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Utilization of Web-Based Madrasah E-Learning For Economic Subject Learning Media

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Abstract

Student learning outcomes remain an important aspect that serves as a standard for the success of learning in schools. Therefore, it is important to understand student learning outcomes. The purpose of this study is to determine the utilization of Madrasah e-learning as a learning media for the economics subject at the State Islamic Senior High School in Demak and to determine the effectiveness of the utilization of Madrasah e-learning in improving student learning outcomes. This research was a quantitative descriptive study. The population in this study consisted of 403 students from the twelfth grade of State Islamic Senior High School of Demak. The sampling technique used was purposive sampling. The data processed in the study used primary data obtained from observations, questionnaires, and learning outcome data distributed directly to Grade XII students of State Islamic Senior High School of Demak. The data analysis method used was descriptive analysis and the difference test between the experimental class and the control class using the Mann-Whitney U statistical test. The results of this study indicate that madrasah e-learning has been proven effective in increasing student learning outcomes, with the percentage of improvement in the experimental class being higher than that of the control class. Learning through web-based media is more effective in increasing student learning outcomes. A suggestion for future research is to examine the differences in the use of madrasah e-learning between young and senior teachers.

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INTRODUCTION

The Industrial Revolution 4.0 represents a significant leap in the industrial sector where information and communication technology are fully utilized to achieve maximum efficiency, resulting in new digitally-based business models. Industry 4.0 has a profound impact on human life, including in the fields of education and science, where all fields and aspects are digitalized, automated, cloud computing-based, interconnected, and integrated systems. Slowly but surely, the function of paper as a document storage medium will be replaced by digital files stored in electronic memory slots. Books, journals, newspapers, population files, and other documents are available in digital formats, with even sacred texts now available in digital formats. Some money is already in digital form (e-money); we just need to wait for regulations and the readiness of economic actors. All money will eventually be in digital form, and spending money will only involve reducing the balance as we use it.

Most organizations are already bound by interconnected digital systems, automated by companies, government institutions, social organizations, political parties, and so on. UNNES has a significant digital gateway through the URL: apps.unnes.ac.id where various doors/applications will be available, starting from Sikadu, Sitedi, SimPKL, Elena, Automation, P2B, Comprehensive Exams, up to Sibidik and SimKKN.

One of the learning resources is books. Physical books, especially those containing only full text (just text without any visuals), are less attractive to students. Textbooks, in particular, are not appealing to students; they only have them out of necessity. As a result, the presence of physical books becomes less optimal in the hands of students. Technology has a significant impact on education, as it has become inseparable from life. Technological advancements will progress in line with educational developments. "Learning technology is defined as a medium that arises as a result of the communication revolution and can be used for learning purposes alongside teachers, textbooks, and whiteboards. The components that form learning technology are television, film, OHP (Overhead Projector), computers, and other hardware components" (Haryanto, 2015:10).

The current educational needs are inseparable from the internet to support students' learning activities without being hindered by distance and time. One of the supporting tools for students' learning activities is learning media. Based on the points discussed, it can be said that in an effort to improve the quality of learning, learning media based on e-learning can be utilized. E-learning-based learning media can certainly be used from various platforms available to support the achievement of students' learning abilities. Therefore, to meet the demands of the 21st century, educators face a particular challenge: to provide a learning system that produces graduates capable of integrating knowledge and skills; therefore. becoming adaptable and competitive global citizens.

The ability to deliver meaningful learning is one of the crucial elements in teaching. In the classroom, a teacher must be professional. A teacher should be able to convey the material as naturally and comfortably as possible to the students; consequently, they do not get frustrated because they do not immediately understand what the teacher is discussing. Here comes the concept of joyful and meaningful teaching. Ideally, learning should be enjoyable and meaningful. Teachers play a significant role here. The abilities and skills that a teacher possesses are crucial assets in teaching in the classroom. However, many teachers still lack evenly distributed abilities and skills in the aspect of ICT.

The software tool used as a learning media is a website, which makes learning media more interactive, engaging, and flexible. The World Wide Web, known as the Web, is an internet service that has an attractive, interactive, and flexible appearance. The use of the internet in this learning process involves sharing web links with students to access according to their login accounts. The use of this media is expected to help students become more diligent in self-study.

Furthermore, the use of learning media can introduce learning variations so that students do not get bored quickly. With the provision of appropriate material and students' good ability to receive the material, the four aspects of writing, reading, speaking, and listening will be learned and absorbed well and can be practiced when they graduate later on.

Demak Regency, a regency located in Central Java Province, Indonesia, is known for its rich cultural charm and history. One important aspect in the development of Demak's community is education, where Senior High Schools (SMA) and Islamic Senior High Schools (MA) play a significant role in providing secondary education in this area.

Demak Regency has several Senior High Schools (SMA) and Islamic Senior High Schools (MA) spread across various districts. Each of these schools plays a crucial role in shaping the future of the younger generation of Demak. SMA is an institution providing upper secondary formal education to students after completing primary education. Meanwhile, Madrasah Aliyah (Islamic Senior High School) is an institution providing upper secondary education with an Islamic approach that integrates general knowledge with Islamic values.

Table 1. Number of Senior High School

No	Region	Demak Regency		
		Public	Private	Jumlah
1	Senior High School (SMA)	12	20	32
2	Islamic Senior High School (Madrasah Aliyah)	1	76	77
Jumlah		13	96	109

Sumber: dindikbud.demakkab.go.id

Learning at the State Islamic Senior High School of Demak during the COVID-19 pandemic utilizes Learning Management Systems (LMS) from various platforms such as Google Classroom, Schoology, Quizziz, Google Forms, and others. Some even resort to manual methods using WhatsApp or other communication media that are not well-organized, resulting in poorly managed grades and causing inconvenience to teachers, especially Social Sciences teachers, as students in Social Sciences classes tend to have less interest and enthusiasm for the subjects.

One of the weaknesses of Social Sciences (IPS) students is their lack of reading and tendency to be less independent in learning. IPS students prefer interactive, audiovisual, and engaging learning formats. Based on preliminary interviews and observations with economics subject teachers and students at the Demak State Islamic Senior High School, it was found that there were difficulties in developing e-learning-based learning media and a lack of variation in the teaching models used in learning activities. As a result, students feel less interested in textbook-based learning materials. Teachers feel the need to increase learning with applications that facilitate the delivery of learning materials and grade management. In this regard, the researcher will explore the utilization of web-based E-learning applications in teaching.

Table 2 Tabulation of Student Responses to E-learning Learning in Class XII IPS 2 at Demak State Islamic Senior High School

No	Response	Number of Students	Percentage
1	Dislike learning that uses the internet or interactive audio-visual networks in LMS form	5	13.89
2	Enjoy learning using the internet or interactive audio-visual networks in the form of LMS.	28	77.78
3	No response	3	8.4

Sumber : Primary Data

The lack of response from students will result in a lack of enthusiasm for learning, which will subsequently affect their learning outcomes negatively. Student interest is an important factor in the education process, but it does not always directly affect learning outcomes. Some students may have a high interest in a particular subject, but they may not necessarily achieve good learning outcomes if they are not supported by other factors such as effective teaching methods, appropriate learning media, conducive learning environments, and internal motivation to learn. On the other hand, some students may not have a strong interest in a subject, but with hard work, discipline, and proper guidance, they can achieve good learning outcomes. Therefore, while interest in learning can be a motivating factor for students, it is not the sole determinant of their learning success. In the context of education, teachers and educational institutions need to provide appropriate learning media and create learning environments that support various types of student interests and learning styles, as well as provide the right encouragement to increase their learning outcomes.

Various obstacles in the learning process of economics subjects such as the limitation of learning media used due to time and space constraints in the classroom. The delivery of subject matter relies solely on lectures and exercises given by the teacher, and the speed of the teacher's teaching is also limited by time and classroom space. Students' attention is more focused on their gadgets not only because of less engaging learning media but also due to the lack of variation in learning media.

Motivation in learning is also crucial for every student. Without motivation in learning, it is impossible for the knowledge taught by every teacher to be accepted by students. Motivation is an internal drive for students. Motivation can also be defined as the force that can generate the level of willingness to do an activity. Motivation comes from within (intrinsic motivation) as well as from external sources (extrinsic motivation). The strength of students' motivation in learning will determine the quality and learning outcomes. Therefore, teachers are required to be able to encourage and increase students' motivation in their learning (Suprihatin, 2015).

Using e-modules with PDF flips increases their economics learning outcomes effectively. These e-module media can be accessed online through smartphones, notebooks, or computers (Mahromah, 2022).

A student can learn more efficiently if they strive maximally, meaning they motivate themselves. Learning motivation can come from within (intrinsic), such as being diligent in reading books and having a high curiosity about a problem. Learning motivation can also be aroused, increased, and maintained by external conditions (extrinsic), such as the presentation of lessons by teachers with varied media, appropriate methods, and dynamic communication (Veriansyah, 2018).

The rapid advancement of ICT demands that society keep pace with it, including in the field of education where teachers must always stay

updated with various changes and developments, followed by implementing relevant teaching innovations in their respective fields. The use of ICT in learning is expected to accelerate students' abilities and increase the quality of classroom learning, which will have implications for students' learning outcomes.

The application used as a learning media is a website that makes teaching materials more engaging, interactive, and flexible. The internet is the second "qibla" for humans today. According to Rosenberg as cited in (Rusman, 2013, p. 288), the use of internet technology to deliver a series of solutions can increase knowledge and skills. The use of the internet in this learning process is utilized to share links for learning through the Madrasah E-learning application via the web. The use of this media is expected to help students in independent learning. Additionally, the use of learning media will foster variation and innovation in teaching so that students do not become bored with monotonous teaching models.

The advancement of ICT nowadays poses a challenge for teachers to develop teaching materials using web-based media. The web is one of the ICT developments utilized as a medium in the learning process. Alsaif (2019) states that learning using the web is more effective compared to conventional learning. Learning through the web provides students with more freedom and space to engage, which is a result of higher levels of learning motivation. Vause (2017) suggests that web-based teaching is more effective in increasing knowledge and reducing stress compared to traditional teaching. Furthermore, Xueqing (2020) states that the use of the web in the teaching process can increase students' confidence. Utami (2022) states that the use of web-based accounting applications improves the learning outcomes of the experimental class compared to the control class.

However, this research differs from the study conducted by Arani (2017), which indicates that to improve teaching quality, teachers collaborate with students in the learning process. Direct learning through discussions with students using textbook materials is more effective and can increase student engagement compared to using internet/web-based teaching materials.

However, this study contrasts with the research conducted by Arani (2017), which suggests that increasing teaching quality involves teachers collaborating with students in the learning process. Direct learning through discussions with students using textbook materials is more effective and can enhance student engagement compared to using internet/web-based teaching materials.

This study, includes the utilization of web applications with user-friendly interfaces that are easy to use and understand by economics teachers and students for personalized learning, the use of data analytics for more efficient monitoring and evaluation, as well as the integration of responsive and intuitive user interfaces. Both students and teachers have their own accounts to monitor learning progress and achievements in real-time. Current research also focuses on adaptive design, which allows learning content to be automatically adjusted and ready-made according to the student's level of understanding. Through this application, economics subject teachers are expected to be helped in managing learning effectively and systematically, as well as organizing assessments that are neatly arranged, fair, and aligned with objectives.

From the above explanation, the researcher sees significant benefits in using web-based learning media applications (e-learning), namely web-based learning media (e-learning/LMS). It is hoped that students can understand the materials available on e-learning/LMS and motivate teachers to use and utilize engaging learning media that are suitable for the environmental conditions from both the students' and teachers' perspectives, therefore facilitating updates in the implementation of learning activities. The utilization of web-based e-learning learning media in Senior High School/Islamic Senior High School economics subjects is expected to improve students' learning outcomes. Therefore, the researcher intends to conduct a study to determine the benefits of using E-learning with the title "Utilization of Web-Based Madrasah E-learning as Learning Media for Economics Subjects.

RESEARCH METHODS

This research used a quantitative descriptive method. The population for this study consisted of all twelfth-grade students at the State Islamic High School of Demak, totaling 403 students. Purposive sampling was a sampling technique carried out solely based on the researcher's judgment, assuming that the desired elements were present in the selected sample members. In this study, the researcher sampled students from the twelfth-grade social science program (IPS) at the State Islamic High School of Demak, totaling 134 students.

The research steps involved comparing one control group that did not receive the treatment and one experimental group that did receive the treatment. The study began with a pre-test given to the sample before the treatment, followed by learning using madrasah e-learning for two learning sessions, and concluded with a post-test. The success of utilizing madrasah e-learning was measured by calculating the difference between the pre-test and post-test scores. In this study, the researcher sampled students from the twelfth-grade social science program (IPS) at the State Islamic High School of Demak, totaling 134 students. The analysis of this research consisted of (1) descriptive analysis, (2) analysis of students' responses to madrasah e-learning, and (3) difference testing between the experimental class and the control class using the Mann-Whitney U statistical test.

RESULTS AND DISCUSSION

At the beginning of the implementation of Distance Learning (PJJ), teachers at State Islamic Senior High School of Demak used applications from various platforms and providers of distance learning applications such as Google Classroom and Google Meet, Google Forms, Schoology, Quizziz, Ruang Guru, Quipper, Eduprime, Edubrand, and some even conducted lessons through WhatsApp. However, after the Ministry of Religious Affairs released an application called "E-Learning Madrasah" and began to implement the use of this application in schools under its jurisdiction the Ministry of Religious Affairs, State Islamic Senior High School of Demak also adopted the "E-Learning Madrasah" application for teaching.

State Islamic Senior High School of Demak organized a workshop for teachers on the use of the "E-Learning Madrasah" application. During the workshop, the usage of the "E-Learning Madrasah" application was explained in detail. In addition to the workshop, a tutorial video was prepared by the Directorate of Curriculum, Facilities, Institutions, and Student Affairs (Direktorat Kurikulum, Sarana, Kelembagaan, dan Kesiswaan or KSKK) of Madrasah, Ministry of Religious Affairs, to help teachers who might not fully understand the application during the workshop and wish to access it on their own at home.

"E-Learning Madrasah" itself is an application created by the Directorate of Curriculum, Facilities, Institutions, and Student Affairs (KSKK) of Madrasah and released by the Ministry of Religious Affairs of the Republic of Indonesia for levels from Raudatul Athfal (Islamic Kindergarten) to Madrasah Aliyah (Islamic High School). E-learning can be accessed 24 hours a day, anywhere by users, as long as they have stable internet access and have a username and password to access e-learning. This application was created to facilitate distance learning implementation and also to address the challenge of advancing technology. "E-Learning Madrasah" can be utilized by teachers and students in conducting distance learning, both during the COVID-19 pandemic and after the pandemic ends (Hikmah, 2020:76).

The "E-Learning Madrasah" application itself is a breakthrough in information technology to help educational institutions manage the learning process during the pandemic (Hidayatullah, 2022:587). As the "E-Learning Madrasah" application was originally intended for all madrasahs, any madrasah wishing to use the application can do so for free. However, there are requirements for each madrasah that wants to use the "E-Learning Madrasah" application. The first step is to visit the website https://elearning.kemenag.go.id/ and log in by entering the school's NSM (School Statistical Number) as the username and password. This

registration process can only be done by the respective school operator. After successfully logging in, the school operator must fill out the school profile and upload the operator's SK (Letter of Appointment). Then, the school operator must wait for the SK operator to be verified by the Directorate of KSKK Madrasah at the Ministry of Religious Affairs. Once the operator's SK has been successfully verified, the school operator can then download and use the "E-Learning Madrasah" application.

The response of teachers at State Islamic Senior High School of Demak to the use of the "E-Learning Madrasah" application is generally positive, and they agree to use the application in teaching. However, most senior teachers do encounter difficulties in using the application due to limitations, one of which is related to age and ICT skills. Therefore, State Islamic Senior High School of Demak does not force teachers to conduct teaching using the "E-Learning Madrasah" application. The school authorities realize that not all teachers are capable of using the "E-Learning Madrasah" application for teaching, even after being provided with training. Therefore, teachers who genuinely do not understand how to use the "E-Learning Madrasah" application are given the opportunity to teach using other applications that are easier for them to use.

The results of the research conducted by the researcher on the response to the utilization of Madrasah e-learning indicate that the utilization of Madrasah e-learning receives sufficient enthusiasm from students for use in the learning process, with a percentage of 82.86% categorized as good. This study is in line with research conducted by Ririn Eva Hidayati, which shows that the implementation of learning using Madrasah e-learning is quite effective for use.

Table 3 Results of the Mann-Whitney Test Post-Test Learning Outcomes of Experimental Class and Control Class

Test Statistics[a]	
	Post-Test Learning Outcomes
Mann-Whitney U	1373,500
Wilcoxon W	3453,500
Z	-3,902
Asymp. Sig. (2-tailed)	,000
a. Grouping Variable: Kelas	

Sumber: Processed Research Data (2024)

Based on the presentation of the Mann-Whitney test results, the student's learning outcomes from both samples in the form of post-tests in the experimental class and the control class show a value of Asymp. Sig. (2-tailed) of 0.000, indicating that the value of 0.000 < 0.05, means there is a difference in the average post-test results between the experimental class and the control class after using the e-learning madrasah media. Furthermore, it can be stated that the use of e-learning madrasah effectively improves students' learning outcomes because there is a significant difference between before and after the treatment.

This research is supported by previous studies, such as the one conducted by Shofaul Hikmah (2020), which showed that the E-learning Madrasah application proved to be beneficial as a learning technique during the COVID-19 pandemic. This identifies that through e-learning madrasah, students can learn even remotely or outside the classroom. Although many studies are showing that there is no influence between the use of e-learning madrasah and learning outcomes, several studies are showing a more dominant influence between the use of e-learning and learning outcomes.

Through instructional media, students can independently explore their abilities and thinking abilities, thus producing their own version of knowledge construction, which may differ from that of their teachers. This is in line with Constructivism Theory by Piaget and Vygotsky, which emphasizes the interaction of interpersonal (social), cultural-historical, and individual factors as the key to human development (Schunk, 2012: 339). The concepts and principles of Lev Vygotsky's constructivism theory are presented by Ormrod (2012: 314):

"Some cognitive processes are seen in a variety of species; others are unique to human beings. Vygotsky distinguished between two kinds of processes, or functions. Many species exhibit lower mental functions: certain basic ways of

learning and responding to the environment—discovering what foods to eat, how best to get from one location to another, and so on. But human beings are unique in their use of higher mental functions: deliberate, focused cognitive processes that enhance learning, memory, and logical reasoning. In Vygotsky's view, the potential for acquiring lower mental functions is biologically built in, but society and culture are critical for the development of higher mental functions."

Based on that opinion, it can be understood that humans have the ability to use their mental functions to increase learning, memory, and logical reasoning. In Vygotsky's view, the foundation of human mental functions is biologically built, and to develop these mental functions, humans require the roles of society and culture.

In the constructivist learning theory, it is stated that knowledge is a result of human (student) construction after interacting with materials, content, and experiences they have personally encountered, to be constructed into new knowledge that may differ from previous knowledge. Teachers only provide materials and knowledge, while students acquire that knowledge through their thought construction. The knowledge received by students may differ among them, and their understanding of the knowledge may differ from the teacher who provided it. Therefore, students construct knowledge from all the materials and media they receive, then process and construct it, organizing it in their brains into their version of knowledge.

The source of knowledge for today's students is not limited only to school and traditional learning, given the rapid access to information through various tools and devices. On one hand, some students can accelerate with the advancement of information technology, while on the other hand, there are students who also stagnate due to a lack of knowledge construction and motivation within themselves. Constructivist learning strategies involve active learning, self-directed learning, collaborative learning, and learning through the experiences of the individual (students) themselves. In constructivist theory, learning is a process of internalizing, restructuring, and forming new knowledge.

Constructivist learning theory believes that in learning, one uses their thinking ability to critically receive what is taught, meaning to relate it to what has already been learned, to accept what is learned according to their own understanding, and to create new concepts and knowledge based on new understanding. Constructivist learning theory is the refinement and reinforcement of knowledge received by students, combined with the knowledge they already possess, to produce (construct) new knowledge that may differ (antithesis) from what is received from their teacher. According to this theory, active students will develop and acquire more knowledge. The teacher is only a facilitator and mediator.

This study aligns with previous research conducted by Mohamad Kholish Widodo (2022), which examines the strengths and weaknesses of Madrasah e-learning, its effectiveness in distance learning, its benefits for teachers and students, and solutions to overcome the challenges of using Madrasah e-learning. This research can contribute to the effective use of Madrasah e-learning as an alternative learning mode and can serve as a reference for other institutions.

CONCLUSION

Based on the results of the research and discussions outlined earlier, it can be concluded that the utilization of Madrasah e-learning as a learning activity media is still partial. Teachers, especially senior teachers, are still "accustomed" to using conventional learning activities where teachers only use student textbooks as references for students to learn both in class and independently. This is because teachers, especially senior teachers, still have difficulty in utilizing IT-based, digital, and web-based learning media, which require further understanding to use. Madrasah e-learning as a learning media has proven to be effective in improving students' learning outcomes, with differences in test results between the experimental and control groups. The test results indicate that the increase in scores in the experimental group is higher than the increase in

scores in the control group. Therefore, it can be concluded that Madrasah e-learning is a feasible learning media for use in Madrasah education.

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