E-Learning Information System Model at SMK Raksana Medan

Erianto Ongko* and Parulian Napitupulu
Department of Informatics, Akademi Teknologi Industri Immanuel, Medan, Indonesia

* eriantoongko@gmail.com

Abstract. E-Learning can be viewed as a system that enables teachers as a provider of learning materials as well as learning managers and students as learning participants can learn and interact directly by using an electronic media such as computers and telecommunications equipment connected to the Internet network. SMK Raksana Medan is one of the vocational schools which in addition to focus on providing science and expertise to the students also focus on the formation of student character and personality reflected in the culture of SMK Raksana namely HOPE (Honor Our Parents Everyday). The absence of E-Learning information system makes it difficult for students to ask or discuss between them. The existence of this E-Learning information system can certainly improve the quality of teaching and learning process. The research method used in this research is SDLC (System Development Life Cycle) method which is a very good design methodology because it identifies well the needs of the user. E-Learning Information System designed to enable learning is done synchronously (direct interaction) and asynchronous (interaction indirectly). The information system will be designed using PHP Programming Language and MySQL database. The results of the study are expected to answer the needs of students and teachers of a system that can enable students and teachers to do the learning process after the learning process at school ends.

1. Introduction
E-learning is a web-based educational eco-system that integrates several stakeholders into technology and processes. With popularization and broadening of access to the World Wide Web and greater access to Internet access devices such as smartphones, laptops, tablets and computers, eLearning learning has been rapidly spreading around the world[1]. Learning have inevitably developed from a traditional textbook-oriented learning focus focused on group learning to a more flexible, ubiquitous, e-learning personalized, resource-oriented learning process that takes advantage of the convenience and ubiquitous features of mobile technology[2]. While textbooks are key to learning in a classroom environment, their role in the e-learning environment may be different[3]. According to Turban et al. [4], E-Learning (Electronic Learning) refers to learning that is supported through the web can be done in the classroom as a supporter of traditional teaching, such as students learn through the web at home or in the classroom, E-learning can also be done in virtual classrooms, where all activities are not done directly, so E-Learning is part of distance learning. In the designing of teaching material, we must pay attention in data diversity[5], the optimization of the information classification [6] and their sensitivity[7], and must calculate the efficiency of the implementation[8][9]. SMK Raksana Medan is one of the vocational schools which in addition to focus on providing science and expertise to the students also focus on the formation of student character and personality reflected in the culture of
SMK Raksana namely HOPE (Honor Our Parents Everyday). SMK Raksana Medan manages 5 (five) departments of choice, namely: Administration Office, Accounting, Accommodation Hospitality, Software Engineering, and Travel Business. Knowledge and utilization of information and communication technology has been instilled early on to the students of SMK Raksana and supported by free WIFI access for all students which can be accessed in some room like Canteen, Garden, and School Hall. The implementation of web can be used in decision support system[10].

In SMK Raksana Medan, based on the results of community devotion done by ATI Immanuel has been able to produce good learning materials to be given to the students after the learning process. However, the absence of E-Learning information system makes it difficult for students to ask or discuss between them. The existence of this E-Learning information system can certainly improve the quality of teaching and learning process. Students who have unintelligible materials can take advantage of the E-Learning Information System to ask teachers and student discussions. Teachers can respond to incoming questions and set real time (synchronous) face-to-face learning schedules for their students.

2. Related Works
Learning is the process of organizing information in the brain. In the digital age and in the rapidly evolving world, e-learning systems have opted for a viable alternative for educational and educational purposes in various forms of educational applications from pedagogical education to lifelong learning[11]. According to aparicio et al. the success of the E-Learning depends on learners' individual characteristics[12]. Several commercial and open source teaching management systems are available today, such as Docebo, Moodle and Canvas. Moodle is one of the most popular open-source educational platforms with a huge number of implementations. It has 80364 registered locations in over 235 countries[13]. Caputi's and Garrido's [14] research shows that, in order to get the most out of Moodle's benefits, we need to design a way to monitor student-centered learning paths (according to student's background and learning goals). Teachers can also improve the Moodle platform by implementing web evaluations. These works serve to improve the student's cognitive scheme, help them to build knowledge and promote positive attitudes of students to discussion and cooperation with peers. It is proven that students increase their skills to learn through information technology[15].

3. Research Methodology
Software design method using SDLC (System Development Life Cycle). The stages and steps for development E-Learning Information System with SDLC method can be described in the form of flow diagrams as shown in figure 1.
The design of E-Learning information system at SMK Raksana Medan starts from the analysis of the needs of the school. Through the analysis of this requirement obtained a description of the information system to be designed. After the process of system analysis, then will be done information system development. The flowchart of E-Learning information system design can be seen in figure 2.

![Flowchart of E-Learning Information System Design](image)

**Figure 2. Research Method**

4. Result and Discussion

4.1. Use Case Diagram

The design of e-learning information system can be seen in figure 3.

![Use Case Diagram](image)

**Figure 3. Use Case Diagram**
4.2. Sequence Diagram
The Sequence Diagram of the learning process with E-Learning Information System at SMK Raksana Medan can be seen in figure 4.

![Sequence Diagram](image)

**Figure 4.** Sequence Diagram

4.3. Discussion
Through the research results can be obtained that the interaction between teachers and students in teaching and learning activities include a number of activities such as: Absent, Provision of Materials, Consultations, and Tasks all of which take place in the face-to-face activities. The process begins when the teacher does attendance for student attendance. The teacher will then give the lesson material and the students are required to listen to the subject matter given by the teacher. Then the teacher will give the students an opportunity to ask questions and then the teacher will give answers to the questions asked by the students. If it is felt that the students have understood the material given then the teacher will test the student's understanding by giving a number of tasks as an evaluation material and then the students will do it.

In the existing interaction then the whole activity can only be done when the lesson is still available, whereas if there are students who are still less understood it will have difficulty when they are at home. While teachers with limited time are often unable to repeat the continuous delivery of material if there is a student who still do not understand. Therefore, E-Learning information system is needed that can help teachers and students to interact with each other outside the learning hours so that the quality of teaching and learning process will be improved.

5. Conclusion
The conclusions that can be obtained from the results of this study are as follows. First, through research can be seen that the teaching and learning process that took place in SMK Raksana has limitations because it can only be done at the time of learning. Second, SMK Raksana teachers have the ability in producing teaching materials that can support E-Learning. Third, the existence of E-Learning information system can help teachers and students in the learning process without constrained learning time constraints, and the last existence of this E-Learning information system can improve the quality of learning.

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