

The Effectiveness of Learning Management System in Learning Media Using Moodle with the Blended Learning Concept

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Abstract

The research objective is devoted to managing electronic learning media, a learning management system, learning activities that can take place in a network, called e-learning. System integration must be synchronized with computers, requiring schools to use e-learning related to technological developments in the era of the industrial revolution 4.0 and related to society 5.0 affecting aspects of educational life. In this study, the effectiveness of the learning management system in learning media can be relevant to the concept of blended learning which aims to overcome the weaknesses of e-learning. The results of the study provide an understanding of the learning methods applied in learning in the era of the industrial revolution 4.0 which is focused on e-learning and Moodle-based blended learning. This research method develops learning methods used in every school, knowing its effectiveness is expected to provide ease in using e-learning and blended learning in the learning system.

Keywords: Learning Management System, E-Learning Blended Learning, Learning Media, Moodle, Industrial Revolution 4.0

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Introduction

All aspects of life are now entering the era of the industrial revolution 4.0 marked by a very significant increase in technological development, including the digital world, artificial intelligence, and virtual space. Information and communication technology is certainly a major aspect that has an impact on other sectors of life, especially education (Budiharso & Tarman, 2020 & Beirade et al., 2019). This transition can not be avoided by anyone so it requires a readiness to adjust to existing developments. With the development and availability of the internet, various electronic learning systems have also been developed. E-learning is a media developed for educational institutions, which aims to support online learning.

Information can be obtained quickly without limitation of distance and time is a technological advantage, where the digital world plays an important role in the application of data and information processing to facilitate learning activities with the concept of e-learning (Putri et al., 2018; Dobashi, 2016, 2017). This is certainly related to the field of education that is sustainable

with increasingly evolving technology. Electronic learning is one application of technology in education in Indonesia, with skills in using technology to help more quickly obtain information and increase interest in learning activities. Education currently refers to society 5.0 where students and teachers have applied concepts integrated with cyberspace, all connected at the same time without any restrictions. This new era is a technological system that is directly connected to the network or the internet that makes it easy to obtain information and communication.

Education that requires applying technology towards the industrial revolution 4.0 in its implementation will have a positive impact on learning activities. Learning activities carried out by different methods, provide a high interest in learning, especially for students. With the Learning Management System (LMS), it can create a better and more effective education system in its application, compared to traditional classroom methods (Barge & Londhe, 2014; Rezgui et al., 2014). The application of LMS can have effectiveness if it uses the concept of blended

learning to overcome the weaknesses of e-learning. Combining these two methods can provide very optimal effectiveness in the application of LMS that allows to improve planning the process of learning (Haryanto et al., 2020).

Moodle-based e-learning is one of the popular e-learning among educators. Moodle is a program that can develop learning media into a form of web media that is directly connected to the network that provides easy access for its users.(Khamal et al., 2014; Mtebe & Kondoro, 2016) The e-learning program allows students to access digital classes to obtain learning materials. Moodle applies cloud-based media that can be accessed through computers or smartphones that must be connected to the internet. This can accustom students to learn to use information and communication technology to face the digital era. In this context, students can use e-learning based on existing features, this can be combined with the concept of blended learning

to obtain the level of effectiveness in implementing LMS in learning activities.

Method

The research was conducted based on a qualitative descriptive approach, which examines the status of an object, conditions, and systems of thought, function, and perception. Because it does not use calculations in this research study. Literacy studies are also a method for collecting various sources of books, articles and journals and documents related to research. The method is a method that requires a lot of activity to read the data, analysis and information that has been collected.

To be able to do this study, we use the concept of literature with bibliometric, we see the extent of research on Moodle (LMS) from various points of view.

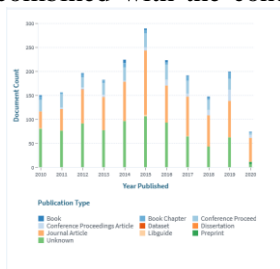


Figure 1. Moodle Publication from 2010-2020

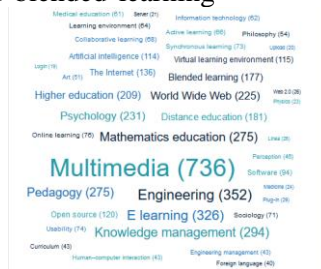


Figure 2. Word Cloud Moodle Use For

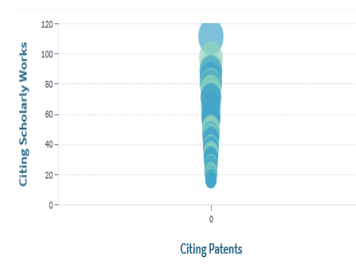


Figure 3. Noodle Citing Patent Score

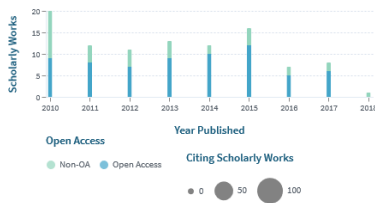


Figure 4. Moodle Source Type OA and non OA

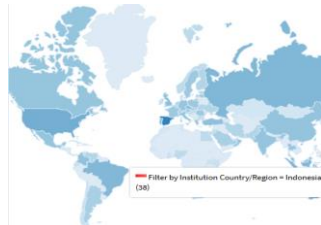


Figure 5. Moodle Research form the Word, Specially in Indonesian

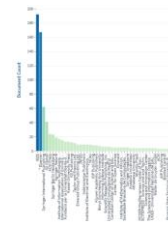


Figure 6. Publisher Moodle Research form the Word.

The writing method used is in the form of material collection in the form of a theory taken from the results of the analysis obtained in the application of the Learning Management System in high schools in Java-Bali. The objects of this research are teachers, students, and parents. Study time 8 months. There are 10 schools on the island of Java Bali which are the research objects. The data collection method was carried out by direct survey and direct discussion with the headmaster or

researcher in connection with senior high school IT staff.

The research was conducted in schools, specifically conducting interviews and validation in discussions with the school. Assessment of the use of software used after 1 year is given to schools to be tested on students. The school conducts evaluations, especially for technology teachers or administrative staff who manage the network at the school.

Results and Discussion

A very important e-learning tool is the Learning Management System. LMS is an application that is used in making the learning media process directly as a software for the delivery of learning activities programs, facilities provided by the LMS are also in the form of management of learning courses, management of learning materials, management of activities, value management, displaying transcript values, and managing display for e-learning. Learning tools such as e-learning have considerable potential in the development of knowledge in the development of student competencies. The services provided can be accessed and can be used interactively.

Learning Management System

The use of the internet as a learning medium is possible by providing online learning tools, which enable the delivery of teaching materials to students using internet media or other computer network

media, online learning can be done by providing LMS (Learning Management System) software that provides features that support the activity of learning, it can be combined with learning that is done directly so that it gives students or teachers interest in mixed learning activities that can be done with traditional or virtual classes, or even both.

In the LMS mode, students can individually engage in active learning activities by using the available resources and materials in the form of interactive e-books, videos, and weekly instructions. In this mode, some students may tend to use LMS independently (LMS-IL), as a more academically and less socially oriented approach to study. Students may also tend to seek challenging learning experiences and use feedback to help them learn more effectively (Baragash & Al-Samarraie, 2018). Based on the results of a survey conducted <https://www.apjii.or.id/survei> the use of the internet in Indonesia has reached 171.17 million people, then the application of LMS as a learning method can be done to the maximum.



Figure 7. Internet User Penetration in 2018

The use of LMS has an impact on teacher and student interactions. All content is captured in a computerized database making it easier to process and retrieve data that can be used for learning purposes.

Moodle

Moodle is the name for a free web-based application program for educators that can transform learning media into web media, one of



Figure 8. Internet User Behavior in 2018

the most popular open-source LMS. Moodle provides different activity modules (like Assignments, Forums, Wikis, Blogs, Quizzes, Tracking, etc.), and be applied in different ways (Šumak et al., 2011). Modular Object-Oriented Dynamic Learning Environment or Moodle is a course management system software that is open source so that it can be upgraded or developed for use by anyone with a general public license

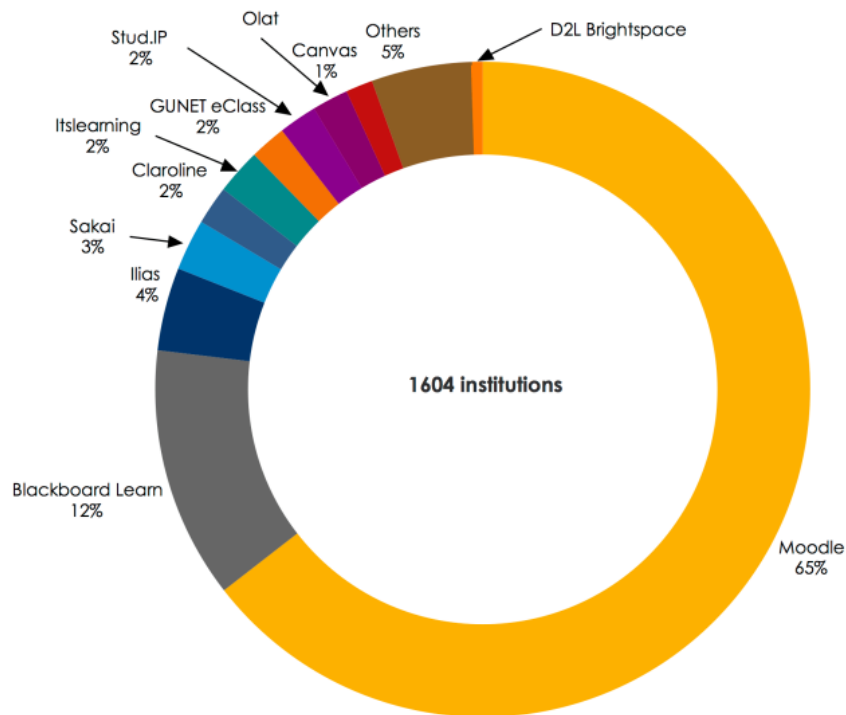



Figure 9. Percentage of LMS as the Main System

The advantages of e-learning, as opposed to traditional classroom methods, can be proven by e-learning which can directly impact the effectiveness of time and place. But not apart from deficiencies, e-learning has shortcomings namely in the activities

of social interaction between students and teachers. In its application e-learning can have a higher level of effectiveness by applying the concept of blended learning to overcome these weaknesses.

Table 1. Moodle LMS Installation Needs

		
<i>Operating System</i>	<i>IBM compatible PC with Pentium II 500 MHz and above, with Windows XP operating system or better</i>	<i>MAC Power PC, G3 233 MHz machines or better, with OS X latest version</i>
<i>Web Server</i>	XAMPP, WampServer (WAMPP)	
<i>Database</i>	PostgreSQL, MariaDB, MySQL, MSSQL, Oracle	
<i>Browser</i>	Internet Explorer (v7 or above) Firefox (v3 or above) Google Chrome (v12 or above) Opera (v9 or above) Safari (v5 or above)	

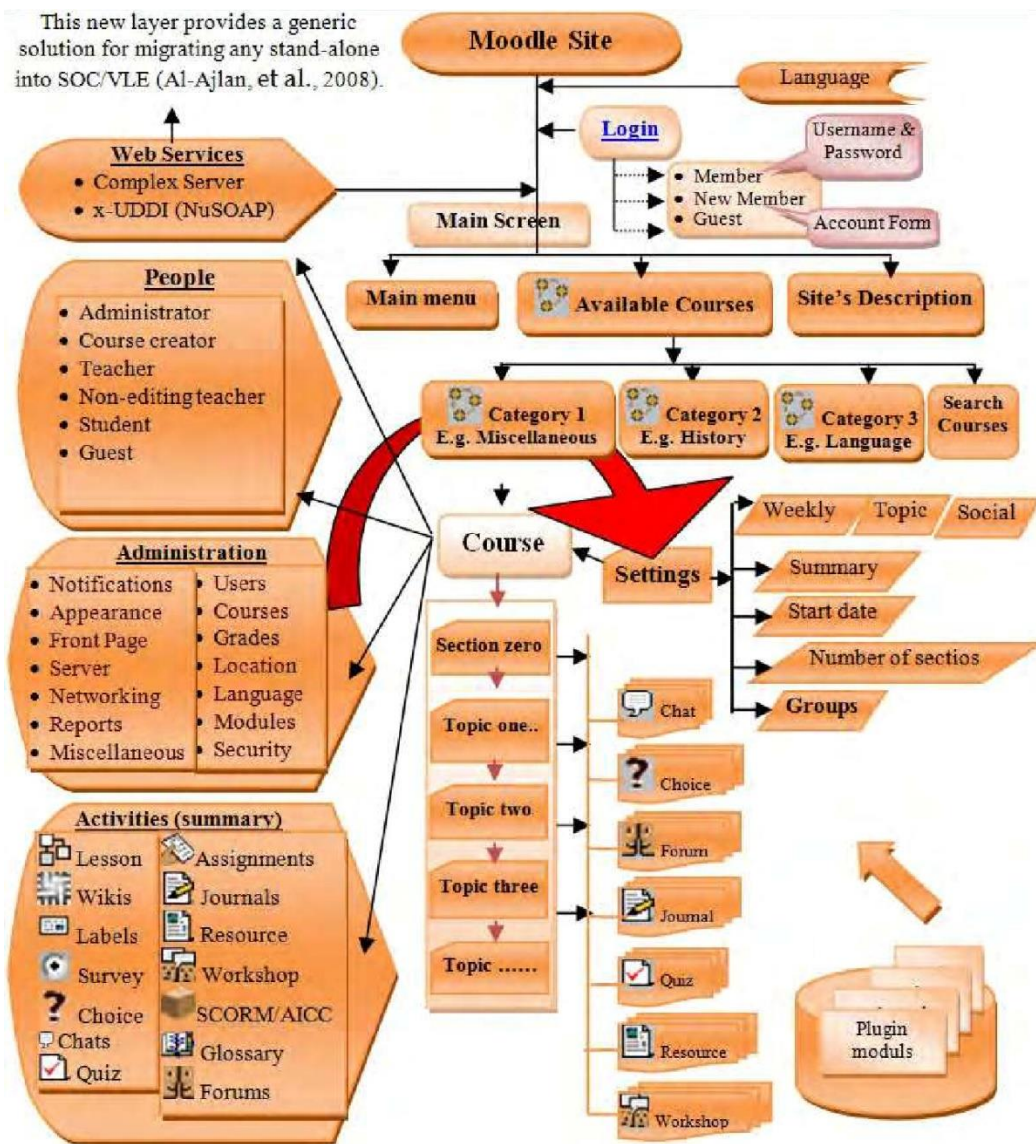


Figure 10. Moodle Administration Site

Blended Learning

Blended learning is a learning method to overcome the weaknesses of e-learning that only occurs in virtual classrooms where there is no direct social interaction between teachers and students. In its implementation it will be maximized if the teacher can make a way or method in the delivery of material with mixed learning, to see the understanding and potential of higher students. With the role of e-learning applications, parents can also see the development of their children. Teachers need training on how to employ blended learning instruction model effectively, because online courses, no matter how efficient they are, cannot facilitate learning by itself. Digital tools are only as good as the teachers (Tosun, 2015). The target to be achieved is the relationship between teachers, students and parents

who are cohesive to create comfortable learning conditions for students and make it easier for teachers to provide knowledge and teaching to be better, and certainly more perfect.

The success of Blended learning depends not only on the quality of the course and the virtual environment but also on the grade to which the students are prepared to work in their virtual study environment. It also depends on their ability to make themselves organized in a given background and use all the tools offered by the LMS. Of course, effective use of the ICT in eLearning is influenced to a large extend by a responsible students' attitude to the work on a given task (Hubackova & Semradova, 2016). Teaching in blended learning requires teachers to have reasonable technological competence. Because of

the role of technology and student's curiosity and interest in technology, teachers must have the necessary technological and pedagogical support from their institutions to motivate them in fully integrating technology with traditional face-to-face teaching proportionally (Rasheed et al., 2020).

Application of LMS with Blended Learning

E-learning requires two kinds of activities: communication activities (e-mail, forums, conferences, on-line blogs, etc.), and exploration activities (mainly navigation of contents). These activities usually take place on an LMS (Learning Management System). An LMS is a platform for administrating, documenting and delivering e-learning contents, which offers the enrolled students a vast number of courses with highly

customizable capabilities (Caputi & Garrido, 2015). The concept of blended learning is a method that uses media as a tool to convey learning either directly or through web media such as e-learning, this has a good effect because learning systems with different methods can increase the interest of students or teachers in learning activities. The development of LMS will certainly have a good impact on the existing learning system in schools, this certainly provides great potential in the use of existing technology and communication. The traditional class method can be changed by applying the concept of blended learning to deal with the industrial revolution 4.0 and society 5.0 that affect aspects of life, especially in the field of education.

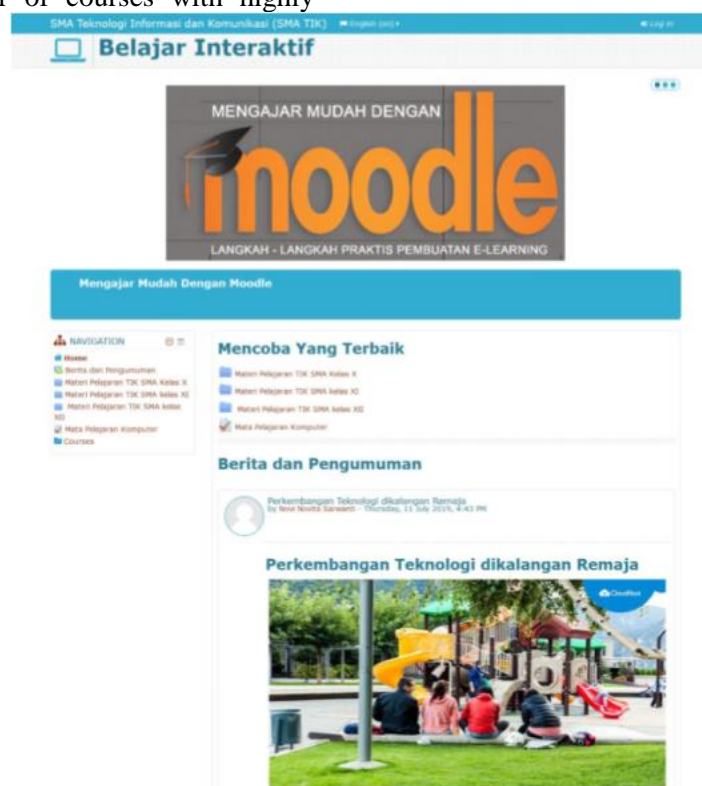


Figure 11. Main page of LMS Moodle

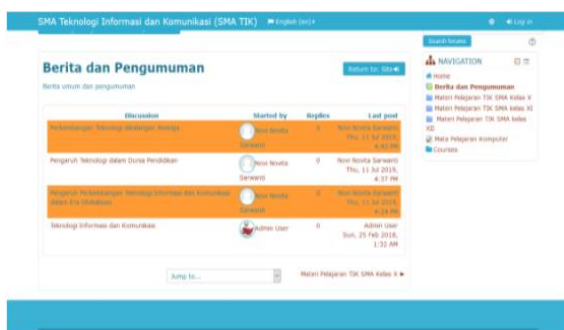


Figure 12. News and Announcement of LMS Moodle



Figure 13. LMS Moodle Learning Materials

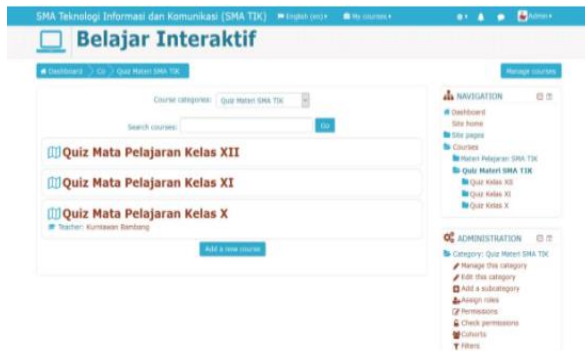


Figure 14. Moodle LMS Quiz



Figure 15. Grade of Moodle LMS Value

We reflect the existing concept and the existing moodle framework, we develop a program like figure 10. And we develop and share it with high schools. We make everything easy especially in the learning conditions during the covid-19 pandemic. We make the design as easy as possible to adapt to current conditions so that teachers and

Conclusions

The era of industrial revolution 4.0 and society 5.0 requires schools to implement a learning method based on technology, communication, and information, with the existence of an LMS that can implement electronic learning or called e-learning. Moodle is e-learning that is popular among educators, by creating an effective learning system, the application of e-learning can be done as a method of learning. But in the implementation of e-learning, there is still a need for direct interaction between teachers or students for the creation of good social interaction, the role of blended learning can be applied as the most effective learning method with supporting e-learning. The effectiveness of the LMS with the concept of blended learning can create a cohesive relationship between teachers, students and parents to create comfortable learning conditions for students and make it easier for teachers to provide knowledge and teaching to be better, and certainly more perfect.

The use of e-learning can be applied in schools as an effective and efficient learning media, even more, effective if implementing blended learning as a method of learning today. In the case of the development of instructional media requires human resources who can manage LMS, this is related to facilities that can support the education system that applies distance or mixed learning. Should the use of blended learning, facilities in the form of LMS implementation and development be evenly distributed throughout schools in Indonesia.

students are interested in current learning activities. everything has been going on online and currently entering our 3rd year of research, where the Covid19 pandemic is already in the country as well as support for the industrial revolution 4.0.

Acknowledgments

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