ABSTRACT

LEARNING SOLAR SYSTEM WITH COMPUTER ASSISTED

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The rapid advancement of information technology in accordance with human needs that information technology can provide a new knowledge in the learning process, especially learning for elementary students who need an attractive and useful learning for the development of knowledge in natural science.

Through media learning applications of the solar system is expected to further develop children's creativity and make the students more quickly capture the content of these learning materials. In the media application, the student will stimulate his brain so it can receive and absorb the learning material through the application properly and this will also facilitate the students in understanding the nuances of the material of the solar system with an attractive and interactive

These systems process models using the Waterfall method, whereby a tool used to design a system that is UML (Unified Modeling Language), in which there: Usecase Diagram, Class Diagram, Activity Diagram, Sequence Diagram. While application development tool uses the Adobe Flash CS 4 Macromedia and Access 2007.

Keywords: *solar system,Waterfall method, UML (Unified Modeling Language), Macromedia Adobe Flash CS 4, Microsoft Access 2007.*

1. INTRUDUCTION

1.1 Background

The development of information and communication technology world lately has increased very rapidly and can be found almost all areas of human life, one on education.

Along with its development, not least the children of today who has known world of information technology (IT). In the first period of his life until nearly adult children make learning, learning is done is to develop basic skills which is the main pillar of its growth, among other physical abilities and language skills of social emotional skills.

Learning methods currently applied mostly still manual one of them material about the solar system and everything involved. Delivery media that are still use the manual as a blackboard with drawings booked while the material of the solar system is very difficult to encounter in everyday life, we need a tool to know the existence of binoculars stars (telescope), so that complicates children (students) to understanding the material and to imagine the existence of the solar system to be studied and eventually became lazy students to learn.

By using the learning method using a computer with a display of interesting and interactive learning is expected to increase the willingness of children (students) to study the solar system since its implementation is equipped with text, sound, animation and visualization of images and interaktifiti so that it makes the students to learn and understand the material on solar system.

1.2 Problem Identification

Based on the things that have been described in the background of the problem, the authors identify several problems that exist, namely:

1. How to make the application of the solar system.

2. Who are the users who use the learning applications of the solar system.
3. How where the process updates the application data

1.3 The Aim and The Purpose

Based on the problems studied, the purpose of this thesis is to build an interactive multimedia learning and seisinya solar system. While the purpose of this thesis is:

1. Creating a learning application and the solar system contained therein for elementary students, especially students of class 6 SD.
2. Applications are made to assist and support the learning process of the solar system.
3. Applications can provide a means to evaluate students' understanding about the solar system materials

1.4 Problem Limitation

Given the many problems that can occur, then the writer will limit these problems, among others:

1. This application is intended for elementary students, especially elementary school sixth graders.
2. Evaluation given in the form of multiple choice questions and true or false, along with an assessment of the results.
3. Application of this solar system learning using a tool adobe flash Cs.4, and Delphi to make an evaluation
4. This application is only limited to learning materials and curriculum that applied to the sixth grade elementary school students in particular as well as additional material to complement.

2. MODELS, ANALYSIS, DESIGN AND IMPLEMENTATION

2.1 Model

Data analysis techniques in software development using the waterfall software, which includes several processes such as:

a. System Engineering
An early stage in the development system is defining everything that is needed to build software with the requested clarification from the parties related to the application.

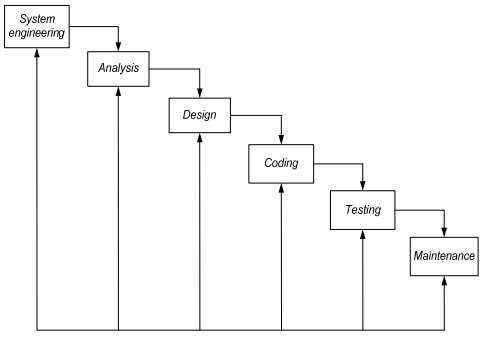
b. Analysis
Learn and understand software which is made by determining the characteristics, relationships between objects.

c. Design
An interpreter or transformation phase of the analysis phase into a software design method that is easily understood by the user.

d. Coding
This stage is the stage of interpreting the data or solving problems that have been designed into a format that can be read by a machine using a computer programming language.

e. the Testing
Testing (testing) software that integrates test case design methods into a series of well-planned steps, and the result is a good software construction.

f. Maintenance
Final stage in which a software which has been completed can experience the changes or additions as requested by the user.



Picture 1. *Waterfall* Paradigm

2.2 Analysis

A System Analysis

In this applications required a needs analysis that will be used as reference in designing the learning application of this solar system. Ie covering user needs, the needs assessment materials, job user, (user task analysis), application requirements and application performance.

B Database Analysis

Unified Modeling Language (UML) is a "language" which has become the industry standard for visualizing, designing and documenting software systems. UMLmenawarkan a standard for designing a system.

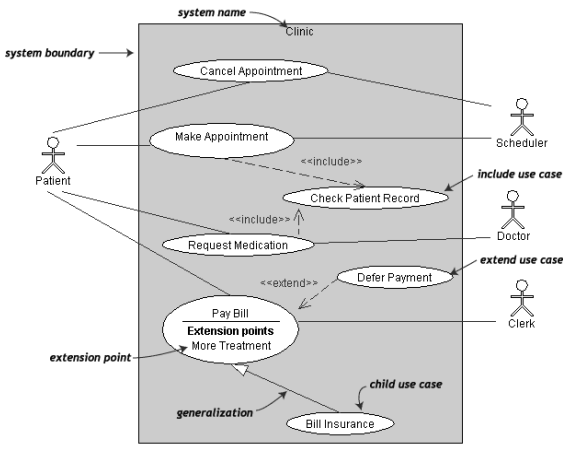
Abstraction of the basic concepts of UML structural classification, dynamic behavior, and model management, we can easily understand if we look at the picture above from the diagrams. Main concepts we can view as terms that will arise when we make a diagram.

UML diagrams defined as follows:

1. *Use case* diagram is a description of a typical system of the described interaction between the user (users) of a system with its own systems through a story of how a system is used. Sequence of steps that describe the user and the system is called scenario.

   In talking about the use case, users are usually referred to as actors. Actor is a role that could be played by users in their interaction with the system.

   Example use case diagram:



Picture2 *Usecase Diagram*

2. *Class Diagram*

   Class diagram is a specification that if diintansi will menghasilak an object and is the core of the development of object-oriented design denagn. Class describing a state (attributes or properties) of a system, while offering a service to manipulate the state of the three principal areas

   a. Name
   b. Attribute
   c. Methods

   Attributes and methods can have one of the following characteristics:

   a. Private, not be called from outside the relevant class
   b. Protected, can only be called by the class in question and children who inherit it
   c. Public, anyone can be called

Akun
+ Notes: string + order: ordered + orderBalance: currency + Orderstatus: string
+ Getitembalance():currency + getorderID(): orderID

   Class may be an implementation of an interface, ie an abstract class that only has methods. Diinstansiasikan interface can not directly, but must be implemented first into a class. Thus the interface supports a resolution method at run-time.

3. *Statechart diagram*

   Statechard diagram describing a state of transition and change (from one state to another state) of an object on the system as a result of stimuli received. In general statechard diagram illustrates a particular class (class can choose more than one statechard diagram).

4. *Activity Diagram*

   Activity flow diagram describing the various activities in the systems being designed, how each flow starts, the decision may occur and how they ended. Activity diagrams can also

illustrate the parallel process that occurs in some execution.

Activity diagram is a special state diagram where most of the Aktion and the state is largely triggered by the completion of the transition in the state before (internal processing).

5. Sequence Diagram

Sequence diagrams describe interactions between objects within and around the system (including user, displays and so forth) in the form of message over time. Sequence diagrams consist of vertical dimension (time) and hotizontal dimensions (objects) associated.

6. Collaboration Diagram

Also Collaboration diagram illustrates the interaction Between Standard and Poor 'object sequence diagrams, but more emphasis on the role of Each object and notes on message delivery time of Each message has a sequence number, Nowhere a message from the highest level has a number one. Message from the Same Same level have the prefix.

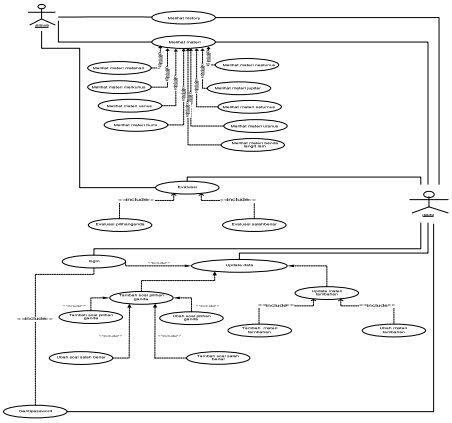
7. Component Diagram

Component diagrams illustrate the relationship between structure and software, including dependence (dependency) among others. Component software is a module containing the code, both containing the souce code and binary code, both libraries and executables, both appearing at compile time, link time or run time.

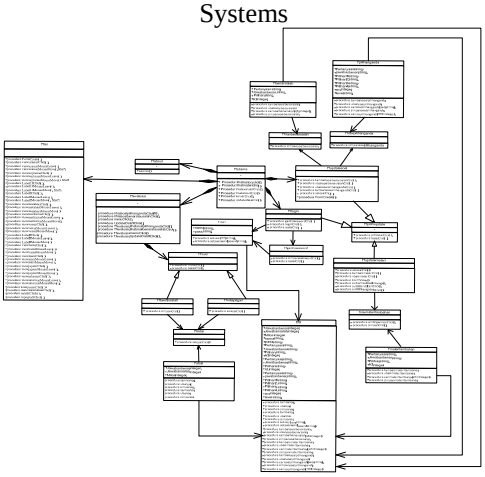
8. Deployment Diagram

Deployment diagrams describe in detail how the components deployed in the infrastructure system in which components will be located (on a machine, server or hardware), how the network capacity at these locations, such as servers and others who are physically

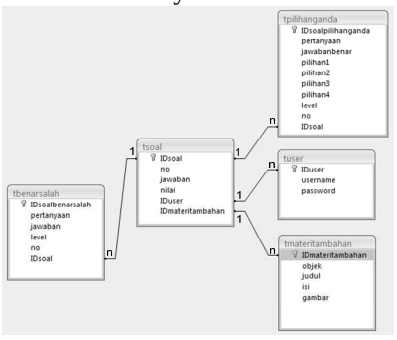
C. Functional Analysis



Picture 3 Use-Case Diagram Learning Application of Computer Assisted Solar Systems



Picture 4 Class Diagram Learning Solar System



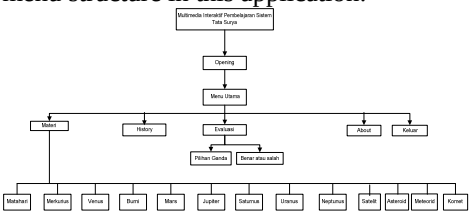
Picture 5 Relation Scheme

2.3 Design

A Menu Structure Design

In designing a menu structure that required the application menu and submenu

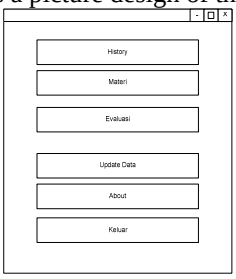
contains functions to allow a user to use the application. Here was described on the menu structure in this application:



Picture 6 Menu Structure Design

B. MAIN MENU DESIGN

Here is a picture design of the main



Picture 7 Main Menu Design

2.4 Implementation

Once the system is analyzed and designed in detail, it will lead to implementation phase. Implementation is the stage of putting the system so that the system is ready for operation. Aims to confirm the implementation of modules for design, so users can give input to the development of the system.

A System Implementation

The objective is to confirm the implementation program modules principals of design in the system so the user can provide input to the system builder.

B. Hardware Implementation

Hardware used to implement the system are:

1. Processor Intel Pentium IV or better
2. Minimum 128 MB RAM + VGA Card 256 MB minimum
3. Hard Disk 10 GB
4. Monitor 17 "with a resolution of 1024x768
5. Mouse, keyboard and CD ROM drive

C Software Implamantation

Software used to implement the system are as follows:

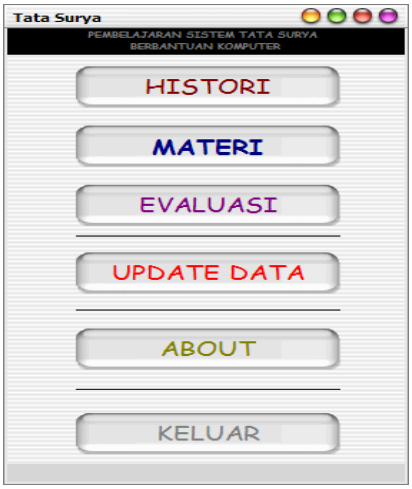
1. Windows XP Operating System
2. Programming Language Adobe Flash CS 4 and Delphi
5. Other application programs as support for improving the implementation process.

D Object Implementation

Nama Kelas Perancangan	Nama File
Tfabout	About.pas
Tfbenarsalah	ubenarsalah.pas
Tfevaluasi	uvaluasi.pas
Tfgantipassword	ugantipassword.pas
Tfisi	uisi.pas
Tflevel	ulevel.pas
Tflogin	ulogin.pas
Tfnavbenarsalah	uupdatebenarsalah.pas
Tfmateritambahan	unavmateritambahan.pas
Tfnilai	unilai.pas
Tfnilaipilgan	unilaipilihanganda.pas
Tfpilgan	upilihanganda.pas
Tfpilihupdate	upilihupdate.pas
Tfupdatemateri	uupdatemateri.pas
Tfupdatesoal	uupdate.pas
Tfutama	uutama.pas
Tnavpilihanganda	uupdatepilganda.pas
Tuser	login.pas
Tbenarsalah	tubenarsalah.pas
Tmateritambahan	tumateritambaha.pas n
Tpilihanganda	tupilihanganda.pas
Tsoal	tusoal.pas

3 RESULTS AND DISCUSSIONS

From analysis and design that has been done, the results of the application built on the view might look like this:



Picture 8Main Menu


Picture 9 *Splashscreen*

3. CONCLUSION AND RECOMMENDATION

Based on the analysis and discussion that has been described in previous chapters, it can be drawn several conclusions as follows:

4.1 Conclusion

1. This application can be used as a medium of learning that can help elementary students in learning.
2. Ease in delivering learning materials, with interesting nuances because this application is made to facilitate the delivery of the material.
3. The material is taught can be directly submitted with an application that can be directly used.
4. Facilitate the children to understand about the material of the solar system with the material being taught, because this application is made to provide facilities for children in learning

4.2 Suggestion

The suggestions that the authors put forward will further enhance the results already obtained. Here are some suggestions that the author wants to convey.

1. The application development is still not perfect especially in view it is better made the look more interesting and developed. To obtain maximum results, we recommend
2. use a multimedia computer with high specifications. In order to use this application there are no barriers.
3. It needs a good maintenance of the application concerning the maintenance of hardware and software maintenance
4. Often provide the latest learning and interesting, so children are not saturated with the material presented.

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