ANALYSIS AND DESIGN OF THE "KIN'S ENGLISH" ENGLISH LEARNING CLASS USING THE ICONIX PROCESS METHOD

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***Abstract*—** Kin's English is an institution that offers English classes to students of all ages, including children, teenagers, and adults. With the assistance of selected tutors, students can be freed to choose what material they want to learn. However, the issue is that this institution still does not have an official website to support its operational activities. Therefore, we require a website that can accommodate all of Kin's English learning resources and provide additional features such as an English language proficiency test service that can be accessed anywhere and at any time. The scope of this research is the analysis and design of "Kin's English" English tutoring website from the requirements analysis and designing systems using the ICONIX process until the evaluation stage.

Keywords—ICONIX; analysis and design system; information systems; website

I. Introduction

Tutoring or commonly abbreviated as tutoring according to (Oemar Hamalik 2004) is guidance aimed at students to get an education that suits their needs, talents, interests, and abilities, as well as help students overcome learning problems experienced by students by determining effective and efficient learning styles. Currently, tutoring institutions are not only present offline, but also online. There are various websites course guidanceOne of them is Kin's English. Kin's English is an institution that serves English courses for all people. With the tagline "We don't teach you English, We make you speak English". The institution, which was founded by Seto Kinara in 2018, offers superior programs in online English courses to people spread across various regions in Indonesia. Information technology has brought many changes to human life, one of which is in the field of education. With these developments, almost all activities can be done only by using the internet.

In the current era of digitalization, the development of To meet the need for such information, systematic information processing is needed in order to facilitate every activity in Kin's English. In this case, a facility is needed that can make it easier for tutors and students to carry out learning by providing a forum that can collect materials, practice questions, and information related to Kin's English that can be integrated and operated online on the internet.

Based on these problems, the author is finally interested in creating a website English tutoringThe existence of this design is expected to produce a website that can help students in the learning process as well as an alternative learning media other than face-to-face learning.

II. Research Methodology

This section contains the steps taken to achieve the objectives of the research including the following.

A. Literature Study

Literature study is a method of collecting data through materials written in journals, books, and e-books as references that can support this research.

B. Data Collection

Data collection in this study used interview and observation methods. The interview was conducted by asking several questions related to the research to the resource person, namely the owner of Kin's English. Observations were made by observing directly the activities carried out in Kin's English.

C. Requirements Analysis

Perform a requirements analysis by analyzing and then describing the flow of the old system in the form of a flowchart, determining the functional requirements of the system, and making proposals for the flow of a new system in the form of a flowchart.

D. System

The system design uses the ICONIX process with the

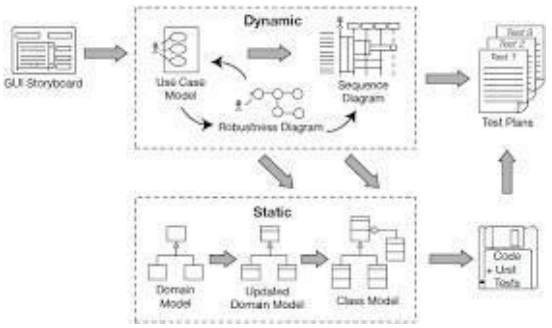

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Figure 1. System Design ICONIX process

Unified Modeling Language (UML) approach. Unified Modeling Language (UML) is a graphical image-based or visualization language for designating, constructing, and documenting systems.

Consists of 4 (four) stages, among others:

1) Requirements
   a. Functional Requirements
      An activity that collects and processes data and then in accordance with the functional requirements needed for system development.
   b. Domain Modeling
      Static UML stage, where data is taken from functional requirements and extracted into several parts that are connected according to software requirements.
   c. GUI Storyboard
      The stage of creating the user interface.
   d. Use Case Modeling
      Stages of describing what activities are carried out by users and their relation to system responses. In this section there is an identification of actors and business processes that are currently running.
2) Analysis and Preliminary Design
   a. Robustness Analysis
      The development of the analysis stage is then carried out in the design stage process.
   b. Model Domain
      Update removes some classes and redundant adds some classes and attributes in the modeling domain.
3) Detailed Design
   a. Sequence Diagram
      Modeling sequence diagram continued from the robustness analysis stage diagram.
   b. Class Diagram
      Class diagram stages modeling based on domain model and previous diagrams.
4) Implementation
   The last stage of the ICONIX process where the designs that have been created are submitted to the programmer to be translated into programming codes.

III. Result and Discussion

A. Requirements

This stage includes the old system and the new system as well as the functional requirements of the system.

B. System Analysis

The identified business processes related to current business processes and which will be proposed to Kin's English are as follows.

1) Current registration process
2) Current learning process
3) Current learning certificate approval process
4) Proposed registration process
5) Proposed learning program selection process
6) Proposed payment process
7) Proposed learning process
8) Proposed English proficiency test process
9) Proposed viewing of learning outcomes or certificates

Examples of business process modeling that have been made are as following.

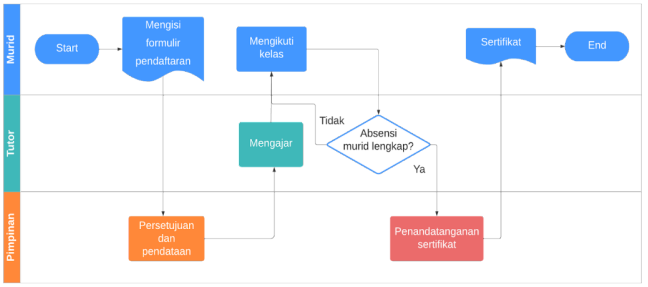

Figure 2. Kin's English Current

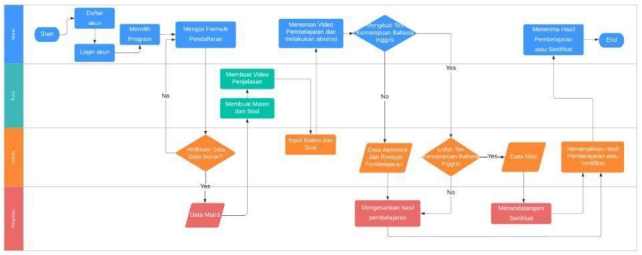

Figure 3. Business Process Modeling Proposal Kin's English

Based on Figures 1 and 2 it can be seen the difference between the current and proposed system capabilities. Where in the old system the operational activities were still manual, then the Kin's English activity process was proposed which implemented a computerized system.

C. Functional Needs

The functional needs that have been identified in this system, obtained 4 actors, namely Admin, Leaders, Tutors, and Students. All four have the characteristics of interaction with the system and different information needs. Here are the scenarios from the four system users or actors:

- Admin
  Verifying student graduation, displaying student certificates, verifying materials, videos, and questions that have been inputted by the tutor.
- Leaders
  Obtain student data, certify learning outcomes, sign certificates.
- Tutor
  Input material and questions for students, as well as input learning videos.
- Students
  Log in, choose a learning program, fill out registration forms and verify the correctness of the data that has been inputted, view materials and watch learning videos, take tests of proficiency language, get learning outcomes or test result certificates.

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D. System Design

This design stage includes user interface design and database design.

1) Graphical User Interface (GUI)

Design of the initial user interface on website Kin's English. Figure 4 below is a display of the homepage Kin's based on its feature and functional requirements. On the home page ,there will be main menus on the Kin's English website displayed on the dashboard on the website. The menus are Home, Program, Course, TOEFL, Certificate, and Account. Users can select each menu by clicking on it and will be directed to the display on each menu as well. On this page there is also a bit about Kin's English and the login button.

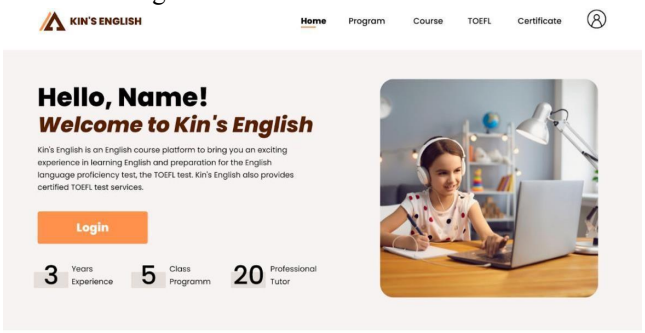

Figure 4. Home Page of Kin's English

2) Domain Modelling

Identifying nouns and terms at the needs analysis stage. After the nouns are collected, the word filtering is carried out to become 10 domains as Figureshown 5. The domains are tutors, students, student accounts, admin, attendance, class programs, transactions, materials and questions, learning outcomes, and leadership. Almost all domains have a Has a relationship but there are also those that have an Is a relationship, namely on students to learning outcomes, learning outcomes to attendance, and class programs to program a, program b, and program c.

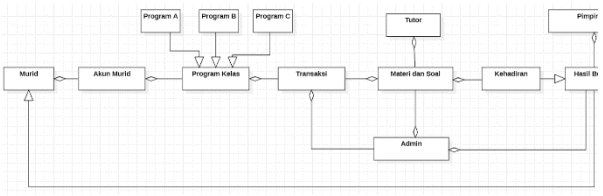

Figure 5. Domain Modeling

3) Use Case Diagram

Use case diagrams describe the features and functions of the system. Generated use case diagram with 4 actors and there are 14 use cases which can be seen in Figure 6. Student actors have 6 use cases, namely login, choose a
program, fill out application forms, watch videos, take tests, and receive certificates. The admin actor has 4 use cases, namely data verification, graduation verification, displaying certificates, material validation and questions. The tutor actor has 2 use cases, namely material and question input, and learning video input. And lastly, the lead actor has 2 use cases, namely validating the results and signing the certificate.

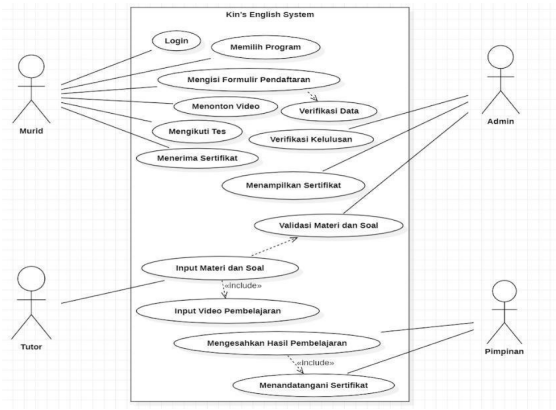

Figure 6. Use Case Diagram

4) Robustness Diagram

Robustness diagram is a link between analysis and system design. Diagram is a description of the object of the use case that has been created.

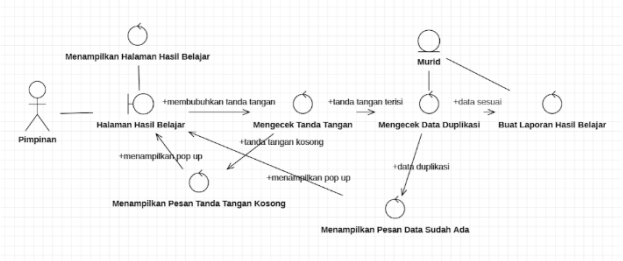

Figure 7. Robustness Diagram Validating Learning Outcomes

Figure 7 is a robustness diagram when the leader validates learning outcomes. The leader user enters the learning outcomes page and the leader affixes a signature on the learning outcomes report. Then the system will check the signature, if the signature is filled, then proceed to the process of checking the duplication of data, but if the signature is empty it will display an empty signature message via a pop up and be returned to the learning results page.

In the process of checking duplication of data, the signed learning outcomes report will be checked for duplication or not. If there is duplication of data, the system will display a message that the data already exists via a pop up and will be returned to the learning results page. If there is no duplication of data, a signed learning outcome report will be generated and entered into the student database.

5) Sequence Diagram

Sequence diagrams are made according to use cases and robustness diagrams, which are 14 pieces.

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Naming for actor, boundary, control, and entity used is a term that is adapted to the domain model that has been created. The flow sequence diagram follows the *robustness diagram*. Figure 8 is *a sequence diagram* when the leader validates the learning outcomes.

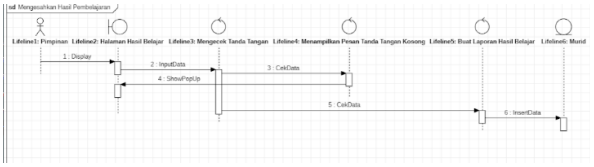

Figure 8. Sequence Diagram Validating Learning Outcomes

The leader opens the learning outcomes page. On this page, data input will be carried out in the form of a signature. Next, check the signature data, if the data is empty, a pop-up message will be displayed and returned to the learning results page, but if the data check is complete, the system will generate a signed learning outcome report. Learning outcomes report data will be entered into the student database.

6) Class Diagram

Class diagrams are made from the development of the domain model and previous diagrams. Their entity, control, model, and view. Making class diagrams of the previous process stages as needed. Figure 9 is a class diagram of Kin's English system.

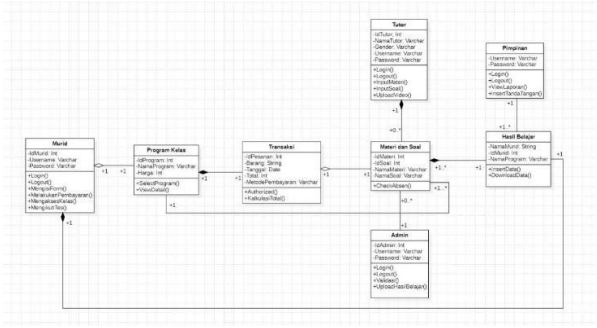

Figure 8. Class Diagram

From student to class program has a one to one relationship. From class programs to transactions have a one to one relationship. From transactions to materials and questions, there is a one-to-one relationship. From the material and questions to the tutor, there is a many-to-many relationship. From the material and questions to the admin, there is a many-to-one relationship. From materials and questions to class programs, there is a many-to-one relationship. From material and questions to learning outcomes, there is a many-to-one relationship. From the results of learning to the leadership has a many to one relationship. From learning outcomes to students have a one to one relationship.

E. Implementation

The final stage of the *ICONIX process* is the implementation stage. At this stage the designs that have been made previously will be submitted to the *programmer* to be translated into programming codes.

IV. Conclusion

From the results of research and design, it is concluded that the process of designing websites is carried out using the ICONIX process. The old system, which was still carried out offline or face to face, has now been changed to be able to be done online with additional features. The ICONIX process consists of four stages, namely requirements, analysis and preliminary design, detailed design, and implementation.equipped with is functional requirements, domain modeling, GUI storyboards, use case diagrams, robustness diagrams, sequence diagrams, and class diagrams.

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