



Literature Review: Implementation of Learning Management System in Learning

Fitri Conscience

Masters in Educational Technology, Jakarta State University, Indonesia

Email: fitribugis137@gmail.com

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Abstract

The purpose of this research is to produce a learning management system product, analyze the feasibility of a learning management system and analyze the effectiveness of a learning management system product. This study uses a literature study research method. The data collection technique is by collecting several previous studies to answer the feasibility of the media, responses, and learning outcomes after applying learning media with a learning management system. Previous research that has been collected is then compiled, analyzed, and concluded so as to obtain conclusions about the development of learning media with learning management systems. The conclusion in this study can be drawn that from the results of the analysis above, the learning media with the learning management system is said to be feasible because it meets the aspects of the validity of the media with the learning management system with an average percentage of validation assessment. 61% -100% with good to very good quality.

Keywords: *Keywords: Learning Management System (LMS), E-Learning, Online Learning, Virtual Learning Environment*

Introduction

The concept of learning management system can be considered as a dynamic concept due to the constant evolution of digital technology, its features and potential, in

the learning process. Web -based education systems are used by many universities, schools, and companies, not only to incorporate web technologies into their learning, but also to complement their traditional face -to-face learning. This system collects a large amount of data that is useful for analyzing learning content and its use. Learning management system provides many special and unique features.

Therefore, there are many opportunities to take advantage of it in the world of education. Currently, the learning management system in the ICT -based teaching and learning process can be interpreted in three paradigms. First, ICT as a tool or learning management system as a tool in the form of technological products that can be used as PBM. Second, tik as content or learning management system as part of the material that can be used as the content of the teaching and learning process. Third, ICT as an application program or learning management system as a tool for the teaching and learning process effectively and efficiently (Munir, 2014).

Based on the description above, in this case the research aims to compile and describe studies on: (1) producing LMS products (2) analyzing LMS feasibility (3) analyzing LMS effectiveness.

Method

The approach in this study uses the type of research in the form of literature study or literature study. Literature study can be reached by collecting references consisting of several previous studies which are then compiled to draw conclusions (Mardalis , 1999). The results of the compilation of several previous studies are used to conclude: (1) produce an LMS product (2) analyze the feasibility of an LMS (3) analyze the effectiveness of an LMS. The procedure in this study was carried out with the following steps (Kulthau, 2002): 1. Theme selection 2. Information exploration 3. Determination of research direction 4. Data source collection 5. Data presentation 6. Compiling a report on data analysis techniques used in This study uses a content analysis method that can be used to obtain valid inferences and can be re -examined according to context (Krippendoff, 1993). In the analysis, selection, comparison, merging, and sorting will be carried out so that the relevant ones are found (Sabarguna, 2005). Inter -library checks and observations of supervisor comments are carried out to maintain the continuity of the evaluation process, prevention and eradication of misinformation is a human misunderstanding that may arise due to a shortage of library writers (Sutanto, 2005).

Discussion

In the process of reviewing the literature on the development of learning media with this virtual learning environment, there are several obstacles, namely: (1) the required literature on the development of learning media is still minimal. (2) the learning resources used there are those who use media with this learning management system as a media to support the learning methods being studied. (3) learning media with this learning management system is used to deliver material in the field of medical education, nursing

education . The study of the feasibility of learning media with a learning management system contains about how learning media with a learning management system can be said to be feasible. Testing the feasibility of learning media with the learning management system is carried out by validating the media with the condition that it gets an average percentage assessment of 61% -100% with qualitatively feasible and very feasible (arikunto and suharsimi 2013). Empirical studies that have been carried out by several previous researchers regarding producing LMS products include:

(1) (Arifka et al., 2021) in his research on the development of digital learning geography based on the moodle learning management system on the population dynamics material for class XI high school which shows that this research and development resulted in an update on the learning management system (LMS) system moodle (2) in line with the research conducted by (Indah Wulandari, Pargito, 2022) in his research online learning during the pandemic at geography teachers at sman 15 bandar Lampung 2021 which showed the results that this research and development resulted in an update on the Learning Management System (LMS). (3) in line with research conducted by (Emerenu V. C., 2021) in his research on survival of geography education in a covid -19 prone society stated that this research and development resulted in an update on the Learning Management System (LMS). (4) this is also in line with the research conducted (Mueller & Strohmeyer, 2010) in his research on the design of the characteristics of the virtual learning environment, an expert study stated that this research and development resulted in an update on the Learning Management System (LMS).

In line with research conducted by (5) (santoso et al., 2018) in his research the development of a learning dashboard for lecturers: a case study on a student -centered e -learning environment which states that this research and development resulted in an update in Learning Management System (LMS). (6) in line with research conducted by (m. Nur salim muzakki et al., 2021) in his research on the effectiveness of student centered learning methods in the learning management system at the PGRI Wiranegara university based on observations. This research and development resulted in an update on learning Management System (LMS). (7). In line with the research conducted by (DAS 2020) in his research developing a sociocultural approach in learning management system through moodle in the era of the covid-19 based on observations found that this research and development resulted in an update on the Learning Management System (LMS). (8). In line with research conducted by (widodo & mukminan, 2018) in their research on the development of e -learning for geography subjects to improve the learning outcomes of class X high school students based on observations found that this research and development resulted in an update on the Learning Management System (LMS). (9). (Adri, 2013) in his research on the development of learning management systems (LMS) as learning media which shows that the validity of learning management systems (LMS) as learning media in the display aspect of learning management systems (LMS) as learning media is declared very valid with a total value of 89 .23% and is feasible to use. (10). This is also in line with research conducted by (Hidayat et al., 2017) in his research on the development of a learning management system for the PHP programming language. This research and development resulted in an update on the Learning Management System (LMS). (11) (Wahyuaji & Taram, 2018) in his research on the development of e -learning -based mathematics learning media using the Moodle learning management system (LMS)

on linear programming material for high school students in class xi This research and development resulted in an update on the Learning Management System (LMS) moodle. Further research conducted (12). (Efrita et al., 2016) in his research on the development of e-learning using LMS (learning management system) for physics education students who showed that this research and development resulted in an update on the Learning Management System (LMS). (13). (Cyly Arrum Dalu & Rohman, 2019) in their research on the Development of E-Learning as a Simulation Learning Media and Digital Communication for Vocational High School Students stated that this research and development resulted in an update on the Learning Management System (LMS). (14). (Sutrisno & Agung, 2016) in his research on the development of e-learning-based videoscribe media on data communication and interface subjects at SMK Sunan Drajat Lamongan stated that this research and development resulted in an update on the Learning Management System (LMS). (15). (Noer & Reski, 2021) in their research on the Development of Learning Management System-Based E-Learning Media (LMS) in the Covid Pandemic Era stated that this research and development resulted in an update on the Learning Management System (LMS). (16). (Azis, 2015) in his research on the Development of E-Learning Media Based on Moodle Lms in the Human Physiology Anatomy Course stated that this research and development resulted in an update on the Learning Management System (LMS). (17). (Lestari, 2013) in his research on the Development of Learning Management System-Based E-Learning in the Learning Media Course stated that this research and development resulted in an update on the Learning Management System (LMS). (18). (Kustiandi et al., 2020) in his research "MISKOM" Development of Online Practice Learning Technology Based on LMS (Learning Management System) in the Development Economics Course stated that this research and development resulted in an update on the Learning Management System (LMS). (19). In his research (Hardika, 2021) Development of Learning Management System in the Implementation of Learning Media in Higher Education stated that this research and development resulted in an update on the Learning Management System (LMS). In evaluating the validation results, several aspects must be met, namely aspects of learning media, curriculum/material aspects and display aspects (Siregar Eveline and Tian Hardiansyah, 2018) empirical studies that have been carried out by several previous researchers regarding the feasibility of learning media with learning management systems include: research conducted by (1) (Arifka et al., 2021) in his research on the development of digital learning geography based on the moodle learning management system on the population dynamics material for class xi high school which shows that the results of the questionnaire that have been distributed to research subjects are used to determine the feasibility level website product developed. Charging is done after students study the population dynamics material using the product trial questionnaire product website covering 2 aspects, namely material aspects and media aspects. The media aspect consists of 6 assessment points, while the material aspect consists of 4 assessment points. The results of product trials at each point get results with proportions for each question in the range of 82% - 94%. Adjust to the eligibility criteria if the proportion of trial results ranges from 76% - 100% getting very good qualifications. (2) in line with the research conducted by (Indah Wulandari, Pargito, 2022) in his research online learning during the pandemic at geography teachers at sman 15 Bandar Lampung 2021 which showed the results that with the validity test that the media used in the study was said to be suitable for use as learning Media. (3) in line with research conducted by (Emerenu V. C., 2021) in his research on

survival of geography education in a covid-19 prone society stating that the validity of learning media is said to be feasible because it meets the validity aspect with an average percentage of validation assessment 61% -100% qualitative good to very good. (4) this is also in line with the research conducted (Mueller & Strohmeier, 2010) in his research on the design of the characteristics of the virtual learning environment, an expert study stated that the validity of the learning media was said to be very good. In line with research conducted by (5) (Santoso et al., 2018) in his research the development of a learning dashboard for lecturers: a case study on a student-centered e-learning environment which states that the validity of the learning media is said to be feasible because it meets aspects of learning interactivity. (6) in line with the research conducted by (m. Nur salim muzakki et al., 2021) in his research on the effectiveness of the student centered learning method in the learning management system at the PGRI Wiranegara university. SCL learning method in the learning process, students are more active and participatory in the learning process. This is indicated by the attendance list of students who every meeting always fills in the LMS and follows the entire series of lectures to completion in each of the existing courses so that the validity of the learning media is said to be feasible because it meets the aspects of learning interactivity. (7). In line with the research conducted by (DAS 2020) in his research developing a sociocultural approach in learning management system through moodle in the era of the covid -19 based on observations found that every student can easily understand and understand lecture material through the VLE system and not only pursuing a high achievement index, but also students are able to apply the knowledge they have gained so that the validity of the learning media is said to be feasible because it meets the aspects of learning interactivity. (8). In line with research conducted by (widodo & mukminan, 2018) in their research on the development of e-learning geography subjects to improve the learning outcomes of class X high school students based on observations found that the feasibility of e-learning products was based on the results of the alpha test by material experts 1 against all validated indicators obtained an average score of 4.19 in the "very good" category and validation by material expert 2 on all validated indicators obtained an average score of 4.33 in the "very good" category. The feasibility of e-learning products based on the results of the alpha test by media expert 1 on all validated indicators obtained an average score of 4.19 in the "very good" category and validation by media experts 2 on all validated indicators obtained an average score 4.03 with the category "very good". The results of the e-learning user assessment by students obtained an average score of 4.5 in the "very good" category. (9). (Adri, 2013) in his research on the development of learning management systems (LMS) as learning media which shows that the validity of learning management systems (LMS) as learning media in the display aspect of learning management systems (LMS) as learning media is declared very valid with a total value of 89.23% and is feasible to use. (10). This is also in line with research conducted by (Hidayat et al., 2017) in his research on the development of a learning management system (LMS) for the PHP programming language showing the validity of the learning management system (LMS) as a learning medium in the display aspect of the learning management system (LMS). as a learning media is declared very valid and feasible to use. (11) (Wahyuaji & Taram, 2018) in his research on the development of e-learning-based mathematics learning media using the Moodle learning management system (LMS) on linear programming material for high school students of class xi which shows that the product results from the development of learning media are assessed by three material experts, three media experts and 41 students. The results of the

assessment as a whole get a good category at an average of 3.96. Based on these results, it can be concluded that the learning media developed is suitable for use in the mathematics learning process. In relation to the feasibility of learning media, that the learning media developed is suitable for use in teaching and learning activities. Learning media is said to be feasible because it has been assessed by experts and students with an average score of 3.96 and gets a good classification.

Further research conducted (12). (Efrita et al., 2016) in his research on the development of e-learning using LMS (learning management system) for physics education students which showed that based on the results of evaluations by material experts, learning experts and media experts, the results of field tests by lecturers and students, it can be concluded that the developed e-learning using Moodle 3.1 for the basic physics course I has met the criteria very well (82.3%) and is suitable for use as a web-based learning medium for students of physics education study program at the State University of Jakarta. (13). (Cyly Arrum Dalu & Rohman, 2019) in their research on the Development of E-Learning as a Simulation Learning Media and Digital Communication for Vocational High School Students stated that the results obtained from the trial of material experts reached an average of 89.58% which indicates that the learning materials in e-learning within valid and appropriate criteria for use. While the media expert trials, the criteria assessed include media appearance, ease of access, suitability for learning objectives, completeness of features. The percentage of trials obtained is 86.80%, based on the predetermined success rate criteria, the e-learning developed is included in the valid criteria and is feasible to be used as a learning medium. From the results of the large group trial, the average achievement of success was 81.72%. This percentage indicates that the e-learning learning media is valid and feasible to be used as an alternative source for group and independent learning. The developed e-learning has undergone refinement through several stages of review by material experts, media experts and test results on students. The results of the review show that the developed e-learning is valid and feasible to be used as a supplementary learning resource for students. (14). (Sutrisno & Agung, 2016) in his research on the development of e-learning-based videoscribe media on data communication and interface subjects at SMK Sunan Drajat Lamongan stated that from the validation of e-learning-based video scribe learning media conducted by 4 experts, namely 3 lecturers from State University Surabaya and 1 teacher of SMK Sunan, Drajat Lamongan, obtained the following validation results. From the Material aspect, 90% of the validation results were obtained, from the illustrative aspect the Media got 91.25% results, and the Language aspect got 87.5%. From all aspects that were validated, the average was 89.5833%, so that the e-learning-based video scribe learning media according to the validation results was included in the very valid category. (15). (Noer & Reski, 2021) in their research on the Development of Learning Management System-Based E-Learning Media (LMS) in the Covid Pandemic Era stated that the development of media learning management systems the valid category. (16). (Azis, 2015) in his research on the Development of Moodle LMS-Based E-Learning Media in the Human Physiology Anatomy Course stated that the Moodle LMS based learning media has met the criteria for validity with a value of $(x_r = 4.59)$ and is feasible to use. Learning media that has been developed can be a source of learning for students and help lecturers in lecture activities for human anatomy and physiology courses. (17). (Lestari, 2013) in his research Development of Learning Management System-Based E-Learning in Learning Media

Courses stated that from the feasibility and convenience of using e-learning it was feasible to use, namely 36% of the 75% aggregate value. The use of e-learning is feasible as an alternative media and to enrich traditional learning by perfecting other components. (18). (Kustiandi et al., 2020) in his research "MISKOM" Development of Online Practice Learning Technology Based on LMS (Learning Management System) in the Development Economics Course stated that expert validation was carried out in terms of media and materials. The results of the expert test data analysis showed that the overall average was 88% with a very good category, meaning that the LMS was ready to be used as learning. (19). In his research (Hardika, 2021) the Development of Learning Management Systems (Lms) in the Implementation of Learning Media in Higher Education states that the Development of Learning Management Systems (LMS) as learning media has gone through the validation stage by users, by conducting direct evaluations in the lecture class. This stage is a needs analysis where an evaluation of the condition of the learning process using the LMS occurs before and after the LMS development is carried out, with a very good category, meaning that the LMS is ready to be used as learning.

In making virtual learning environment learning media, aspects of analyzing the effectiveness of the LMS. Empirical studies that have been carried out by several previous researchers regarding the effectiveness after applying learning media with a virtual learning environment include: (1) research conducted by (Arifka et al., 2021) in his research on the development of digital geography learning based on the moodle learning management system in The population dynamics material for class xi high school which shows that the results of the students' understanding test of class xi ips 2 sman 1 purwosari listed in table 4.6 shows that students in the 76 -100 grade range get the highest proportion of 82% with a total of 23 students. Meanwhile, students with the lowest scores in the range of values of 40-55 get a proportion of 4%, namely 1 student. It also uses the principle of visualization, such as a great improvement in student learning, moreover the feedback is positive because technology produces easier and real understanding from the student's side, especially positive teacher feedback because it facilitates their teaching process and it can be concluded that LMS learning media is proven very effective in improving learning outcomes. (5) in line with the research conducted by (M. Nur Salim Muzakki et al., 2021) in his research on the effectiveness of the student-centered learning learning method in the learning management system at the Pgri Wiranegara University, it shows that the parameter that the SCL method has been applied well by higher education institutions, among others, changes in learning patterns in students, changes in teaching patterns carried out by lecturers, the occurrence of an interactive, active, participatory and dynamic lecture atmosphere, and the fulfillment of three learning competencies, namely knowing, doing, and being; From the data we have, he also proves that the SCL method on LMS applied by the PPKN study program has been running effectively.

In line with the research conducted by (6). (Widodo & Mukminan, 2018) in his research on the development of e-learning for geography subjects to improve the learning outcomes of class X high school students based on observations showed that there were differences in learning outcomes between the experimental class and the control class. After learning with p value = 0.001. The mean n -gain in the control class is 0.57 while in the experimental class is 0.68 and it can be said that the n -gain in the experimental class is higher than the n -gain in the control class. There is a difference in learning independence

between the experimental class and the control class after learning with a value of $p = 0.000$. The mean n -gain of learning independence in the control class is 0.44 or within the moderate criteria, while in the ex -experiment class it is 0.21 or in the low criteria and it can be said that the n -gain of the experimental class is higher than the control class n -gain, so it can be concluded that it can be concluded that the LMS learning media is proven to be very effective in improving learning outcomes. (7) This is also in line with research conducted (Mueller & Strohmeier, 2010) in his research on the design of virtual learning environment characteristics which show that the development of virtual learning environments is effective in helping and facilitating students in understanding the material and improving learning outcomes. (8). (Adri, 2013) in his research on the development of learning management systems (lms) as learning media which shows that the practicality of using learning management systems (lms) as learning media in learning can be seen from the implementation of the use of learning management systems (lms) as learning media as a whole. well. This can be seen from the results of the teacher's response who obtained an average percentage of 92.50%, and the results of the student's response who obtained an average percentage of 93.59%. This shows that the learning management system (LMS) as a learning media developed is included in the "very practical" category. (9) (wirawan n.d.) In his research the development of mobile learning management system learning designs on the introduction of network components shows that the mobile learning management system design is able to model the introduction of network components in data communication and computer network courses and the implementation of mobile learning management system software is capable of presents material introduction to network components in data communication and computer network courses and becomes an alternative media in the learning process material introduction to network components in data communication courses and computer networks anywhere and anytime (any time anywhere) so that the development of an effective virtual learning environment helps and make it easier for students to understand the material and improve learning outcomes. (10). (Efrita et al., 2016) in his research on the development of e -learning using LMS (learning management system) for physic s education students who showed that the response to learning media was good because respondents indicated that the development of a virtual learning environment was effective in helping and facilitating students in learning. understand the material and improve learning outcomes. (11) (Wahyuaji & Taram, 2018) in his research on the development of e -learning -based mathematics learning media using the Moodle learning management system (LMS) on linear program material for high school students in class xi which shows that e -learning -based implementation uses a learning management system (LMS) Moodle on linear programming material for high school students in class xi proved to be very effective in improving learning outcomes as evidenced by increasing student learning scores.

Research conducted by (12). (Pargito, 2022) in his research on online learning during the pandemic at geography teachers at sman 15 Bandar Lampung 2021 stated that online learning during the pandemic at geography teachers at sman 15 Bandar Lampung was proven to be very effective in improving learning outcomes as evidenced by increasing student learning scores. (13). (Cyly Arrum Dalu & Rohman, 2019) in their research on the Development of E -Learning as a Simulation Learning Media and Digital Communication for Vocational High School Students stated that the results of the learning process using e -learning, an assessment of student learning outcomes was held every week. The average

achievement of learning outcomes is 81.7% for three weeks, this percentage shows that students have reached the minimum completeness criteria. Learning outcomes through activities in online classes show that on average students have achieved minimum learning mastery whose standards have been determined by the school. (14) (S utrisno & Agung, 2016) in his research on the development of e -learning -based videoscribe media on data communication and interface subjects at Smk Sunan Drajat Lamongan stated that the development of e -learning -based videoscribe was stated to be able to i ncrease students' understanding and interest in the subject. data communication and interface lessons at SMK Sunan Drajat Lamongan, this can be seen from what shows that the Learning Management System (LMS) as a learning medium that has been developed is i ncluded in the "very practical" category. (15). (Noer & Reski, 2021) in his research on Development of Learning Management System -Based E -Learning Media (LMS) in the Covid Pandemic Era stated that the development of media learning management systems met the valid, practical, and effective categories for use during the Covid pandemic. management system can help STMIK Hasan Sulur Wonomulyo College in managing lecturers, students, and staff in an integrated manner in a system, namely the learning management system. So that it can be used as a reference in managing interactive learning, providing positive results for improving student learning outcomes.(16). (Azis, 2015) in his research on the Development of Moodle -Based E -Learning Media in the Human Physiology An atomy Course stated that the developed learning media can be a source of learning for students and assist lecturers in lecture activities for human anatomy and physiology courses." This can be seen from the results of the lecturers' responses which show that the Learning Management System (LMS) as a learning media that has been developed is included in the "very practical" category (17). (Lestari, 2013) in his research on the Development of Learning Management System -Based E -Learning in Learning Media Courses stated that it was proven to be very effective in improving learning outcomes. (18). (Kustiandi et al., 2020) in his research "MISKOM" Development of Online Practice Learning Technology Based on LMS (Learning Management System) in the Development Economics Course stated that the results of research on the development of learning media using "Millennials Like Economics (Miskom)" student motivation in doing very good learning so that understanding of the material can be absorbed well.

In his research (Hardika, 2021) the Development of Learning Management Systems (Lms) in the Impl ementation of Learning Media in Higher Education states that the efficiency and effectiveness of the use of Learning Management Systems (LMS) as learning media in the learning process can be seen from the implementation of the use of LMS which as a whole r uns well. This can be seen from the results of the lecturers' responses which show that the Learning Management System (LMS) as a learning media that has been developed is included in the "very practical" category.

Conclusion

Based on the preparation and analysis of the development of learning media with LMS which has been discussed in the previous chapter, it can be concluded as follows. Based on the validation data, it shows that the media with LMS with an average percentage of validation assessment 61% -100% is qualitatively good to very good. Conclusions based

on the preparation and analysis of the development of learning media with LMS that have been discussed in the previous chapter, the following conclusions can be drawn. Based on the validation data, it shows that the media with a virtual learning environment with an average percentage of validation assessment 61% -100% is qualitatively good to very good.

Suggestion

Based on the research data above, suggestions that can be given to create a conducive learning environment are still constrained by several things, namely unstable network conditions, lack of students' initial knowledge about virtual learning environments. As well as suggestions for further research to focus on the effectiveness of the application of assistance in a virtual learning environment on student learning strategies.

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