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# Game-Based Learning Interactive Multimedia in Improving Thematic Learning Achievement of Third-Grade Students

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***ABSTRAK***

*Permasalahan yang terdapat pada pembelajaran tematik adalah guru hanya mengajar menggunakan metode ceramah tanpa melibatkan media pembelajaran. Hal ini menunjukkan rendahnya pemanfaatan media pembelajaran di sekolah sehingga prestasi belajar siswa menurun. Penelitian ini bertujuan untuk menciptakan media pembelajaran multimedia interaktif berbasis game based learning pada pembelajaran Tematik Tema 5 siswa kelas III SD. Subjek penelitian terdiri dari 1 ahli isi mata pelajaran, 1 ahli desain,1 ahli media dan hasil uji coba produk dari 12 peserta didik. Penelitian ini merupakan penelitian pengembangan (Research and Development) menggunakan model ADDIE. Metode yang digunakan untuk pengumpulan data yaitu observasi, wawancara, dan kuisioner. Teknis analisis data menggunakan analsis kualitatif dan kuantitatif. Berdasarkan penilaian ahli isi materi pembelajaran yang memperoleh hasil review yaitu 96,25% dengan kualifikasi "sangat baik", ahli desain pembelajaran memperoleh hasil review yaitu 93,33%, ahli media pembelajaran memperoleh hasil review yaitu 94,67%, uji perorangan yaitu 97,78% dan uji kelompok kecil yaitu 97,63% dengan kualifikasi sangat baik. Maka, multimedia interaktif berbasis game based learning pada pembelajaran tematik tema 5 layak digunakan dalam kegiatan belajar mengajar untuk membangun antusias siswa dalam mengikuti proses pembelajaran. Implikasi penelitian ini diharapkan multimedia interaktif digunakan sebagai media pembelajaran yang membantu dalam memahami materi.*

**ABSTRACT**

The problem with thematic learning is that the teacher only uses the lecture method without involving learning media. It shows the low use of learning media in schools so that student achievement decreases. This study aims to develop interactive multimedia learning media based on game-based learning in the Thematic Theme 5 learning for third-grade elementary school students. The research subjects comprised one subject matter expert, one design expert, one media expert, and product trial results from 12 students. This research is research development (Research and Development) using the ADDIE model. The methods used for data collection are observation, interviews, and questionnaires. Technical analysis of data using qualitative and quantitative analysis. Based on the assessment of learning content experts who obtained review results, namely 96.25% with the qualification very good, learning design experts obtained review results, namely 93.33%, learning media experts obtained review results, namely 94.67%, individual test, namely 97 .78% and the small group test is 97.63% with very good qualifications. Thus, interactive multimedia based on game-based learning in thematic learning theme 5 is appropriate for use in teaching and learning activities to build student enthusiasm in participating in the learning process. This research implies that interactive multimedia is a learning medium that helps understand the material.

## 1. INTRODUCTION

The 2013 curriculum emphasizes thematic learning to be a basic demand and requirement in the teaching and learning process in elementary schools. Since introducing the 2013 curriculum, the learning process has used a theme system (Ramadhani & Ramadan, 2022; Subagia & Wiratma, 2016). Thematic learning systems can be interpreted as learning systems carried out by integrating or combining several

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learning studies into themes (Hayati, 2021; Mukhlis, 2018). Thematic learning is a learning approach that includes several materials into one theme to provide students with real and broadly meaningful experiences (Amalia et al., 2018; Anshory, 2020). Thematic learning must achieve the qualification criteria for graduate abilities, including skills, attitudes, and knowledge (Ginting et al., 2021; M. Rahmi, 2019). Learning media can be described as media containing informational or instructional messages that can be used in learning (Ariani & Ujianti, 2021; Saputra & Putra, 2021). A teacher must maintain the learning process to create a pleasant learning environment to direct or guide students' intellectual processes (Sulaiman et al., 2022). A pleasant learning process can be achieved through the skills and creativity of teachers in developing learning media (Arisyanto et al., 2021; Wahono et al., 2017).

Law Number 14 of 2005 concerning teachers and lecturers stipulates that teachers must have pedagogical competence and master the learning process. So teachers as educators are expected to master learning strategies and be able to create innovative learning media as needed in the process of learning activities in class (Fitrianti et al., 2020; Lukitasari et al., 2021; Sutrisno & Yusri, 2021). Teachers must be able to use the tools provided by the school, which may be due to the developments and demands of the times. Teachers can at least use instructional media that are affordable and efficient even though they are simple but are a must to achieve the expected learning objectives (Mayang et al., 2021; Widiyasanti & Ayriza, 2018). Besides being able to use the available tools, teachers are also required to develop skills in making learning media that they will use if the media is not yet available (Aini et al., 2019; Ardianto & Rubini, 2016). For this reason, teachers must have sufficient knowledge and understanding of instructional media.

However, until now, the use of media has often yet to be applied in learning to support the effectiveness of the teaching and learning process. Teachers can at least use instructional media that are affordable and efficient. Even though they are simple, they are necessary to achieve the expected learning objectives. Many obstacles make teachers need help in learning activities, such as the lack of availability of learning media, low student motivation, and lack of student participation in the implementation of learning. It is supported by the results of observations in the third grade of SD Negeri 3 Pejarakan. The observations and interviews with class teachers show that the main problem in thematic learning activities is that no proper learning media exists. As the most responsible person in the class, the teacher has not been able to package interesting learning and increase student interest in learning. Homeroom teachers also need help using instructional media due to limited time and ignorance of the use of various learning multimedia software. However, on the other hand, the teacher justifies that media is very much needed in learning carried out in the classroom. Learning less attractive activities result in low motivation and student learning outcomes. Learning activities will only run well if these problems are addressed.

Efforts that can be made to overcome the problems of learning mathematics are by developing learning media. Learning media is the most important thing in learning activities. It is because learning media can be tools, means, intermediaries, and connectors to spread, carry or convey messages and ideas (Mayang et al., 2021). Learning media plays a role in facilitating the process of transferring information from teacher to student so that it can also easily stimulate students' thoughts, feelings, actions, interests, and attention (Arifin et al., 2021; Yuniarni et al., 2019). One of the appropriate learning media used for thematic learning is interactive multimedia. Interactive multimedia is made with a display that conveys information or messages and interacts with users (Saifudin et al., 2020). With interactive multimedia, students can easily understand the material's content in communicative language (Zaini & Soenarto, 2019). Developing interactive multimedia for thematic learning will be more meaningful if developed using a Game-Based Learning approach. Through a game-based learning approach, learning becomes more effective and efficient. It influences students' learning motivation to achieve competency so that it impacts learning outcomes.

Previous research findings stated that learning multimedia developed through articulate storylines in thematic learning (M. et al. et al., 2019). Multimedia development on the material "The Beauty of my country" is declared valid and suitable for learning activities (Qistina et al., 2019). Developing multimedia for science learning symbiosis material using the Macromedia Flash application is feasible to be developed and taught to students (Armansyah et al., 2019). The weakness of previous research is that it only uses one learning material, while the current research uses one sub-theme. This study designed thematic learning media Theme 5 for third-grade elementary school, which is considered very important. Product development is carried out by analyzing the needs of teachers and students in the learning process. Interactive multimedia on Theme 5 sub-theme 1 material on weather conditions where the material will be presented concretely in a more interesting way to foster student enthusiasm in the learning process. This research aims to create interactive multimedia learning based on game-based learning. Game-based learning-based interactive multimedia is relevant to development due to the characteristics of third-grade students who are more interested in carrying out the learning process in a

pleasant atmosphere. With this, developing interactive multimedia based on game-based learning is expected to be an alternative learning medium that can present a new and interesting learning atmosphere and help teachers convey material more easily.

## 2. METHOD

The research method used in this study is a research and development method known as Research and Development (R&D). R&D is a research method used to develop products or improve products. This study uses the ADDIE development model as a basis which consists of analysis, design, development, implementation, and evaluation stages. This development model is selected based on the suitability of the development flow carried out by researchers in developing animated video media. Visually the stages of the ADDIE development model can be seen in Figure 1.

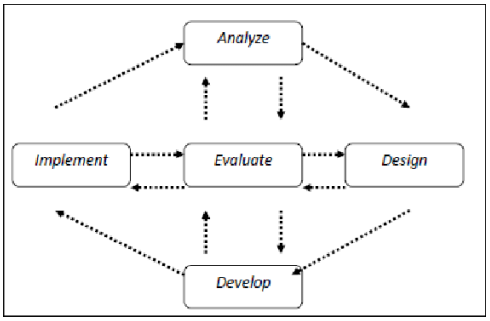


**Figure 1.** ADDIE Model's Image

(I Made Tegeh & Kirna, 2013)

The subjects of this study were all third-grade students, totaling 24 students. In this interactive multimedia development research, two methods were used in data collection: questionnaires and tests. The questionnaire is a way of obtaining and collecting data by sending a list of questions to respondents. The written test method is a way to determine students' knowledge, skills, intelligence, or abilities by using a series of questions as an objective test. The following is a lattice of data collection instruments in development research which will be further developed into two types of instruments, namely expert review questionnaires, individual trials, small groups, and test questions in the form of multiple choices. Table 1, Table 2, Table 3, and Table 4 present the research instrument grids.

**Table 1.** Subject Content Expert Instruments

| No. | Aspect | Indicator |
|---|---|---|
| 1 | Curriculum | 1. Conformity of the material with Competency Standards, Basic Competencies, Indicators, and Learning Objectives |
| 2 | Material | 1. Accuracy in selecting and developing materials<br>2. Appropriateness of the material with competence<br>3. Clarity of material description<br>4. Ease of understanding the material<br>5. Appropriateness of the material with the real-life students<br>6. Completeness of the material |
| 3 | language | 1. Using language according to linguistic rules<br>2. Readability of the text<br>3. Use of sentences and communicative language |
| 4 | Evaluation | 1. The balance of the proportion of questions on the material<br>2. The suitability of the test with the learning objectives<br>3. The suitability of the evaluation material with the material |

(Dharma & Agung, 2021)

**Table 2.** Instruments for Learning Design Experts

| No. | Aspect | Indicator |
|---|---|---|
| 1 | Objective | 1. Clarity of learning objectives with media<br>2. Clarity of learning objectives with material |

| No. | Aspect | Indicator |
|---|---|---|
| 2 | Strategy | 1. 1. The attractiveness of delivering the material<br>2. The attractiveness of the presentation of the material<br>3. The suitability of the material with the student's character |
| 3 | Strategy | 1. The suitability of learning strategies with the conditions at school<br>2. The accuracy of the use of learning strategies |
| 4 | Evaluation | 1. Clarity of instructions for working on the problem<br>2. The suitability of the questions with the indicators<br>3. Quality of questions |

(Dharma & Agung, 2021)

**Table 3.** Instruments of Learning Media Experts

| No. | Aspect | Indicator |
|---|---|---|
| 1 | Visual | 1. Product display attractiveness<br>2. Appropriateness of the design with the characteristics of students<br>3. The accuracy of text selection (size, readability, and attractiveness)<br>4. Image selection accuracy and image clarity<br>5. Accuracy of music selection<br>6. The color combination used<br>7. Location and navigation function<br>8. Quality of animation and the attractiveness of animation |
| 2 | Penggunaan | 1. The application is not difficult to operate<br>2. The application is easily accessible |

(Dharma & Agung, 2021)

**Table 4.** Individual and Small-Group Test Instruments

| No. | Aspect | Indicator |
|---|---|---|
| 1 | Visual | 1. The attractiveness of learning media |
| 2 | Objective | 1. Achievement of the objectives of the use of learning media |
| 3 | Material Presentation | 1. Ease of understanding the material<br>2. Submission of interesting material<br>3. Clarity of material description |
| 4 | Motivation | 1. Motivate learning |
| 5 | Evaluation | 1. The suitability of the questions with the material<br>2. Students' attitudes toward the use of learning media |

(Dharma & Agung, 2021)

To determine the level of validity and reliability of the measuring instrument, the instrument was tested to determine the validity and reliability of the instrument. The requirements for fulfilling the instrument are the validity of the test items, the reliability of the test, the level of difficulty of the test items, and the differential power of the test. Data analysis techniques used in this study include qualitative descriptive analysis techniques, quantitative descriptive analysis techniques, and inferential statistical analysis. Qualitative data analysis techniques were used to process test score data from learning content experts, learning design experts, learning media experts, and students. Quantitative descriptive analysis techniques were used to process data obtained through questionnaires in percentages. Inferential data analysis uses interactive multimedia development products to determine the level of product effectiveness on class III student learning outcomes. Target trial data were collected using the pre-test and post-test on the subject matter being tested. The results of the Pre-test and Post-test were then analyzed using the t-test to determine the difference between the results of the Pre-test and Post-test. Before carrying out the hypothesis test (correlated t-test), prerequisite tests (normality and homogeneity) were carried out. To give meaning and make decisions, provisions are used, as shown in Table 5, the conversion of achievement with a scale of 5.

**Table 5.** Conversion of Achievement Levels with a Scale of 5

| Achievement level (%) | Qualification | Description |
|---|---|---|
| 81 - 100 | Very well | Very decent. No need to revise |
| 61 - 80 | Good | Decent. No need to revise |

| Achievement level (%) | Qualification | Description |
|---|---|---|
| 41 - 60 | Enough | Not feasible. It needs to be revised |
| 21 - 40 | Less | Not feasible. It needs to be revised |
| < 21 | Very less | Not very feasible. It needs to be revised |

(Agung, 2017)

## 3. RESULT AND DISCUSSION

### Result

The results of this study are game-based learning-based interactive multimedia design with the ADDIE development model, namely the analysis stage. At this stage, an analysis of student characteristics and problems in the learning process, competency analysis, and facility/environment analysis is carried out. Design stage, at this stage, designing an interactive multimedia product. The development stage includes collecting teaching materials, materials, images, sound, and animation and packaging them into products in the form of interactive multimedia. The results of the validity test are presented in Table 6.

**Table 6.** Percentage of the Results of the Validity of Interactive Multimedia Development

| No. | subject to Test the Validity of Learning Video Media | Validity Results | Qualification |
|---|---|---|---|
| 1 | a. Subject Expert Test | 96.25% | Very good |
| | b. Learning Design Expert Test | 93.33% | Very good |
| | c. Learning Media Expert Test | 4.67% | Very good |
| 2 | a. Individual Trial | 97.78% | Very good |
| | b. Small Group Trial | 97.63% | Very good |

The percentage of subject matter experts is 96.25%. If converted to a 5-level achievement scale, the percentage is 90-100%, with very good qualifications. The percentage of learning design experts is 93.33%. If converted into the criteria for the level of achievement of media eligibility, it is in very good qualifications. The percentage of learning media experts is 94.67%. If converted into the criteria for the level of achievement of media eligibility, it is in very good qualifications. The results of the overall presentation of the individual trial subjects were 97.78%. If converted to the eligibility criteria, the media is qualified. At the same time, the results of the overall presentation of the small group trial subjects were 97.63%. If converted to the eligibility criteria, the media is qualified.

In the implementation stage, the interactive multimedia that has been developed will be applied in the learning process. Evaluation stage, this final stage aims to determine the feasibility and be able to evaluate the products that have been developed so that a valid learning media will be obtained to support the learning process of third-grade students. In product implementation, the things that must be done are conducting product trials with subject content experts, learning design experts, learning media experts, individual trials, and small group trials. The effectiveness of game-based learning-based Interactive Multimedia development was measured using the multiple choice test method by giving multiple choice questions to 22 third-grade students through pre-test and post-test. The students' pre-test and post-test results showed a significant difference (5%) before and after using interactive multimedia based on game-based learning in third-grade thematic learning. It indicates that interactive multimedia based on game-based learning is effectively used in third-grade thematic learning. Interactive multimedia displays are presented in Figure 2.


**Figure 2.** Revision of Interactive Multimedia Displays

**Discussion**

Based on the research analysis results, interactive multimedia based on game-based learning has tested its validity and is feasible to be applied in learning. It means that interactive multimedia based on game-based learning is effective in helping students to improve learning outcomes in thematic learning theme 5. It is supported by the theory that the benefits of interactive multimedia can arouse student learning motivation so that learning outcomes increase (Gede et al. et al., 2020; I. et al., 2019). With interactive multimedia, teachers will be able to visualize weather conditions interestingly and easily understand students because interactive multimedia is equipped with games, pictures, and music (Syofyan et al., 2022; Wirantini et al., 2022; Yuniarni et al., 2020). In addition to giving an interesting impression to students, interactive multimedia also has practical and accessible properties (Ahmet et al., 2018). Students can access this interactive multimedia anywhere and anytime.

In this study, multimedia development was carried out using a game-based learning approach. Many things make interactive multimedia based on game-based learning effective to be applied in the learning process. Interactive multimedia is developed based on views in terms of content, design, and media quality. Then suitability of the use of language with student characteristics increases student interest and motivation to learn. Implementing a lesson plan appropriate to the characteristics of students will motivate students to be more active in the learning process. It positively affects student learning outcomes (Fitriani & Wangid, 2021; Widyaningsih et al., 2020). With the game-based learning method, students will get a learning experience with a new, more pleasant atmosphere to produce an effective learning process (Lee & Osman, 2012; Manurung & Panggabean, 2020). There are three aspects of the game-based learning approach: opening, playing, and reflection (Husein et al., 2017; Lauc et al., 2020). Interactive multimedia greatly improves student learning and learning activities (Geni et al., 2020; Putrantana et al., 2020). Regarding media quality, this interactive multimedia is designed with a cover that is adjusted to the characteristics of students and a title that matches the media user interface so that an attractive cover can motivate students to learn. At the age of elementary school students, students see more concrete operationally, which the visual element is very important for students, so an attractive cover display must ensure this.

The findings of previous research reinforce this finding that the implementation of learning all information in multimedia that combines text, images, videos, music, and animation can enrich the presentation of learning material to make it more interesting (G. C. S Dwiqi et al., 2020). As for the results of interactive multimedia research that was developed based on a game-based learning approach, it improved student learning outcomes. Other findings also reveal that it is feasible to use in the learning process and can improve student learning outcomes in thematic learning (Panjaitan, 2020). Other findings also state that developing Android-based interactive multimedia in thematic learning can help students understand and think critically and systematically (Abda'u et al., 2020). The implication for developing interactive multimedia based on game-based learning is the use of interactive multimedia based on game-based learning in thematic learning that is more effectively used in learning activities because it can improve student learning outcomes and increase student learning motivation. Students can be more active in learning activities because interest in learning increases with interactive multimedia to deliver material by creating a more enjoyable learning atmosphere. Interactive multimedia is designed to motivate students and avoid boredom during learning. It can be concluded that using interactive multimedia based on game-based learning can help teachers convey material, efficiently achieve learning objectives so that students can more optimally accept the material provided, and help students in independent learning.

## 4. CONCLUSION

Game-based interactive multimedia based on game-based learning on thematic learning of weather conditions using the ADDIE development model, capable of producing quality products and feasible if used in the learning process, which can assist teachers in concretizing the message or learning material to be conveyed. It indicates that game-based learning multimedia based on thematic learning Theme 5 material on weather conditions is suitable for use in elementary schools. Third, interactive multimedia based on game-based learning has proven effective in increasing the learning outcomes of third-grade elementary school students.

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