Jurnal Mantik
Volume 4, Number 4, Feb 2021, pp. 2687-2690 E-ISSN 2685-4236
https://iocscience.org/ejournal/index.php/mantik

Web-Based Online Learning System MVC Method

Salmiati[1], Mardi Turnip[2]

[1,2]Universitas Prima Indonesia, Jl. Sekip Jl. Sikambing No.simpang, Sei Putih Tim. I, Kec. Medan Petisah, Kota Medan, Sumatera Utara 20111

Email : [1]salmiati0593@gmail.com, [2]marditurnip@unprimdn.ac.id

ARTICLEINFO

Article history:
Received: 15/01/2021
Revised: 30/01/2021
Accepted: 28/02/2021

Keywords:
E-Learning, Online Education, Internet, Website, Video Conference

ABSTRACT

Along with the development of information technology, internet-based technology is also developing which is considered one of the tools for fast delivery of information. Information technology really helps the learning process in schools, one of which is the impact of its development. Information technology is a pattern of change in education. Education uses information technology to assist in the distance learning process electronically by using a computer as a tool. This assistance is known as e-Learning. With e-Learning, students can learn independently without having to constantly expect teaching materials from the teacher. E Learning also allows students to study only in the classroom but also outside the classroom or anywhere as long as they are connected to the internet. All student activities such as access to grades, schedules, and others can be accessed in this e-Learning application.

1. Introduction

In today's digital era, technology develops according to human needs so that it can help and make it easier to carry out activities. Technology is also often used to obtain information needed in various fields such as health, business, education and entertainment. In the world of education, the influence of technology is increasingly felt with a shift in learning patterns from conventional face-to-face learning to those that are more open in the media, especially due to several circumstances such as the 2019 pandemic so that an online-based learning system is needed.

Based on previous research conducted by (Ali et al., 2015) "Academic Information System Solutions (SIAKAD) The Complexity of Data and Information Management in Higher Education", (Anam, 2018) "Analysis and Design of Web-Based Academic Information Systems at Mi Al- Mursyidiyyah Al-'Asyirotussyafi'iyyah ", (Membara et al., 2014)" Web-Based Academic Information System of SMP Negeri 2 Talang Empat ". This research is starting to attract students' interest because it saves time and effort. Basically e-Learning is one of the conventional forms of learning that is poured into digital format through internet technology where the teaching and learning process can be done remotely. In the development of e-learning not only pouring subject matter into the internet but also need to be considered logical and still hold the principles of the teaching and learning process.

In the application of e-learning students really need validation of the meetings held and do not limit the interaction between students and supervisors / teachers / lecturers to reduce cheating by students and supervisors, after the author applies, contact the meeting representatives in this application. From the problems and solutions above the authors take the title "Web-Based Learning System MVC Method"

In accordance with the background and problems discussed above, the purpose of this study is to design web-based e-learning that can be used in schools in general. With the success of the above research objectives, it is hoped that it will be useful for all parties and the benefits of this research are as follows:

a. Increase efficiency and activities in the distance teaching and learning process,
b. Provide an alternative learning atmosphere that is more enjoyable because the teaching and learning process can be done from anywhere.
c. Minimizing errors in the teaching and learning process.
d. Facilitate access to teaching and learning at certain times such as the social distancing period and study from home.

Accredited "Rank 4"(Sinta 4), DIKTI, No. 36/E/KPT/2019, December 13th 2019.

2. Research Method

In developing e-learning, the author uses the MVC (Model View Controller) where this method aims to maximize performance and is easy to understand. The research and development stages are as follows:

a. Analysis Phase
b. Design Stage
c. Development Stage
d. Implementation Stage

Fig 1. Block Diagram of Research and Development Stages

Tests are carried out to obtain data that will be used as data to improve the product. Before being tested, testing is first carried out to get input from experts, users or students, and product media experts can be corrected according to the input obtained. The purpose of this trial is to determine the feasibility of the e-learning website that will be developed. Meanwhile, the analysis of functional and non-functional requirements is an important part of analyzing the development requirements of a system. Functional requirements are analyzed to find out what information is expected on the system to be developed.

3. Results and Discussion

The stages of analysis in an information system are stages. The important thing is, at this stage the system is up and running and the results will be observed later and can be used to propose a new system to be developed. System analysis is the initial stage carried out to understand the need for learning media to be developed. System analysis serves to understand and find out the business process in the teaching and learning process to find its weaknesses so that if you find weaknesses, the bias will be resolved in the learning media that will be developed. Regarding system analysis, analysis is also carried out from the point of view of PIECES (Al-Fatta 2007) which stands for (Performance, Information, Economic, Control, Efficiency, Service). From the results of research and analysis of e-learning development needs, it can be concluded that as follows:

a. Has carried out a system analysis with PIECES analysis in order to get an understanding of the state of the system and describe it in the form of a map map.
b. Has conducted several analyzes of the activities carried out by each actor in learning and described them in use case diagrams.
c. Have understood the concept of conventional teaching and learning and applied it in digital form.
d. Has developed an application system with the ADDIE method.
e. Has designed and created an e-learning website application using the Laravel PHP framework and understands how to use third-party APIs.

Use cases are techniques used in software or information system development to capture the functional requirements of the system in question. Use Case describes the interactions that occur between actors and existing systems. The following is the Use Case of the designed e-learning system.

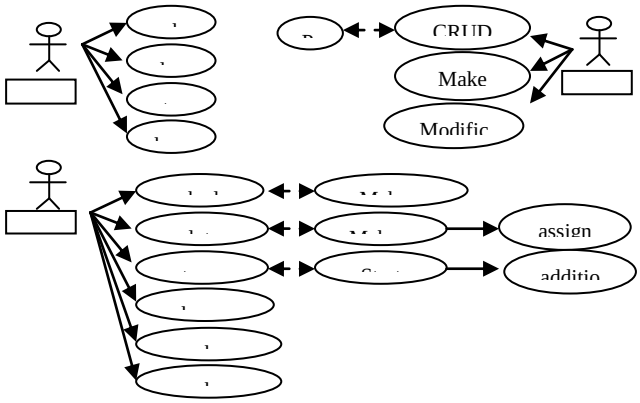

Fig 2. Design Use Case

Accredited "Rank 4"(Sinta 4), DIKTI, No. 36/E/KPT/2019, December 13th 2019.

A flowchart is a chart with certain symbols that describe the sequence of processes in detail and the relationship between one process and another in a program. The following is an overall flowchart of the e-learning system to be built.

3.1 Development and Implementation Stage

At this stage there are several things that must be considered so that the process of making and developing the system runs smoothly. As mentioned in table 3, there are several specification requirements that must be completed, among others.

a. Framework

Currently the author uses the laravel framework as the basis for making this website where the laravel framework is one of the best frameworks developed using the PHP programming language. The framework version that I use is Laravel framework version 7.0 because some of the repositories I use do not support using the Laravel framework under it.

b. Microsoft Redistributable

The Laravel 7.0 framework will run if the user uses several distribution libraries that must be installed first. This is required because Laravel 7.0 is already using PHP version 7.2. The following libraries must be installed, among others:

1) MSVCP 2012 (Microsoft C++ redistributable 2012)
2) MSVCP 2015 (Microsoft C++ redistributable 2015)
3) MSVCP 2017 (Microsoft C++ redistributable 2017)

c. Server

In developing this website the user uses the Apache 2.4.41 server where this version is the stable version and the most widely used, while the author's database uses the MySQL / MariaDB DBMS version 10.4.10 which is the latest version.

d. API video call

The API (Application Programming Interface) for video callpenulis uses a third party application, namely the daily.co API, where this API provides features that can be used to develop applications or websites that have a group video call feature.

3.2 Result

This room page is a physical representative page of the classroom, so that users can view information about the ongoing meeting. On this page the user can also see which students have attended the meeting, what assignments are given and all users can discuss, debate and meet face to face virtually with video calls that can be enlarged to full screen. On this page, users who have access rights as teachers / mentors can assign assignments directly on the page. The page view can be seen in the picture.

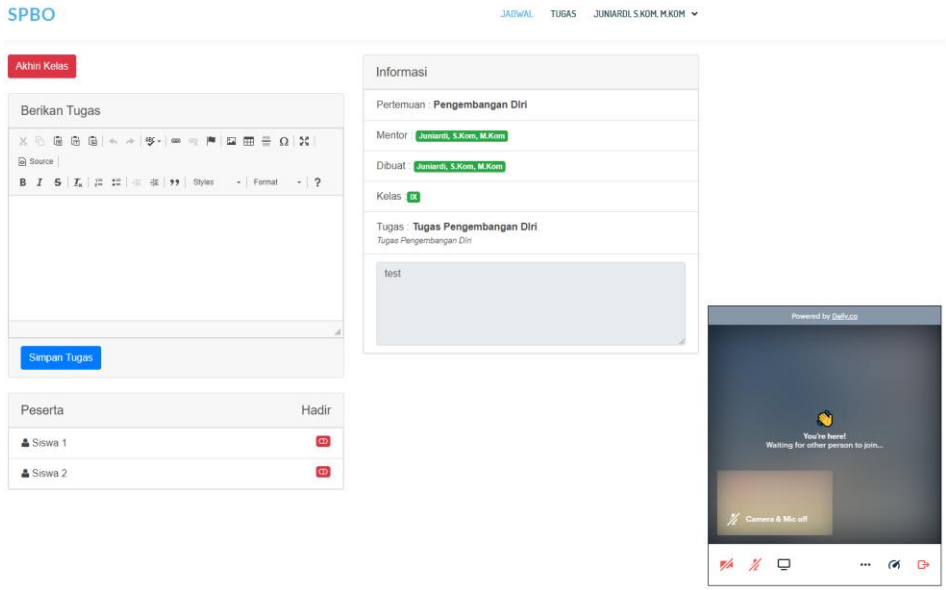

Fig 3. Virtual Room Pages

3.3 Discussion

After the activity was evaluated, initially most of the participants were still somewhat lacking in knowledge of the Online-Based Learning System website and its benefits. After the training was held by

Accredited "Rank 4"(Sinta 4), DIKTI, No. 36/E/KPT/2019, December 13th 2019.

introducing the SPBO website, participants became more aware and could apply it to support learning. The driving factor is the enthusiasm for learning and the great curiosity of the participants so that they are ready to get lectures and tutorials. Meanwhile, the inhibiting factor encountered was the diversity of participants' knowledge levels regarding computer application programs to support the learning process. so that the implementation of the tutorial starts from scratch.

Basically, this Online Based Learning System website was developed using Laravel PHP Framework as Backend and Blade Templating as display processing for the Frontend. The data storage media that I use is MySQL Database, because in general, websites that use PHP Programming Language as their programming language use the MySQL Database.

The development stages that were followed to produce the SPBO website started from making process and system models commonly used in higher education institutions (Business Modeling), collecting data on system requirements to be developed (System Requirements), focusing on system analysis and design (Analysis and Design) and the last stage is the distribution stage of the system developed to users (Deployment).

4. Conclusion

From the results and discussion above, it can be seen that the author uses the Video Conference API as a medium for conducting video conferences at ongoing meetings on the application. The API can be accessed using the private-key and public-key provided by third parties.

The results of designing this website can be used for teaching and learning activities at educational institutions and foundations at the level of high school and college. This application is a means to facilitate learning and teaching activities online with features such as online meetings with video calls, automatic attendance, tools for giving and collecting assignments, tools for providing material, schedule lists, meeting lists, course lists and tools for giving. assessment of assignments that have been given by the mentor.

This application is operated by three different entities, namely Participants, Mentors and Administrators. These three entities have different functions and access rights. Participants can only attend meetings, do assignments, and access materials that have been provided by the respective mentors. Mentors have access rights to manage data related to participants such as managing courses, schedules, assignment assessments, managing meetings and materials while Administrators have full access rights to the system as a whole.

5. References

[1] Aldaej, R., Alfowzan, L., Alhashem, R., Alsmadi, M. K., Al-Marashdeh, I., Badawi, U. A., Alshabanah, M., Alrajhi, D., & Tayfour, M. (2018). Analyzing, Designing and Implementing a Web-Based Auction online System. *International Journal of Applied Engineering Research*, *13*(10), 8005–8013. http://www.ripublication.com

[2] Ali, E., Susandri, & Rahmaddeni. (2015). Sistem Informasi Akademik (SIAKAD) untuk Solusi Kompleksitas Manajemen Data dan Informasi di Perguruan Tinggi. *SATIN - Sains Dan Teknologi Informasi*, *1*(1), 63–68. https://jurnal.stmik-amik-riau.ac.id/index.php/satin/article/view/14/pdf

[3] Anam, K. (2018). Analisa Dan Perancangan Sistem Informasi Akademik Berbasis Web Pada Mi Al-Mursyidiyyah Al-'Asyirotussyafi'Iyyah. *Jurnal Teknik Informatika*, *11*(2), 207–217. https://doi.org/10.15408/jti.v11i2.8867

[4] Chen, X., Ji, Z., Fan, Y., & Zhan, Y. (2017). Restful API Architecture Based on Laravel Framework. *Journal of Physics: Conference Series*, *910*(1). https://doi.org/10.1088/1742-6596/910/1/012016

[5] Kansha Isfaraini Huurun'ien, Agus Efendi, a. G. T. (2017). Jurnal Ilmiah Pendidikan Teknik Kejuruan (JIPTEK). *Jurnal Ilmiah Pendidikan Teknik Kejuruan*, *X*(2), https://jurnal.uns.ac.id/jptk.

[6] Membara, E. P., Yulianti, L., & Kanedi, I. (2014). Sistem Informasi Akademik Smp Negeri 2 Talang Empat Berbasis Web. *Media Informatika*, *10*(1), 72–80.

[7] Ouni, A., Kessentini, M., Inoue, K., & Cinnéide, M. (2017). Search-Based Web Service Antipatterns Detection. *IEEE Transactions on Services Computing*, *10*(4), 603–617. https://doi.org/10.1109/TSC.2015.2502595

[8] Panjaitan, B., & Khair, R. (2017). Motorcycle safety technology with iot. *Journal Online Jaringan Pengajian Seni Bina (JOJAPS) MOTORCYCLE*, *10*, 116–120.

[9] Ramdania, D. R., Irfan, M., Saprudin, R., Alam, C. N., Ramdhani, M. A., & Yusli, D. (2019). Web-based design for lecturer performance reporting applications. *Journal of Physics: Conference Series*, *1280*(2). https://doi.org/10.1088/1742-6596/1280/2/022017

[10] Torrecilla-Salinas, C. J., Sedeño, J., Escalona, M. J., & Mejías, M. (2015). Estimating, planning and managing Agile Web development projects under a value-based perspective. *Information and Software Technology*, *61*, 124–144. https://doi.org/10.1016/j.infsof.2015.01.006

[11] Turnip, M., Novriyanti, D., N.K, M., & Sitanggang, D. (2018). Aplikasi perhitungan angka kredit jabatan fungsional dosen berbasis web meggunakan model waterfall. *Jurnal Sistem Informasi Kaputama*, *2*(1), 37–46.