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Development of Moodle-based Content Learning System in MKDK Student Development Subjects at LPTK in Indonesia

Sriadhi¹, Khaerudin², Neni Wahyuningtyas³, Darni⁴, Rahadian Zainul^(5*), Muhammad Adri⁵, Rusdinal⁵, Nasrun¹, Rahmulyani¹, Nuranjani¹, Nurmaniah¹, Agus Wedi³, Ence Surahman³, Eny Nur Aisyah³, Herlina Ike Oktaviani³, R. Sri Martini Meilanie², Siti Nuraini Purnamawati², Hapidin², Winda Dewi Listyasari², Irsyad⁵, Syafril⁵, Anisah⁵, Yulianto Santoso⁵, Muhardi⁶, Andi Kristanto⁴, Lamijan Hadi Susarno⁴, Dedi Kuswandi³, Ratna Wardani⁷, Evita Adnan²

¹Universitas Negeri Medan, Indonesia

²Universitas Negeri Jakarta, Indonesia

³Universitas Negeri Malang, Indonesia

⁴Universitas Negeri Surabaya, Indonesia

⁵Universitas Negeri Padang, Indonesia

⁶STMIK Hang Tuah Pekanbaru, Indonesia

⁷Universitas Negeri Yogyakarta, Indonesia

*corresponding author: rahadianzmsiphd@fmipa.unp.ac.id

Abstract. Learning in the industrial revolution era 4.0 and the Covid 19 pandemic period shifted towards digital and online learning. This research aims to analyze the Basic Educational Course (MKDK) elearning product for Student Development that was developed. The method used is mixed method research, qualitative and quantitative mixture. The development of e-learning products uses the Borg and Gall method, while validity and practicality are carried out by questionnaire analysis to respondents online. The instruments for product development and testing have been declared valid by Expert, both in content, design and IT. Based on data from respondents (n = 40), MKDK e-learning products have a high acceptability (3.84) and are appropriate to use. From the aspect of e-learning that was examined, the material portion or content substance had the highest yield, 4,215. Meanwhile, the evaluation aspect received the lowest score, which was 3,588. Based on this research, it was concluded that e-learning products for subjects with learning and learning subjects could be widely used in the Educational Institution (LPTK) in Indonesia.

Keywords: Effectiveness, e-Learning, Student, MKDK, Moodle, LPTK

1. Introduction

Online learning is a major demand in the industrial revolution 4.0 era. Transformation in communication from educators to students will experience a significant shift. Access speed will also be the key to change, the faster and easier to reach even in long distances. The learning process no longer requires direct interaction or face to face. Learning will take place without presenting a teacher in front of the class, digital or virtual books that replace physical books from paper, as well as recorded learning in



the form of quality video, both in terms of content, picture quality and sound used. However, the completeness of the application infrastructure and learning content is still not much developed, especially in lecturing prospective teacher students in LPTK (6, 9, 11, 13).

One of the courses needed in the provision of prospective teacher students is MKDK of Student Development. MKDK Student Development must be given to prospective teacher students at LPTK in Indonesia. Currently from the data of the Ministry of National Education of the Republic of Indonesia (formerly the Ministry of Research, Technology and Higher Education) in 2018-2019, there were 425 LPTKs in Indonesia. The number of Education Study Programs reached 5,728 and the total number of new student admissions reached 300,000 people/year. This growth projection compared to the needs of teachers each year in Indonesia is only 90,000 people, has reached over capacity. However, on the other hand, aspects of equity and quality of lectures for prospective teacher students should be the main thing that must be improved. Meanwhile, on the other hand, the distribution of Indonesia's territory which consists of more than 13,000 islands, is a problem in itself. This is the main reason for the need for changes in service and lecture system that can be done without being limited by distance and time (3, 8, 12).

The provisioning of prospective teacher students online is the key to successful learning at the LPTK. Various studies have been carried out and implemented in various parts of the country, especially web-based and online learning, including in learning for students for prospective teachers. The application of distance learning, and the use of internet media to conduct lectures has also been aggressively developed. This web-based and non-paid learning application includes, among others, google class room, moodle, edmodo, schoology and SEVIMA EdLink. Later in Indonesia, applications developed in a more specific and paid form also began to appear, such as Ruangguru, Quiper, Zenius, and learning houses. These applications are online learning or known as e-learning (5, 7, 10, 14-15).

The development of e-learning in this study is MKDK Student Development, which is a compulsory subject for every student who later becomes a teacher. This course can later be applied to LPTK in Indonesia, if the development meets the standards and quality of learning after going through content validation, learning design and Information Technology (IT). The urgency of this research is also related to the current condition of the world and Indonesia which is being hit by the Covid Pandemic 19, so that the lecture process will take place effectively and efficiently and in accordance with the Covid 19 health protocol online. Thus, this research is very interesting to be developed and implemented if the products made have high feasibility.

Based on the facts and gap analysis above, this study aims to analyze the MKDK e-learning needs of Student Development for prospective teachers in LPTK. Specifically, it is developing MKDK e-learning products Moodle-based Student Development which is valid and feasible and can be implemented in the 4.0 industrial revolution era and the Covid 19 pandemic. In this study, the LPTKs incorporated were Medan State University, Jakarta State University, Padang State University, Malang State University and Surabaya State University.

2. Methodology

Respondent and Data Collection

This research lasted for 1 year, which is a 10-month development process and 2-month testing. The development process was carried out from May 2019 to February 2020. The testing process was carried out from March 2020 to May 2020, to coincide with the Covid 19 pandemic period. There were 40 students who were respondents, who came from LPTK and were in the 2nd year. Each student will be given an account in the form of a username and password, to be able to access lectures during this time period. After that, each of them will fill out a questionnaire prepared online to see how they respond as prospective teacher students at LPTK.

The solution for data collection was done by testing and picking up online to 40 students who were respondents of this study. These respondents consisted of education students at Padang State University, second year, who had attended 1.5 years of lectures. Each student will get an account in the

form of a username and password to be able to carry out the test and give their opinions according to their own choice.

Product Development

Development of e-learning products is carried out by the Berg and Gall development method. The application used is MOODLE (Modular Object Oriented Dynamic Learning Environment) as a learning management system (LMS). Moodle application is Open Source and more stable and easy to configure as needed in learning. The stages of product development can be seen in the following scheme:



Figure 1. Scheme of MKDK SDS e-learning Product Development

Instrument

The instruments in this study used instruments that had been developed by Sriadhi (<https://www.researchgate.net/publication/334586889>). But in this research, the above instrument has been modified by adding aspects of e-learning development as needed in this research. Instrument modification can be seen in the following scheme:

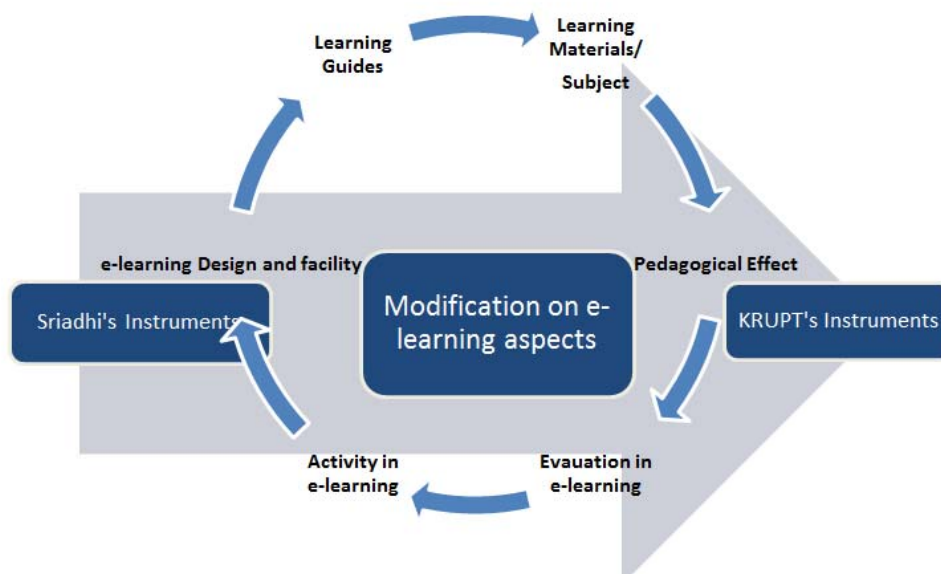


Figure 2. Schematic modification and aspects of KRUPT e-learning development

Data Analysis and Interpretation

Data analysis uses the calculation and interpretation of e-learning product acceptances as developed by Sriadhi. These calculations and interpretations can be accessed at researchgate (<https://www.researchgate.net/publication/334586889>). Interpretation will result in the acceptance and feasibility assessment of the product. The score generated from the calculation will be interpreted based on the mean score interval which is formulated in 4 choices of acceptances, namely 1.00-2.49 (low), 2.50-3.32 (enough), 3.33-4.16 (high) and 4.17-5.00 (very high).

3. Results and Discussion

Product Elearning for Student Development Subjects

MKDK e-learning products Students Development Subject developed by the KRUPT team has been successfully developed using the Moodle platform version 3.75. Moodle is a Course Management System (CMS), also known as a Learning Management System (LMS) or a Virtual Learning Environment (VLE). It is a Free web application that educators can use to create effective online learning sites. Moodle is released under the GNU General Public License. The product compiled was uploaded and configured at WEbHosting Padang State University, <http://mooc.unp.ac.id/>. MOOC, the Massive Open Online Course of Padang State University, became a center for product development that could later be accessed from anywhere via the internet.

The front view of MKDK e-learning products' 'Student Development Subject' "can be accessed at <http://mooc.unp.ac.id/course/view.php?id=4>, as shown in Figure 3. In Figure 3 above Medan State University logo is displayed on the top right, because the development of this material was carried out by the Consortium Team from Medan State University.



Figure 3. Display of MKDK e-learning ‘Students Development Subject’

The contents of this course can be seen in the lectures section. Parts of the content include, learning achievements, course descriptions, semester learning plans, lecture contracts, learning outcomes, assignments, material descriptions, summaries, discussions, and formative tests. In the learning outcomes section, the goals and objectives to be achieved in the lecture are illustrated. In the lecture description there is a description of how this lecture becomes important for every LPTK student to become equipped when becoming a professional teacher. In the material section, it is illustrated how this lecture is presented on the website by referring to various digital sources and lecture materials called CLS (Content Learning System), as shown in Figure 4.

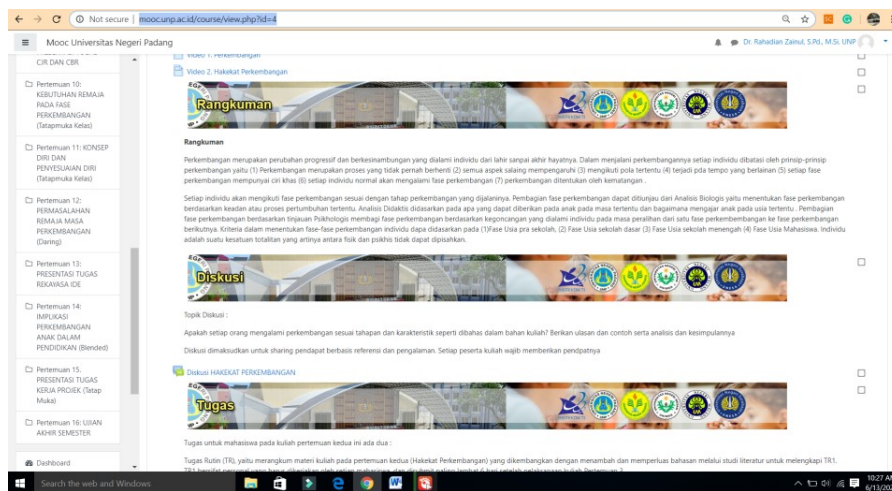


Figure 4. Tools and activity features of MKDK SDS e-learning

The development of CLS is a determinant of the quality of e-learning products used in learning. In learning material, researchers will prepare various types of content, such as PPT (Power Point), PDF / JPG from uploaded material, MP4 and MP3 for demonstration or video sections that can be watched by students online on the website. All content included on the website is part of the development and is validated by the Expert. Content taken from internet sources, will also be filtered and validated so that the resulting e-learning products can meet the desired standards and quality. On content that cannot be taken from internet sources, the KRUPPT Team will produce it themselves, for example video presentations,

explanatory videos and demonstrations as well as digital lecture materials in JPEG, PDF, PPT and other MP4 formats. All of these CLS will first be uploaded to YouTube and Google Drive on behalf of the Copyright of the KRUP Team under the consortium research account, as shown in Figure 5.

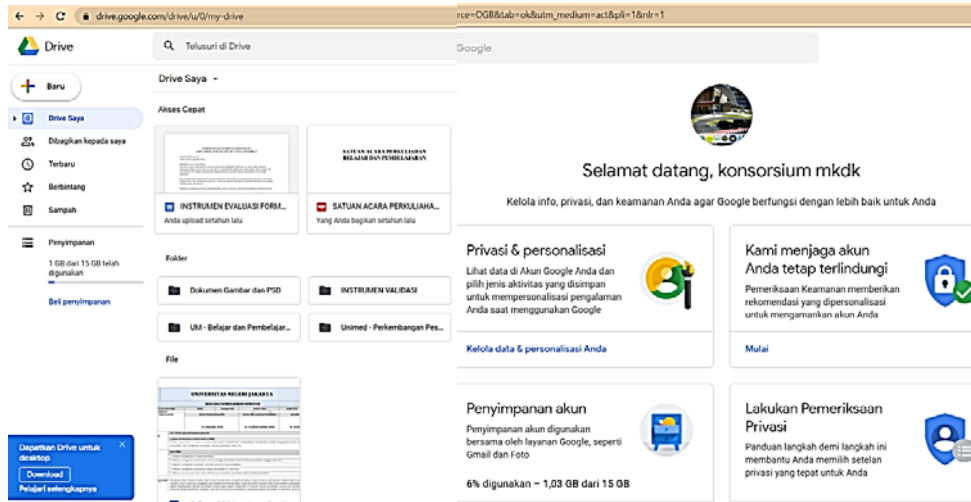


Figure 5. Gmail and Google Drive Consortium accounts

The online learning process is done by giving access to each lecture participant or student. Students will have an account and password obtained after they register at the beginning of the website. This lecture will be interesting, because the number of participants is not limited, but is controlled in accordance with the grouping conducted by the administrator (admin e-learning). This control is carried out starting from the participant registration process, which by the rules will be verified by the admin, where each participant must send their email. Through this email, a username and password will be sent to them after they have verified their account. After participants get this account, they can carry out lectures according to the access given by the admin to students (1-2, 4). This process will be seen by the admin later after the participant enters the group of participants registered on the website, as shown in Figure 6.

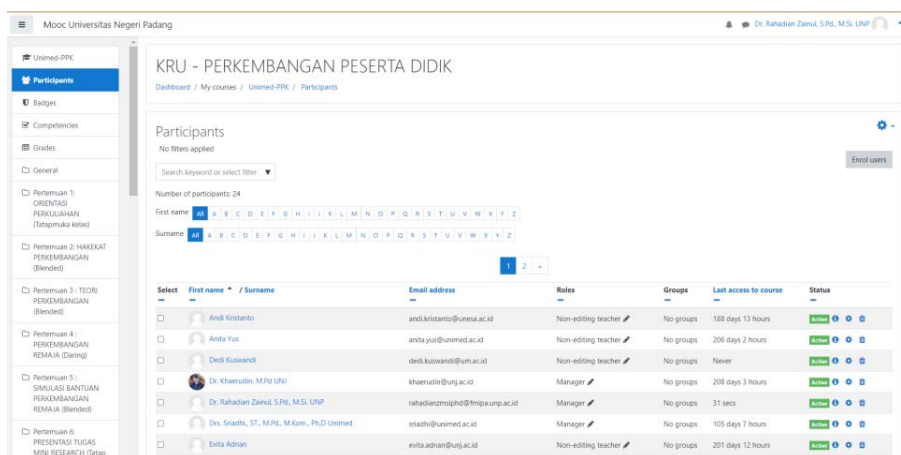


Figure 6. Part of the website that contains Participants

Online Questionnaire Results

Of the 40 respondents who gave an assessment of e-learning, it can be seen that all aspects of development already have a high acceptability. In Figure 7, the score given by the respondent has reached a number that meets the criteria of high acceptance. This means that the developed e-learning products are feasible and can be used in online learning for LPTK students in Indonesia. The overall feasibility level of e-learning products developed reached 3.84. This indicates the high acceptability of products made, so that it can be implemented in the MKDK SDS learning process.

Respondent Projection of Score for e-Learning Aspects

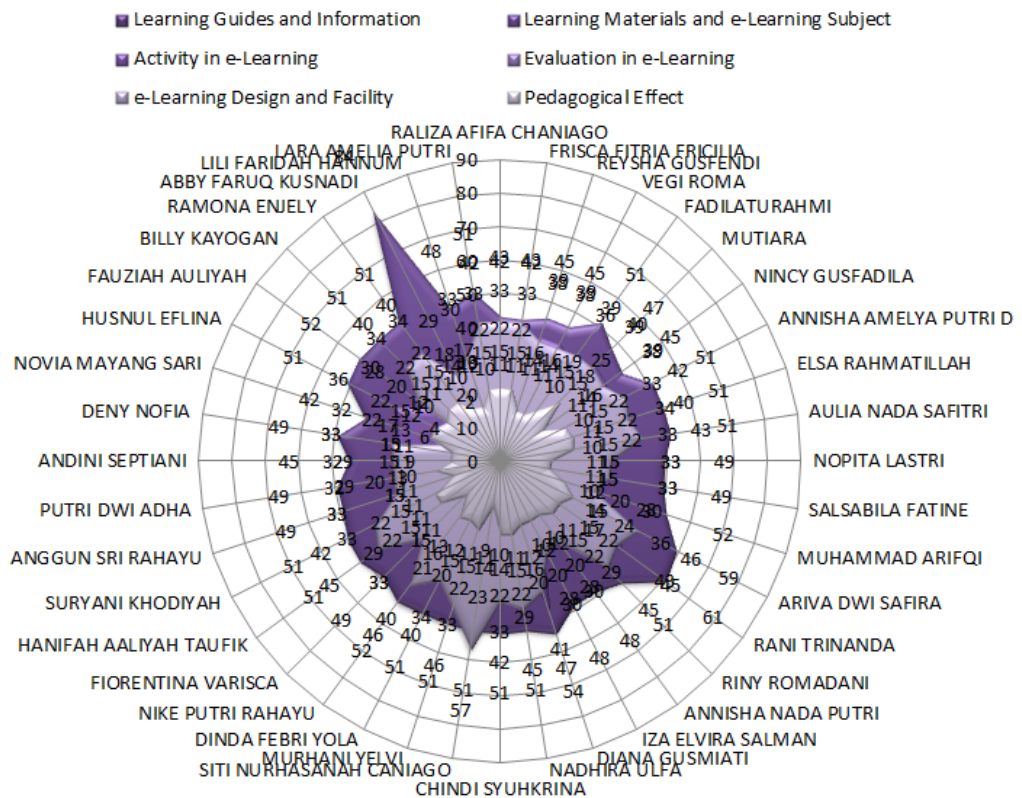


Figure 7. Visualization of respondents for MKDK e-learning with subject “ Students Development Subject ”

The results of the questionnaire analysis carried out specifically for each part of the e-learning that were made, resulted in diverse assessments and varying acceptances. However, from all aspects assessed, the figures for each aspect of e-learning remain of high value. From the respondents' questionnaire analysis, the scores obtained for aspects of pedagogical effects, evaluation in e-learning, e-learning design and facilities were 3,840, 3,588 and 3,733, respectively. Meanwhile, the figures obtained for aspects of Learning Materials and e-Learning Subject, and learning guides and information are 4,215 and 3,658, respectively. In the aspect of activity in e-learning has a value of 3,628. From this figure it can be concluded that the aspects of MKDK SDS e-learning product development have met the specified criteria to be implemented for LPTK students in Indonesia.

Based on the results of responses from respondents, as shown in Figure 4, e-learning products have a high acceptability. In Learning Aspects Materials and e-Learning Subject has the highest acceptance, which is 4,364. In the pedagogical aspect, it also has a high acceptance, which is 4,125. In e-learning design and facility, learning guides and information and aspects of evaluation in e-learning and activity in e-learning have a high level of acceptance, namely 3,960; 3,692; 3,563 and 3,606. These figures reflect that the product designed already has a high acceptability and is suitable for online learning in tertiary institutions.

In Figure 8, the percentage of acceptances from the six aspects of e-learning that are examined can be interpreted more specifically. Learning Materials and e-Learning Subjects ranked highest, at 19%. Pedagogical aspects have a percentage of 17%, while 4 other aspects of e-learning each get the same percentage of 16%. From these results it can be seen that the substance of the content of the lecture material has the most decisive factor in the assessments given by respondents of the e-learning made. These results are in line with research that has been done by several previous experts.

The development of e-learning products is largely determined by the quality of the content or substance of the material being developed. Development of a Content Learning System (CLS) that supports learning achievement, will influence the success of the learning process. Thus, the better CLS development, the better the response given by students. The quality of CLS from this substance is the biggest determinant for the quality of e-learning products made.

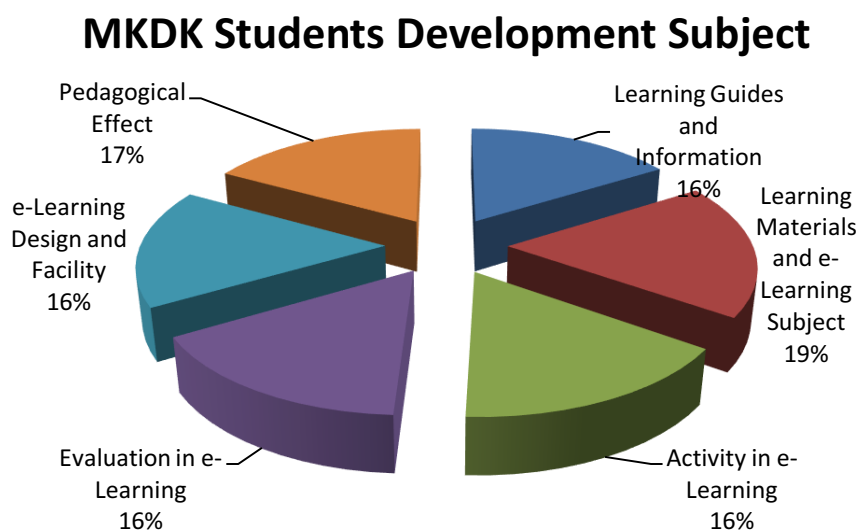


Figure 8. Percentage of SDD MKDK learning aspects developed

4. Conclusion

From this research it can be concluded that the MKDK e-learning product " Student Development Subject " has been successfully created by having a high acceptance, which is 3.84. This level of acceptance shows that MKDK SDS e-learning products are indeed suitable for use by LPTK students in Indonesia. This e-learning product can be applied with recommendations on the need to develop and adjust implementation in the field, such as adequate patterns of interaction, communication and availability of internet networks. This ideal condition will be the key to the success of online learning implementation using Moodle-based SDD MKDK e-learning products for LPTK students in Indonesia.

5. Acknowledgment

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