

Analysis of Moodle as E-Learning in the Online Learning Implementation in Aviation Polytechnic of Surabaya

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Abstract: *This study aims to analyze the implementation of Moodle as e-learning in the online learning application at the Aviation Polytechnic of Surabaya. The research method employed the descriptive qualitative method. The sample in this study consisted of 46 cadets at Aviation Polytechnic of Surabaya. This research was carried out from March 2020 to June 2020 at the Aviation Polytechnic of Surabaya. Data were collected using observation, questionnaires, interviews, and literature studies. The data obtained through questionnaires were then analyzed utilizing descriptive analysis techniques with percentages. The results of the optimal level of Moodle as e-learning in the online learning application reached 79.56% for the user satisfaction aspect, with a good category. From the usability aspect, it got 73.61%, with enough category. From the graphic design aspect, it attained 56.74%, with enough category. The navigation aspect reached 76.95% in the good category, while the content aspect obtained 84.34% in the good category. Overall, the response of the VA and VB Aviation Communication cadets obtained 74.24%, with enough category. Thus, it can be concluded that Moodle as e-learning in the online-based learning application at the Aviation Polytechnic of Surabaya was not fully optimal since it was still in enough category.*

Keywords: *Online learning, E-learning, Moodle*

Abstrak: Penelitian ini bertujuan untuk menganalisis implementasi moodle sebagai e-learning dalam penerapan pembelajaran daring (dalam jaringan) di Politeknik Penerbangan Surabaya. Metode penelitian yang akan digunakan adalah metode kualitatif deskriptif. Sampel pada penelitian ini terdiri dari 46 Taruna di Politeknik Penerbangan Surabaya. Penelitian ini dilaksanakan pada bulan maret 2020 hingga Juni 2020 yang bertempat di Politeknik Penerbangan Surabaya. Pengumpulan data dilakukan dengan menggunakan metode observasi, angket/ kuesioner, wawancara dan studi pustaka. Data yang diperoleh melalui angket dianalisis menggunakan teknik analisis deskriptif dengan persentase. Hasil tingkat keoptimalan moodle mencapai 79,56% untuk aspek user satisfaction dengan kategori Baik, dari aspek usability mencapai 73,61% dengan kategori Cukup, dari aspek Graphic Design mencapai 56,74% dengan kategori Cukup, dari aspek Navigation mencapai 76,95% dengan kategori Baik, dan dari aspek content mencapai 84,34% dengan kategori Baik. Secara keseluruhan respon taruna Komunikasi Penerbangan Angkatan VA dan VB diperoleh prosentase sebesar 74,24% dengan kategori Cukup. Maka dapat disimpulkan bahwa moodle sebagai e-learning dalam penerapan pembelajaran berbasis daring (dalam jaringan) di Politeknik Penerbangan Surabaya belum sepenuhnya optimal karena masih dalam kategori cukup.

Kata Kunci: Pembelajaran Daring, E-Learning, Moodle

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INTRODUCTION

The rapid development of information and communication technology, especially internet services, has resulted in the development of better information services in various aspects, especially in educational institutions. Dhika, et al. (2020) asserted that information technology is a major aspect in facing the 4.0 revolution in the world of education. For example, in several universities, polytechnics, and abroad, the use of information and communication technology (ICT) is realized in a system called electronic university (e-University). The development of e-University aims to support education implementation so that higher education institutions can provide better information services to their communities, both inside and outside the institution, through the internet. Another educational service that can be implemented through internet facilities is by providing online lecture materials that can be accessed by anyone who needs it. Usually, it is presented in the form of e-learning.

Hartley (in Triluqman and Sukirman, 2009) stated that e-learning is a type of teaching and learning that allows the delivery of teaching materials to students using the internet, intranet, or other computer network media. Currently, the e-learning concept has been widely accepted by the public because of its advantages, which are considered effective. It aligns with Wahid and Luhriani's (2015) theory, proposing that the e-learning system is considered to provide effective and efficient performance in the context of utilizing information technology in an educational institution. It is evidenced by the widespread implementation of e-learning in educational institutions (schools, training institutions, and universities) and industry (Cisco Systems, IBM, HP, Oracle, etc.), including its application at the Aviation Polytechnic of Surabaya. Regarding the online-based learning implementation, especially the use of e-learning as an alternative learning medium, the Aviation Polytechnic of Surabaya used the Moodle platform.

Moodle (Modular Object-Oriented Dynamic Learning Environment) is an online Learning Management System (LMS), which allows lecturers to create dynamic courses by extending learning anytime, and anywhere (Risdianto, 2019). Moodle is one of the open-source software that supports the e-learning implementation because it is equipped with interactive features, such as assignments, quizzes, communication, collaboration, and the primary feature that can upload various formats of learning materials (Wulandari and Surjono, 2013).

In addition, the use of Moodle is precise and can be adapted for constructivism learning. Based on Surjono (2010), Moodle can be modified according to needs, and it was proven that more than 49 thousand e-learning sites spread in more than 210 countries in 2010, and there are more than 594 e-learning sites in Indonesia. In this case, learning is oriented towards cadets who actively build new knowledge by tinkering and experimenting, and cadets can learn more by explaining what they have learned to others and adopting a more subjective attitude to the knowledge created. These ideas run parallel to the way open-source development works, where developers are also frequent users. Related to this, everyone is free to play around with the software, and the code is rebuilt or adapted, reviewed, and refined through open discussion (Risdianto, 2020).

More specifically, the Aviation Polytechnic of Surabaya is one of the educational institutions under the Transportation Human Resources Development Agency. Aviation Polytechnic of Surabaya is located in East Java, with the address at Jalan Jemur Andayani 1/73 Surabaya. The existence of the Surabaya Aviation Polytechnic began with the training implementation in Region III, Directorate General of Civil Aviation Surabaya in 1989, under the name of the Aviation Education and Training Center Organization in accordance with the Decree of the Minister of Transportation Number KM 22 of 1989 dated 13 May 1989 concerning Organization and Work Procedures Center for Aviation Education and Training. Based on the Decree of the Minister of Transportation, jointly, an aviation education and

training organization was formed; besides in Surabaya, there are also in Medan, Palembang, Makassar, and Jayapura.

Aviation Polytechnic of Surabaya realizes that the e-learning application as a learning method in the world of education is a must to support and improve the quality of education. Based on the Regulation of the Minister of Education and Culture of the Republic of Indonesia Number 109 of 2013 concerning the Implementation of Distance Education in Higher Education, electronic learning (e-learning) is learning that utilizes information and communication technology-based information packages for learning purposes, which can be accessed by students anytime and anywhere.

Currently, the Aviation Polytechnic of Surabaya has developed a Learning Management System (LMS) facility that can facilitate distance learning to improve learning effectiveness and quality. This Learning Management System (LMS) facility is in the form of a website application called e-learning.poltekbangsby.ac.id. This e-learning is open-source and uses the Moodle platform. Moodle, in general, will make it easier for cadets because it can be accessed via the internet, where cadets will get various information about lecture activities, including learning materials, which are provided by teaching lecturers. Another convenience that cadets will feel with Moodle is that cadets will be more independent in understanding the material provided and looking for references related to the material provided. In addition, Moodle will provide convenience for teaching lecturers for sharing lecture material files, managing cadet assignments, administering exams, and discussing through online forums.

A number of studies have revealed that Moodle is considered very helpful in the e-learning process. Gunawan, et al. (2021) affirmed that the Moodle-based LMS effectively developed the students' ability to express their opinions. In addition, Shurygin and Sabirova (2017) obtained the results that Moodle could improve the quality of the learning process, the effectiveness of the retrieval of the e-learning system, and the ease of accessing the required information. However, Arkorful & Abaidoo (2015) research found different results from the perception of aviation cadets in Makassar, who admitted that they had difficulty if e-learning was still used during practice because of problems with the tools or practice materials used, while for the process of delivering theory, e-learning was still considered effective. Therefore, the application of Moodle as e-learning in online learning is not known for sure whether it has been running optimally or not. It is the basis of this research, so that the researcher wanted to analyze the Moodle implementation as e-learning in the online learning application at the Aviation Polytechnic of Surabaya. Based on the background described above, the author raised research entitled "Analysis of Moodle as E-Learning in the Online Learning Implementation in Aviation Polytechnic of Surabaya."

RESEARCH METHODS

Basically, this section describes how this research was conducted, including research design, population and sample, data collection techniques, and data analysis techniques. The design used in this research was qualitative. Meanwhile, for data collection techniques, the researcher utilized questionnaires and interviews. For the population and sample, there were 48 cadets. Interviews were conducted with resource persons considered representative of the object of the research problem, namely the IT lecturer at the Aviation Polytechnic of Surabaya, Mrs. Lady Silk Moonlight. After getting all the data needed, the questionnaire data processing employed a Likert scale percentage. Furthermore, the data were processed and presented in the Results and Discussion section.

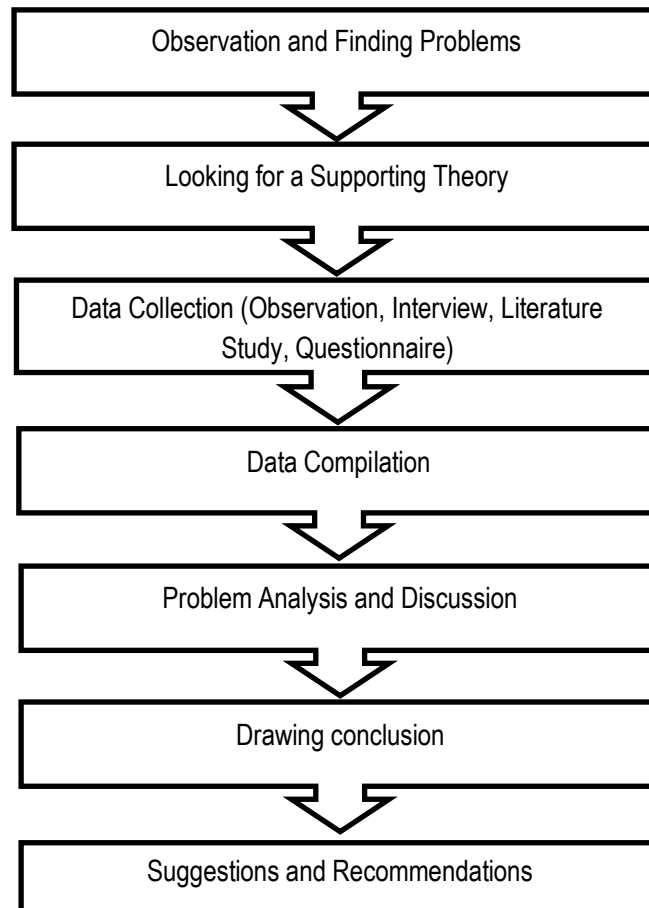


Figure 1. Research Stages (Research Guide, 2020)

RESULTS AND DISCUSSION

The results of this study were obtained from the process of observation, interviews, and questionnaires, which were carried out from March to June 2020. Data collection with questionnaires was carried out by distributing questionnaires to D3 Aviation Communication cadets batch V A and B, totaling 48 cadets. Meanwhile, interviews were conducted with resource persons considered representative of the object of the research problem, namely the IT lecturer at the Aviation Polytechnic of Surabaya, Mrs. Lady Silk Moonlight, by asking questions based on the interview guide and conducted face-to-face.

Data from the questionnaire were obtained from the nine statements listed. These nine statements were intended to analyze the respondents' interest, convenience, usefulness, and satisfaction in using Moodle as e-learning. Furthermore, the data obtained from the questionnaire were presented in tabular form and calculated using a Likert scale. Good results were obtained for the aspects of satisfaction, convenience, and usefulness, and sufficient results were obtained in the aspect of interest. Then, the interview resulted in data presented in the form of excerpts from interviews, containing various respondents' answers regarding the implementation of Moodle as e-learning in the online learning application at the Aviation Polytechnic of Surabaya.

The interview stage was carried out to clarify and obtain deeper data related to the interview points studied. Meanwhile, the research results analyzed were presented in detail. Based on the

interviews that the author submitted to IT lecturers, it can be concluded that: 1) every cadet has the right to get knowledge and information related to lecture material anywhere and anytime, 2) with Moodle as e-learning created by the Aviation Polytechnic of Surabaya, it is hoped that it can support the online learning process, 3) aviation Polytechnic of Surabaya has provided facilities, and with the availability of these facilities, it is expected to be socialized and optimized to provide benefits for the online learning process, 4) it is necessary to pay attention to the regulations set by the management of the Aviation Polytechnic of Surabaya regarding the use of laptops/computers and cellphones as supporting facilities for Moodle as e-learning as it is contrary to the purpose of using Moodle as e-learning.

Questionnaires were distributed online to Aviation Communication cadets batch V A and B after utilizing Moodle as e-learning. The questionnaire score analysis for each indicator studied can be seen in the following table:

Table 1. Questionnaires Result

NO	STATEMENT	INDICATOR				
		SA	A	N	D	SD
1	I am interested in using Moodle as an e-learning in online learning.	15	18	10	3	0
	Value Weight	15X5	18X4	10X3	3X2	0X1
		75	72	30	6	0
	Index %	$\frac{183}{230} \times 100 = 79.56\%$				
2	As e-learning, Moodle makes online learning easier.	8	11	25	2	0
	Value Weight	8X5	11X4	25X3	2X2	0X1
		40	44	75	4	0
	Index %	$\frac{163}{230} \times 100 = 70.86\%$				
3	Moodle's operation made it easy to find information related to the courses I needed.	6	14	15	9	2
	Value Weight	6X5	14X4	15X3	9X2	2X1
		30	56	45	18	2
	Index %	$\frac{151}{230} \times 100 = 65.65\%$				
4.	I access Moodle easily anytime and anywhere.	20	17	8	1	0
	Value Weight	20X5	17X4	8X3	1X2	0X1
		100	68	24	2	0
	Index %	$\frac{194}{230} \times 100 = 84.34\%$				
5	Moodle design and features are interesting and complete.	2	5	13	17	9
	Value Weight	2X5	5X4	13X3	17X2	9X1
		10	20	39	34	9
	Index %	$\frac{112}{230} \times 100 = 48.69\%$				
6	Overall, Moodle looks good.	8	12	13	9	4
	Value Weight	8X5	12X4	13X3	9X2	4X1
		40	48	39	18	4

Index %				$\frac{149}{230} \times 100 = 64.78\%$		
7	The ease of navigating (exploring) the e-learning system using the existing menu is good.	12	23	5	4	2
Value Weight		12X5	23X4	5X3	4X2	2X1
		60	92	15	8	2
Index %				$\frac{177}{230} \times 100 = 76.95\%$		
8	Each course is adjusted to the curriculum that has been determined and arranged systematically.	21	18	7	0	0
Value Weight		21X5	18X4	7X3	0X2	0X1
		105	72	21	0	0
Index %				$\frac{198}{230} \times 100 = 86.08\%$		
9	The use of language is easy to understand.	15	23	7	1	0
Value Weight		15X5	23X4	7X3	1X2	0X1
		75	92	21	2	0
Index %				$\frac{190}{230} \times 100 = 82.60\%$		

Table 2. Questionnaire score analysis for aspects of user satisfaction

Sub indicators	User Satisfaction		Total
Question items	1		
Σ Score	183		183
Percentage	79.56%		79.56%
Category	Good		Good

Table 3. Questionnaire score analysis for usability aspects

Sub indicators	Usability			Total
Question items	2	3	4	
Σ Score	163	151	194	508
Percentage	70.86%	65.65%	84.34%	73.61%
Category	Enough	Enough	Good	Enough

Table 4. Questionnaire score analysis for the graphic design aspect

Sub indicators	Graphic Design		Total
Question items	5	6	
Σ Score	112	149	261
Percentage	48.69%	64.78%	56.74
Category	Less good	Enough	Enough

Table 5. Questionnaire score analysis for the navigation aspect

Sub indicators	Navigation	Total
Question items	7	
Σ Score	177	177
Percentage	76.95%	76.95%
Category	Good	Good

Table 6. Questionnaire score analysis for content aspect

Sub indicators	Content		Total
Question items	8	9	
Σ Score	198	190	194
Percentage	86.08%	82.60%	84.34%
Category	Good	Good	Good

From the questionnaire analysis results, good criteria were produced with a percentage score of 79.56% for the user satisfaction indicator so that it can be seen that, in general, users (cadets) were interested in Moodle as e-learning in online learning. The ease of accessing the material (usability) also determines whether or not Moodle is optimal as e-learning in online learning. Based on the questionnaire analysis results, it was found that the questionnaire analysis score was 73.61% with enough criteria so that in terms of usability, cadets found it easy to find information related to courses anytime and anywhere. Besides, graphic design is an essential factor because it relates to the subjective visual satisfaction of users. In the questionnaire analysis, Moodle was included in enough category in graphic design because the cadets felt that the design and features were less attractive and incomplete as teaching materials, with 56.74%. Meanwhile, in terms of navigation, the percentage was 76.95%, with a good predicate. Furthermore, the course content must be adjusted to the subject that has been prepared. The questionnaire analysis results showed that 84.34% of respondents stated that the content provided had good criteria. The material from the e-learning model using Moodle was in accordance with the subject being studied, was complete and systematic, and helped in understanding the concepts of each course.

From the overall response of VA and VB Aviation Communication cadets, the percentage obtained was 74.24%, with enough criteria. Thus, it can be concluded that Moodle as e-learning in the application of online-based learning at the Aviation Polytechnic of Surabaya was not yet fully optimal. For this reason, it needs to be developed again in terms of design and features, such as video on demand and video streaming.

The results of observations, interviews, questionnaires, and literature studies have found several problems in implementing Moodle as e-learning at the Aviation Polytechnic of Surabaya as the online learning application. Therefore, solving the research problems are; 1) renewal of regulations regarding the use of laptops/mobile phones as facilities that support Moodle as e-learning is in accordance with the Regulation of the Minister of Education and Culture of the Republic of Indonesia Number 109 of 2013 concerning the Implementation of Distance Education in Higher Education that electronic learning (e-learning) is learning that utilizes packages information and communication technology-based information for the benefit of learning that can be accessed by students anytime and anywhere, 2) the addition of new features, such as video on demand and video streaming, needs to be done, and 3) It needs design development to make it more attractive.

CONCLUSIONS AND RECOMMENDATIONS

Based on the research that the author conducted at the Aviation Polytechnic of Surabaya, it can be concluded that based on the Likert scale producing 74.24%, Moodle as e-learning in the online-based learning application was not fully optimized. Based on the conclusions that the author put forward above, the author provides suggestions as input for consideration as follows. (a) The addition of new features in Moodle, such as video on demand and video streaming, is required. (b) It is necessary to add a copyright detector to detect cadets cheating in terms of copy and paste. (d) Development is needed on the Moodle display design to make it more attractive. Also, (e) updating the rules for using laptops/computers is required.

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