

Development of An Integrated Moodle-Based Physical Education E-learning with Religious Content on the Topic of Pencak Silat at SMA Genrus Nusantara Boarding School Kendal

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Abstract

Moodle is one of the e-learning platforms that can be developed to support distance learning effectively. In order not only to function as knowledge transfer, e-learning needs to be integrated with religious content. This research aims to: (1) produce an integrated Moodle-based physical education e-learning with religious content on the topic of Pencak Silat; (2) test the feasibility; and (3) test the effectiveness of e-learning product. This Research and Development uses 3 stages of 4D model (define, design, develop). The final product is produced after passing the validation by experts and two trials. Small-scale trials were conducted on 20 students and large-scale on 73 students of class X. Data analysis include feasibility test, student responses test, effectiveness test, t-test. This study shows the following results: (1) e-learning was developed using Moodle version 3.11.6 which provides several features: virtual meeting, e-books, discussion forums, learning videos, online exams; (2) e-learning has been declared feasible based on validation of expert in the field of learning media with percentage of 93,75% with “very feasible” criteria, expert in the field of physical education with percentage of 87,50% with “very feasible” criteria, and user responses with percentage of 79,50% with “good” criteria; (3) e-learning product was proven effective based on the t-test paired samples taken from the results of the pretest and posttest.

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INTRODUCTION

The shift from face-to-face learning to distance learning due to the COVID-19 pandemic requires media that can support the distance learning process effectively. Several learning platforms are available and can be used to support the distance education process such as Edmodo, Moodle, MOOC, and Google Classroom (Setiadi, et al., 2021). Furthermore, several applications such as WhatsApp, You Tube, and Zoom are also used to conduct virtual meetings between teachers and students (Indina & Maryati, 2021). Of the various learning platforms available, Moodle is an e-learning platform that is widely used by more than 60% of educational institutions in the world with more than 210 million users (Thaila, et al., 2021).

Ratnasari & Haryanto (2019) revealed that effective learning can be seen in terms of the process and results. In the terms of process, learning is said to be effective if students are actively involved during the learning process. In terms of results, learning is said to be effective if the learning objectives are achieved by all students. Moodle-based e-learning offers features that can make students actively involved by interacting both with fellow students and with teachers so as to support the implementation of effective distance learning. The facilities offered by Moodle-based e-learning that can be used as a forum for interaction include messages, discussion forums, uploads, online quizzes, and many more.

In a distance learning situation that requires the use of information and communication technology, character education becomes something urgent (Santoso, et al., 2020). One of the strategies used to provide character education to students is by integrating character values into the learning media used (Rahmawati & Hasfat, 2021). This integration makes the learning process using e-learning not only limited to material transfer, but the teacher also instills moral values in learning.

SMA Genrus Nusantara Boarding School (GNBS) is an educational unit in the city of

Kendal which was established on December 7, 2016 with the mission of building the next generation of people who are devoted, superior, and independent. In implementing distance learning, SMA GNBS does not yet have e-learning media. The development of Moodle-based e-learning integrated with religious content in SMA GNBS needs to be done to support effective distance learning and support the cultivation of the religious character of students in accordance with the school's vision.

The integration of religious content in every learning must be carried out by teachers, including in physical education subjects. In physical education subjects, Pencak Silat martial arts material is material that can support religious character education in students (Al-Makhfudhoh, 2017). This study aims to produce an integrated Moodle-based physical education e-learning with religious content on the topic of Pencak Silat at SMA Genrus Nusantara Boarding School Kendal and then test the feasibility and effectiveness of the product developed.

METHODS

This research is a Research and Development (RnD) which refers to the development model proposed by Borg and Gall, namely the 4-D model (define, design, develop, & disseminate). The model is adapted to the needs of research conducted on a small scale, namely by using only three stages (define, design, & develop). The final product is produced after passing the validation by experts in the field of learning media and experts in the field of physical education, as well as product trials twice (small scale and large scale). The small-scale trial involved 20 students and the large-scale trial involved 73 students of class X first semester of the 2020/2021 academic year at SMA GNBS Kendal.

The data collection method used in this research is the questionnaire method to obtain expert lecturer assessment data and user response data, the test method to determine the effectiveness of the media, the interview method

to obtain information, opinions, suggestions, and criticism from physical education subject teachers, and documentation method to collect other supporting data in research activities.

The data analysis techniques used include feasibility tests by experts in the field of learning media and experts in the fields of physical education, student response tests obtained from the results of student response questionnaires on small-scale and large-scale trials, and media effectiveness test seen from the learning outcomes obtained by students and t-test.

RESULTS AND DISCUSSION

The product produced in this research and development is an integrated Moodle-based physical education e-learning media on the topic of Pencak Silat at SMA Genrus Nusantara Boarding School Kendal which has passed the feasibility test, trial phase, and several revisions which makes the final product feasible and effective as a learning medium. The final e-learning product contains several features that can support the learning process, namely: (1) virtual meetings, (2) learning materials in the form of e-books, (3) discussion forums, (4) learning videos, and (5) online exams. The Learning Management System (LMS) used to build e-learning is Moodle version 3.11.6. E-learning can be accessed through the site <https://elearning.smagnbskendal.sch.id/>. The display of e-learning portal is presented in Figure 1, the display of course page is presented in Figure 2, and the display of learning activities for Pencak Silat martial arts is presented in Figure 3.

The advantage of the product developed is the integration of religious values contained in e-learning which makes the e-learning not only function as a medium for material transfer, but the teacher also instills moral values during the learning process. As stated by Sunarti, et al. (2021) that the integration of religious content can be done by instilling religious values into the learning materials used so that teachers not only provide knowledge, but also instill religious values during the learning process. The religious

content of Pencak Silat is formulated with the expressions of *taqwa*, *tanggap*, *tangguh*, *tanggon*, dan *trennginas*. Religious values in Pencak Silat are expected to shape the character of students who believe and are devoted to God Almighty, have noble personalities, love friendship, peace, humility, self-control, discipline, resistant to trials, and so on. The display of religious content is presented in Figure 4.

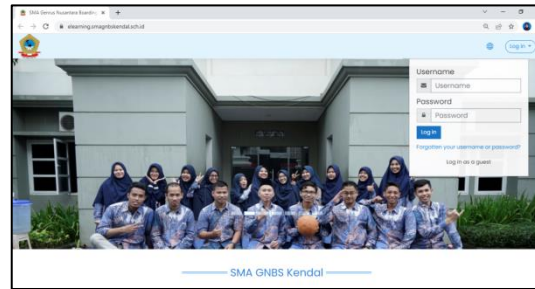


Figure 1. E-learning Portal Display

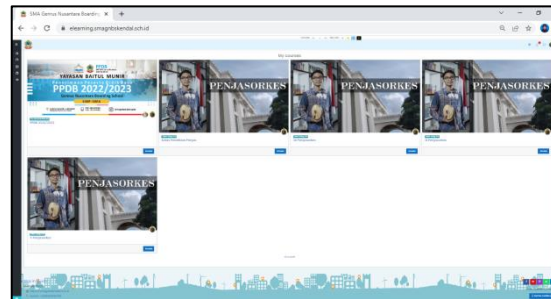


Figure 2. Course Page Display

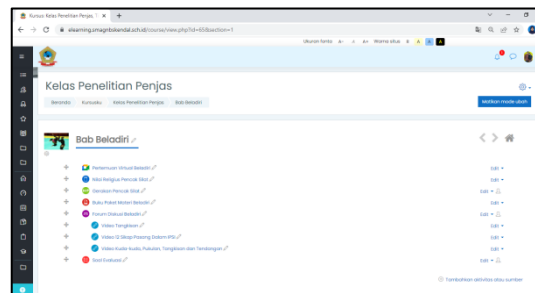


Figure 3. Display of Learning Activities for Pencak Silat Martial Arts

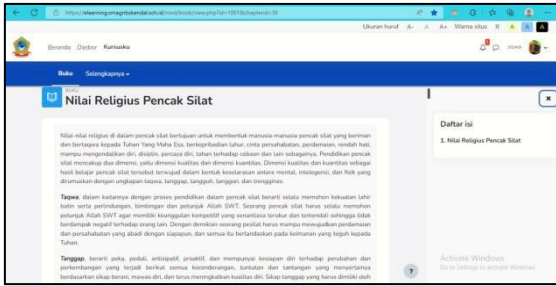


Figure 4. Display of Religious Content

E-learning can be implemented synchronously, asynchronously or a combination of both. Because the government has allowed face-to-face learning, in this study the implementation of e-learning was carried out using a combined method of online and conventional learning.

After the product has been developed, the next step is feasibility test by experts in the field of learning media and experts in the field of physical education. Validation or feasibility tests are carried out to determine the feasibility of the product and to get input, criticism, and advice from experts as a guide for product improvement before field trials are carried out (Mariyani, et al. 2021). The feasibility test by experts in the field of learning media is an expert assessment of two aspects, namely aspects of software engineering and aspects of visual communication. The software engineering aspects contains seven indicators that are used to assess the feasibility of e-learning, namely: 1) effectiveness and efficiency; 2) reliability; 3) maintainable; 4) reusability; 5) accuracy of application type; 6) packaging of integrated learning media programs; and 7) reusable (Arfiansyah, et al., 2019). Furthermore, the visual communication aspects contains six indicators, namely: 1) communicative; 2) creative; 3) simple and attractive; 4) visuals; 5) mobile media; and 6) interactive layouts. The results of the assessment by experts in the field of learning media are presented in Table 1.

Table 1. Feasibility Test Results by Experts in the Field of Learning Media

No	Aspect	P(%)	Criteria
1	Software	100	Very

2	Engineering		feasible
	Visual	87.50	Very
	Communication		feasible
Average		93.75	Very
			feasible

Based on Table 1, the average percentage of product feasibility is 93,75% with very feasible criteria. In the aspect of software engineering, the reliability indicator in question is that the application can run well, not easily hang, crash, and stop during operation, few bugs and errors, and the loading process is smooth (Sumarsono & Sugiyanto, 2019). Furthermore, the usability indicator in question is the ease of e-learning to operate, does not require experts or specialists, and the operation is simple (Sujono & Santoso, 2017).

The feasibility test by experts in the field of physical education is an expert assessment of four aspects, namely: 1) concept content; 2) religious content; 3) language; and 4) illustration (image/video/simulation). Based on the results of the feasibility test by experts in the field of physical education, the average percentage of product feasibility is 87,50% with very feasible criteria. The results of the assessment by experts in the field of physical education are presented in Table 2.

Table 2. Feasibility Test Results by Physical Education Experts

No	Aspect	P(%)	Criteria
1	Concept content	75.00	Feasible
2	Religious content	100	Very feasible
3	Language	100	Very feasible
4	Illustration	75.00	Feasible
Average		87.50	Very feasible

The results of feasibility test by experts in the field of physical education indicate that the material contained in e-learning is feasible to be used as a learning material. As revealed by Arsanti (2018) that there are three criteria that must be met so that the material can be said to be good or suitable to be used as a source of information in learning, namely: (1) the concept content and the scope of the material meet the

principles of completeness, suitability, adequacy, contain character education, and relevance; (2) the presentation of materials and illustrations fulfills the principles of being attractive, creative, innovative, systematic, and active; and (3) the use of language that is easy to understand and communicative.

Based on the results of the feasibility test by experts, comments and suggestions were obtained as guidelines for product improvement. The first improvement was carried out in accordance with advice from experts in the field of learning media, namely so that the e-learning was adapted to the characteristics of the students and so that the e-learning contained material in the form of videos. Before improvements were made to the learning activities section, the pencak silat material only contained virtual meetings learning materials in the form of e-books, discussion forums, and online exams. After the revision, the e-learning contains three learning videos , namely 1) *tangkisan*, 2) *12 sikap pasang IPSI*, and 3) *kuda-kuda, pukulan, tangkisan, tendangan* in MP4 format. According to Dineva (2019), providing learning materials in the form of videos is an effective approach to improve student learning outcomes, attract student's attention, and increase student learning motivation. In addition, by presenting learning materials in various forms of representation, namely verbal, image, audio, and video, it can overcome student boredom during the learning process and create an active and creative atmosphere (Syahputra & Maksum, 2020; Huwaidi, et al., 2021). The display of learning

videos in e-learning is presented in Figure 5. In addition to improving content in e-learning, researchers also use advice from experts in the field of physical education when teaching pencak silat martial arts material, namely providing learning material from simple concepts to more complex concepts and making affective learning outcomes indicators a learning priority.

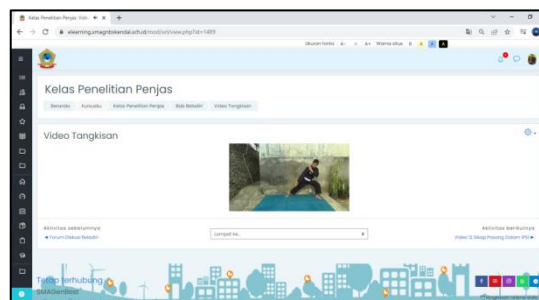


Figure 5. Learning Video Display

The next step is a small-scale trial involving 20 students in class X at SMA GNBS Kendal. In a small-scale trial, the product effectiveness test were carried out and student responses were tested. To find out the learning outcomes, a pretest was carried out, then the treatment was in the form of the application of e-learning, then posttest was carried out. Furthermore, the student response test was carried out by giving a questionnaire containing several statements in which students were asked for their opinions regarding the product being developed. The distribution of pretest and posttest scores in small-scale trials is presented in Figure 6.

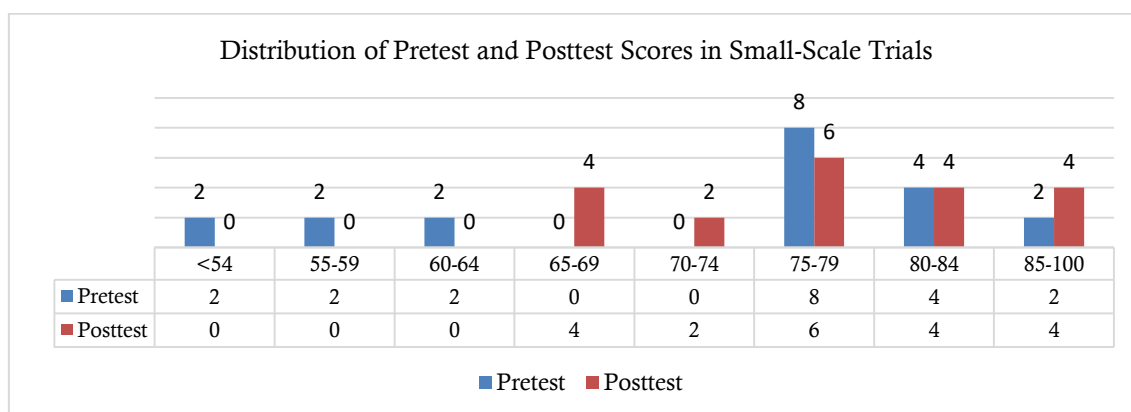


Figure 6. Distribution of Pretest and Posttest Scores in Small-Scale Trials

Based on Figure 6, it can be seen that there is a positive change in the learning outcomes obtained by students after using e-learning. The number of students with scores between 65-69, 70-74, and 85-100 has increased and there are no more students who score below

64. These results indicate that the product developed can improve student learning outcomes. Furthermore, based on the results of the t-test, it is known that the level of product effectiveness is shown in the Table 3.

Table 3. Results of Paired Sample T-Test on Small-Scale Trial

Pair	Pre Test - Post-Test	Paired Differences				t	Sig. df (2-tailed)	
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference			
					Lower			Upper
1		-7.000	7.152	1.599	-10.347	-3.653	4.377	19.000

Based on Table 3, it can be concluded that there are significant differences in the pretest and posttest scores. This can be seen from the results of $|t_{count}| \geq t_{table}$, namely $|4.377| \geq 2,093$ with a significance value = $0,000 < \alpha = 0,050$. The mean of -7,000 indicates that there is an increase in student learning outcomes after using Moodle-based e-learning media.

scores in large-scale trials is presented in Figure 7. Based on the results of large-scale trials as shown in Figure 7, it can be seen that there are no more students who score below 69 on the posttest, and the number of students with scores between 70-74, 80-84, and 85-100 has increased. These results indicate that the product developed can improve student learning outcomes. Furthermore, based on the results of the t-test, it is known that the level of product effectiveness is shown in the Table 4.

The next step is a large-scale trial involving 73 students of class X at SMA GNBS Kendal. The distribution of pretest and posttest

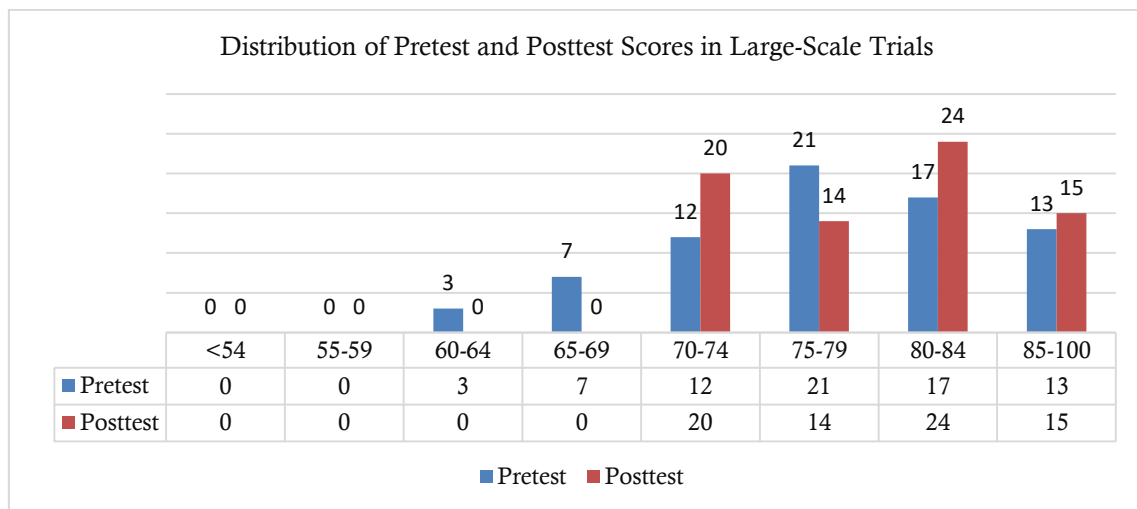


Figure 7. Distribution of Pretest and Posttest Scores in Large-Scale Trials

Based on Table 4, it can be concluded that there are significant differences in the pretest and posttest scores. This can be seen from the results of $|t_{count}| \geq t_{table}$, namely $|2.604| \geq 2,000$ with significance value = $0,011 < \alpha = 0,050$. The

mean of -3,288 indicates that there is an increase in student learning outcomes after using Moodle-based e-learning media.

Table 4. Results of Paired Sample T-Test on Large-Scale Trial

Pair	Pre Test - Post-Test	Paired Differences				t	df	Sig. (2-tailed)	
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
					Lower				Upper
1		3.288	10.788	1.263	-5.805	-.771	2.604	72.011	

The results of this study have implications for education provider at SMA GNBS Kendal and other education providers that e-learning developed is effective in improving student learning outcomes. Thus, the resulting e-learning product can be used as an alternative media in the physical education learning process. Furthermore,

the education system in the form of e-learning enables equal distribution of education in Indonesia considering that Indonesia is a very large archipelagic country. Furthermore, e-learning media also received good response from users. The results of student response test are presented in the Table 5 and Table 6.

Table 5. Results of Student Response Questionnaire Analysis on Small-Scale Trials

No	Aspect	P(%)	Criteria
1	Effectiveness and efficiency	75.00	Good
2	Reliability	100	Very good
3	Usability	75.00	Good
4	Communicative	75.00	Good
5	Visual	75.00	Good
6	Illustration	75.00	Good
7	Religious content	75.00	Good
8	Obstacles encountered	75.00	Good
Average		78.13	Good

Table 6. Results of Student Response Questionnaire Analysis on Large-Scale Trials

No	Aspect	P(%)	Criteria
1	Effectiveness and efficiency	86.30	Good
2	Reliability	100	Very good
3	Usability	75.00	Good
4	Communicative	75.00	Good
5	Visual	75.00	Good
6	Illustration	75.00	Good
7	Religious content	75.00	Good
8	Obstacles encountered	75.00	Good
Average		79.50	Good

Based on the results of the analysis, the average percentage of student responses on small-scale trial was 78,13% with good criteria and the

average percentage of student responses on large-scale was 79,50% with good criteria.

E-learning provides education that can be accessed by many people anytime and anywhere, although in the process of implementation it is also necessary to pay attention to several things such as budget and infrastructure. This e-learning is expected to be an innovation in physical education learning, especially Pencak Silat martial arts material which also plays a role in supporting character education. Furthermore, so that the e-learning developed in this study can function optimally, it is recommended that the internet connection is well connected and the user already has basic knowledge of computer operation. In addition, this media should be utilized more optimally with the development of materials or other basic competencies.

CONCLUSION

The product produced in this research and development is an integrated Moodle-based physical education e-learning media on the topic of Pencak Silat at SMA GNBS Kendal which has passed the feasibility test, trial phase, and several revisions which makes the final product feasible and effective as a learning medium. The final e-learning product contains several features, namely: virtual meetings, learning materials in the form of e-books, discussion forums, learning videos, and online exams. The Learning Management System (LMS) used to build e-learning is Moodle version 3.11.6. The advantage of the product developed is the integration of religious values contained in e-learning which makes the e-learning not only function as a medium for material transfer, but the teacher also instills moral values during the learning process. The e-learning product has also been declared feasible based on validation by experts in the field of learning media, experts in the field of physical education, and user responses. E-learning proved to be effective based on the results of the paired sample t-test taken from the pretest and posttest.

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