

# Increasing Literacy Through Interactive Media In Early Childhood

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## Increasing Literacy Through Interactive Media In Early Childhood

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### Abstrak

The purpose of the study is to develop interactive learning media to improve early childhood literacy. The type of research is *Research and Development/R&D* using the ADDIE model development procedure. The subjects of the study included 21 groups of Class A in Al Azhar kindergarten. Data collection techniques use interviews, FGD (*Focus Group Discussion*), observation, and validation of material and media experts. Data were analyzed with descriptive statistics and effectiveness tests. Research results in the development of interactive learning multimedia products that are valid, effective, and feasible to be used to improve early childhood literacy. The effectiveness of the media is shown from the results of the t-test, which is known that that learning with interactive media can improve early childhood literacy.

**Kata Kunci:** *early childhood literacy; early childhood; interactive learning media*

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### Introduction

Literacy refers to a person's ability to understand, use, and analyze various types of information in written, oral, or visual form. In general, literacy includes the ability to read, write, speak, and listen effectively. In Early Childhood Education and Care (ECEC), literacy is becoming one of the important aspects of education, and literacy education is considered an important part of the educational process in many countries. Digital technology is used for pedagogic purposes, as a support for the process and quality of learning in various fields including literacy. Pedagogical enhancement introduces digital technologies in early childhood to integrate digital technologies in encouraging problem-solving (Han et al., 2023; Hatzigianni et al., 2023); (Kirya et al., 2022).

Early childhood can understand basic concepts such as color, shape, size, and relationships between objects. Thus, early childhood educators need to look for practical information, including ideas for children's learning activities (Hatzigianni et al., 2023). An understanding of the differences between oneself and how to interact with others, the dynamic offers society perceptions of environmental discomfort and its relation to behavior (Kamai et al., 2023); (Karihtala et al., 2023); (Labotka & Gelman, 2023). Early childhood tends to learn in a different way than adults, namely through direct experience and interaction with their environment. Environmental destruction that occurs during maternal pregnancy or early childhood growth and development can adversely affect various reproductive outcomes, pregnancy, and child health (Tran et al., 2023); (Shen et al., 2022). They learn through play,

exploration, and talking to adults and peers (Isa et al., 2022); (Pathman et al., 2023); (Song et al., 2022); (Ziauddeen et al., 2022). Play is not an instrumental activity in ECCE and may be the mediating goal of children's learning, where learning is play and play is learning (Guerrero & Camargo-Abello, 2023).

Early childhood skills in understanding language also begin to develop during this golden period. Causal models for children against virus transmission are essential to support the development of knowledge systems, scientific literacy, and public health (Labotka & Gelman, 2023). In scientific literacy can understand simple words and recognize some words in the language in their environment. Early childhood literacy refers to a child's ability to understand, use, and analyze information in written, oral, or visual form at an early age. This paper provides a basic idea of play-based learning and illustrates the importance of digital technology in early childhood learning. The role of digital technology is shown in several indicators related to the use of learning videos. The basic idea of play in early childhood education and the importance of digital technology in the teaching and learning process also has an influence on broader behavior when children play. It can be concluded that teachers can integrate digital technology into the process of early childhood play (Leung et al., 2019); (Meng & Liu, 2022; Radesky et al., 2022; Snyder, 2022; Zhang et al., 2022).

Literacy in early childhood is very important to help them in developing language skills and learning in the future. (Akbayin et al., 2023) states that parents who have children under the age of have difficulties with French. He concluded that parents of preschoolers are highly dependent on family communication as the first and foremost place of education. While gadgets are one of the media that can be used. Interactive media is a form of media that allows users to actively interact with media content. The utilization of online media over traditional media shows that they prefer interactive media platforms (Taghva et al., 2022); (Lomos et al., 2023); (Akbayin et al., 2023). Interactive media offers a more immersive and effective learning experience, as users can interact directly with media content, try, and play around with the concepts they learn. Critical education and critical media literacy theory as well as the local role of memory that fosters critical awareness (Aristizábal-Cardona & Ortiz-Medina, 2023). Data visualization, communication, storytelling, and interactive media. Development of story applications sourced from visual data on interactive digital platforms for the general public through the creation of entertaining data content, one of which is in the form of stories. Thus, the approach takes precedence over the composition of accumulated data and story elements, as well as creating route maps of information units and visual paths. Game development to support content creation visual data storytelling allows for the overall evaluation, function and impact of each component as well as measure the communication efficiency of information encoded in character or object patterns developed (Zhang et al., 2022); (Akbayin et al., 2023); (Kirya et al., 2022). The paradigm of digital storytelling, serious gaming, and data visualization can be transformed into a useful outlook (Radesky et al., 2022).

However, there are several problems related to literacy skills, including low reading, and writing skills so it is difficult to understand, use and analyze written, oral, and digital information. The emergence of miniature, easy-to-use, and accessible multimedia products led to screen exhibitions beginning in early childhood. Excessive exposure in preschool can cause side effects (Mendes et al., 2022). In addition, young people have not had many opportunities to see and compare different objects, making it difficult to distinguish colors, shapes, sizes, and relationships between objects. Another thing that is also a problem is that the level of parental literacy can affect children's literacy abilities. Next, the use of information technology and digital media makes children limited in accessing information. Excessive use of interactive media can lead to dependence on technology and disrupt the time balance between online and offline activities. Some of these problems can interfere with children's daily activities, such as learning, playing, and interacting. Research needs to be conducted to analyze the needs and procedures for developing interactive media that are appropriate for early childhood development. The solution provided/novelty offering is to meet and find the

need for the appropriate type of interactive media according to the stage of early childhood development (Listiani., 2023); (Keysers, 2015); (Snyder, 2022); (Song et al., 2022); (Penna et al., 2022). The study aims to identify the need for early childhood learning media in listening activities to improve literacy skills by developing interactive learning media.

### Methodology

The research was conducted using the R&D (Research and Development) method which refers to the theory of Borg and Gall. The research and development approach uses the ADDIE model. The design of learning media development used by ADDIE Instructional development design (Analysis, Design, Development, Implementation, Evaluation) (Gazali, 2016). The implementation of the ADDIE model in this study consists of (Creswell & David Creswell, 2018) (1) Analysis, by analyzing the initial needs of Early Childhood to determine or design the initial material to be used with the theme of oneself, the sub theme of knowing the limbs used in Making Multimedia Programs. (2) Product initial design based on the results of needs analysis in selected learning materials in Early Childhood Education (PAUD), (3) Development of interactive multimedia learning programs, in the form of Audio Video media using Ms. PowerPoints Software 2019 program, Animated Video, and Hyperlink on Ms. PowerPoints 2019 which contains six aspects of early childhood development, including aspects of religious and moral values, social-emotional aspects, cognitive aspects, language aspects, art aspects, and physical motor aspects. Interactive learning media can be used repeatedly on the material being studied and related to children's developmental achievements so that learning can be maximized. Followed by validation tests involving material expert validation and media expert validation. (4) Implementation of interactive multimedia learning media products through trials. (5) Evaluation of programs that have been produced and tested at Al Azhar Islamic Kindergarten 14 Semarang. Data analysis begins with the data collection process, including the stages of document analysis, making assessment grades, consulting with experts, and continuing with instrument writing. Data collection is carried out by interviews, Focus Group Discussion (FGD), Questionnaires, Documentation, and Observation. Figure 1, is a chart of the stages of development research:

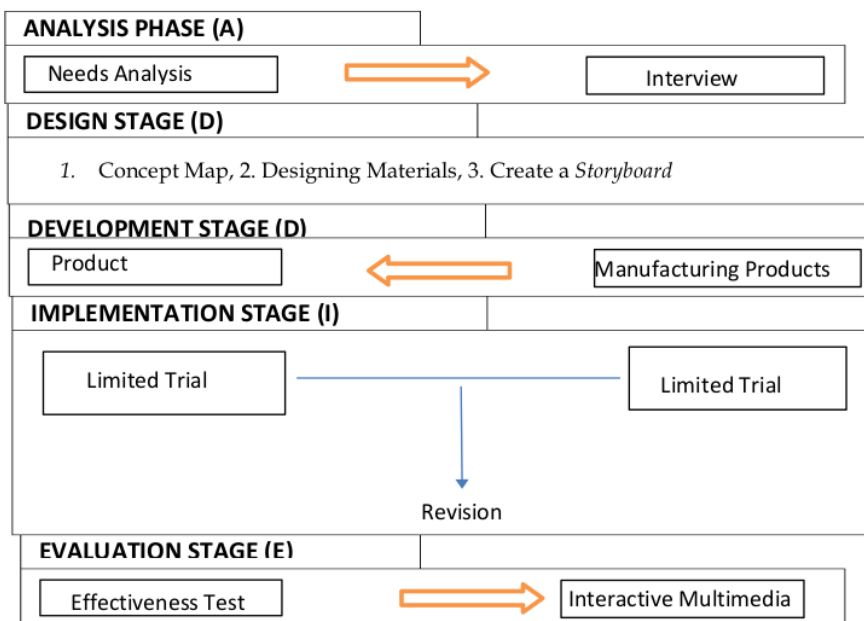


Figure 1. Research and Development Stages Chart

The data collection process is carried out in several stages, namely: Conducting document analysis, making assessment grids, consulting with experts, and continuing with instrument writing. There are at least four methods used by researchers to collect data in this study, including interviews, *Focus Group Discussion* (FGD), Questionnaire, Documentation, and Observation. Data collection on child development on the theme of self, sub-theme of knowing body parts directly according to children's activities when using media. The learning developed is the theme of oneself, the sub-theme of knowing the child's limbs can use media that has been made by researchers in the form of videos and *power points* that can be observed directly, to strengthen the information that can be obtained, including being able to overcome obstacles that occur in the field. Aspects observed include abilities that require clues, the ability to understand, the ability to relate places, the ability to distinguish notes (high, low), and the ability to give information in the correct order.

This research instrument is used to collect data on the validity of the material, the validity of the media, the validity of <sup>39</sup> Daily Learning Implementation Plan (RPPH), and the validity of the research instrument. The instruments used in this study include observation sheets, student learning work, and validation sheets consisting of media validation instruments, material validation instruments, and performance validation instruments. Data analysis in this study is divided into <sup>2</sup> types, namely: data analysis of validation test results, data analysis of the practicality of interactive learning media, and data analysis of the effectiveness of interactive learning media.

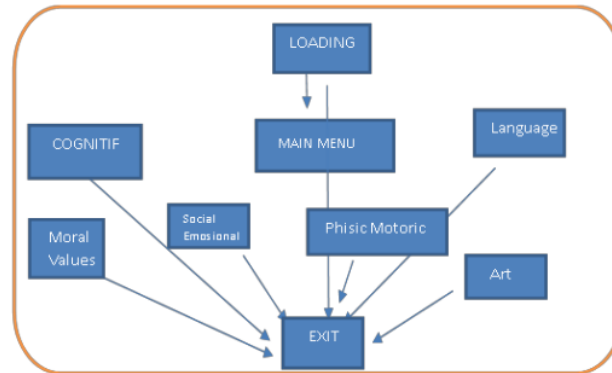
## Results and Discussion

This research is carried out in two stages, namely the development stage of interactive learning media and the implementation stage of interactive learning media. Needs analysis conducted through interviews showed that teachers of Al Azhar 14 Semarang Kindergarten concluded that interactive multimedia learning for listening activities (literacy) for early childhood is needed. Learning development design planning begins with determining competency standards, basic competencies, learning achievement indicators, and learning strategies to be carried out. The competency standard presented is Increasing Children's Knowledge of the Theme of Yourself. The learning materials presented include Getting to Know the Limbs. The material is in the form of Audio video Media (Interactive). The video is edited using Kinemaster software. To bring up animations of writing, sound, and music, use Ms. PowerPoints Software 2019. Display design on Animated Videos and clickable buttons to be Interactive, using the Hyperlink menu in Ms. PowerPoints 2019. The learning applied is communicative interactive learning between teachers and students using computer-assisted learning media, laptops, and Liquid Crystal Display (LCD) viewer projectors for the delivery of teaching materials. Figure 2 i design of learning media at the stage of making videos.



Figure 2. Use of Kinemaster software

Videos are downloaded from YouTube, then edited using Kinemaster Software. After editing the video, then make a display design on Ms. PowerPoints 2019. A programflow program is a chart with symbols that show <sup>12</sup>the sequence of processes with the relationships between processes in detail as illustrated in Figure 3.



**Figure 3. Animated Video Flow Chart**

The flow chart is designed to choose the learning menu in the interactive learning media layer, at the top of loading then enter the main menu, after entering the main menu it will appear in one layer with six aspects of development, users can choose the aspects to be used, The aspects of development that appear include Religious Values and Moral (NAM), Cognitive, Social Emotional (SOSEM), physical motor, language, and art. Data users click on the selected aspect and an animated learning video will appear. After supporting materials such as images, videos, and so on are collected, a storyboard is made to illustrate the shape of the display of each frame in the developed learning media. The storyboard design is made based on the flowchart that has been created. The Main Menu page is the main page of the application. In this menu, 6 navigation buttons further contain different material, namely: (1) the introduction is the initial page of the newly run application display, this page contains the logo, animated media title, author name, and several main menus; (2) Video material is a page to deliver learning material, users can click the menu or button according to the needs of the material to be delivered; (3) The cover contains the display of the author's biodata, with this cover design. Interactive learning media is finished being used to end learning activities; users can press buttons. Assembly is the stage of combining all materials into a learning medium. To facilitate use in learning, the videos are arranged based on the sequence of learning materials using Microsoft PowerPoints 2019 software.

Here's a look at the Microsoft PowerPoints 2019 software program. The assembly stage is the stage of making multimedia objects or materials. After the materials needed in making the application have been needed, the next stage is managing and combining materials into a medium which is made based on storyboards, navigation structures, state transition diagrams, and interface design (user interface).

The result of combining the appearance of the main menu is in the form of text, audio, animated images, <sup>20</sup>and buttons. This main menu is the title of the learning media created. In this case, the title of interactive learning media is the theme of oneself with the sub-theme of knowing the limbs for the first semester of kindergarten A, then teachers and children can use and select the menu on the title cover consisting of six developmental aspects containing power points and animated videos. In the aspect of religious and moral values, it contains about how students have gratitude as God's people. The social-emotional aspect contains the ability of students to control their emotions, knowing how to touch and not to touch. The cognitive aspect contains how students recognize parts of the limbs they have. The art aspect

is about how to make dolls out of origami paper. The language aspect contains about children's songs part of the limbs, after the child listens through the song the child can repeat the song heard and can mention parts of his limbs, the physical motor aspect contains about children moving their limbs to be healthier and stronger.



Figure 4. Merger Results (HOME)

After the initial product was created, the program was tested on several computers and laptops. The purpose of this trial is to determine the effectiveness of media on several computers and laptops that have different specifications. The result obtained after the trial is that it can be used on all computers and laptops easily. This learning medium has a resolution of 800 x 600 pixels (Figure 4). After the product runs well, then to get the feasibility of the developed learning media, a validation process is carried out, namely media expert validation and material expert validation. Based on the results of the assessment by the two material expert validators, it can be concluded that the 12 aspects of the assessment indicators for the material test presented can be said to be Very Good. This is reinforced by the data on the questionnaire which shows an average score of 3.71. Based on the results of the assessment by the two media expert validators, it can be concluded that from the 15 aspects of the assessment indicators for the media test presented, it can be said to be 'Very Good'. This is reinforced by the data on the questionnaire which shows an average score of 3, 5, 7.

The practicality of interactive learning media is the level of ease of application of interactive learning media developed along with supporting devices. The level of practicality of this learning is reviewed based on the implementation of interactive learning media that is piloted. The implementation of research on the development of interactive learning media for self-material has been carried out on 21 students of TK A Al Azh 14 Semarang. Each submission of a Daily Learning Implementation Plan is observed on the teacher's ability to manage teaching and learning activities using interactive learning media with prepared learning implementation instruments. The ability of teachers in managing interactive learning media is focused on their ability in activities: Opening, Core, Mastery of material, selection, and use of learning media, material linkage, discussing activities, and closing. Data from the study were obtained from a sample of 21 children. This assessment is carried out by referring to observation sheets that have been used in schools. To strengthen the results of this study, the assessment was carried out by two teachers who were competent in assessing activities. From the results of the assessment obtained, it shows that both are realistic. It can be proved that 0.36. Based on the results of the initial needs analysis through interviews conducted at TK Al Azhar 14 Semarang, it shows that the role of teachers in learning activities is very important, teachers need innovation in learning related to the media. This can be seen in the deepening of the self-theme material, the sub-theme of knowing the limbs still uses conventional media, for example with books, posters, and pictures. So, with that, the ability of students only

depends on the teacher and students feel bored. The media used by teachers in learning activities so far has not changed and has not used the existing infrastructure to the maximum, in TK Al Azhar 14 Semarang infrastructure facilities such as computers, and LCDs use only one way, for example only to watch or listen to music. Learning activities are new, and innovative and can motivate students to easily understand what the teacher conveys, especially in the theme of oneself, the sub-theme of knowing the limbs requires the use of existing technology because technology can make a very effective contribution to learning, as stated by Smaldino et al (2005) in (Setyawan, 2016), who said that the media is a communication tool and source of information. So, the use of this media is very effective in learning so that the delivery and deepening of message and information learning materials can be maximized. Interactive Learning Media (MPI) is one of media that is very suitable for use in learning at the early childhood level because this media can make it easier for students to receive messages conveyed, especially for listening activities. There are many types of learning media, but researchers are interested in the development of interactive learning media that utilize technology in its implementation, namely by developing interactive learning media for deepening and understanding interactive multimedia-based material. According to (Pangemanan et al., 2016) in stating that multimedia is a media that combines two or more media elements consisting of text, graphics, images, photos, audio, video, and animation in an integrated manner. So indirectly multimedia will increase children's interest in listening activities which will later have an impact on children's effectiveness to improve listening skills. Development of multimedia-based interactive learning media using the ADDIE procedure. But in general, it consists of five phases that form stages, namely: Analysis, Design, Development, Implementation, and Evaluation. (Khoiruddin & Taulabi, 2016) in the opinion of Zulrahmat Togala for the book Instructional Design: The ADDIE Approach, explains the activities carried out at each stage as follows (Togala, 2013) (Sukenda, 2013).

**First**, Analysis; in the phase, of defining instructional problems, instructional objectives of the learning environment, knowledge and expertise currently possessed by children, this analysis uses interview method guidelines by analyzing who uses the product, what characteristics of existing children, what material is suitable to be given and what kind of media will be used in learning activities in kindergarten children of Al Azhar 14 Semarang. This analysis is used to take steps to develop the mathematics to be presented. **Second**, Design; the design phase deals with goal setting, assessment instruments, exercises, content, subject matter, lesson plans, and media design, which is carried out systematically and specifically. Activities carried out include material selection, making overall concept maps, and the shape and appearance of the program. **Third**, Development; This phase is done by creating and merging content that has been designed in the design phase. Here developed storyboarding, content writing and graphic design. In this phase, the necessary media are created and collected, the use of the internet to present information in various formats according to the child's needs, and define creative interactions, with innovative forms and encourage further listening. Furthermore, validation of material experts and media experts is carried out to assess the feasibility of the developed product.

**Fourth**, Implementation; in this phase is carried out real steps to apply interactive learning media that have been made. This means that all learning materials are such that they can be implemented immediately according to their roles and functions. **Fifth**, Evaluation; is this phase of the process to see whether the learning system being built is successful by initial expectations or not. This evaluation stage is carried out to test the effectiveness of the media, to improve students' literacy skills by the way the teacher observes children's activities in listening and is outlined in the performance of making origami dolls part of the limbs. Then analyze based on the results of pretest and posttest observations.

Analytical effectiveness is performed by t-test analysis. The validity of interactive learning multimedia products can be seen in detail in the results of the material expert validation stage and media expert validation. Validation was carried out by two material



experts and two media experts. The stages of interactive learning media product validation certainly have several stages of product revision to perfect the product developed. Based on the assessment of the validation of material experts and media experts, it can be concluded that the interactive learning media developed are valid and can be used for learning in Early Childhood Education (PAUD), especially listening skills to improve literacy. The interactive learning multimedia product developed has the following advantages: (1) accommodates both visual and auditory learning styles, (2) the existing buttons are easy to determine the material to be taught, (3) the material can be repeated as needed, (4) there are six aspects of the field of development in one product, (5) clarity of letter characters that are appropriate for early childhood, (6) can be used for self-study.

This is by Kemp and Dayton in Arsyad (2011: 22) in that there are three benefits of learning media, namely: (a) learning can be more interesting and interactive and can combine learning visual and auditory, (b) the length of time needed in learning can be shortened, and (c) learning can be given when and where desired or needed. The practicality of interactive learning media is shown by the implementation of learning phases by the stages developed. Practicality is shown by the achievement of learning implementation carried out by class teachers who show very good criteria. This means that teachers can use interactive learning media for learning activities. The aspects observed to determine the implementation of learning using interactive learning media are the teacher's ability in opening activities, core activities, material acquisition, selection of learning media use, material linkage, discussing, and closing. Observers give an average very good response to the implementation of learning using interactive learning media (Nabilah Layaliya & Haryati Setyaningsih, 2021).

The effectiveness of learning tools can be seen from the achievement of targets in performance activities in making works on the theme of self, the sub-theme of knowing the limbs, students making origami works about parts of the limbs, and increasing pretest-posttest scores measured by student learning outcomes test instruments. Aspects of performance assessment include understanding clues, recognizing shapes, understanding places, distinguishing tones, and providing information. The result of the work means that what is produced is made correctly and neatly according to its place. Information on the achievement of completeness of performance assessment shows classical completeness reaches 100%. This means that students already have skills in making works of parts of the limbs well, where the work can be done according to the location of the parts of the limbs as well as being able to explain their functions. Visualization of observations through interactive learning media can improve students' process skills in making works and be able to explain the functions of their limbs. Based on the achievement of classical completeness of students, it can be interpreted that early childhood is very suitable if learning is carried out with optimal activities that rely on the use of interactive learning media because it will be very effective to increase the competence of their abilities. This is research that states that learning that relies on interactive learning multimedia can motivate users during the learning process, giving the impression of realism or real experience, interaction between programs and users provides a strengthening of student understanding (Setyawan, 2016).

## Conclusion

The development of valid interactive learning media meets the characteristics of validity. And it can be used for learning. The results of the development of interactive learning media with one's theme are stated to be practical in their use to increase the literacy of early childhood students. The development of interactive learning media has proven effective. Able to improve the literacy ability of students aged 4-5 years, the effectiveness of learning using interactive learning media self-theme can be seen through effectiveness tests with the results that interactive learning media self-theme sub-theme knowing body parts can increase early childhood literacy.

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