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Development of a Moodle-Based Learning Management System on the Learning Medium of Islamic Religious Education

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Abstract
The purpose of this study is to create a Moodle-based Learning Management System (LMS) as a Learning Media for islamic Religious Education (PAI) Subjects. Along with the advancement of technology, the use of LMS has become increasingly important in supporting more flexible, effective, and interactive learning. Moodle was chosen due to its various features that can be customized to meet the needs of PAI learning. This research uses the R&D method with The ADDIE Development Model (Analysis, Design, Development, Implementation, Evaluation). The research subjects involved 20 students of class X DKV 1. The data collected from the study were analyzed using a Likert scale with a quantitative approach. The results from the validation and student trial showed the following scores: (1) media expert 93%, (2) subject matter expert 92,17%, and (3) student trial 83,25%. The findings of this study indicate that the Moodle-based LMS developed can enhance student engagement, facilitate access to materials, and support the evaluation and communication processes between teachers and students. The system trial also showed that most users found the LMS to be effective in supporting online PAI learning. Therefore, this Moodle-based LMS is expected to become a new solution to improve the quality of PAI learning in the digital era. Practically, this LMS can be implemented by schools or educational institutions to digitize their PAI curriculum delivery and streamline blended learning practices.

Keywords: ADDIE Model, Islamic Religious Education, Learning Management System, Moodle, Online Learning.

Introduction

High-quality human resources are the key to national development, and education is the key. In Indonesia, the quality of education is still becoming a major challenge, especially in facing the changing times influenced by the rapid development of technology in the era of globalization. Technology has an impact on aspects of education, as well as on other aspects of society (Garcia, et al, 2021). The development of technology has changed the world like never before (Phan, et al, 2022) . The acceptance of technology in education is a common factor that must be considered to be integrated into the educational environment (Garcia, et al, 2021). Technology-based learning reflects the relationship between technology and the world of education that helps shape scientific thinking and meet students' information needs (Manzano et al, 2023). Using technological resources as a learning medium is one method of incorporating technology into education (Akhmadan, 2017). Learning media is an educational tool that can be used by teachers to help students learn more and change the way of learning from conventional lecture into making it more attractive and interesting (Setiawati, et al., 2018; Yulia, et al., 2022).

Along with the development of the times, every individual has the opportunity to utilize technology as a positive and beneficial learning tool with wise management (Maritsa, 2021) . Learning media is one of the important tools in the teaching and learning process, which can increase effectiveness and efficiency (Gunawan, 2015) . According to Berking & Peter (2016) the use of online learning tools such as LMS has

a positive impact on teachers and students, making learning more organized, interesting, autonomous, comfortable, and providing much more instant feedbacks beneficial for learning improvement (Garcia, et al, 2021). One of the many technology-based learning innovations commonly used in Indonesia is Learning Management System (LMS).

Learning Management System (LMS) is a web-based platform created to organize and integrate teaching and learning activities (Riyath and Rijah, 2022). LMS provides an online classroom that helps strengthen the learning process for teachers and students (Bradley, 2020). One of the things that influences the use of LMS is the availability of facilities that support learning and the interests of users, both those who have used LMS and those who have not before (Moonsamy & Govender, 2018). As it's popularity grows, LMS allows learning to be done online, thus overcoming the problem of limited space and time. The use of LMS also makes it easy to access materials, interact with teachers, and conduct evaluations in a more flexible and efficient way. Those benefit encourages teachers to be more creative in designing more interesting and interactive learning material and environment (Cavus, 2015; Ouadoud et al., 2016; (Wihastyanang et al., 2015).

Even though it offers various conveniences for both teachers and students, because LMS is a kind of technological innovation, literacy in information and communication technology is needed because educators who use LMS must deliver material effectively to students using computers and the internet. Furthermore, educator must also maintain intrinsic motivation factors and feedback on student performance to keep the learning motivation in the classroom eventhough LMS has been used in teaching learning (Garcia et al, 2021). Such challenge make LMS not only become innovation but also challenge for both student and teacher in order to maximally utilize it's benefit. This encourage the development of many LMS making it more user friendly and easy to operate, even by newbie.

For the past several years, LMS have been successfully developed and used in higher education institutions around the world. These systems have been successfully adapted and integrated with classroom settings to provide more flexible learning and support social constructivist approaches (Al-Azawei, A., Paslon, P., & Lundqvist, 2017). In academic institutions, LMS establishes an inclusive environment for learning that values collaboration, training for professionals, and communication of LMS users (Garcia, et al, 2021). Moodle is one of the open source LMS technologies that can be used to develop e-learning in schools (Inggriyani, F., Fazriyah, N., & Purbasari, 2019).

Historically, Moodle was developed in 1999 by Martin Dougiamas who worked as a webCT administrator at Curtin University of Technology (Kats, 2010 Makruf, et al. 2022). Object-oriented ideas were used to create a dynamic web-based learning environment system known as Moodle. This phrase, which translates to "Modular Object-Oriented Dynamic Learning Environment," refers to a dynamic setting for object-oriented learning (Lovy Herayanti, Muhammad Fuaddunnazmi, 2017). Moodle is said to have been used by more than 30,000 educational institutions in the world as of today (Makruf et al, 2022). Its open source operating system, the flexibility it offers, and the great support from a large and active user community make Moodle one of the most popular LMSs and is widely used in schools and educational institutions (Kerimbayev, 2017). Based on these findings, researchers are interested in implementing Moodle to encourage the effectiveness of PAI learning at SMKN 1 Tapen Bondowoso.

According to the findings of researchers at SMK Negeri 1 Tapen, although the school has quite complete facilities, such as a Computer Lab, free Wi-Fi, CCTV and LCD Projector, most teachers, especially Islamic Religious Education teachers, have not been able to maximize the use of these facilities in the learning process. Learning in class, especially Islamic Religious Education subjects, still relies heavily on conventional methods such as lectures and the use of textbooks. In fact, with the use of appropriate technology, the learning process can be more effective and interesting. Therefore, this study aims to develop and evaluate the use of a Moodle- based Learning Management System as a Learning Media for Islamic Religious Education at SMK Negeri 1 Tapen Bondowoso, in order to improve the quality and effectiveness of learning at the school.

Method

This study uses the Research and Development (R&D) approach method. Research and Development research is research where the process goes through several stages, one of which is validation of research products (Sanjaya, 2017). In addition, Siregar (2023) stated that R&D is a work process carried out systematically in obtaining new products that are useful in building various applications. At SMK Negeri 1 Tapen, a Moodle-based Learning Management System (LMS) for Islamic Religious Education (PAI) learning materials was developed using the ADDIE (Analysis, Design, Development, Implementation,

Evaluation) development model. The purpose of this project is to create and assess whether a Moodle-based learning management system (LMS) can facilitate PAI learning in the classroom.

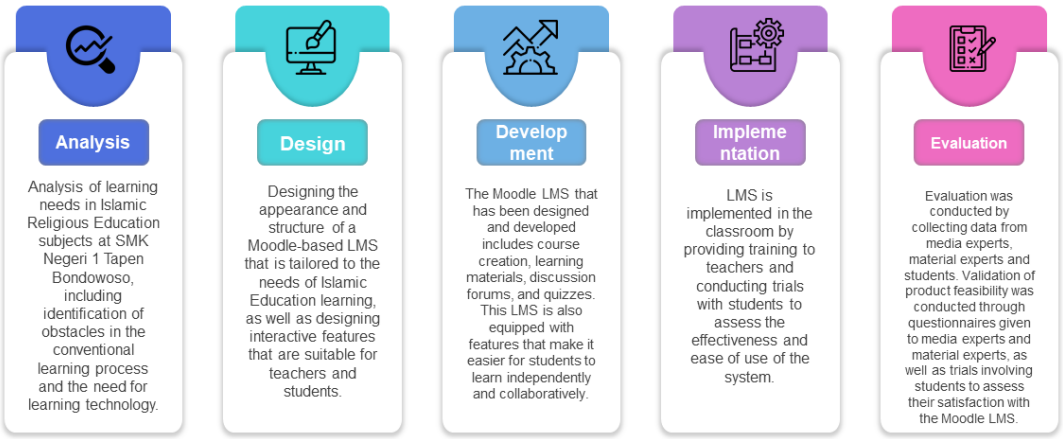

Figure 1 ADDIE Model Chart

Grade X students at SMK Negeri 1 Tapen Bondowoso acted as subjects of research and development. Twenty participants in one class participated in a limited experiment. A combination of quantitative and qualitative research methods was used. To gather ideas for product design, media professionals, material specialists, and students filled out questionnaires to provide qualitative data. On the other hand, quantitative data, obtained from students' responses to the questionnaire, related to the importance of media feasibility.

The data for this study were collected using questionnaires containing positive statements. Data were collected using various questionnaire formats. Examples include the subject matter expert validation questionnaire, which covers aspects of learning, benefits, and materials, and the media expert validation questionnaire, which covers aspects of software engineering and display. In addition, the results of the questionnaires filled out by students and professionals were calculated using the Likert scale model, which calculates values from one to four.

Table.1 *Likert* scale

Questions/Responses			
Score			
Total Score	**Media Validation**	**Material Validation**	**Student Response**
4	Very Worth It	Very Worth It	Strongly agree
3	Worthy	Worthy	Agree
2	Less Worthy	Less Worthy	Disagree Less
1	Not feasible	Not feasible	Don't agree

Source: (Sugiyono, 2015)

Next, we need to know the validity of the results from media experts, material experts, and students. This can be done using the following formula:

Table.2 Percentage Calculation Formula

$$p = \frac{f}{N} \times 100\%$$

p : Percentage of Answers
f: Frequency of Answers
N : Number of Respondents

Source: (Sugiyono, 2015)

The final stage is to measure the product's eligibility requirements if the validity percentage has been calculated. A table describing the product's eligibility evaluation using a rating scale can be seen below.

Table.3 Product Eligibility Criteria

Percentage	Criteria
0% 25%	Not feasible
26% - 50%	Less Worthy
51% - 75%	Worthy
76% - 100%	Very Worth It

Source: (Meisya Widyasusanti, Iva Sarifah, 2022)

Results and Discussion

Result

The results of the research on the development of a *Moodle- based Learning Management System* (LMS) on Islamic Religious Education (PAI) learning media from the validation results of media experts, material experts and student trials on the feasibility of the media.

a. Media Expert Validity Test Results

Table.4 Media Expert Validation Results

Aspect	Percentage	Category
Display Aspect	95%	Very Worth It
Software Engineering Aspects	90%	Very Worth It
Average	**93%**	**Very Worth It**

To ensure the feasibility of the media produced, validation was carried out by media experts. The media was placed into a category, based on the average total of the two Moodle website evaluations. **"Very Feasible"** .

b. Results of the Material Expert Validity Test

Table.5 Material Expert Validation Results

Aspect	Percentage	Category
Material	92.50%	Very Worth It
Learning	91.50%	Very Worth It
Benefit	9250%	Very Worth It
Average	**92.17%**	**Very Worth It**

The expert validation process, carried out by Islamic Religious Education teachers who assessed the Moodle website assessment from three aspects, determined that the material was included in the **"Very Appropriate" category** overall.

c. Student Trial Results

Table.6 Student Trial Results

Aspect	Percentage	Category
Appearance	83.25%	Very Worth It
Material	82.75%	Very Worth It
Benefit	83.75%	Very Worth It
Average	**83.25%**	**Very Worth It**

The purpose of the student trial involving 20 grade X students was to determine whether the media produced was feasible to be developed. The evaluation of the Moodle website was reviewed from three perspectives, and based on the average value of the three perspectives, it was found that this media was included in the feasible category. **"Very Feasible"** .

Discussion

With a suitability level of 93%, it can be seen from the results of the research data analysis that this media is very appropriate for use as a learning medium. This high level of suitability is supported by several contributing factors observed during the data analysis phase. First, the visual design of the platform plays a significant role in user engagement. The website features an attractive interface, the selection of relevant and pedagogically appropriate graphic images, and the use of bright, vibrant color schemes that enhance visual appeal.

These design choices are aligned with findings from Syahnina (2021), which suggest that learners—particularly at the secondary school level, demonstrate a strong preference for primary colors that are bright and contrasting. This preference contributes to increased focus and enjoyment, which in turn positively affects students' perception of the learning media.

Second, the ease of use and accessibility of the Moodle platform also contributed to the high evaluation score. Moodle is known for its user-friendly navigation and intuitive layout, allowing both teachers and students to access content without significant technical barriers. Moreover, the platform's compatibility with multiple devices, including smartphones and personal computers, ensures that students can participate in learning activities anytime and anywhere. This device flexibility supports the principles of ubiquitous learning and accommodates diverse student needs and learning contexts.

The combination of engaging visual design, ease of access, and technological compatibility creates a holistic user experience that not only meets pedagogical requirements but also enhances learner motivation and satisfaction. These elements collectively explain the high suitability rating from media experts and confirm the platform's potential as an effective digital tool in Islamic Religious Education.In terms of material, the results of the study showed that the material presented was classified as very feasible, with a feasibility level reaching 92.17%. The material was arranged systematically based on sub-materials, supplemented with supporting images and videos, and ended with practice questions as an evaluation of knowledge and assignments to assess student creativity. This structured organization reflects a coherent instructional design that aligns with cognitive load theory, which emphasizes the importance of well-ordered content to reduce extraneous cognitive processing and promote deeper learning.

Research conducted by (Aprilia, 2021) revealed that the use of background colors and images can increase learning interactivity and attract students' attention, which ultimately has a positive impact on learning effectiveness. The inclusion of visual elements not only serves aesthetic purposes but also enhances dual coding, where information is processed through both verbal and visual channels—thereby strengthening memory retention and engagement.

The language used in the material is also quite simple, so it is easy to understand, and the material provided is in accordance with learning objectives. In addition, the material is also equipped with videos to provide real examples such as videos of verses of the Qur'an so that students can observe the length and shortness of the reading of the verse. This integration of multimedia content enables contextualized learning, where abstract religious concepts are presented in observable, real-life formats. This is in accordance with research (Firman, 2019) which shows that practical activities are very important to improve students' abilities and facilitate their learning of new material. In this case, the use of Qur'anic recitation videos allows students to bridge theory and practice, particularly in mastering Tajweed, which is often difficult to grasp without auditory models.

The results of the student trial showed that this media was very feasible to use with 83.25%. This can be seen from the level of interest and success of students in using the Moodle- based Learning Management System media. High student feasibility ratings can be linked to the platform's ability to personalize learning experiences, provide immediate feedback, and foster independent exploration, features that are central to modern learner-centered pedagogies.

Based on this analysis, it can be concluded that this media can improve student understanding. Research (Nugroho & Iqbal arrosyad, 2020) reinforces all of this, stating that the Moodle -based Learning Management System has a positive impact on learning. Research (Purmadi & Sa'di, 2021) also discusses the Moodle Learning Management System (LMS) , which proves an increase in student learning outcomes. These findings are consistent with broader educational technology literature, which supports the claim that LMS platforms like Moodle not only enhance content delivery but also cultivate learner autonomy and collaborative learning environments.

Conclusion

The results of the study show that the development of a *Moodle- based Learning Management System* (LMS) as a learning medium for Islamic Religious Education (PAI) at SMK Negeri 1 Tapen Bondowoso is as follows:

1. In the research on the development of Moodle-based learning management system, the ADDIE model was used, which includes *Analysis, Design, Development, Implementation, Evaluation* .

2. It has been proven that the level of feasibility is practical and effective. Based on the assessment of media experts, the "Very Feasible" category obtained an average percentage score of 93%, while material experts obtained an average percentage score of 92.17%. In addition, students gave positive answers to the aspects of appearance (83.25%), material (82.75%), and benefits (83.75%), with an average percentage of 83.25% falling into the "Very Feasible" category.
3. The development of a *Moodle-* based *Learning Management System* in Islamic Religious Education Learning Media has several superior aspects, including:
    a. Systematic presentation of material with supporting images and videos.
    b. Learning with LMS is also more efficient in terms of time and space, and encourages teachers to be more creative in designing more interesting and interactive learning.
    c. It is very easy to use and available for PC and smartphone.
    d. Student involvement in learning is increasing.

Based on these findings, it is recommended that the developed Moodle-based LMS be implemented more broadly across other schools, especially those with similar curricular needs in Islamic Religious Education. Its flexibility and effectiveness make it a viable digital learning tool in both urban and rural educational contexts.

Future research is suggested to explore the long-term impact of LMS implementation on students' academic performance and religious understanding. In addition, comparative studies involving different digital platforms or integration with gamification elements could provide deeper insights into optimizing digital learning for religious subjects.

References

Akhmadan, W. (2017). Pengembangan Bahan Ajar Materi Garis dan Sudut Menggunakan Macromedia lash dan Moodle Kelas VII Sekolah Menengah Pertama. *Jurnal Gantang*, *2*(1), 27–40.

Al-Azawei, A., Paslon, P., & Lundqvist, K. (2017). Investigating the Effect of Learning Styles in a Blended E-Learning System: An Extension of the Technology Acceptance Model (TAM). *Australasian Journal of Educational Technology*, *33*(2). https://doi.org/10.14742/ajet.2741.

Berking, Peter, and P. G. (2016). "Choosing a Learning Management System." *Advanced Distributed Learning (ADL) Initiative*, *8*(3).

Bradley, V. M. (2020). Learning Management System (LMS) Use with Online Instruction. *International Journal of Technology in Education*, *4*(1), 68. https://doi.org/10.46328/ijte.36

Cavus, N. (2015). Distance Learning and Learning Management Systems. *Procedia - Social and Behavioral Sciences*, *191*, 872–877. https://doi.org/10.1016/j.sbspro.2015.04.611

Gunawan. (2015). *Model pembelajaran sains berbasis ICT*. FKIP Universitas Mataram.

Inggriyani, F., Fazriyah, N., & Purbasari, A. (2019). Penggunaan E-learning Berbasis Moodle bagi KKG Sekolah Dasar di Kecamatan Lengkong Kota Bandung. *Jurnal SOLMA*, *8*(2), 268.

Kats, Y. (2010). Teknologi Sistem Manajemen Pembelajaran dan Solusi Perangkat Lunak untuk Pengajaran Daring: Alat dan Aplikasi. *Referensi Ilmu Informasi.*

Kerimbayev, N., Kultan, J., Abdykarimova, S., & Akramova, A. (2017). LMS Moodle: Distance International Education in Cooperation if Higher Education Institutions of Different Countries. *Education and Information Technologies*, *22*. https://doi.org/10.1007/s10639-016-9534-5.

Lovy Herayanti, Muhammad Fuaddunnazmi, H. (2017). Pengembangan Perangkat Pembelajaran Fisika berbasis Moodle. *Jurnal Pendidikan Fisika Dan Teknologi*, *3*(2).

Maritsa, S. (2021). Pengaruh Teknologi Dalam Dunia Pendidikan. *Ojs.Diniyah.Ac.Id*, *4*(2).

Meisya Widyasusanti1, Iva Sarifah, H. U. (2022). Pengembangan Media Pembelajaran E-Learning Berbasis Moodle Pada Materi Pecahan Senilai Kelas Iv Sekolah Dasar. *Jurnal Ilmiah Kependidikan*, *3*(2), 1–15.

Mohamed Ismail Mohamed Riyath, U. L. M. R. (2022). Adoption of a Learning Management System Among Educators of Advenced Technological Instituces In Sri Lanka. *Asian Association of Open Universities Journal*, *17*(2). https://www.emerald.com/insight/2414-6994.htm.

Moonsamy, D., & Govender, I. (2018). Use of blackboard learning management system: An empirical study of staff behavior at a South African university. *Eurasia Journal of Mathematics, Science and Technology Education*, *14*(7), 3069–3082. https://doi.org/10.29333/ejmste/91623

Ouadoud, M., Chkouri, M. Y., Nejjari, A., & Kadiri, K. E. El. (2016). Studying and Analyzing the Evaluation Dimensions of E-learning Platforms Relying on a Software Engineering Approach. *International Journal of Emerging Technologies in Learning*, *11*(1), 11–20. https://doi.org/10.3991/ijet.v11i01.4924

Phan, T.T., Vu, C., Doan, P. T., Luong, D, Bui, T, Le, T, & Nguyen, D. (2022). Two Decades of Studies on Learning Management System in Higher Education: A Blibliometric Analysis with Scopus Database 2000-2020. *Journal of University Teaching and Learning Practice*, *19*((3). https://doi.org/#N/A.

Renato Sebastian Manzano Perez, Tannia Elizabeth Lopez Perez, R. J. M. P. M. V. P. L. (2023). Technology Innovation and Education: a Brief Review of the Literature. *Ibero-American Journal of Education & Society Research*, *3*(1). https://doi.org/10.56183/iberoeds.v3i1.596.

Rizaldy E. Garcia, Anjo M, Abaratigue, and Nida V, A. (2021). Integration of Learning Management System as an Aid in Teaching: An Assessment. *European Journal of Educational Research*, *10*(3), 1199–1213. https://www.researchgate.net/profile/Ebru-Eren/publication/348382981_Education_Policies_in_the_Context_of_Political_Communication_in_Turkey/links/5ffc2aeba6fdccdcb846cc03/Education-Policies-in-the-Context-of-Political-Communication-in-Turkey.pdf

Setiawati, Nurrita, Kartika, I., & Purwanto, J. (2018). *Pengembangan Mobile Learning (M- Learning) Berbasis Moodle Sebagai Daya Dukung Pembelajaran Fisika di SMA. UIN Sunan Kalijaga, Yogyakarta.* UIN Sunan Kalijaga.

Sugiyono. (2015). *Metode Penelitian Pemdidikan Pendekatan Kuantitatif, Kualitatif, dan R&D*. Alfabeta.

Wihastyanang, W. D., Hentasmaka, D., & Anjarwati, R. (2015). Active Learning Using Learning Management System To Improve Students' Competence in Argumentative Writing. *Journal on English as a Foreign Language*, *4*(1), 1. https://doi.org/10.23971/jefl.v4i1.69

Yulia, R., Susanti, E., & Rizal, R. (2022). Pengembangan Multimedia Interaktif Berbasis Android Pada Materi Cetakan Elastisitas Bahan untuk SMA Kelas XI. *Jurnal Eksakta Pendidikan*, *6*(1), 1–10.