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Design of Information System for Peace Education Based on Unified Modelling Language

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ABSTRACT
Education is the main foundation in managing peaceful and dignified human life and civilization. Peace Education is the best alternative in facing the era of disturbance, which of course has an impact on various aspects of life and education. The era industrial revolution 4.0 applies Information and Communication Technology (ICT). Utilization Information and Communication Technology in education are fundamental in developing knowledge. Technology information plays an essential role in creating peaceful societies and reducing conflict and social degradation. The following research proposes an information system design on peace education based on Unified Modeling Language. Research the following is an information system design on peace education that can be used in building information systems comprehensive peace education. From testing software requirements on the development of this, the information system showed promising results with an average yield of 96%. These results indicate that the information system design with the UML approach by identifying needs produces optimal results.

Keywords: *Information Communication Technology, Information System, Peace Education, Unified Modelling Language*

1. INTRODUCTION

Peace education is not new but has emerged since the 1980s. At that time, the topics discussed had more to do with efforts to achieve peace due to nuclear proliferation, which frightened many parties [1]. Since then, there have been several education courses and workshops held as part of extracurricular activities on campus, mainly related to conflict resolution studies [2]This study continues to develop following the issues that occur and significantly affect the life of the nation and state. After the events of September 11, 2010, peace education has begun to shift as an effort to face religious radicalism.

According to UNESCO, peace education can be defined as a process to promote knowledge, skills, attitudes, and values that can make a person ready to prevent conflict and violence, ready to resolve conflicts peacefully, ready to form a peaceful atmosphere both intrapersonal, interpersonal, intergroup, national or international level [3].

The goal of peace education is under the wishes of all people who expect that they can live in peace. However, several things undermine the security atmosphere, such as separatism, terrorism, and coups [4]. The attitude of prioritizing personal and group interests with less empathy with the positions of other people and groups has the potential to create conflicts and disturb security. The conflict will be even more dangerous if it develops into violence.

This concept is essentially in line with the spirit of religion, which wants peace and away from violence. In the context of Islam, peace education is considered as an effort to convey the substance of the Islamic message that spreads grace to the universe. Therefore, a Muslim should apply the values of justice, equality, forgiveness, do good, and solidarity in every aspect of life. Likewise, in dealing with differences, Islam teaches an attitude of mutual understanding based on the spirit to always maintain obedience to religious teachings [5].

Referring to the definition of peace education, there are several fundamental values in peace education with

the substance to foster a spirit of tolerance and mutual respect in social life [6]. In the process of securing this value, sharing experience is also essential. Thus, it can be said that peace education must involve two aspects, namely knowledge, and practice. If it is only a piece of knowledge, then it cannot be categorized as peace education [7]. Likewise, practice without knowledge will be far from the awareness and spirit of realizing peace.

In terms of theory, students are emphasized to understand the nature of peace and the efforts to maintain peace. Therefore, the students are asked to understand the efforts to address various problems avoiding falling into violence. At least, in the teaching process, there are several main subjects in peace education, such as understanding the roots of violence, efforts to find alternatives that are far from violence, and efforts to build awareness so that they can play an active role in realizing peace [8].

In simple terms, it can be stated that the effectiveness of implementing peace education is highly dependent on the transformation of thought in human history [9] With the emergence of awareness that an atmosphere of peace is more beneficial than conflict, there will be a spirit to commit to positive things. If there is a problem or conflict, then efforts are made to find a non-violent solution.

Also, in the practical aspect, peace education needs to teach objects to be tolerant and prioritize dialogue in various situations. They are required to be able to do several positive things, such as empowerment, transformative measures, and efforts to reflect in life (Sumida Huaman, 2011, p. 245). Some of these things are considered to be complementary modalities for realizing social justice models, which concern the voice of all. Even in the learning process, the students should learn and commit to the values of togetherness and tolerance (Tamatea, 2005, p. 152).

2. METHODS

This research is a comparative study with data collection methods through literature reviews, observation, in-depth interviews, and Focus Group Discussion (FGD). The objects in this research are university stakeholders on campus, curriculum and education experts, and students.

In more detail, the methods in this study can be described as follows:

2.1. Research Location

Research in Malang because educational cities, with a multicultural population of various ethnicities, religions, and backgrounds. Also, these two regions have become one of the areas used by radical groups to develop their movements.

2.2. The Subject of Research:

Institutionally, this research subjects consist of Brawijaya University, and State Islamic University of Maulana Malik Ibrahim.

2.3. Data Collection

In data collection, the following methods will be used:

2.3.1. Participative Observation

Researchers will make observations at the location by reviewing the implementation of peace education and mapping the potential for the development of digital-based of peace education.

2.3.2. In-depth Interview

In the data collection process, researchers will conduct in-depth interviews with university stakeholders, education experts, and students regarding the implementation of peace education and the possible chance for the development of digital-based of peace education in Brawijaya University, and State Islamic University of Maulana Malik Ibrahim.

2.3.3. Literature Reviews

Researchers will collect various references related to peace education in both Indonesia and India.

2.3.4. Focus Group Discussion (FGD)

FGDs will be held to enrich the data obtained through the previous methods.

2.4. Data Analyze Method

The collected data will be compiled for reduction, display, verification, and conclusion. As a tool for carrying out this process, the researcher will use the star UML. The data that has been collected will be coded, and cases will be created. Furthermore, it will be studied through the creation of matrix frameworks and clustering.

Figure 1 shows step by step to the methodology of research such as Study of Literature, Requirement Engineering, Design Business Process, Design Systems, Implementation, and Recommendation. The following research uses power designer tools. The proposed system design is based on object-oriented design. Each requirement that has been identified from the system is designed based on the needs of the user. Designing the proposed information system using the design business process with a unified modelling language approach.

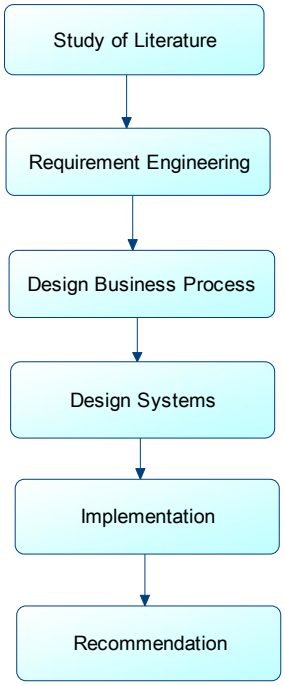

Figure 1 Research methods

a. Study of Literature

The stages of literature study aim to find references to theories relevant to existing cases or problems. The reference contains the following:

1. Peace Education
2. Design of Information Systems
3. Object-Oriented Design
4. Unified Modelling Language

These references can be searched from books, journals, research report articles, and websites on the internet. The output of this literature study is a collection of references relevant to the formulation of problems. It aims to strengthen the problem as well as the basis of the theory in conducting the study and also becomes the basis for conducting system design and simulation of the flow in the Peace Education Information System.

b. Requirement Engineering

A structured document that sets out a detailed description of system functions, services, and operational constraints. The main functions in requirement engineering are:

1. Help software engineers better understand the problems they are trying to solve.
2. Generate a written understanding of customer issues.
3. Started from communication activity in software engineering and continued with modelling activities.

Determination of requirement engineering is the essential thing in the early stages of designing the information system.

c. Design Business Process

The architecture of the Business Processes (BP) of an enterprise is defined as the type of processes it contains and the relationships among them. We may define an architecture for the whole of an enterprise of for some portion thereof [10].

d. Design Systems

The design system is a set of interconnected patterns and shared practices coherently organized to achieve the purpose of the digital product. The design system is also accompanied by documentation that includes a code library, pattern library, and a style guide to be used by the whole team in developing a product to be faster. Here are some benefits of creating a design system as follows:

1. Consistency

   In a design team that is already large enough, it certainly has many designers and has different design views. A design system can maintain consistency of user interface display that can improve the quality of user experience towards the product for the better.

2. Efficiency

   The design system will, of course, save more time and cost when developing a product. This can be a benefit for the business.

3. Easy to Scale

   Also, the design system can accommodate a problem that is a design team that is starting to develop, the demands of multi-platform, and the development of a product in line with the development of business needs.

e. Implementation

This stage is an activity to implement the pre-prepared design to be realized implementation for procedures in computer technology will use computer language.

f. Recommendation

The recommendations stage aims to produce a design information system developed. The design results can be used in the implementation of a peace education information system.

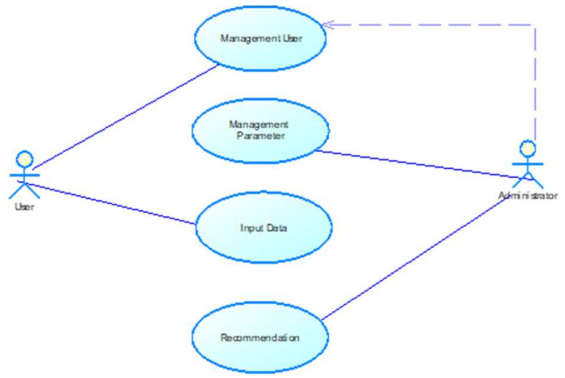

Figure 2. Use Case Diagram

3. RESULTS AND DISCUSSION

The following research discussions include use case diagrams, sequence diagrams, activity diagrams, and class diagrams.

The use case diagram consists of two actors, namely user, and administrator. One or more use cases can realize an activity. The activity describes the running process, while the use case describes how the actor uses it to perform the activity.

Figure 5 indicates the Activity Diagram process is a custom state diagram, where most states are actions, and most transitions are triggered by the completion of the previous state (internal processing). Activity Diagrams, therefore, do not describe the internal behavior of a system (and the interaction between subsystems) but better describe the processes and activity paths of the upper level in general. Activity describes a job/task in the workflow.

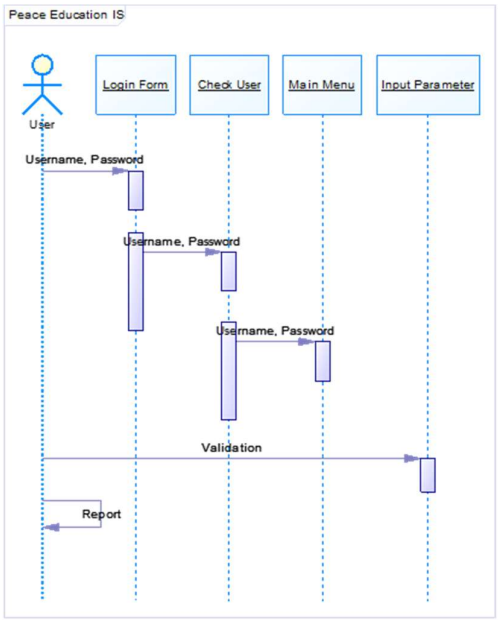

Figure 3. Sequence Diagram of Actor User

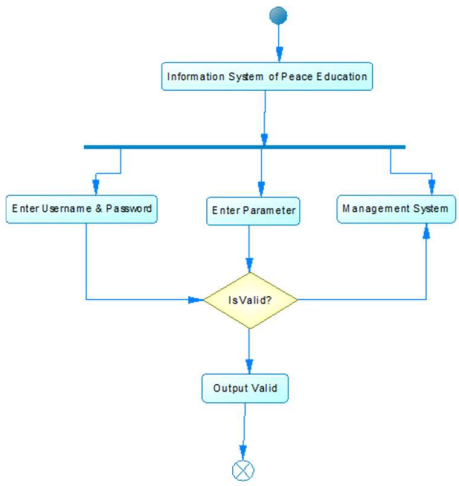

Figure 4. Activity Diagram

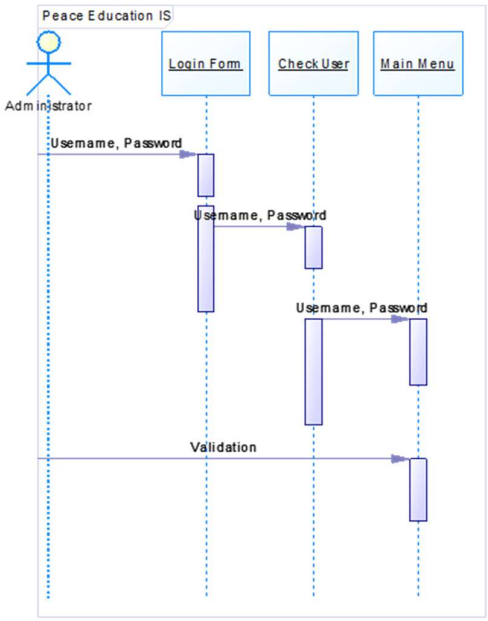

Figure 5. Sequence Diagram of Actor Administrator

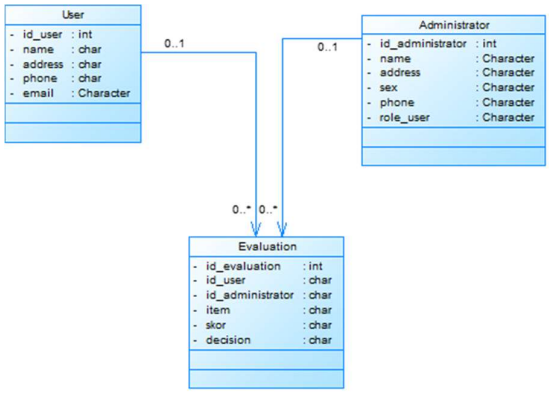

Figure 6. Class Diagram

Table 1. Scoring Requirement Engineering

Requrement	Score(%)
R1	90
R2	95
R3	97
R4	96
R5	99
R6	98

Figure 6 shows the chart class in object-oriented design. Class diagrams are visuals of the program's system structure on the types that are in the form. A class diagram is the flow of a database path on a system. A class diagram is an explanation of the database process in a program. In a system report, this diagram class is mandatory. The functions and benefits of the chart class are as follows.

a. Describes a data model for an information program, no matter if the data model is simple or complex
b. Mastering the diagram class will improve the understanding of the schematic overview of a program
c. Able to visually state the specific needs of information and share that information throughout the business
e. The Chart Class can be created a detailed and precise chart by paying attention to what specific code the program needs. It can implement into the structure described
f. Class Diagram can provide an independent implementation explanation of a type of program used, then passed between its various components

The analysis of software needs in the research is shown, as shown in the following.

1. R1 = The user accesses the information system by entering the username and password
2. R2 = The user accesses the menu form if they have logged in successfully
3. R3 = The user enters the required input parameters including characteristics, attitude, and level of the application program
4. R4 = Users start learning by accessing the app features that have been provided
5. R5 = Users can repeat the application if needed as needed
6. R5 = Users see the results of the learning process and recommended products in the application program

The system design in the following research using UML includes use case diagrams, activity diagrams, class diagrams, and software needs analysis. Every need that has been identified becomes the basis of software development. Scoring requirements aim to be used as a priority scale parameter in developing an information system. Scoring results need software as in figure 7.

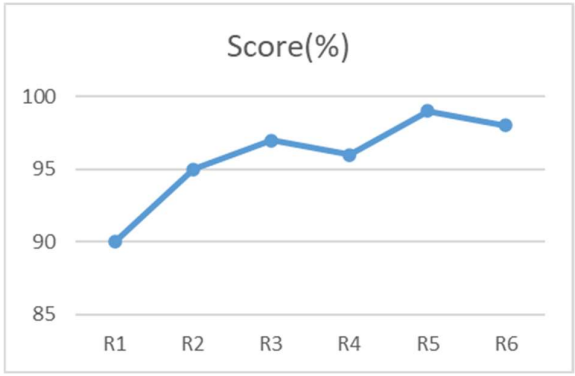

Figure 7. Visualization of Requirement Results

The percentage level of requirement results shows pretty good results with an average of 96%. This indicates that the design of the information system with the UML approach by optimizing the needs of the user shows promising results.

4. CONCLUSION

The following research resulted in a use case diagram with two actors: actor user and administrator. Sequence diagrams are two categories, namely sequence diagram for actor user and sequence diagram for actor administrator. The research diagram's activity diagrams include several processes, including Information System of Peace Education, Enter Username & Password, Enter Parameters, Management System, and Output. The diagram class consists of the User, Administrator, and Evaluation classes.

The following research shows that Unified Modelling Language is the right way to design a peace education information system. The following design can be used to develop peace education information systems, both web-based and desktop-based.

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