

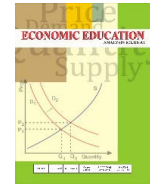


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The Influence of the eLDirU LMS, Digital Literacy, and CBL Methods on Learning Achievement

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Abstract

Critical thinking skills are essential for students in developing their intellectual skills. Critical thinking involves the ability to objectively analyze, evaluate, and synthesize information. It allows students to make good decisions, recognize strong or weak arguments, and identify weaknesses in their own thinking. Critical thinking skills also help students be critical of information sources, avoid superficial thinking, and face challenges with creative problem solving. In today's information age, critical thinking enables students to become self-reliant, informed, and skilled individuals in the face of the changes and complexities of the modern world. Implementing monotonous learning without considering active student participation is one of the causes of low critical thinking abilities among students. This study aims to enhance students' critical thinking abilities through project-based learning. The research was conducted using a quasi-experimental method. The research design used a nonequivalent pretest-posttest control group design. The study subjects were students from class XI MIA 1 and XI MIA of SMA Negeri 5 Kota Sukabumi and SMAN 1 Sukaraja. The research results, obtained through the t-test, yielded a significance value of 0.007. This means that applied project-based learning can enhance students' critical thinking abilities.

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INTRODUCTION

From time to time the world of education experiences significant changes, especially in the increasingly sophisticated fields of technology and informatics (Montanesa & Firman, 2021). According to Agustian & Sababila (2021) the development of information technology which is increasingly rapid in the current era of globalization cannot be avoided anymore its impact on the world of education. The development of computer network technology and the expansion of the internet has made the development of education increasingly widespread, this has become an opportunity to add innovation to the learning process so that learning can run effectively, efficiently and flexibly, that is, it can be done anytime and anywhere. The task of educators is needed to make changes in the strategies, procedures and media used. Teachers must also be able to develop innovative ICT-based learning models, learning media, and e-learning applications (Warsita, 2017). Besides those educators are also required to have several competencies that must be possessed so that the e-learning program that they run can run well. An educator or teacher must be able to learn to be there to learn, be creative and fun (Yustanti & Novita, 2019).

The application of e-learning in the teaching and learning process in schools requires digital literacy competencies. According to Fernanda et al. (2020) digital literacy oriented towards the ability to use the internet to find information. Digital literacy is more complex than just the skills to utilize ICT and the internet, for example the use of LMS for e-learning (Nugraha, 2022). Through e-learning, students can access various information on the internet. Digital literacy skills are one solution in responding to the challenges of technological progress. So, e-learning can have an impact on students' digital literacy skills (Dewi, 2022).

Students who have the opportunity to

use these technologies indirectly hone or improve their ICT literacy and critical thinking skills, problem solving and others (Adisel & Pranansa, 2020). So, this 21st century skills can be achieved by utilizing developments in computer technology, including in learning for students at the Faculty of Economics and Business, Jenderal Soedirman University, Purwokerto. One innovation that can be done to improve the quality of learning is to develop a Learning Management System (LMS) in lectures. LMS is a software application for activities in networking and electronic learning (e-learning). Learning Management System (LMS) is a software for administrative purposes, documentation, material searches, reports on an activity, providing training materials online teaching and learning activities that are connected to the internet. connected to the internet (Warsono, 2021). Learning Management System is a management system learning which is very popular nowadays, where almost every school and college uses this media to create their virtual learning environment.

E-Learning at Jenderal Soedirman University (ELDirU) is a Learning Management System (LMS) owned and managed by Jenderal Soedirman University. ELDirU is a system that is integrated with SIA (akademik.unsoed.ac.id), where every lecturer and student can log in with the same username and password as the username and password on SIA. By using e-learning, it is hoped that it will get a good and positive response from the community. According to (Ratnawati & Werdiningsih, 2020) the use of e-learning is intended to support learning activities so that it becomes more innovative, interesting, fun, and not monotonous. The method of implementing E-learning has been practiced by all universities, with the advantage that lecturers can interact with students outside the lecture schedule. Students can also download materials or references provided by lecturers via E-learning. This is also useful for students because refe-

rences from journals will help them to gain new insights and improve students' ability to study (Senny Luckyardi, 2021).

According to Dinata (2021) digital literacy is one of the abilities that must be learned by students in preparing for the industrial revolution 4.0. Digital literacy that is important for 21st century students to have includes information literacy, media literacy, and Information and Communication Technology (ICT) literacy (Sujana & Rachmatin, 2019). Digital literacy is the potential to understand and use information in various forms from a very wide range of sources that can be accessed via computer devices. The importance of digital literacy can be seen from increasingly sophisticated technological developments. The digital era emerged marked by the internet phenomenon which can be enjoyed by all broad groups, both the younger and older generation (Farleynia Giovanni, 2019).

Research results from (Perwita, 2021) explained that Jenderal Soedirman University students' understanding of digital media was in the very good category. This can be seen from the results that technical skills and critical understanding are in the very good category and social competence is in the medium category, the level of individual competence of Jenderal Soedirman University students in digital media literacy is in the advanced category.

Conventional learning methods are considered no longer in line with the progress of the world of education in this era of globalization. Case Based Learning is an effective and interesting learning approach. According to Wospakrik et al. (2020) Case Based Learning (CBL) is an instructional learning method that is oriented towards a problem solving approach to learning. In CBL learning, scenarios or case studies are used to develop students' reasoning knowledge and skills in solving the problems they face (Farleynia Giovanni, 2019). According to (Frengki Wospakrik, 2020) explained that the CBL method is very effective and has a positive impact on motivating pupils and students to increase their potential knowledge and skills in identifying

problems faced by students.

According to (M. Irfan Taufan Asfar, 2019) an alternative strategy that can improve students' understanding of the material is by implementing learning through Case Based Learning (CBL). CBL is a learning strategy that can build students' analytical skills related to real (contextual) situations that are complex and relevant to the teaching material.

Students are subjects who are always active in accessing the internet and utilizing eLearning as a facility to support their learning. In the campus world, the development of e-learning technology has also been widely used in the teaching and learning process in the campus environment. Research conducted at the College of Information and Computer Management Tasikmalaya can obtain information regarding e-learning facilities on the campus that can be used for semester exams, online learning media, course assignments, and collecting assignments for certain courses. Learning achievement can be achieved through appropriate strategies from educators such as mastery in the classroom, learning methods used, teaching materials used and media used in the learning process. There is a research gap between the research results of (Gunawan, 2021) that a Moodle-based learning management system (LMS) can improve the argumentation skills of UNRAM Master of Science Education Students, in the other hand, according to (Fernanda Effendi, 2019) there is no influence of digital media literacy on achievement student, Islamic Religious Education Study Program at Kuantan Singingi Islamic University. So, the novelty of this research is that it's located at Jenderal Soedirman University and uses quantitative approach while previous research used qualitative and experimental design.

Based on the background above, the author is interested in researching problems related to the eLDirU Learning Management System, digital literacy and the Case Based Learning method, analyzing its influence on student learning achievement, precisely at the Faculty of Economics and Business, Jenderal Soedirman University, Purwokerto.

METHODS

This research use quantitative approach. According to (Sugiono, 2010) quantitative data is data in the form of numbers. The data collection technique was carried out by distributing questionnaires. This research was conducted at the Faculty of Economics and Business, Jenderal Soedirman University with the population are active students in the Faculty of Economics and Business that registered in the 2021-2022 academic year. The sampling technique in this research used the cluster sampling and based on the calculation, there are 100 students as samples in this research.

Table 1. Indicator of the Variable

Object Research	Indicator
Learning management system (X1)	1. There is new information
	2. There is a clear formulation of learning objectives
	3. There is integration between new substance content and loose learning material
	4. Students can demonstrate their level of understanding through practice
	5. There is feedback on the assessment carried out
Digital Literacy (X2)	1. Intensity of application and use of digital literacy in learning activities
	2. Number and variety of digital-based reading materials and teaching aids
	3. Frequency of borrowing digital-themed books
	4. Number of presentations of school information using digital media or websites page

Object Research	Indicator
Case Based Learning Method (X3)	Teaching materials require illustrations of real cases in the application of knowledge The available teaching materials are still theory-based Building strong reason for students to learn to understand. solve problem. apply material in business practice.
Learning Achievement (Y)	Grade Point Average (GPA)

Source: Processed Data, 2022

The objects in this research consist of Learning management system (X1), Digital Literacy (X2), Case Based Learning Method (X3), and Learning Achievement. The indicators of the object research show in Table 1.

RESULTS AND DISCUSSION

The respondent description are consisted of several departments from the Faculty of Economics and Business, Jenderal Soedirman University. Some of the majors that contributed as respondents were Economic Education, Management, Accounting, Business Administration, Economic and Social Development Sciences, and Office Administration, as well as International Business. From the data of 100 respondents, each class contributed several students, such as the 2018 class with 4 students, 2019 with 24 students, 2020 with 35, and 2021 with 36 students, and the class of 2022 also contributed respondents, even though only 1 student.

Data Analysis Results

Validity test

The table R value is 0.1966 for sig 0.05 when compared with the calculated R value then all variables are above 0.1966 so the data and all variables are valid.

Table 2. Instrument Validity Test

No	R Count				R Table	Information			
	X1	X2	X3	Y		X1	X2	X3	Y
1	0.384	0.658	0.584	0.617	0.1966	Valid	Valid	Valid	Valid
2	0.551	0.656	0.655	0.716	0.1966	Valid	Valid	Valid	Valid
3	0.616	0.512	0.731	0.785	0.1966	Valid	Valid	Valid	Valid
4	0.676	0.779	0.722	0.885	0.1966	Valid	Valid	Valid	Valid
5	0.692	0.750	0.692	0.854	0.1966	Valid	Valid	Valid	Valid
6	0.656	0.739	0.750	0.684	0.1966	Valid	Valid	Valid	Valid
7	0.695	0.621	0.573	0.745	0.1966	Valid	Valid	Valid	Valid
8	0.676	0.680	0.733	0.776	0.1966	Valid	Valid	Valid	Valid
9	0.648	0.758	0.726	0.774	0.1966	Valid	Valid	Valid	Valid
10	0.608	0.767	0.836	0.795	0.1966	Valid	Valid	Valid	Valid
11	0.629	0.754	0.811	0.790	0.1966	Valid	Valid	Valid	Valid
12	0.669	0.633	0.797	0.756	0.1966	Valid	Valid	Valid	Valid
13	0.675	0.710	0.820	0.605	0.1966	Valid	Valid	Valid	Valid
14	0.789	0.787	0.738	0.911	0.1966	Valid	Valid	Valid	Valid
15	0.760	0.721		0.854	0.1966	Valid	Valid		Valid
16	0.552	0.705		0.715	0.1966	Valid	Valid		Valid
17	0.704			0.819	0.1966	Valid			Valid
18	0.639			0.625	0.1966	Valid			Valid
19	0.661				0.1966	Valid			
20	0.655				0.1966	Valid			
21	0.698				0.1966	Valid			
22	0.596				0.1966	Valid			
23	0.630				0.1966	Valid			
24	0.603				0.1966	Valid			
25	0.682				0.1966	Valid			

Source: Processed Primary Data, 2022

Reliability test

It can be seen that the Cronbach alpha coefficient value for each variable is > 0.70 , so

it can be concluded that the instrument used in this research has a sufficient level of reliability.

Table 3. Instrument Reliability Test

Variable	Croanbach's Alpha Coefficient	Minimum Croanbach Alpha	Information
eLDirU Learning Management System	0.940	0.70	Reliable
Digital Literacy	0.927	0.70	Reliable
Case Based Learning Method	0.927	0.70	Reliable
Learning achievement	0.957	0.70	Reliable

Source: Processed Primary Data, 2022

Table 4. Path Analysis (Path Analysis)

Model	Unstandardized Coefficients		Standardized Coefficients
	B	Std. Error	Beta
(Constant)	-.879	4.435	
1 eLDirU Learning Management System	.126	.060	.152
Digital Literacy	.568	.110	.463
Case Based Learning Method	.452	.115	.336

Source: Processed Primary Data, 2022

Path analysis

Based on the results of the path analysis that has been carried out, it is found that the three independent variables have an effect on the dependent variable. This is proven by the results of the standardized coefficient which shows a value of >0.05 . Variable Variable X2 (Digital Literacy) influences Variable Y (Learning Achievement) with a value of $0.463 > 0.05$. Variable X3 (Case Based Learning Method) influences Variable Y (Learning Achievement) with a value of $0.336 > 0.05$.

Normality test

From the results of the normality test in Table 5, it was found that the value of Asymp. Sig. (2-tailed) 0.200 is greater than 0.05 so the data is said to be normally distributed in terms of all research variables.

Multicollinearity test

From the Table 6 can be seen the tolerance values for variables X1, X2 and X3 each of them is greater than 0.10. The VIF values of these three variables are also smaller than 10, so it can be concluded that the data does not have symptoms of multicollinearity.

Heteroscedasticity test

From Table 7 can be seen the heteroscedasticity test that the sig. of each of the three variables mentioned above is smaller than 0.05 so it can be concluded that there are no symptoms of heteroscedasticity.

Coefficient of determination test (R)

From Table 8 can be seen the R determination test above that an R Square value of 0.772 is obtained, which means that variables X1.

Table 5. Normality Test

One-Sample Kolmogorov-Smirnov Test		
		Unstandardized Residuals
N		100
Normal Parameters. b	Mean	.0000000
	Std. Deviation	5.61567389
Most Extreme Differences	Absolute	.060
	Positive	.056
	Negative	-.060
Statistical Tests		.060
Asymp. Sig. (2-tailed)		.200c.d
a. Test distribution is Normal.		
b. Calculated from data.		
c. Lilliefors Significance Correction.		
d. This is a lower bound of the true significance.		

Source: Processed Primary Data, 2022

Table 6. Multicollinearity Test

Variable	Collinearity Statistics	
	Tolerance	VIF
Learning Management System eLDirU(X1)	0.454	2.204
Digital Literacy (X2)	0.298	3.358
Case Based Learning Method (X3)	0.329	3.043

Source: Processed Primary Data. 2022

Table 7. Heteroscedasticity Test

Variable	Mark	
	t	Sig.
Learning Management System eLDirU(X1)	2.099	0.038
Digital Literacy (X2)	5.178	0.000
Case Based Learning Method (X3)	3.950	0.000

Source: Processed Primary Data, 2022

Table 8. R Square Test

Model Summary b				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.878a	.772	.764	5.70274

a. Predictors: (Constant). Case Based Learning Method. eLDirU Learning Management System. Digital Literacy

b. Dependent Variable: Learning Achievement

Source: Processed Primary Data, 2022

Table 9. ANOVA test

ANOVAa					
Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	10546.596	3	3515.532	108.099	.000b
1 Residual	3122.044	96	32.521		
Total	13668.640	99			

a. Dependent Variable: Learning Achievement

b. Predictors: (Constant). Case Based Learning Method. eLDirU Learning Management System. Digital Literacy

Source: Processed Primary Data, 2022

Table 10. Partial Significance Test

Model	t	Sig.
(Constant)	-.198	.843
1 eLDirU Learning Management System	2.099	.038
Digital Literacy	5.178	.000
Case Based Learning Method	3.950	.000

Source: Processed Primary Data, 2022

F test

From the F test in the Table 9 it can be seen that the calculated F value is 108.099, while the F table value is 2.70, so it can be concluded that this regression model is very precise and feasible.

T test

The results of partial analysis using the t test showed that all independent variables had

a significant effect on learning achievement. The three variables (X1, X2, X3) have a sig value <0.05.

eLDirU Learning Management System influence on learning achievement

Learning Management System is a software application that can used in administration, documentation, tracking, reporting and delivery of e-learning based educational

programs or training programs. Jay Kumar C in (Suyanto, 2010) defines E-Learning as any teaching and learning that uses electronic circuits (LAN, WAN, or Internet) to deliver learning content, interaction, or guidance. eLDirU (E-Learning at Jenderal Soedirman University) is an LMS (Learning Management System) owned and managed by Jenderal Soedirman University. ELDirU is a system that is integrated with Academic Information Systems (akademik.unsoed.ac.id), where every lecturer and student can log in with the same username and password as the username and password at Academic Information Systems.

Indicator of (Kamin Sumardi, 2021) The learning management system for computer-centered learning materials states that the distribution of computer-centered learning materials must have the following indicators: (a) There is new information; (b) There is a clear formulation of learning objectives; (c) There is integration between new substance content and loose learning material; (d) Students can show their level of understanding through practice; and (e) There is feedback on the assessment carried out. Based on the results of the analysis using the T test, it can be concluded that partially, the eLDirU Learning Management System influences learning achievement.

The results of this research are in line with research conducted by Gunawan (2021) which explains that a Moodle-based Learning Management System (LMS) can improve the argumentation skills of Unram Master of Science Education students. This is proven by the N-gain score which is in the high category. This research is supported by the findings of Perwita (2021) which obtained the following results eLDirU proven to improve learning achievement. It is hoped that the results of this research can provide additional scientific references regarding the importance of improving the quality of e-learning in order to achieve the best achievements that students want to achieve.

There are several reasons why eLDirU learning management system has a significant

effect on learning achievement, namely students assess that eLDirU is very easy to access, understands its various features, and makes it easy to understand the relationship between the material in the LMS. Apart from that, students can know, understand, and complete practice questions and feel very helped by the eLDirU learning management system to support learning. Several of these reasons must be of concern to the relevant parties so that the eLDirU learning management system can be used optimally, so that it can improve student learning achievement.

Digital literacy influences learning achievement

Digital literacy is a capability that can understand and utilize information through a wide variety of sources where access is assisted by computers (Giovanni, 2022). According to (Hidayati & Nurgiansah, 2023) digital literacy has a very strong influence on student achievement in Civics subject. Digital literacy skills are seen from four indicators According to (Revelation Aji Pratama, 2019), namely: a) Intensity of application and utilization of digital literacy in learning activities, b) Number and variety of digital-based reading materials and teaching aids, c) Frequency of borrowing digital-themed books, d) Number of presentations of school information using digital media or websites.

Based on the results of the analysis using the T test, it can be concluded that partially, digital literacy has a significant effect on learning achievement. The results of this research do not agree with research by Fernanda Effendi (2019) which found that there was no influence from digital media literacy on the learning achievement of students in the Islamic Religious Education study program at Kuantan Singingi Islamic University. However, this is different from Perwita's (2021) research which explains that Jenderal Soedirman University students' understanding of digital media is in the very good category. This can be seen from the results technical skills and critical understanding is in the very good cate-

gory, and social competence is in the medium category, the level of individual competence of Jenderal Soedirman University students in digital literacy is in the advanced category.

The differences in the results of this research can be caused by many factors, one of which is regarding students' understanding of digital literacy. The importance of digital literacy can be seen from increasingly sophisticated technological developments. The digital era emerged marked by the internet phenomenon which can be enjoyed by all broad groups, both the younger and older generations. (Farleynia Giovanni, 2019). Therefore, students' understanding of digital literacy must be further improved in order to support their abilities so that it has an impact on their learning achievement.

Students feel the benefits of digital media. Students assess that they have good digital literacy, so they can improve learning achievement if maximized. However, on the other hand, students have weaknesses in getting used to reading the material before learning begins. Apart from that, some students have difficulty finding material in digital form for some of the material presented. Even though some lecturers provide learning modules, students try to find references on the internet to hone their independence.

The Case Based Learning method influences learning achievement

According to (Frengki Wospakrik, 2020), explains that the CBL method very effective and has a positive impact on motivating students to improve their knowledge and skills in identifying problems faced by patients. The application of the CBL method in group discussion lectures is more effective in increasing student creativity and developing positive attitudes in learning to achieve better learning outcomes (Aliusta, 2016).

According to (Sriyani Mentari, 2019). The main reasons for developing case-based teaching materials are proposed in this lecture, namely a) That teaching materials require

illustrations of real cases in the application of knowledge, b) The available teaching materials are still theory-based, c) Building strong reasons for students to learn to understand, solve problems, apply the material in business practice.

Based on the results of the analysis using the T test, the hypothesis is accepted. It can be concluded that partially, the Case Based Learning method has a significant effect on learning achievement. The results of this research are in line with the statement of M. Irfan Taufan Asfar (2019) who explains that an alternative strategy that can improve students' understanding of the material is by implementing learning through Case Based Learning (CBL). Learning that instills the concept of reasoning in pupils and students by connecting their previous knowledge with real life contexts will have an impact on students' understanding abilities.

In the learning process using the case based learning method, students assessed that many of the case illustrations presented by lecturers were not understood by students. The use of the case based learning method can make students sharpen their thinking to analyze real cases that can be observed. Most students are interested in this learning method if it is packaged with more relevant case studies. By using illustrations of problems in a case, students feel challenged to solve these problems. In the other hand, by using the

Case Based Learning (CBL) model learning model, students will easily use basic skills or science generic skills generic science skills in solving or solve cases given by the educator (Nurlaili et al., 2015). However, this learning is still not optimal because some students think that some lecturers still prioritize theoretical discussions and ignore case illustrations. Therefore, learning using the case based learning method must be balanced with the lecturer's ability to package illustrations of existing problems and then link them to the topic of discussion. This will certainly have an impact on increasing student learning achievement.

eLDirU Learning Management System, digital literacy, and Case Based Learning methods simultaneously influence learning achievement

According to (Rosyid, 2019) interprets learning achievement expressed in the form of symbols, numbers, letters or sentences which can reflect the results that have been achieved by each student in a certain period and it can be stated that learning achievement is the result of a learning activity accompanied by changes achieved by the student.

The undergraduate program graduation predicate is as follows: a) Pass: GPA 2.00 – 2.75, b) Satisfactory: GPA 2.76- 3.00, c) Very Satisfactory: GPA 3.01 – 3.50, d) With Honors: GPA > 3.50 with a maximum study period of 5 (five) years without a D grade. (Regulation of the Chancellor of Jenderal Soedirman University Number 6 of 2018).

Based on the results of the analysis using the F test, the hypothesis is accepted. It can be concluded that simultaneously, the eLDirU Learning Management System, Digital Literacy, and the Case Based Learning method have a significant effect on Learning Achievement. The results of this research explain that together the eLDirU Learning Management System, digital literacy, and the Case Based Learning method have a significant effect on learning achievement. If partially each independent variable has a significant effect on the dependent variable, then it is slightly different from the simultaneous results which found that variable X2 had the highest significance level of 5.178, followed by variable X3 at 3.950 and ending with variable X1 at 2.099.

Student learning achievement will increase significantly if the media, methods and knowledge of digital literacy are good. Students think that learning achievement can be influenced by learning management systems, digital literacy, and case based learning methods. This can be observed from research data which shows that students are interested in learning using a learning management system supported by good student digital literacy, and choosing case illustration-based learning met-

hods.

CONCLUSION

Increasing student learning is influenced by many factors in learning. In the teaching and learning process, students need learning support as a basic thing. Elements that influence student learning activities are the students themselves, lecturers, learning methods or processes, environment, infrastructure, and so on. eLDirU is one LMS that can support student learning. Apart from that, digital literacy as a student provision also contributes to increasing learning achievement. And what not can be put aside, of course learning methods as a step to improve achievement must not be forgotten.

Student learning achievement will increase significantly if the media, methods and knowledge of digital literacy are good. Our advice as a research team for lecturers and students is to improve the quality of learning using a learning management system, digital literacy, case based learning, so that student learning achievement can increase optimally.

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