https://doi.org/10.35877/jetech2708

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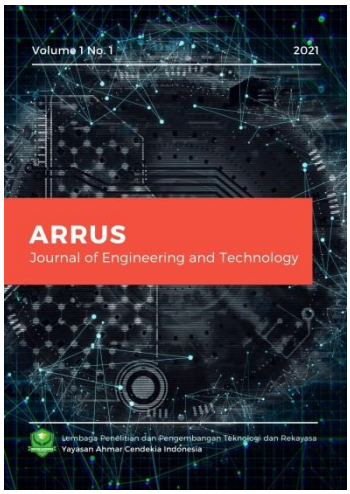
ISSN : 2776-7914 (Print) / 2807-3045 (Online)



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RESEARCH ARTICLE

Learning Application Through Visual Media to Enhance Senses for Early Childhood Based on Multimedia at Dahlia Kindergarten

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Abstract: With the rapid advancement of information technology, there has been an overflow of dynamically flowing data without limits and regardless of time. Perhaps one thing we must not forget is that data can be communicated with the help of images. One of the most popular learning methods today is sensory perception learning media. The analysis used is to study a number of information about sensory perception learning and collect materials related to sensory perception that will be used in this application program. Such as searching and editing images. The aim is to help beginners learn about sensory perception so that it can provide convenience in learning, without having to adjust the time of learning. Then an application program was made to recognize sensory perception. Sensory perception learning through this learning media is a useful media for helping to recognize sensory perception, through sensory perception learning media this makes an interesting and effective thing because it is designed with images, animations, and sounds that support the atmosphere of learning.

Keywords: Learning Media, Senses, Early Childhood, Multimedia

1. Introduction

The rapid development of technology has changed various aspects of life, including in the field of education. This progress provides great opportunities for the development of more effective and engaging learning methods, especially for early childhood education in Kindergarten (TK). One of the main challenges in early childhood learning is to teach them about sensory perception in a fun and effective way.

Learning sensory perception in early childhood should not only focus on conceptual understanding alone, but also consider the aspects of pleasure and children's involvement. According to Tordoff (2019), using images and animations can help in a more interesting and easily understood teaching process for children. This is in line with Rafferty's opinion (2020) that multimedia approaches in learning can significantly increase children's learning interests.

In this context, a multimedia-based learning application to recognize sensory perception at Dahlia Kindergarten, Pandeglang, becomes a relevant solution. This approach aims not only to facilitate enjoyable learning but also to provide interactive and profound learning experiences for early childhood (Chang et al., 2021).

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This study aims to develop and test the effectiveness of a learning application focused on image media in improving children's understanding of sensory perception. By integrating multimedia principles and interactivity, it is hoped that this application can become an innovative and effective learning tool in the Kindergarten environment (Lewis & Stanley, 2018).

2. Literature Review

2.1. Definition of Senses

Senses refer to humans' ability to receive information from the environment through five main senses: sight, hearing, smell, taste, and touch. Each sense plays a specific role in the perception process and human interaction with the environment. For example, sight allows visual perception, hearing for sound perception, smell for odor perception, taste for taste perception, and touch for touch or texture perception (Ariani, 2017; Azizah, 2019).

2.2. Definition of Learning

Learning is a complex and integrated process in which individuals acquire knowledge, skills, attitudes, or values through various forms of study, direct experience, or teaching. This process involves interaction between students and teachers, learning materials, and their physical and social environments. Learning not only covers cognitive aspects but also deep affective and psychomotor aspects (Santoso, 2018; Sudarwan, 2020).

2.3. Definition of Multimedia

Multimedia refers to the use of computer technology to combine various forms of media such as text, images, sound, animation, and video in a single interactive presentation or application. The multimedia approach allows information to be delivered in a more dynamic and interesting way, facilitating more interactive and participatory learning (Arifin & Pramono, 2016; Susanto, 2019).

2.4. Definition of Macromedia Flash 8

Macromedia Flash 8 is a very popular software in its time for creating interactive animations and web applications. With Flash 8, users can develop rich multimedia content using animation timelines, asset libraries, and the ActionScript programming language. This platform supports the development of e-learning applications, educational games, and various other interactive applications (Irawan, 2017; Kurniawan, 2018).

2.5. Definition of Actionscript

ActionScript is a programming language used within the Macromedia Flash environment to control object behavior and user interface interactions. With ActionScript, developers can create scripts to organize animations, respond to user input, manage data, and dynamically manipulate objects in Flash applications. This allows the creation of more interactive multimedia content and personalization of user experiences (Wibowo & Santoso, 2015; Rahayu & Susilo, 2019).

3. Research Methods and Materials

The method used in this study is research and development. In the research and development method, there are several types of models. The model used is the 4-D development model. The 4-D development model (Four D) is a development model for learning devices. This model was developed by S. Thiagarajan, Dorothy S. Semmel, and Melvyn I. Semmel (1974: 5). The 4D development model consists of 4 main stages: Define, Design, Develop, and Disseminate. This method and model were chosen to produce a pop-up media product. The developed product was then tested for its validity and product trial to determine the extent of improvements in student learning motivation and outcomes.

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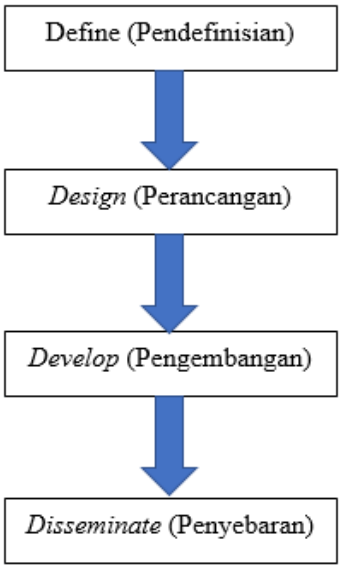

Figures 1. The 4-D model

The explanation of the four stages of development is:

a. Define stage, the purpose of this definition stage is to determine and define learning conditions,
b. Design stage, the aim of this stage is to prepare a prototype of the learning device. At this stage the researcher makes an interesting initial design
c. Development stage, the aim of this stage is to produce interactive learning multimedia that has been revised based on expert input.
d. Destinate stage, the stage of developing interactive learning multimedia which has been developed on a wide scale, for example testing the effectiveness of using interactive learning multimedia in the reading ability of Dahlia Pandeglang preschool children.

3.1. Data collection technique

The data collection process that the author carried out in this research was as follows:

a. Interview

This is a method of carrying out direct observations through questions and answers with resource persons at the research site "PAUD DAHLIA" to obtain accurate and reliable information.

b. Observation

Observation is direct observation of the activity being studied. To complete the data obtained, observations were made regarding the activities taking place at the preschool.

c. Literature review

Namely research by taking materials from literature books and other sources related to the problem being studied so that a theoretical basis can be obtained in conducting research and in analyzing existing data.

3.2. Analysis

To build a multimedia system, various information is needed that is in accordance with the problem formulation, the main idea of problem solving and the system model to be built. In this section, several activities are carried out, including analyzing problems that occur, defining user needs and finding solutions through multimedia.

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a. Problem analysis

1) The need for interesting and effective learning media.
2) There are obstacles that occur during the learning and teaching process in lessons about the five senses, such as limited time in the learning and teaching process and students' boredom in reading.

b. Problem Solving

1) After studying the problems above, to have students who are competent in the field of sensory understanding, effective and efficient learning is needed to support the learning and teaching process. One of the learning methods currently developing is using multimedia technology.
2) Multimedia technology is used to create learning media. One application of multimedia technology is an interactive multimedia system.

c. Flowmap

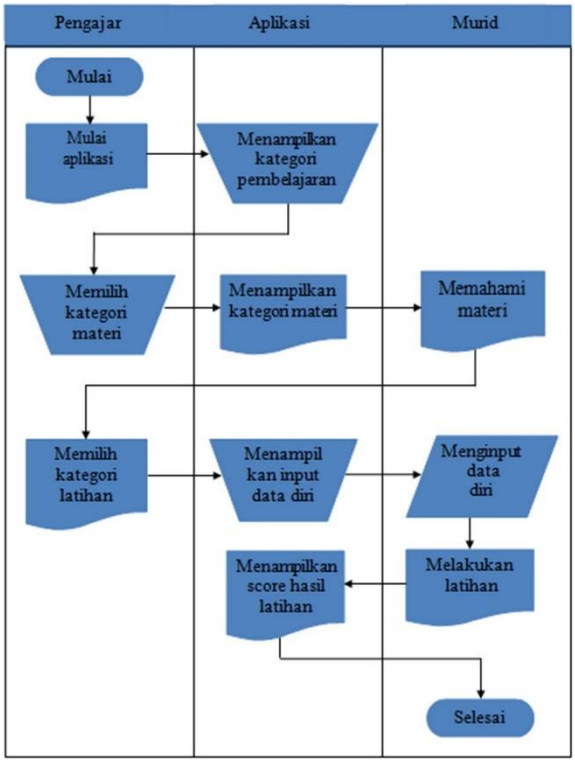

Figure 2. FlowMap

3.3. Flowchart

Flow chart is a program flowchart that explains in detail the steps of the program process. This flowchart explains the learning process. The flowchart shown on Figure 3.

4. Results and Discussion

4.1. System Specifications

a. Software

To create learning media works using extensive multimedia, researchers use software used to design learning media, namely:

1) Macromedia Flash 8 (as authorware software)
2) Adobe Photoshop (for display and menu design)

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3) Microsoft Office (Word and Power Point, used for text editing)
4) Xilisoft audio marker 6 (sound control)
5) Inno setup compiler (program installer)

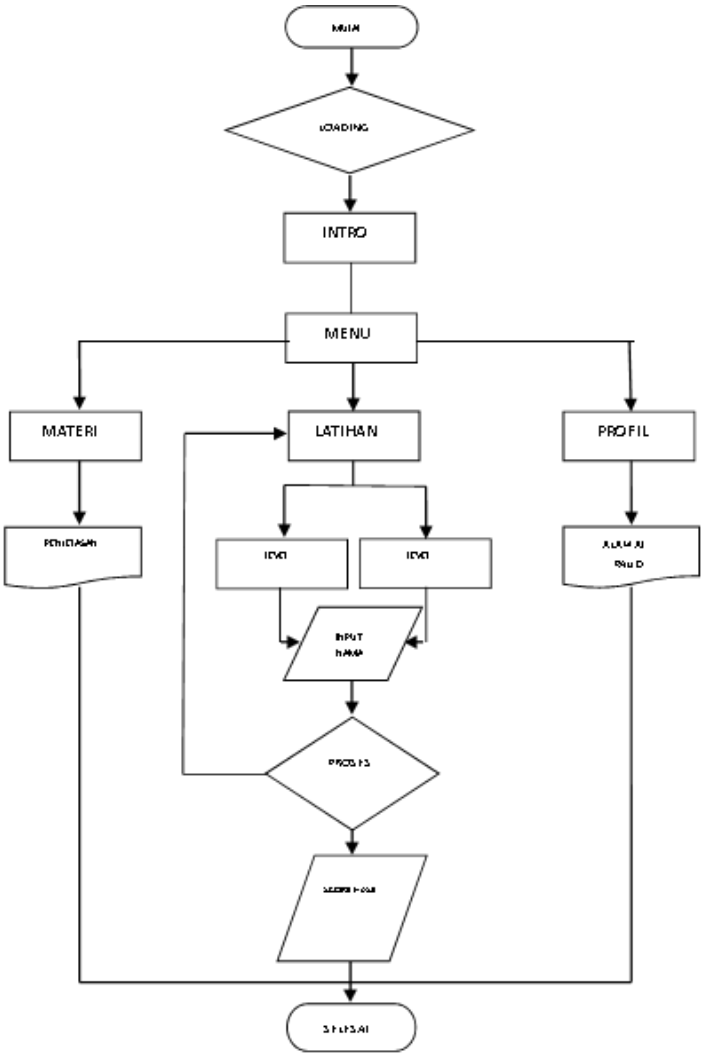

Figure 3. Learning Process FlowChart

b. Hardware

Dual core Intel processor with a minimum speed of 2.66 Mhz.

1) Minimum memory 1.6 Mb.
2) VGA Card 64 MB.
3) Monitor with 800 x 600 resolution.
4) Sound Card, Mouse, Keyboard.

c. Executor

In the implementation of the five senses learning application at PAUD DAHLIA PANDEGLANG there are several implementers, namely:

1) Teacher
2) Student

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4.2. Application Usage Procedures

a. Homepage

On the home page, namely the display of the five senses interactive learning application for the Dahlia Pandeglang preschool, you can see the Figure 4.

Figure 4. Homepage

b. Intro Page

On the intro page, to enter the menu, press the house image button in the lower right corner, and to exit the application, press the X button in the lower left corner.

Figure 5 Intro Page

c. Main Menu Page

From the main menu page there are three buttons, namely, the material button to enter the material, the practice button to enter the practice question page, the profile button to enter the creator's profile page.

d. Materials Page

On this material page, you can press the image and point to the image and the image and explanation will appear.

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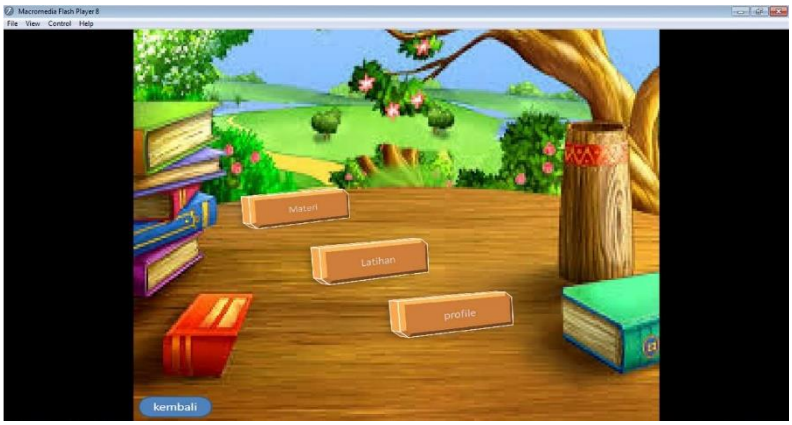

Figure 6. Main course

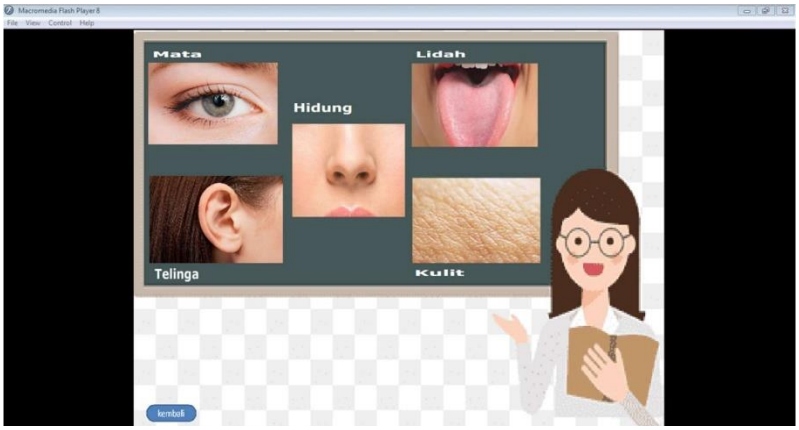

Figure 7. Material page

e. Easy Level Input Page

This input page is for inputting the name of the person who will do the practice questions.

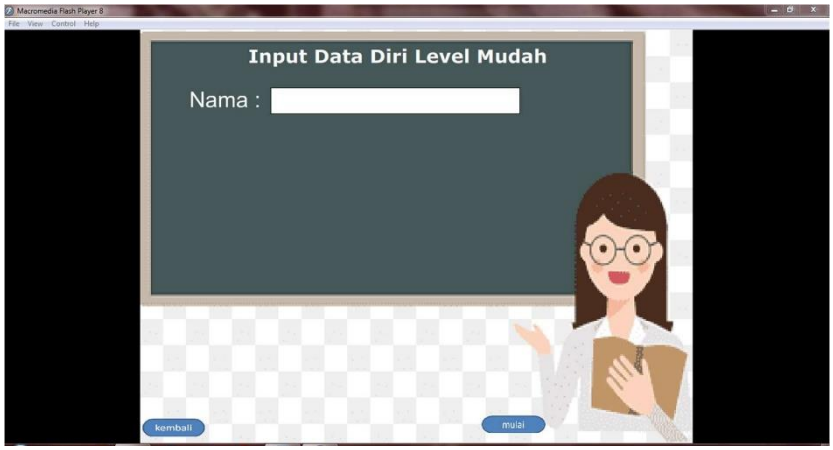

Figure 8. Easy Level Input Page

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f. Easy and difficult level questions page

To do the exercise and determine the answer, simply select the picture of the five senses that is listed.

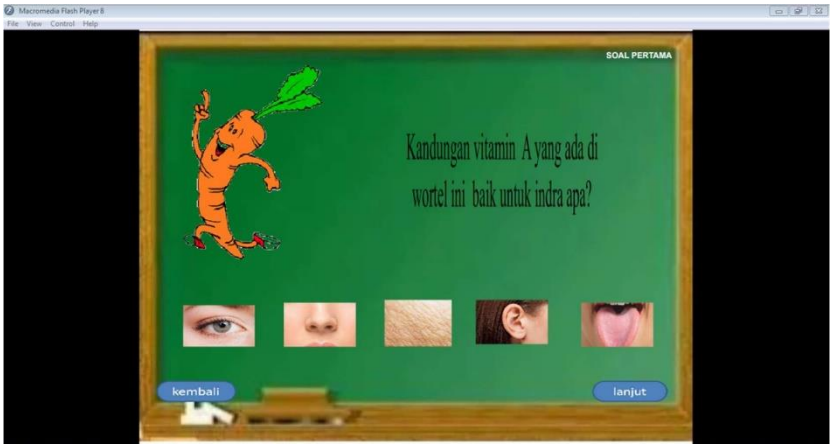

Figure 9. Easy Level Questions Page

Figure 10. Difficult Level Questions Page

g. Page Value of Practice Questions for Easy and Difficult Levels

From this page you can see the results of people who have done the practice questions, and to return, press the home button in the bottom right corner. The pages shown on Figure 11 and 12.

4.3. Black Box Testing

This learning media application for introducing the five senses has been tested using the black box testing method. Black box testing focuses on the program control structure, test cases are carried out to ensure that all statements in the program are correct have been executed at least once during testing and that all logical conditions have been tested. The results shown on Table 1.

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Figure 11. Easy Level Practice Question Results Value Page

Figure 12. Difficult Level Practice Questions Results Score Page

Table 1. Black box testing

No	Tests Performed	Results
1	Displays the loading page	Good
2	Displays the intro page	Good
3	Displays the main menu	Good
4	Displays the material page	Good
5	Displays the practice page	Good
6	Displays the profile page	Good
7	Displays the eye menu	Good
8	Displays the nose menu	Good
9	Displays the tongue menu	Good
10	Displays the ear menu	Good
11	Displays the skin menu	Good
12	Clicking all the buttons each page uses	Good

5. Conclusion

Based on the explanation of the material and discussion, it can be concluded as follows:

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a. This learning application was designed by the author to make it easier for Dahlia PAUD students to get to know the five senses. The application is presented in image media based on interactive multimedia.

b. Dahlia PAUD students are very enthusiastic about learning because learning is no longer boring and this learning media really helps students understand the five senses well so that parents no longer worry about their children's development at an early age.

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