

Information Technology for Early Childhood Education in Indonesia

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Information technology for early childhood learning includes technologies such as computer-aided teaching tools that are used to increase understand during the introduction and passage pronunciation of Latin letters and Arabic spelling and numbers. This assistive software presents materials on the introduction of the Latin alphabet and Arabic, the introduction of units and tens digits, the introduction of Arabic spelling, and presents an evaluation or test for students after studying the material that has been given. This introduction to letters consisted of the introduction of the Latin letters (Aa - Zz) and the Arabic alphabet and the Arabic letters. The introduction of numbers consisted of unit recognition of numbers (0-9) and tens (10-100). An evaluation is provided in the toolkit for implementation along with the materials given, in the form of visuals that randomly appear and students need to match the writing on the media that has been provided in accordance with the emergence of visual. At the end of the evaluation, number of questions and answers as well as the results of calculations the final value of the evaluation are produced. This learning aid software was built using a prototyping approach, which consisted of collecting information from customers, making prototypes, and evaluating prototypes.

Key words: *Computer Assisted Device, Software, PAUD, Prototyping.*

Introduction

The social demand for education is currently high. To bridge the gap between the needs of the community and the goals of national education, it is necessary to organize education with a curriculum that is clear and focused, so that the potential nature and culture of an area is a major capital in achieving common prosperity and community fairness. The link between education with the environment and regional development, has been regulated through a law on the National Education System which stipulates that implementation of education must be

based on a nationally applicable curriculum and curriculum that is tailored to the circumstances and environmental needs and characteristics of the education unit concerned.

Adjustments in education in accordance with the circumstances and needs of the environment have been carried out by the Ministry of Education and Culture, including books, teaching methods, and the latest teaching materials across the region in Indonesia. Especially for early childhood learning which is currently known as the model of speed reading. Departing from the above problems, it is necessary to build computer-aided software that can help teachers and students in the learning process by simplifying understanding the education, while also introducing children to tools of information technology in the learning process. With the existence of this software, it is expected that teachers, students and the wider community, especially among the world of education, can take advantage of teaching tools for rapid learning to increase students' interest in learning the material taught.

This study has the objective to improve the understanding of the learning process for Early Childhood Education (ECD), especially in Singapore, by applying technology-based learning tools. The question is how can efforts to help the learning process for Early Childhood Education be made more effective and efficient. In answering this, factors that can be identified include:

1. Application of Information Technology in learning does not yet have a model that can support the learning process.
2. The absence of optimal efforts in utilizing information technology in an effective and efficient learning process.

Research Questions

To analyze the needs of information technology and information systems, the authors ask the question as follows:

1. What Learning Tools Help is needed by the Early Childhood Education?
2. What are the benefits of Auxiliary Learning Tools for Early Childhood Education?
3. What is the model used to define the approach Prototyping Tools Help Learning for Early Childhood Education?
4. How to design devices for the Bantu Education Early Childhood Education?

Research Objectives

The purpose of designing instructional software is:

1. To design learning software as a tool for the learning process for Early Childhood Education.

2. To optimize information technology in the learning process to be more effective and efficient.

Scope and Limit to the Research

The scope of the research problem in software design learning aids for Early Childhood Education Bandung, which will be developed, include:

1. Designing learning material in the form of letter recognition, the introduction of Arabic spelling, as well as introduction to the numbers of units and tens.
2. The final result of designing this learning aid device includes an evaluation of the implementation of the materials that have been given. In this evaluation the students match the answer by writing down the visual forms that appear randomly on the media that has been provided. At the end of the evaluation the amount of the given problem will be known, as well as the number of true values, the amount of any value, and the final value.
3. Learning software built web-based.

Research Methodology

The development methodology of the design model of learning aids software uses is the prototyping framework. The stages of development are:

1. Interviews, which are used to collect data and gather information directly from the source.
2. Observations, namely direct observation of the object of research to see activities carried out up close.
3. Frames used in software designing assistive in this study, namely: identification of the problem, phase of software development, analysis phase, design phase of software, the determination of multimedia devices (taking pictures / graphics, sound recording and animation) and the last stage of implementation of the software.
4. In designing learning aids software, used in the form of Prototyping approaches, there are several stages of prototyping; discussions with customers determine requirements, create prototypes, and demonstrated the prototype to the customer.

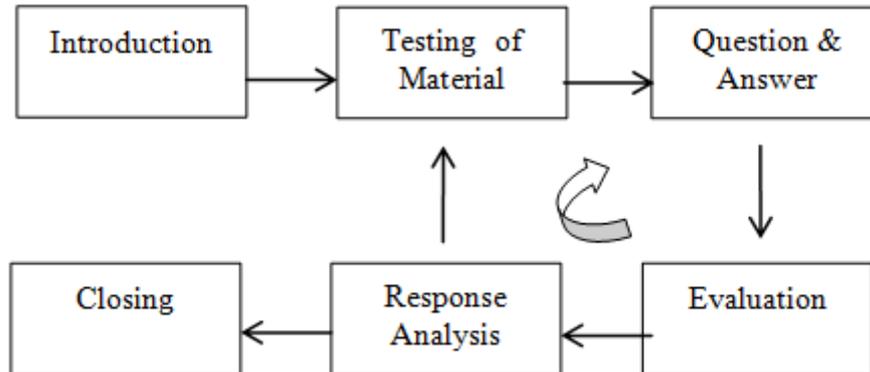
Methodology

A. Computer Assisted Learning

1. Computers are one of the media forms used in improving the quality and quantity of teaching activities. Computer systems are used to delivery instruction to students through direct interaction with subject matter that is programmed into the computer.[1]
2. Technological developments affect the teaching pattern result in the tendency to utilize technology to enhance the facility or the tools used in the teaching system, teaching the use of media, as well as teacher resources. [2]

3. General Structure and Flow of an tutorial [3]:

Figure 1. General Structure and Flow of an tutorial



B. Teaching Planning Process

The process of designing teaching generally follows the contours of the following [4]:

1. Presentation
2. Evaluation
3. Response analysis
4. Response (comments based on analysis)
5. Follow-up, the path that students may choose (depending on the making of the system), namely:
 - a. The material is continued by giving an explanation
 - b. If there is an error, further improvement material is displayed, students are only free to choose the previous material.

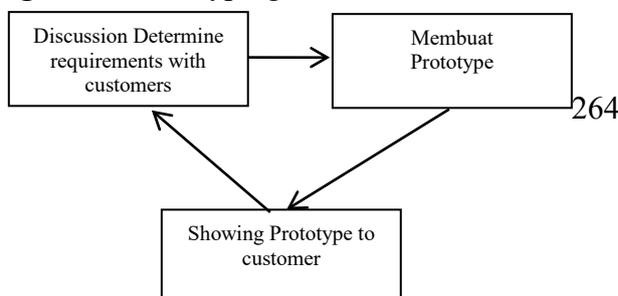
C. Prototyping Method

Stages of Prototyping Methods in designing this learning software, among others [5]:

Collect information from the customer

- 1.2. Make Prototype software, wherein it is though "quick design" and a prototype is made in accordance with the design
2. Evaluate the prototype, namely by showing the prototype to the customer to be adjusted to the customer's desires.

Figure 2. Prototyping Model

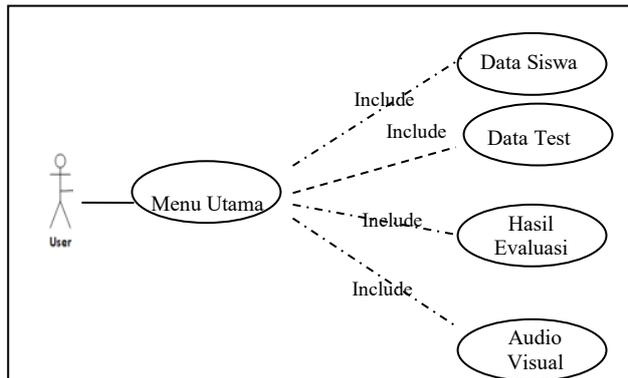


Results

A. Use Case Diagram

Use case diagram is a functional requirement that is described from the point of view of a user of a system. Use Case answers the question of how actors interact with the system and describes the actions that will be carried out by the system.

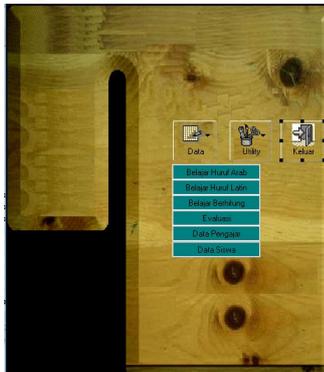
Figure. 3. Use Case Diagram



B. User Interface

The user interface is interface software intended for learning aids

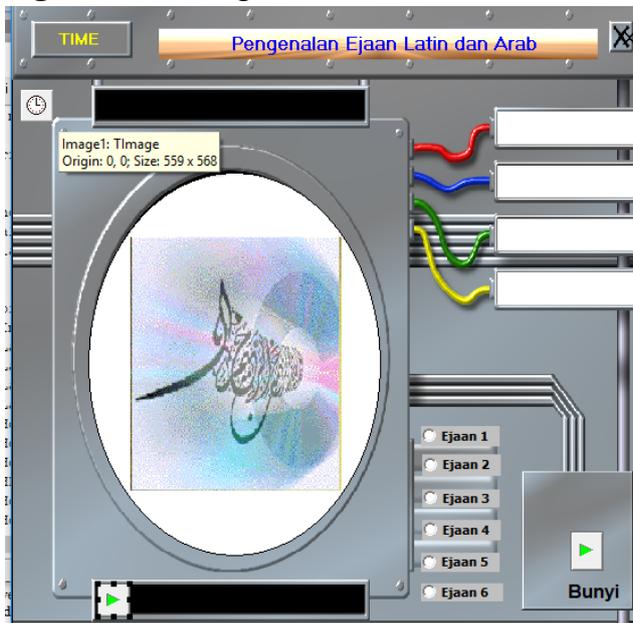
Figure. 4. Main Menu Interface



The menu provides options such as "Data", "Utility", and "exit"

This interface provides the main learning about the spelling of the Latin alphabet, how to write Latin as well as learning to recognize numbers and tens unit.

Figure 5. Learning Latin



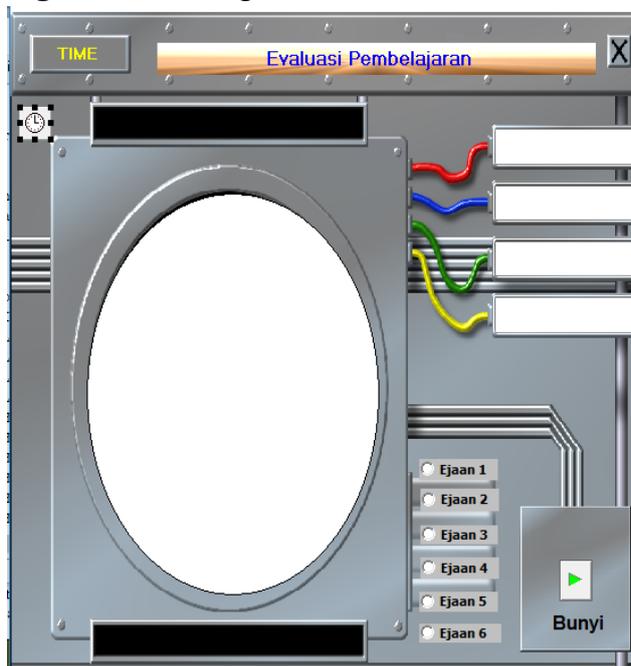
This interface provides the main learning about the spelling of Arabic, how to write Arabic as well as learning to recognize numbers and tens unit.

Figure.6. Learning Arabic



This interface provides the learning evaluation of the materials that have been studied, so that students and teachers can know the depth of material that has been given, whether it is understood or not understood, so that any recurrence would need these materials.

Figure 7. Learning Evaluation Interface



Conclusion

Based on the stage that has been described in the previous chapter, the following can be concluded:

1. Making Software Teaching aids are expected to help the learning process for Early Childhood Education.
2. Making Linak Devices teaching aids for Early Childhood Education are expected to be able to improve the quality of learning so that it is more effective and efficient in the learning process.
3. Software Teaching aids can be used as an alternative media learning process, supporting the understanding of the learning process for Early Childhood Education, so that it can optimize the involvement of information technology in the learning process.

As a reference for making the next learning aids software, the following suggestions can be made:

1. The development of further learning software can utilize Artificial Intelligence (AI) by adding procedures and data processing so that this software can receive additional data that supports educational material.
2. Further software development can be more interactive, considering that Early Childhood is more likely to like the combination of Audio, Video and Animation which is supported by the quality of the learning model.



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