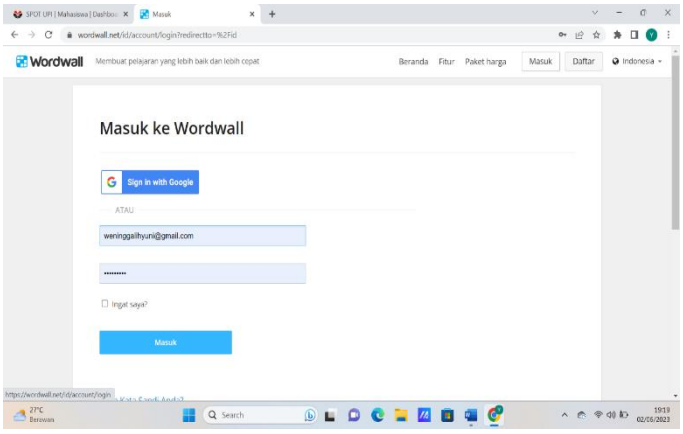

Figure 2 Login Wordwall

The third stage of development, the development stage begins with researching the wordwall web application and adapting the concept of temperature and heat and the group sorting game. There are groups of Heat Energy Sources, Isolators, and Conductors. In this game, students place words or terms and their explanations into the correct groups. There are gameshow quizzes and crosswords as alternative game choices to make it more varied.

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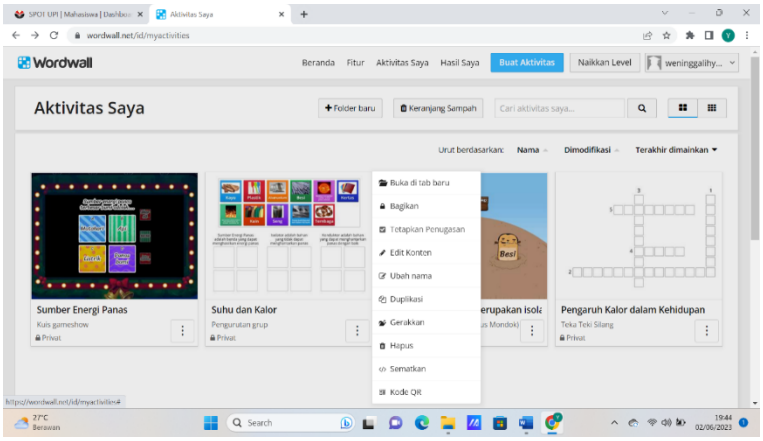

Figure 3 Group Sorting

At this stage, the development process is carried out on the existing design. The first step taken is to visit the selected website, namely the Wordwall web application (wordwall.net). After the interactive game learning media is created, a validation process is carried out before being used by students. The validation process is carried out by users (teachers), and media experts, who test the learning media created. Learning media can be used for learning if it passes the validation process and gets a good assessment (Pramesti, Rr., Syarif, M., Murni, 2020).

Validation was carried out in the form of a user (teacher) questionnaire with the following results: User Instrument (Teacher): Convenience of use with a rating scale of 4, Level of possible interest and motivation of students when used in learning both individually and in class with a rating scale of 4, can be used for individual learning by students and/or teaching aids for teachers in class with a rating scale of 3, Level of possible encouragement of critical thinking and problem-solving skills of students with a rating scale of 4. Real-life applications that match the characteristics of the relevant audience (students) 4. The final presentation is 80%. Comments/reviews/recommendations are very interesting, especially visual and audio, and easy to access.

Table 1 Validation Results by Users (Teachers)

ASSESSMENT ASPECT	ASSESSMENT STATEMENT	CATEGORY	NUMBER
Utility	Convenience of use	B	4
	The level of possible student interest and motivation when used in learning both individually and in class	B	4
	Can be used for individual learning by students and/or as a teaching aid for teachers in the classroom.	B	4
	The level of possibility of encouraging students' critical thinking and problem solving skills	B	4
	Real-life applications that match the characteristics of the relevant audience (students)	B	4
Total Score		**20**	
Percentage Score		**80%**	
Average Score		**4**	
Comments/reviews/recommendations		**very interesting, especially visual and audio and easy to access**	

The development results criteria are in the form of a validation questionnaire for learning communication media experts with the evaluation of aspects. clarity of narration, audio, animation, simulation, and suitability of language and communication style with audience characteristics with a rating scale of 3, Accuracy of selection of narration, audio, animation, simulation with the purpose and content of the material with a rating scale of 4, The attractiveness of the packaging of learning multimedia with a rating scale of 4, The accuracy and attractiveness of video media as a whole with a rating scale of 3. Therefore, the media developed meets the criteria of valid, practical, and effective with a final percentage of 91.6%. Final comment Very good.

Comments/reviews/recommendations are that the selection of media used is appropriate, packaged attractively, and arouses student enthusiasm. Wordwall

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media is able to motivate students and condition students to participate actively, both individually and in groups, based on their own abilities and beliefs, and can develop students' creativity (Larasati et al., 2024). Wordwall is a digital media for evaluation that is easy to operate by teachers and students (Rosyid Khoirul Nafian, 2024).

Table 2 Validation Results by Media Experts

ASSESSMENT ASPECT	ASSESSMENT STATEMENT	CATEGORY	NUMBER
Contents	clarity of narrative, audio, animation, simulation and suitability of language and communication style to audience characteristics	B	4
	The attractiveness of packaging multimedia learning	B	4
	The accuracy and overall appeal of the video medium	C	3
Total Score		**11**	
Percentage Score		**91.6%**	
Average Score		**3.6**	
Comments/reviews/recommendations		**The selection of media used is appropriate, packaged attractively and generates student enthusiasm.**	

The fourth stage is the trial stage (Implementation), testing is carried out through several steps. Students will be given a brief explanation regarding the material on temperature and heat. Then students are supervised to play the game that has been created. After that, learning can be closed with reflection.

Figure 4 Presentation of Material

The fifth stage is Evaluation, the evaluation stage is carried out by researchers to find out the weaknesses of interactive game learning media. After realizing these weaknesses, researchers tried again to improve learning materials through interactive games. This evaluation stage is useful for researchers to develop relevant and appropriate materials that can be used to facilitate the learning process in the classroom (Arikunto, 2011). Evaluation of the development of learning media aims to find out several things, namely: (1) students' attitudes towards science learning activities, especially on temperature and heat materials as a whole; (2) increasing student abilities which are marked by understanding concepts are the impact of participation in learning activities. The use of Wordwall media received a good response from teachers and students because the use of learning media was able to increase learning motivation and student interaction positively.(Ramanda, 2024).

Table 3 Research Stages with ADDIE

Stages	Results
Analysis	Students are unable to answer questions and have very low grades on the Temperature and Heat material, learning contains many terms that are not yet understood, relies on textbooks, and the media used is monotonous or boring. Therefore, students need media that can visualize the temperature of the material
Design	The design stage begins with the selection of the type of media to be developed. The media to be developed is an interactive game based on a web word wall application. The purpose of this game is that students must be able to sort the groups of heat energy sources, insulators, and conductors in the game. As the game manager, the teacher can monitor the results of the student's game using the existing scoreboard.
Development	researching the wordwall web application and adapting the concept of temperature and heat and group sorting games. There are groups of Heat Energy Sources, Isolators, and Conductors. In this game, students place words or terms and their explanations into the correct groups. There are gameshow quizzes and crosswords as alternative

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	game choices to make them more varied. At the development stage, a validation test was carried out by users (teachers) with a score percentage of 80%, and a media expert test of 91.6%.
Implementation	Students will be given a brief explanation of the material on temperature and heat. Then students are supervised to play the game that has been created. After that, learning can be closed with evaluation and reflection.
Evaluation	Evaluation, the evaluation stage is carried out by researchers to find out the weaknesses of interactive game learning media. After realizing these weaknesses, researchers will try again to improve learning materials through interactive games. Evaluation of the development of learning media aims to find out several things, namely: (1) students' attitudes towards science learning activities, especially on temperature and heat materials as a whole; (2) increasing student abilities which are marked by understanding concepts is the impact of participation in learning activities.

CONCLUSION

The creation of interactive learning media for science courses using the web application Wordwall on Temperature and Heat material was made for Elementary School Grade V. At the analysis stage, the researcher found that teachers needed media that could visualize temperature and heat material. The researcher developed learning media in the form of interactive games based on the web application Wordwall. The concept consists of the Group Sorting game and 3 alternative games of hitting moles, gameshow quizzes, and crosswords with certain modifications to help students understand temperature and heat material. It can be concluded that this research has successfully developed a web Wordwall application media for teaching science with Temperatures and Heat material.

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