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Research Article

DEVELOPMENT OF INTERACTIVE MULTIMEDIA EVALUATION JEOPARDY GAME ON SOCIAL STUDIES (IPS) MATERIAL BASED ON MACROMEDIA FLASH FOR FIFTH GRADE ELEMENTARY SCHOOL STUDENTS

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Abstract
The rapid advancement of educational technology has encouraged the integration of interactive multimedia as an innovative approach to enhance learning quality, particularly in elementary school Social Studies (IPS). This study aims to develop and evaluate the feasibility of an interactive multimedia evaluation in the form of a Jeopardy game based on Macromedia Flash for fifth-grade elementary school students. The research employed a Research and Development (R&D) approach using the ADDIE model, encompassing the stages of analysis, design, development, implementation, and evaluation. Data were collected through expert validation involving media, material, learning, and language experts, as well as responses from fifth-grade teachers as product users. The results indicate that the developed interactive multimedia achieved an overall average score of 80.88, categorized as "Good" with teacher responses reaching the "Very Good" category. These findings demonstrate that the Jeopardy game-based interactive multimedia is feasible, engaging, and effective as an evaluation tool to support Social Studies learning. The novelty of this study lies in the development of a computer-based interactive evaluation model that transforms conventional assessment into an interactive game format, thereby fostering student engagement and independent learning. This research highlights the urgency of developing innovative digital evaluation media to improve learning effectiveness and adapt elementary education to current technological demands.

Keywords: interactive evaluation, jeopardy game, multimedia

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INTRODUCTION

Education is very important for everyone(Dela Peña & Galigao, 2025; Sharma & Ankit, 2023; Shavkidinova et al., 2023). From an early age, children receive education both at school and at home. One important subject to learn is Social Studies (IPS). Social Studies is a field of study that examines, analyzes, and reviews social phenomena and issues in society from various aspects of life. Social Studies is taught from the elementary school level to support the achievement of Indonesia's national education goals. The purpose of thematic learning in elementary Social Studies is to develop students' basic knowledge and skills that are applicable in daily life(Fauzi & Hajaroh, 2023; Septiwiharti et al., 2024; Wardani et al., 2020).

However, for elementary school students, thematic learning in Social Studies is not easy to understand in a short period of time(Siagian, 2025). Students at this level are still in a play-oriented developmental stage and tend to lose interest when learning activities are perceived as monotonous. Social Studies is often considered boring because it emphasizes historical events that require reading, understanding, and memorizing past occurrences. In practice, Social Studies learning is frequently perceived as monotonous and abstract because it relies heavily on textbooks, verbal explanations, and memorization of past events, resulting in low student engagement and limited learning effectiveness. This condition is further exacerbated when learning activities do not utilize varied and interactive instructional media.

One effort to improve students' understanding is the use of appropriate learning media that align with students' characteristics. The use of learning media plays an important role in supporting effective learning(Jusmida et al., 2024). Various computer-based learning media, such as PowerPoint presentations, educational videos, games, and internet-based resources, have been widely applied to enhance student engagement. Previous studies have reported that interactive multimedia can improve students' motivation and learning outcomes in Social Studies learning. However, most existing studies focus on multimedia as a learning delivery tool, rather than as an evaluation medium, and generally employ conventional formats such as quizzes or multiple-choice tests.

In practice, learning media used by educators are still dominated by textbooks and blackboards, while multimedia-based tools are rarely utilized. Similarly, the evaluation process is still largely conducted using conventional paper-based tests. Although evaluation is essential to measure the effectiveness and efficiency of learning in terms of objectives, materials, methods, and media, innovative computer-based evaluation models are still limited, especially those that allow students to learn independently in an interactive and time-controlled environment. Unlike previous research that integrates games mainly for instructional purposes, few studies have developed game-based evaluation media that combine assessment and learning simultaneously.

Based on these conditions, this study proposes the development of a Macromedia Flash–based interactive multimedia evaluation using a Jeopardy Game format for fifth-grade Social Studies learning(Pankaew et al., 2024). Unlike earlier multimedia evaluations that emphasize static or linear interactions, the Jeopardy Game model encourages active participation, analytical thinking, and teamwork. According to Fakhri in (Rahmi et al., 2019), Macromedia Flash enables the integration of animation, images, sound, and video effectively, allowing abstract concepts to be presented concretely and attractively.

The selection of the Jeopardy Game format in this study represents a novel contribution, as its application in elementary Social Studies evaluation is still rarely explored. Compared to previous multimedia-based learning tools, this study emphasizes the use of a game-based evaluation model that promotes active, creative, effective, and enjoyable learning while simultaneously assessing students' understanding. Thus, this research contributes to the development of innovative evaluation media that bridges the gap between interactive learning and assessment in elementary Social Studies education.

RESEARCH METHOD

Research Design

This study employs a research and development (R&D) design based on the ADDIE model, which consists of five stages: Analysis, Design, Development, Implementation, and Evaluation. The ADDIE model was selected because it offers a systematic framework commonly used in instructional development and is appropriate for research aimed at producing educational products. The research design refers to the model proposed by Branch (2009) as cited in Sugiyono (2017), emphasizing that each stage in ADDIE is carried out in a structured manner to solve instructional problems and produce learning resources that meet learners' needs.

Research Target/Subject

The subjects involved in this study include several parties responsible for validating and assessing the feasibility of the developed product. These subjects consist of the supervising lecturer, who provided input during the early developmental stages; expert validators, including media experts, material experts, learning experts, and language experts; and teachers who served as product users and provided evaluative responses. Due to restrictions during the COVID-19 pandemic, the implementation stage involved only teacher responses and did not include direct student responses. The selection of subjects employed the *expert judgment* technique, meaning that experts and relevant parties were chosen based on their competence and relevance to the product being developed.

Research Procedure

This research uses the ADDIE development model, which consists of five stages: Analysis, Design, Development, Implementation, and Evaluation. The flow of the ADDIE model stages used in this research is presented in Figure 1.

In the Analysis phase, a needs analysis and curriculum analysis were conducted at Muhammadiyah Elementary School in Kebumen to determine the relevance and urgency of developing multimedia learning evaluation tools. The Design phase includes setting learning objectives, designing learning scenarios, developing learning materials, creating content, and designing assessment instruments. The resulting design is conceptual and serves as the basis for the next stage.

The Development stage is carried out by developing the product according to the initial design, which is then reviewed by the supervising lecturer and validated by experts. Revisions were made based on input from experts. At the Implementation stage, learning media is applied within the learning context. Evaluation sheets are given to teachers to obtain feedback regarding the practicality and quality of the product. However, student responses could not be collected optimally due to the COVID-19 pandemic. The final stage, Evaluation, aims to assess each development stage and determine product feasibility based on expert validation results and user responses.

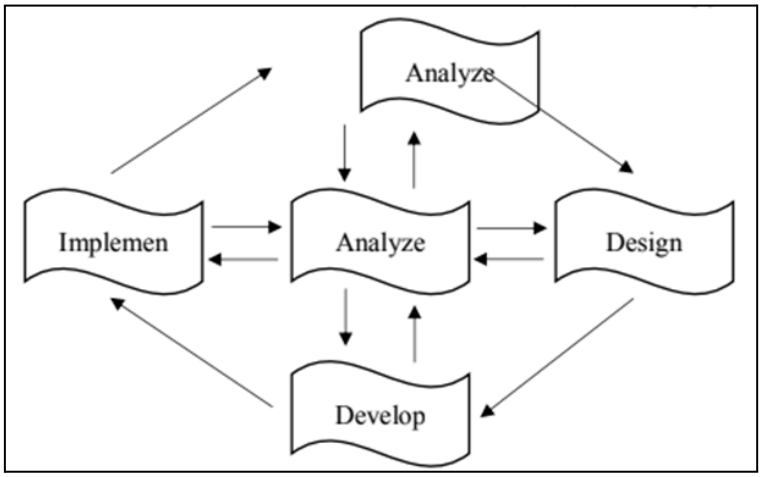

Figure 1. The ADDIE approach by Branch (2009) in Sugiyono (2017:38-39)

Instruments, and Data Collection Techniques

The instruments used in this study were evaluation sheets or questionnaires administered to expert validators—namely media, material, learning, and language experts—as well as to teachers as users of the product. The collected data consisted of quantitative scores reflecting the quality and feasibility of the developed product, including aspects of content, presentation, language, and technical features. Data collection techniques included expert validation through assessment sheets and teacher response questionnaires, which provided evaluative information regarding the strengths and weaknesses of the developed multimedia product.

Data Analysis Technique

The data obtained from the evaluation sheets were analyzed using a scoring formula proposed by Arifin (2013): $S = BN \times 100$, where S represents the calculated score, B is the total score obtained, and N is the maximum possible score. Subsequently, the average score from all validators and respondents was calculated using the formula suggested by Arikunto (2011): $X = \Sigma x / N$, where X denotes the mean score, Σx is the total score, and N is the number of evaluators. The resulting scores were then interpreted according to the assessment criteria by Arikunto and Cepi (2014), in which ≥81 is categorized as *Very Good*, 61–80 as *Good*, 41–60 as *Fair*, and ≤21 as *Poor*. The product is considered feasible for use if it attains at least a *Good* classification (61–80) or higher.

Table 1. Expert Assessment Result Criteria

Value Range	Criteria
81—100	Very Good
61—80	Good
41—60	Fair
21—40	Poor

Based on the criteria above, the results of the Interactive Multimedia Evaluation of the Jeopardy Game on Social Studies (IPS) Material Based on Macromedia Flash for Fifth Grade Elementary School Students can be said to be good if it obtains a score of 61—80 and can be used to assist the learning process both in and outside the classroom.

RESULTS AND DISCUSSION

The data obtained was quantitative and qualitative. Quantitative data was obtained from validation by media experts, subject matter experts, learning experts, and language experts, as well as responses from classroom teachers. Qualitative data was obtained from criticism and suggestions from media experts, subject matter experts, learning experts, and language experts, as well as responses from fifth-grade teachers. To produce a well-developed product, the following steps must be taken:

1. Analysis Stage
   The initial stage, analysis, consists of two stages, namely needs analysis and curriculum analysis, which were carried out at SD Muhammadiyah Kebumen as the first step in product development. New learning evaluation multimedia requires analysis to determine the feasibility of implementing multimedia evaluation. This analysis is the initial basis for developing the Interactive Jeopardy Game Multimedia Evaluation on Social Studies (IPS) Material Based on Macromedia Flash. Furthermore, this stage consists of two activities, namely:
   a. Curriculum Analysis
      This stage is carried out to determine the curriculum implemented at SD Muhammadiyah Kebumen. The curriculum implemented at SD Muhammadiyah Kebumen is the 2013 curriculum. The media is developed in accordance with the learning context that encourages students to be active.
   b. Student Needs Analysis
      This stage involves collecting data by conducting observations at SD Muhammadiyah Kebumen to identify the problems and needs of the students. With this needs analysis, the researcher can determine the media needed to support the learning process. In classroom learning, teachers do not always use media or teaching materials other than the textbooks provided by the school.
2. Planning Stage (Design)
   Designing a learning model/method, the design stage is similar to designing teaching and learning activities. This activity is a systematic process that begins with setting learning objectives, designing teaching and learning scenarios or activities, developing learning tools, designing learning materials, and designing learning outcome evaluation tools. The design of this learning model/method is still conceptual and will underpin the next development process. This planning stage is carried out based on the findings from the analysis stage.
3. Development Stage
   The ADDIE model development stage is the stage of creating media in accordance with the media design in the design stage. The design stage has compiled a conceptual framework for the application of new learning models/methods. The development stage includes the design stage with validation and review by validators. The validators consist of subject matter experts, media experts, language experts, learning experts, teachers, and students. Then, the product is revised after validation.
4. Implementation Stage
   In this stage, the developed product is implemented through limited trials with fifth-grade students to determine their response to the developed product. Trials are also

conducted with teachers to determine their response to the interactive Jeopardy game multimedia evaluation that has been developed to make it more suitable for use in the classroom learning process.

5. Evaluation Stage

The evaluation stage is part of the product development process. Researchers conduct evaluations at each stage of the developed product analysis. Activities carried out during the evaluation stage include collecting data on expert assessments, student responses, and teacher responses as a reference for product improvement and to determine the quality and suitability of the developed product.

Based on the results obtained from media experts, subject matter experts, learning experts, and teacher responses, the following assessments can be accumulated:

Table 2. Expert Assessment Criteria

No.	Expert Validation	Score
1	Media Expert	76.66
2	Subject Matter Expert	77.33
3	Learning Specialist	76.92
4	Classroom Teacher Response	92.63
	Total Score	323.54
	Average	80.88

Based on the table above, the results of the research conducted by expert validators in media, materials, learning, and fifth-grade teacher responses obtained an average score of 80.88, so the development of interactive multimedia evaluation jeopardy games is said to be in the "Good" category.

The description of the validation data results from the experts is as follows:

1) Data from the media expert assessment
The media expert assessment sheet consists of 18 statements that must be assessed. For each statement, there are 5 assessment categories consisting of 5 (strongly agree), 4 (agree), 3 (somewhat agree), 2 (disagree), and 1 (strongly disagree). The results show that 1 aspect received a score of 5 ("strongly agree"), 13 aspects received a score of 4 ("agree"), and 4 aspects received a score of 3 ("somewhat agree"). The average score in the media expert validation assessment was 76.66, which is categorized as "good." Based on the validation results with media experts, it can be concluded that the interactive multimedia jeopardy game evaluation is "good" for use in the learning process with a score of 76.66.
2) Data from the material expert assessment
The media expert assessment sheet consists of 15 statements that must be assessed. For each statement, there are 5 assessment categories consisting of 5 (strongly agree), 4 (agree), 3 (somewhat agree), 2 (disagree), and 1 (strongly disagree). The results show that 1 aspect received a score of 5 in the "strongly agree" category, 11 aspects received a score of 4 in the "agree" category, and 3 aspects received a score of "somewhat agree." The average score in the material expert validation assessment was 77.33 in the "good" category. Based on the results of the validation with subject matter experts, it can be concluded that the interactive multimedia jeopardy game evaluation is "good" for use in the learning process with a score of 77.33.
3) Data from the learning expert assessment
The expert learning assessment sheet consists of 13 statements that must be assessed. For each statement, there are 5 assessment categories consisting of 5 (strongly agree), 4 (agree), 3 (somewhat agree), 2 (disagree), and 1 (strongly disagree). Eleven aspects received a score of 4 in the "agree" category, and 2 aspects received a score of 3 in the

"somewhat agree" category. The average score in the expert learning validation assessment was 76.92 in the "good" category. Based on the validation results with learning experts, it can be concluded that the interactive multimedia jeopardy game evaluation is "good" for use in learning.

4) Data from the fifth-grade teacher's assessment
The fifth-grade teacher assessment sheet consists of 19 statements that must be assessed. Each statement has 5 assessment categories, consisting of 5 (strongly agree), 4 (agree), 3 (somewhat agree), 2 (disagree), and 1 (strongly disagree). The assessment results obtained from the teachers' responses were in the "very good" category. Thirteen aspects received a score of 5 in the "strongly agree" category, five aspects received a score of 4 in the "agree" category, and one aspect received a score of 3 in the "somewhat agree" category. The average score in the fifth-grade teachers' assessment was 92.63 in the "very good" category. Interactive multimedia has a positive influence on student activity and learning outcomes. It is recommended that several HOTS questions be added to the practice questions to test students' ability to analyze and think critically. Based on the responses from the teachers, it can be concluded that the interactive jeopardy game multimedia evaluation is in the "very good" category, with an average score of 92.63.

The conclusion from the overall assessment results of expert validators and classroom teacher responses is that the development of interactive multimedia jeopardy game evaluation on Social Studies (IPS) material for fifth grade elementary school is deemed suitable for use in assisting the learning process. The following is an image of the developed product:

Figure 2. Jeopardy Game Product

The description of the interactive multimedia jeopardy game evaluation that was developed is in accordance with the curriculum requirements. The presentation of the material is in accordance with the selected basic competencies and the formulated indicators. The content of the interactive multimedia jeopardy game evaluation is in accordance with the social studies material in fifth grade elementary school. The interactive multimedia jeopardy game evaluation display was developed with consideration given to the attractiveness of the images and illustrations, as well as the selection of font types and sizes to attract students' interest in learning.

This interactive multimedia jeopardy game evaluation differs from games in general in that it incorporates learning through a thematic learning process in social studies. The use of Macromedia Flash-based multimedia jeopardy game evaluation is interactive multimedia. Macromedia Flash-based jeopardy game learning media is learning media developed with a computer or laptop, namely through Macromedia Flash, which will be implemented for fifth grade in elementary school.

Based on the results of validation tests conducted by media experts, subject matter experts, learning experts, and fifth-grade teachers, it was concluded that the development of Macromedia Flash-based social studies jeopardy game multimedia learning for fifth-grade elementary school students is a final product that is suitable for use in learning, with an average score of 80.88 in accordance with the teaching material quality standards of the National Education Unit Agency (2007: 21). This multimedia development already contains all aspects and is considered very good for use in elementary schools as supporting teaching materials in the learning process.

This is in line with Daryanto's (2010: 52) research in (Rahmat, 2015: 204), which explains that if computer-based multimedia learning is chosen and used appropriately and properly in learning, it will provide enormous benefits for teachers and students. The general benefits of using multimedia learning are that it makes the learning process more interesting and interactive, reduces the amount of learning time, improves the quality of student learning, and fosters student interest and motivation to learn. Therefore, interactive multimedia learning can be used as a solution to improve the quality of the learning process in the classroom, an alternative to the limited teaching opportunities available to teachers, facilitating the learning process and fostering teachers' creativity and innovation in designing communicative and interactive learning, as well as a solution to replace conventional learning in the classroom.

From the above research, it can be concluded that interactive multimedia jeopardy game evaluation is in line with the social studies material in fifth grade elementary school and can assist in the learning process in the classroom. For example, it can encourage students to continue to seek information independently and can be used effectively in classroom learning by teachers. The interactive multimedia jeopardy game evaluation is in line with the social studies material in fifth grade elementary school and can also increase the success achieved by students in learning activities.

Overall, the qualitative findings of this study confirm that the research objectives have been successfully achieved. The needs analysis, expert validation results, and teacher responses collectively demonstrate that the development of Macromedia Flash-based interactive multimedia evaluation in the form of a Jeopardy game effectively addresses the problems identified in the introduction. These findings are consistent with previous studies emphasizing that interactive multimedia can transform abstract learning materials into more concrete and engaging experiences, thereby enhancing student motivation and learning effectiveness. Moreover, the positive evaluations from media, material, and learning experts support theoretical perspectives that highlight the importance of alignment between instructional media, learner characteristics, and learning objectives. The strong response from teachers further reinforces earlier research suggesting that game-based digital evaluation tools can increase classroom engagement and serve as a viable alternative to conventional assessment methods. Therefore, based on the qualitative evidence presented, this study conclusively demonstrates that the developed interactive multimedia evaluation not only meets feasibility standards but also fulfills its intended purpose as an innovative and pedagogically appropriate solution for improving Social Studies learning evaluation at the elementary school level.

CONCLUSION

Based on the research and development conducted, this study makes a significant contribution to the development of learning media, particularly in the form of interactive multimedia-based learning evaluation. The evaluation product, an interactive multimedia Jeopardy game, is capable of providing a more engaging, interactive, and student-active learning evaluation alternative. This media not only serves as an evaluation tool but also encourages increased learning motivation, activity, and concept understanding among fifth-grade social studies students. Therefore, the results of this research can serve as a

reference for educators and media developers in designing innovative learning evaluations that are appropriate for the characteristics of elementary school students.

Nevertheless, this study has some limitations. First, product trials are still limited in scope, both in terms of the number of respondents and the school context, so generalizing the research results widely is not yet possible. Second, this study has not deeply measured the impact of using a multimedia jeopardy game on improving student learning outcomes by comparing it with conventional evaluation methods. Third, the developed media is still limited to one social studies material for fifth grade and has not yet covered cross-curricular development or other educational levels.

Based on these limitations, the recommendation for future research is to conduct trials on a wider scale, involving more schools and students, to obtain more comprehensive results. Further research is also recommended to quantitatively examine the effectiveness of the media thru experiments or quasi-experiments in order to determine its impact on student learning outcomes. Additionally, the development of similar media can be expanded to other materials, subjects, or educational levels, and integrated with online digital platforms to enhance the flexibility and accessibility of using learning media.

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AUTHOR CONTRIBUTIONS

Author 1: Conceptualization; Investigation; Project administration; Validation; Writing – review and editing; Data curation; Formal analysis; Methodology; Writing – original draft; Resources; Visualization.

Author 2: Validation; Formal analysis; Other contributions; Resources; Supervision.

CONFLICTS OF INTEREST

The authors declare no conflicts of interest.

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