



Application of Interactive Learning Games in Stimulating Knowledge About Object Recognition in Early Childhood

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ABSTRACT

Teachers and parents must pay close attention to the golden age phase of early infancy since children's growth and development can occur swiftly during this time. In the early childhood learning process, it is crucial to transfer knowledge so that children can acquire information, including the introduction of objects into the child's environment. There are already a plethora of diverse, entertaining learning materials for young children. One of them is interactive learning media that emphasizes visual features to catch children's attention during the learning process. Based on the relevance of learning media in early childhood, the purpose of this research is to build interactive learning game media in order to promote comprehension and stimulate early children's ability to recognize the introduction of things. 93.3% of students like object recognition learning media and the Figures on the learning media, 80% of students can comprehend object recognition material and can answer according to choice, and 86.67 % of students stated that the terms of color, animation, audio, video, and text were feasible. So that this object identification learning material has an appealing visual design, is simple to use, and can be comprehended by pupils.



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INTRODUCTION

The evolution of information and communication technology motivates the education industry to integrate technology to the learning process with agility (Dewantara et al., 2022; Paramansyah & SE, 2020; Sukmawati et al., 2022). The use of technology in the digital age generates a new pattern in the learning process, which also occurs in early childhood education (Sudarmo et al., 2021; Sudarsana, Mulyaningsih, et al., 2019). Many current learning patterns use technology-based learning media to make it easier to offer early children with information and knowledge. Education is provided to children beginning at a young age; according to Article 28 of the National Education System Law No. 20 of 2003, paragraph 1, the age range for early childhood is 0 to 6 years. Early childhood, between the ages of 1 and 5 years, is a golden phase for the growth and development of the child's brain, as the child's cognitive capacity increases by up to 80% (Dewi, 2017). Education is a top priority in all facets of life, particularly if it begins at a young age (Purwaningsih, 2018). According to article 1 paragraph 1A and article 18 paragraph 1 of the National Education System Law of 2003, Early Childhood Education is arranged prior to the primary school level, from birth to age six, through official education channels mostly in form of kindergarten (Kamaruddin et al., 2022).

One of the early childhood achievement level standards required by Permendiknas Number 58 of 2009 is general knowledge and science, which includes the following: Recognizing objects based on function; Using objects as symbolic games; Recognizing cause-and-effect symptoms related to themselves; Recognizing simple concepts in everyday life; and Creating something based on their

own ideas (Febiharsa & Djuniadi, 2018). This is consistent with the fact that young children tend to be inquisitive about the objects around them. In early childhood, it is crucial for children to be able to recognize an object so they can understand its function and determine which objects are safe to use and which are potentially hazardous. In general, preschool children are very active when playing. When providing parenting or learning methods to preschool children, interactive learning in the form of audio visual is required so that children tend to respond more quickly. One of the supporting factors for interactive learning is the presence of technology-based media or learning facilities (Pertiwi et al., 2019; Rahmawanti et al., 2019).

There are already a multitude and variety of engaging learning materials for young children (Arifin et al., 2018; Rahmawati, 2016). The usage of media is one of the main learning aids for young children. Because the media serves as a tool to clarify the information and messages communicated from the sender to the recipient, in this situation the instructor or parent is the sender and the early childhood is the recipient (Priyanto et al., 2014; Widiyanto et al., 2022). This motivates teachers to utilize various learning media creatively. In fact, there are still some early childhood institutions that tend to shun and do not like to employ electronic media as learning tools (Ni'mah et al., 2018). Parents and teachers avoid this to prevent children from becoming dependent on technological media. According to some teachers and parents/guardians, implementing electronic media in early infancy is still inappropriate. However, there are now a variety of more engaging and easily comprehended methods for introducing children to a variety of subjects through games and technology media.

Learning using interactive multimedia in early childhood is conducted by (Mustoharin, 2016; Sudarsana, Nakayanti, et al., 2019) which discuss object recognition material, (Febiharsa & Djuniadi, 2018) which creates interactive media for learning environmental material, and (Kurniawan, 2018), which creates learning media for object recognition. Or interactive learning materials about [(Sa & Kurniawati, 2020; Satria et al., 2022). The usage of interactive learning media is crucial for early childhood education because it may be used to introduce a story or an object in a way that children can comprehend it. In addition, children not only watch, but also learn, and there is contact between children and teachers such as parents and teachers. Other alternatives to interactive learning media include interactive learning games, sometimes known as Edugame (Novaliendry & Andriani, 2020). Edugame is defined as a game that is designed for education but may also be played for fun. Edugame combines instructional information, learning methods, and computer games (De Vega & Arifin, 2022; Sudarmilah & Kholifah, 2020). The Edugame concept allows for creative, inventive, and enjoyable early childhood education (De Vega et al., 2018; Ranuharja et al., 2021).

Based on the explanation of the significance of learning media in early childhood that can consider the components of moral development, physical development (fine and gross motor coordination), intelligence/cognition (thinking power, creative power), socio-emotional (attitudes and emotions), language, and communication (Dewi, 2017), the purpose of this research is to develop interactive learning media based on the concept of interactive games in order to increase the understanding of early child development.

RESEARCH METHODS

The ADDIE development approach was utilized to create this interactive learning game. The ADDIE model, one of the models that direct the development of effective, dynamic education that promotes education, is one of the systematic learning design models (Ranuharja et al., 2021). Many methodological techniques for the design of textual materials, audiovisual materials, and computer-based learning materials have realized the level of systematic design and development of learning materials as a procedural feature of the system approach. The effectiveness of interactive multimedia created using the ADDIE approach has been demonstrated, and it can enhance student learning results (Febiharsa & Djuniadi, 2018). The five stages of this ADDIE approach are analysis, design, development, implementation, and evaluation (Spatioti et al., 2022).

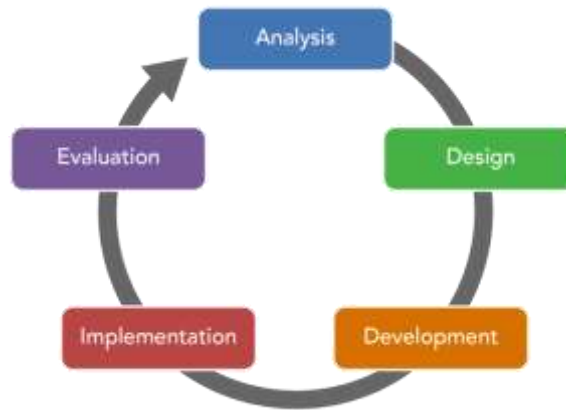


Figure 1 ADDIE Model (Spatiotti et al., 2022)

RESULTS AND DISCUSSION

Analysis Stage

At the analysis stage, which entails conducting descriptive analysis connected to analyzing the demands associated with surrounding object, analysis based on several literature reviews and pertinent material is required for the development of interactive game media. The subject of study is Kindergarten number 2. Ubung to determine the teacher's explanation to children regarding object recognition content, the teacher's delivery of the material is still quite conventional, consisting of lectures or direct exposure approaches that appear less engaging. This causes pupils to comprehend the information less and become bored with it, necessitating an innovative approach to its delivery.

Design Stage

There are two stages left at this point: the media design process and character design. In this part of the process, the author talks about how to create learning media. introduction to the properties of interactive multimedia objects, from setting up the equipment needed to make interactive multimedia to designing displays and learning how to animate and script in Adobe Flash. analysis of non-functional needs for making this interactive game media, such as CorelDraw X7 software to design characters for this interactive multimedia and Adobe Flash to make animations and fill scripts. At the stage of designing characters, CorelDraw X7 software was used. Researchers use CorelDraw X7 to make learning materials for object recognition. It has a lot of tools that can be used to make characters. The author uses the pen tool, which is one of the tools that can be used to make curved shapes, to make a character. The next step is to create the background. The first step in making a background is to figure out the size. In this case, the author uses a size of 1024 px by 768 px, which is the size of a computer monitor screen. Then, color the background and arrange the things in it, like objects and text, and apply the design concept using a modern idea with a mix of happy colors, with white, yellow, blue, and green as the main colors. When creating interactive learning materials for object recognition that incorporate multimedia, navigation buttons are required to connect each page.

Development Stage

During this stage of development, interactive learning media for object recognition are transformed into interactive multimedia. The author use Adobe Flash Player 11 software to create instructional materials for the introduction of object properties. Some things will be animated to increase their visual appeal. The animation will employ the Motion Tween approach. It is believed that the usage of motion tween makes animation easier than using frame-by-frame techniques. However, frame-by-frame techniques are required in certain circumstances, notably for animations that demand precise detail. To make this learning resource more interactive, a button function that interacts with other sites on this learning resource is required. In addition, coding or Action Script is used to give instructions to interactive multimedia so that it can run and function as needed, and the final step is to incorporate backsound. Audio is one of the most essential components of interactive

multimedia. In addition to employing dubbing techniques as well as background and sound effects that serve to make interactive multimedia or animation more vibrant and engaging, this method also includes the use of sound effects. As an additional evaluation method for users, a quiz menu is available.

Implementation Stage

At the stage of implementation, the application will be tested. The purpose of this implementation phase is to determine the user's reaction and the application's response. In this point, interactive media games are being implemented at Kindergarten number 2 Ubung. The application of learning media is accomplished by displaying the findings of finished learning media to students and teachers using a laptop. Each student is able to use the interactive game effectively to test each question and the relevance of the image or animation that emerges, and to select the answer that corresponds to the image. The interactive gaming interface is depicted in Figure 2 below.



Figure 2 Interactive Media Game Display

In the game display, there is some information, including the number of the object on the top left and the amount of time given to the user to select and match the animation or image with the correct answer choice under the image on the top right.



Figure 3 Scores Page

The user's final score is calculated based on the answers they have chosen, which are adjusted to the image or animation in each question, at the conclusion of the interactive game. Additionally, you may view the user's correct and erroneous responses on this page, and the user has the option of starting over. In this educational game, 50 assets are available and may be displayed at random.

Evaluation Stage

In testing learning media, users, particularly students and teachers as respondents, evaluate interactive game media using a questionnaire or questionnaire regarding student replies to this learning media. 15 students in the age range of 3 to 5 years old responded to the survey. The questionnaire consists of fifteen questions pertaining to the graphic display and interface, content description, visual presentation, and text, and focuses on student comprehension of the topic and comfort with the usage of learning media. According to the results of the questionnaire, 93.3% of students liked the object recognition learning media and liked the Figures on the learning media, 80% of students could understand the object recognition material and could answer according to the choices, and 86.67% of students stated that the terms of color, animation, audio, video, and text were feasible and understandable for students in recognizing objects. The results of the questionnaire

indicate that this object recognition learning medium has a visually appealing appearance, both in terms of character depiction and colour and animation. Object identification instructional materials are also user-friendly. In addition, this object recognition learning media adequately explains each topic and is easily comprehended by pupils.

CONCLUSION

The conclusion of the study is based on the importance of early childhood education so that the use of interactive game media becomes one of the alternatives for introducing objects into the child's environment, and with interactive media learning objectives from a young age can be achieved with the assistance of technology. Based on the evaluation of interactive game media through questionnaires, it was determined that 93.3% of students liked the learning media for object recognition and liked the Figures on the learning media, 80% of students could understand object recognition material and could answer according to their choices, and 86.67% of students stated that color, animation, audio, video, and text were feasible and understandable for students in recognizing objects. The results of the questionnaire indicate that this object recognition learning medium has a visually appealing appearance, both in terms of character depiction and colour and animation. Object identification instructional materials are also user-friendly. In addition, this object recognition learning media adequately explains each topic and is understanding.

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