System Development Management E-School as a Students Information Media

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Abstract. The Filial e-school website of LPKA Class I Palembang has indeed provided supporting learning materials for students for formal education at elementary, junior high, and high-school levels. However, entrepreneurship-materials are not yet available on the website as an effort to equip the future of students after leaving LPKA is very important to be improved. The development of e-school Filial LPKA was carried out by presenting entrepreneurial materials interactively. The method used in developing entrepreneurship learning multimedia video tools is the Multimedia Development Life Cycle (MDLC) method. Entrepreneurship-material is presented in a multimedia video format that can be accessed by students at a booth in the LPKA environment. The booth provided is equipped with a set of multimedia personal computers that are connected to the internet network. Each student is given their respective account by the LPKA to be able to access entrepreneurial-material video content on the e-school website with the URL address:https://e-schoolfiliallpka.com. Every student who accesses this e-school website, can interact directly with the system provided, for example by asking questions about the entrepreneurial video material being watched and questions will be answered by practitioners/contributors, students can also express their interest by giving likes. LPKA can also monitor student visit charts for each video material they watch and graphics of student favorite video material. The LPKA party can find out the area of interest of each student that is available so that this effort is expected to increase the motivation and ability of their entrepreneurs in the future. The e-school website also provides a virtual online gallery space for students' work so that the products of entrepreneurship while at LPKA can be exhibited to the public so that the wider community can find out and visit online and in this way is expected to increase their confidence in the work.

1. Introduction

LPKA (Lembaga Pembinaan Khusus Anak) Klas I Palembang is a technical implementation unit that carries out the duties and functions of correctional prisoners or students. LPKA Klas I Palembang carries out education for children under its fostering. There are two types of education carried out by LPKA namely formal and nonformal education. Formal education is carried out starting from elementary school, junior high school, and senior high school. This formal education is carried out by collaborating with schools in Palembang. The implementation of elementary school education is carried out in collaborating with SDN 25 Palembang, junior high school education in collaborating with SMPN 22 Palembang, and senior high school education in collaborating with SMAN 11 Palembang. The learning process is carried out by making a schedule every year for teachers to come and teach students at LPKA. The first-year research developed an e-school website that facilities students’ LPKA Klas I Palembang to learn independently and helps teachers to deliver school materials online. This research is as second-year research which is a continuation of the first research. This research is focused on developing
multimedia-based entrepreneurship learning using the Multimedia Development Life Cycle (MDLC) method [1]. Multimedia-based entrepreneurship learning is developed as non-formal learning for students’ LPKA Klas I Palembang so that students are expected to be ready to return to society.

2. Methodology

Online Platforms for Entrepreneurship Education

The significant role of online platforms, both in entrepreneurship learning and training has been recognized and clearly stated in the Oslo Agenda [2], which is the result of the European Commission conference on how to foster entrepreneurial mindset across European education. Previous documents urge to "build a European and national joint platform of existing programs, projects and teaching materials, to help share and disseminate. The online platform will greatly support practitioners in increasing the offer of entrepreneurship education. In addition, the online platform also facilitates two agenda guides: "launching innovative actions to train teachers about entrepreneurship" and "encouraging the creation of a learning community with the mission of developing an entrepreneurial mindset". Therefore, the provision of effective entrepreneurship education at the European level is challenging to implement basic tools and distance learning procedures [3].

The online platform is able to organize entrepreneurship education for students during mixed learning courses and for educators during the trainer training phase. This educational tool must follow experiential learning methods with an extraordinary emphasis on reflection methods. Innovative electronic material on the topic must match the specificity inherent in the subject to be taught and with the preferences that arise from students who are interested in entrepreneurship [4]. Research conducted by Febrianty, et. al regarding filial e-school for students attending LPKA produces an effective system called e-school filial. The e-school filial system has been able to support better education delivery and improvement of academic services in the LPKA Class I Palembang filial school which provides: a. Video-based learning module, b. Audio-based learning module, c. Text-based learning module, d. Distance learning media, e. Media giving assignments and gathering student assignments, and f. Discussion media [5]. This e-school system facilitates the learning process of LPKA students to be able to learn independently with existing media and make it easier for teachers to deliver learning material [6].

Development System Using MDLC Method

Multimedia Development Life Cycle (MDLC) is carried out based on six stages, namely concept, design, material collecting, assembly, testing, and distribution. According to Luther in Mustika, the six stages do not have to be sequential in practice, they can exchange positions. Even so, the concept stage must be the first thing to be done. Figure 1 is a picture of the stages of the MDLC method.
a. **Concept**
The stage is the stage to determine the purpose and who is the user of the program. At this stage, researchers conduct conceptions, among others:

a. Determining the purpose and benefits of learning media
b. Describing the concept of learning media to be built.

b. **Design**
At this stage making specifications regarding program architecture, style, appearance, and material requirements for the learning media.

c. **Material Collecting**
This stage is the stage of gathering materials in accordance with the needs of the job. These materials include clip art images, photos, animations, videos, audio, etc. that can be obtained free of charge or by ordering other parties according to the design. This stage can be done in parallel with the assembly stage. However, in some cases, the material collecting and assembly stages will be done linearly and not parallel.

d. **Assembly**
The assembly stage is the stage of making all objects or multimedia material. The making of learning media is based on the design stage, such as storyboards, flowcharts, and or navigation structures.

e. **Testing**
The testing phase is done after completing the assembly stage by running the learning media. The first step in this stage is also called the alpha testing phase, where the test is carried out by the manufacturer or manufacturer’s environment. After passing alpha testing, beta testing that involves end-users.

f. **Distribution**
The stage where users can use this learning media. This stage can also be called an evaluation stage for developing products so that they become better.

**Web-Based Learning**
Educational website technology can develop properly to facilitate students to learn a certain material and to support or facilitate the acquisition of knowledge, competency, and skills [7]. The young generation is fully aware of the benefit of personal computer and tablet devices, and almost every student has for accessing the internet, mainly for e-learning and playing games [8]. Web-based learning is an online learning media or a website that has educational goals, and many institutions develop instructional material as a medium for a source of integrated learning material [9]. The advantages of web-based learning from others’ learning models is one of the learning models that used the technology of the web and using the internet. It can be accessed anytime and anywhere from any device using any operating system like Android, Windows, and others [10].

**Laravel Framework**
Laravel is a free, open-source PHP web framework, created by Taylor Otwell and intended for the development of web applications following the model-view-controller (MVC) architectural pattern. Some of the features of Laravel are a modular packaging system with a dedicated dependency manager. The Laravel framework is easy to understand and powerful, the framework itself provides authentication, routing, session manager, caching, IoC container and tons of most commonly used component, also amazing database migration tools and integrated unit testing support, all these tools give developers the ability to build complex applications [11].

Laravel has been designed to improve the quality of your software by reducing initial development costs and repair costs to improve your application by providing expressive syntax that explains and installs core devices that will save implementation costs [12].

**MVC**
The MVC design pattern was first envisioned by Trygve Reenskaug in the 1970s at the Xerox Parc. The essential purpose of MVC is to bridge the gap between the human user's mental model and the digital
model that exists on the computer. The MVC design pattern is such a good fit for web application development because they combine several technologies usually split into a set of layers. Also, MVC specific behavior could be to send specific views to different types of user-agents. User interaction with an MVC application follows a natural cycle: the user takes an action, and in response, the application changes its data model and delivers an updated view to the user. And then the cycle repeats. This is a very convenient fit for web applications delivered as a series of HTTP requests and responses. Figure 2 shows the MVC pattern, there are three parts namely Model, View, and Controller. The Model is the part of the system that manages all tasks related to data: validation, session state, and control, data source structure (database). The Model greatly reduces the complexity of the code the developer needs to write. The View is responsible for graphical user interface management. This means all forms, buttons, graphic elements, and all other HTML elements that are inside the application. Views can also be used to generate RSS content for aggregators or Flash presentations. The Controller is responsible for event handling. These events can be triggered by either a user interacting with the application or by a system process. A controller accepts requests and prepares the data for a response. It is also responsible for establishing the format of that response. The Controller interacts with the Model in order to retrieve the needed data and generates the View. This process is also known as an action [13].

![Figure 2. The MVC Pattern](image)

**Unified Model Language (UML)**

UML is a standard specification language used to document, specify, and build software. UML is a methodology in developing object-oriented systems and is also a tool to support system development. UML is currently very widely used in the industrial world which is a common standard modeling language in the software industry and system development. Use Case Diagram is modeling for the behavior of the information system that will be created. Use Case describes an interaction between one or more actors with the information system to be created. It can be said that Use Case is used to find out what functions are in the information system and who has the right to use these functions [14].

### 3. Result and Discussion

The results and discussion are presented in accordance with the Steps of the MDL Method, which are:

**Concept:**

a. The aim of entrepreneur learning media is to equip LPKA Klas I Palembang students with knowledge not only from formal education but also additional knowledge about the entrepreneur world.

b. The learning media users are LPKA Klas I Palembang students and LPKA coordinators.
c. The learning media will be created in a video format that will be uploaded on Filial LPKA Class I Palembang’s website. To access videos containing the theme of entrepreneurship, students must log in first using the username and password provided.
d. Students can interact with entrepreneurship videos that have been watched by giving questions and favorite signs.
e. The LPKA coordinator manages entrepreneurship videos by uploading and deleting videos.
f. The LPKA coordinator can give responses to questions raised by students.
g. The LPKA coordinator can observe favorite entrepreneur videos, and which are often accessed by students as a reference in developing entrepreneurial material.
h. The LPKA coordinator can observe student interest in the videos presented.

Entrepreneurship-material is presented in a multimedia video format that can be accessed by students at a booth in the LPKA environment. The booth provided is equipped with a set of multimedia personal computers that are connected to the internet network. Each student is given their respective account by the LPKA to be able to access entrepreneurial-material video content on the e-school website with the URL address:https://e-schoolfiliallpka.com.

Figure 3. Home Page Design

Figure 4 is the login page design as authentication for users.

Figure 4. Login Page Design

Figure 5 is a page that aims to inform the public about the work produced by students. These students’ work is a representation of the results of entrepreneur learning media.
Figure 6 is a list of material titles that can be accessed by students. The material contains entrepreneurial topics that are delivered directly by entrepreneur practitioners and lecturers who teach entrepreneurial material, so students can understand in terms of theory and practice.

Figure 7 is a material page design that consists of videos that contain entrepreneur topics and there is a description that contains an outline of the material presented in the video. Students can ask questions about the video material and give a like response to the material presented.

Material Collecting:
At the material collecting stage, the first step is conducting interviews with LPKA coordinators, entrepreneur lecturers, and business people. This step is done to get input from several points of view. The LPKA coordinator can represent students in giving views, views can be based on the hobbies and talents of students that are seen from their observations. Lecturers and business people can provide information about up-to-date entrepreneurial materials and needed at the present time.
Assembly:

At this step, editing video materials uses Adobe Premiere software, and web-based learning media is built using HTML, CSS, Javascript as front end, and the Laravel Framework as back end. Figure 8 is a home page that explains the duties and functions of LPKA Klas I Palembang.

Figure 8. Home Page

Figure 9 is a login page, to log in the user requires a username and password. Learning media users consist of administrators, LPKA coordinators, and students.

Figure 9. Login Page

Figure 10 is a listing page of entrepreneurial material that can be accessed by students to view the video material by clicking the detail button.
Figure 10. Entrepreneurial Material List Page

Figure 11 is a page to access video material according to the chosen topic, and students can watch videos by clicking the play button.

Figure 11. Material Page

Figure 12 is a use case diagram that explains user behavior in the system. Consists of three actors as the generation of user actors. Use actors have behavior in the system namely login, changing password, and logout. The administrator actor manages LPKA coordinator data such as adding, editing, and deleting data. The LPKA coordinator actors manage school data, student work data, and entrepreneurial material videos. LPKA coordinators observe and evaluate through information dashboards about entrepreneurial video materials that accessed by students. and LPKA coordinators manage students’ questions about video materials. Student actors access entrepreneurial video materials, ask questions about the materials presented, and provide responses to the video materials that have been watched.
Testing:

In the testing phase using an alpha testing technique that focuses on the black box testing method (F. Setianingsih, et al., 2019). In table 1 is the testing result:

Table 1. The Testing Result

| No | Actors                | Testing Activities                       | Testing Result |
|----|-----------------------|------------------------------------------|----------------|
| 1  | User                  | Login                                    | Goes well      |
| 2  |                      | Changing password                        | Goes well      |
| 3  |                      | Logout                                   | Goes well      |
| 4  | Administrator        | Creating LPKA coordinator data           | Goes well      |
| 5  |                       | Editing LPKA coordinator data            | Goes well      |
| 6  |                       | Deleting LPKA coordinator data           | Goes well      |
| 7  |                       | Changing LPKA coordinator username       | Goes well      |
| 8  |                       | Resetting LPKA coordinator password      | Goes well      |
| 9  | LPKA Coordinators    | Creating student work data               | Goes well      |
| 10 |                       | Editing student work data                | Goes well      |
| 11 |                       | Deleting student work data               | Goes well      |
| 12 |                       | Creating/uploading entrepreneurial video materials | Goes well      |
| 13 |                       | Editing entrepreneurial video materials   | Goes well      |
| 14 |                       | Deleting entrepreneurial video materials  | Goes well      |
Monitoring information dashboard of accessed video materials by students | Goes well |
Answering students' questions | Goes well |
Changing the answers of students' questions | Goes well |
Deleting the answers of students' questions | Goes well |
Students Watching entrepreneurial material videos | Goes well |
Asking questions about video materials | Goes well |
Giving like responses about the video materials | Goes well |

**Distribution:**
In the distribution stage, entrepreneurship video materials are uploaded to the website of e-School Filial LPKA Klas I Palembang. Students can access entrepreneurship videos in the LPKA Klas I Palembang laboratory and the computer booth provided at LPKA Klas I Palembang.

**4. Conclusion**
MDLC method can be used in developing multimedia-base entrepreneurship learning media. This research produces entrepreneurship learning media for LPKA Klas I Palembang students that have the purpose to equip students with entrepreneurial knowledge. Entrepreneurial learning materials are presented in video format and distributed using web media has been tested using the alpha testing method that is focused on a black-box testing technique.

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