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## Wordwall Interactive Game Media in Natural Science Lessons for Class V Primary School

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### ABSTRACT

The research was conducted with the aim of creating learning facilities intended to: (1) develop interactive learning media for science lessons for fifth grade elementary school, (2) evaluate the relevance of use interactive learning media in science lessons in class V elementary school, (3) describing students' interest in wordwall media based on online games in thematic learning of science content in class V elementary school. Study use ADDIE method which has five stages study namely analysis, design, development, implementation, 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 gets very good results.

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## 1. INTRODUCTION

Natural Sciences (IPA) is a subject that talks about things or symptoms that occur in the universe which are prepared based on the results of experiments and observations carried out by humans (Agustina, 2018). Science teaching and learning activities require media to help the continuity of the learning process, help students understand the subject matter, and involve students to participate actively in learning. For this reason, educators should strive to create a science learning process that is creative, effective and interesting so that the learning foundation is more conducive and focused. Based on the results of initial observations carried out at SD Negeri 2 Panyutran Kab. Pangandaran on Tuesday 14 February 2023, it was discovered that the school was still using the 2013 curriculum, except for classes I and IV which had implemented an independent learning program. Teachers use information and communication technology as a means of delivering material, for example using learning videos on YouTube. However, in delivering the material the teacher relies on textbooks and uses picture media as a tool in explaining the material without visualizing the interactions, giving the impression that the form is abstract, so this condition causes students to have difficulty learning the material in class V science content Theme 6 Heat and its Transfer Subtheme 1 Temperature and Calor which is considered difficult to understand because the media used is not interesting, 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.

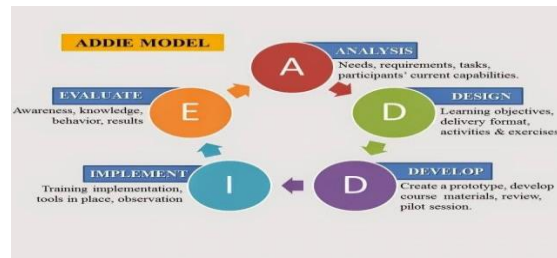
One form of effective effort to make science content interesting to study is to develop web-based interactive learning materials that meet the basic needs of learning materials (Sugiarti & Widaty, 2024). The development of 21st century learning media currently uses digital technology in accordance with the times. In the regulations of the Ministry of Education and Culture, it is proposed that one of the principles of learning pay attention to the use of technology to increase the efficiency and effectiveness of learning in the world of education (Rahmadhani et al., 2024). Learning media is a tool that is utilized and used to share information and becomes an intermediary tool in the learning process, making it easier to deliver subject matter to develop cognitive, psychomotor and affective knowledge (Rahma et al., 2023). According to Satyawan et al. (2023) that "interactive learning media is teaching material that is useful as an intermediary and can be used in learning and teaching activities where senders and recipients of information are encouraged to engage in conversation with each other". Web-based learning materials are widely used in the learning process to make it easier for teachers to deliver the material more effectively. (Nupus et al., 2021). Web-based learning media is teaching material that is used as a supporting tool in learning and teaching activities by operating web-based software that contains learning content which includes: title, objectives, materials, videos and learning evaluation (Yu et al., 2018).

The learning media that will be created is website- based learning media. One of the web applications circulating on the internet is the Wordwall web application (Rejabbilaisyah et al., 2024). Wordwall web application was chosen because it is quite simple to use and easy to access for students. The props created will be in the form of a simple game where students are asked to follow the instructions and choose the correct answer (Kozma, 1991). Like previous researchers (Rahmadhani et al., 2024) took a sample of 20 fourth grade students learning using the wordwall application with The research results show that the use of Wordwall media in class IV 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, it can stimulate sympathy or motivate students to be more enthusiastic and interactive.

## 2. METHODS

This research is a type of research and development, especially research that aims to develop interactive game media based on the hardware-based Wordwall web application. Temperature and Heat in class V science subjects. Researchers used the ADDIE model in this research. According to Suratnu (2023) the ADDIE model has five development stages, namely analysis, design, development, implementation and evaluation. The selection of this research model is based on a simple research model flow that is easy for researchers to apply, as shown in **Figure 1**.



**Figure 1.** ADDIE model.

The analysis stage was initially carried out when researchers found that the majority of students were unable to answer questions and had very low scores for class V students on Temperature and Heat. Followed by interviews with several Class V students. The results of short interviews with students resulted in the fact that teaching the concept of Temperature and Heat contains many terms that are not yet understood, relies on textbooks, and the media is monotonous or boring. The design stage begins with thinking about how to incorporate heat and temperature into learning material in the form of interactive games using the Wordwall web application, because it is easy to use and access. The third development stage (Development), the development stage begins with researching the wordwall web application and adapting the concepts of temperature and heat and group sorting games. There are groups of Heat Energy Sources, Insulators, and Conductors. In this game, students place words or terms and their descriptions into the appropriate groups correctly. There are gameshow quizzes and crossword puzzles as alternative game choices to make it more varied. The fourth stage is the testing phase (Implementation), testing is carried out through several steps. Students will be given a brief explanation regarding temperature and heat material. Then students are supervised to play the games that have been created. After that, learning can be closed with evaluation and reflection. The fifth stage is Evaluation, the evaluation stage is carried out by researchers to determine the weaknesses of interactive game learning media. After realizing these weaknesses, researchers will try again to improve learning materials through interactive games. This evaluation stage is useful for researchers to develop relevant and appropriate material that can be used to facilitate the learning process in the classroom.

## 3. RESULTS AND DISCUSSION

Creativity and innovation in learning media need to be applied to create excitement and motivation for students. When students begin to lose enthusiasm and motivation for learning, the teacher's job is to restore their interest and motivation. The mistake is using many types of study materials. The results of research on the media used by fifth grade

teachers at SDN Panyutran in learning science using Wordwall as learning media, learning materials and assessment tools for teachers and students. Wordwall also provides several examples of teacher creations that can help new users get creative. This learning media can also be understood as a web application that is used to create fun puzzle-based games. Additionally, Wordwall can also be used to design and review learning assessments.

Develop interactive game material that will be used as a learning tool using the gaming concept, namely learning while playing, using learning material that is interesting to students so that it will increase the interest of class V students in studying scientific literature on temperature and heat. The media development process using the ADDIE development model has five stages, namely: analysis, design, development, implementation and evaluation. Furthermore, an interview was conducted with the fifth grade teacher at SDN 2 Panyutran which resulted in the fact that learning about temperature and heat material was only carried out using textbooks and learning videos. This fact is very unfortunate because in learning scientific concepts students need the help of teaching aids that can help students understand easily and the process of instilling new concepts can be maximized. The problem that emerged from the interview was that the temperature and heat science learning process was not pleasant, this treatment ultimately made students easily forget the material and even did not understand it.

Analysis of the problems collected is caused by a lack of attention and innovation in scientific learning. Therefore, it is necessary to develop learning media, interactive games, learning media that support science learning, as well as temperature and warmth materials (Satyawan et al., 2023). Researchers are trying to develop interactive game learning media to stimulate student interest and embed learning material better. Design phase: Once the analysis phase is complete, the next step is the design phase. The design stage begins with selecting the type of media to be developed. The media that will 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 sources of thermal energy, insulators and conductors in the game. As a game manager, the teacher can monitor students' game results using the existing scoreboard. Development Stage: At this stage the development process is carried out on the existing design. The first step is to visit the website of your choice, 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), media experts and material 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. The Development of Interactive Wordwall Game Media in Science Lessons for Fifth-Grade Elementary School Students was compiled by Diyar Sugiarti and validated by Rumnasih, S.Pd. This instrument was administered to teachers on Wednesday, September 8, 2023. Validation was performed directly with the results shown in **Table 1** and **Table 2**.

**Table 1.** Validation from user.

| No | Aspect Evaluation                                                                                                  | Rating Scale |   |   |   |
|----|--------------------------------------------------------------------------------------------------------------------|--------------|---|---|---|
|    |                                                                                                                    | 1            | 2 | 3 | 4 |
| 1  | Convenience use                                                                                                    |              |   |   | √ |
| 2  | The possible level of student interest and motivation when used in learning both individually and in the classroom |              |   |   | √ |
| 3  | Possibly can be used for individual study by students and/or teaching aids for teachers                            |              |   | √ |   |
| 4  | The level of possibility encourages students' critical thinking and problem-solving abilities                      |              |   |   | √ |

|   |                                                                                                                                         |      |
|---|-----------------------------------------------------------------------------------------------------------------------------------------|------|
| 5 | The level of contextuality with application/application in real life that suits the characteristics of therelevant audience (students). | √    |
|   | Amount                                                                                                                                  | 6 12 |
|   | Final Presentation                                                                                                                      | 90%  |

**Table 2.** Written comments / reviews.

| No | Topic                | Sub Topic         | Comments / reviews /recommendations                                                                   |
|----|----------------------|-------------------|-------------------------------------------------------------------------------------------------------|
| 1. | Temperature and Heat | Heat and Transfer | Very interesting, especially the visuals and audio, easyto access. Learning is moreactive and lively. |

The Validation Questionnaire for Learning Communication Media Experts for the study entitled Development of Interactive Wordwall Game Media in Fifth-Grade Elementary School Science Lessons was compiled by Diyar Sugiarti and validated by Dr. Erwin Rahayu Saputra, M.Pd. The validation process was conducted on May 20, 2023. Validation was performed directly with the results shown in **Table 3** and **Table 4**.

**Table 3.** Instruments for learning communication media experts.

| No | Aspect Evaluation                                                                                                               | Rating Scale |   |   |           |    |
|----|---------------------------------------------------------------------------------------------------------------------------------|--------------|---|---|-----------|----|
|    |                                                                                                                                 | 1            | 2 | 3 | 4         | 5  |
| 1  | Clarity of narrative, audio,animation, simulation andsuitability of language andcommunication style to audience characteristics |              |   |   | √         |    |
| 2  | Accuracy in selecting narration, audio, animation,simulation with the aim andcontent of the material                            |              |   |   |           | √  |
| 3  | Attractiveness packaging oflearning multimedia                                                                                  |              |   |   |           | √  |
| 4  | The accuracy and attractiveness of the video medium as a whole                                                                  |              |   |   | √         |    |
|    | Amount                                                                                                                          |              |   |   | 8         | 10 |
|    | Final Percentage                                                                                                                |              |   |   | 90        |    |
|    | Final Remarks                                                                                                                   |              |   |   | Very good |    |

**Table 4.** Written Comments / Revier.

| No | Topic                | Sub Topic             | Comments / reviews /recommendations                                                             |
|----|----------------------|-----------------------|-------------------------------------------------------------------------------------------------|
| 1. | Temperature and heat | Heat and its transfer | Selection of media used Already just right, packed interesting and creating studententhusiastic |

#### 4. CONCLUSION

Development of interactive game learning media based on wordwall web applications for science subjects Temperature and Heat material developed for class V elementary schools using the ADDIE development model which has 5 stages in it, namely (1) The analysis stage is the stage where researchers carry out real analysis of real conditions experienced by the object of analysis, in this case the fifth grade elementary school students regarding problems in learning, especially learning about temperature and heat. (2) The design stage is the time for the researcher to create a media design that will be developed in this research, starting with what type of media will be used and what suggestions to use. In this research, the researcher chose learning media in the form of an interactive game based on the wordwall web application. The concepts that will be used are also explained, namely the Group Sorting game and 3 alternative games of hitting moles, gameshow quizzes, and crossword puzzles with certain modifications to help students understand. temperature and heat matters. (3) The development stage is creating learning media so that it can be used by students and increase students' interest in learning science on temperature and heat material.

After the media is created, it will be tested for validation by validators consisting of users (teachers), media experts and material experts to determine the suitability of the learning media that will be tested on class V elementary school students. (4) At SDN 2 Panyutran the only users are class V teachers so the implementation or testing stage cannot be carried out. Pundits and media pundits are preparing themselves. (5) The evaluation stage is carried out by analyzing and compiling validation results to determine the suitability of the learning media and considering the results of the tests carried out. Based on the results and discussion of media development research by users (teachers), very good results were obtained, namely 90%.

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