

Prototypes Of Learning Physics Using Computer Assisted Instruction Method

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ABSTRACT

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The learning that is being carried out now is still conventional in that the teacher only stands in front of the class and records the material on the board while the students copy the notes written on the board into their notes. This results in the reduced achievement of students who tend to prefer playing rather than learning. An alternative solution is to create learning applications using computer media with the hope of being able to improve classroom learning such as increasing student achievement. CAI stands for Computer Assisted Instruction which means it is a computer system that can deliver instruction directly to recipients of information by interacting with programmed subjects. Computer-Assisted Instruction (CAI) has been developed recently and has proven its benefits to assist teachers in teaching and assisting students in learning.

1. INTRODUCTION

Physics is one of the subjects studied in school. Many lessons are learned about physics in solving problems to find optimal solutions. One of the lessons in physics is energy. Energy is the ability to do an effort and is eternal, meaning that energy cannot be created and destroyed but only changes form from one form of energy to another (Purwoko Pendi, 2006: 85). Based on the foregoing to understand physics lessons that focus on energy, students must look for various references and examples of case studies to understand the lesson. The learning that is being carried out now is still conventional in that the teacher only stands in front of the class and records the material on the board while the students copy the notes written on the board into their notes. [1]-[5]

Learning is essentially a process of interaction with all situations that exist around the individual. Learning can be seen as a process that is directed towards goals and the process of doing, through various experiences. Learning is also a process of seeing, observing, and understanding something. Learning is a system, which consists of various components that are interconnected with one another. These components include objectives, materials, methods, and evaluation. With this method of learning, students become bored and teachers in class so that it will result in a feeling of drowsiness and the material provided cannot be fully captured by students. [6]-[12]

CAI stands for Computer Assisted Instruction which means it is a computer system that can deliver instruction directly to recipients of information by interacting with programmed subjects. Computers are used as a medium for conveying learning materials/information, instructions in solving existing practice questions as well as evaluators. By using computers, it is hoped that students will be more interested and like the material taught in the CAI. Students are given the opportunity to learn interactively with



computers and are not burdensome. The CAI learning system method students learn to follow their own abilities step by step and may repeat the material if it is not understood.[13]-[16]

2. METHOD

This research will focus on the application of Computer Assisted Instruction (CAI) which is a form of learning that places computers as individual learning system devices, where students can interact directly with computer systems that are deliberately designed or used by teachers. Computer-assisted learning (CAI) can be carried out by child users independently. If the child user who will use the application has mastered computer use, then the child user can immediately play the application independently (individual learning). However, you should be accompanied by a teacher or adult who understands using computers.

The research steps/research flow is divided into several stages, namely the analysis stage which is divided into field studies/literature studies and needs analysis. Continue with the design stage, namely system design, then the development stage which is divided into application development and application validation. At this development stage, the application validation process will take a lot of time due to the revision process or not the application being made. After the development stage is complete, continue with the Implementation stage, namely testing the application for children, and the last stage, namely the evaluation stage, namely analyzing the validation results and making conclusions.

3. RESULTS AND DISCUSSION

Computer-based learning or better known as e-learning is one way to improve the quality of learning. There are various types of methods that can be applied in computer-based learning, for example, CAI (Computer Assisted Instruction), which is computer-assisted instructors whereas a whole, conventional learning components are replaced by computers, because in conventional learning there are still shortcomings, for example, time, books, instructors and distance. The design of UML consists of a use case design and an activity diagram that the authors designed, here is an explanation of each diagram.

1. Use Case Diagram

The use case is a scenario description of the interaction between users and the system. This diagram shows the set of use cases and actors (a special kind of class)

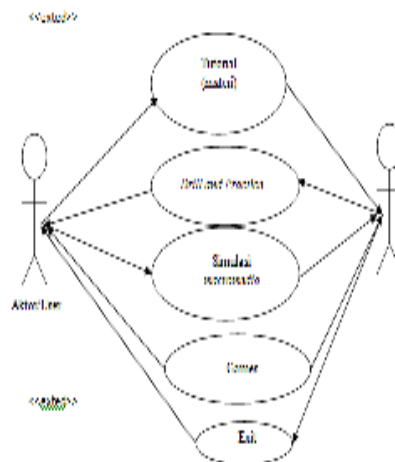


Figure 1: Use Case Diagram of a Learning Application



2. Main Menu Interface Design

The system interface design consists of the login page interface design, the question simulation menu, the material menu and sample questions, the physics application menu, and the exit menu.

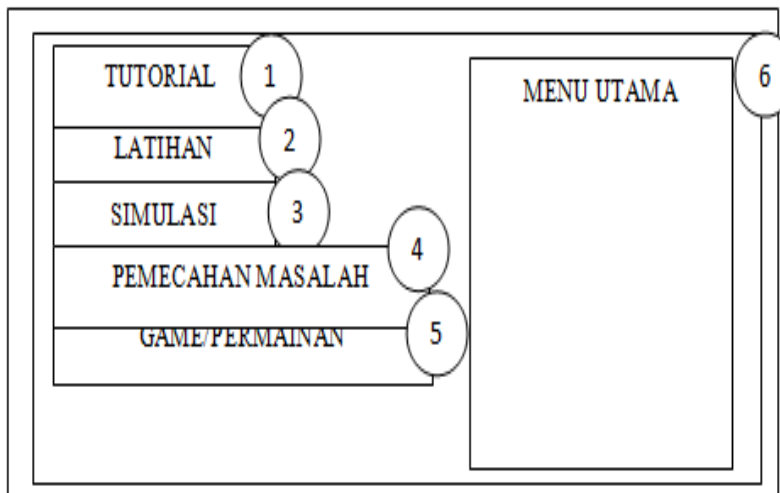


Figure 2: Application of Main Menu Design

4. CONCLUSION

Designing Physics Learning Applications Material Energy with the Computer Assisted Instruction (CAI) method is designed with a consistent navigation system and a comfortable coloring system for users and can be used to teach and train in learning a scientific discipline. The animation effects shown are very helpful in explaining the subject matter described. In addition, animation effects will also be a good tool to foster curiosity about the Macromedia Flash Professional 8 application program.

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