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INTEGRATION OF ALEF CONTENT INTO MOODLE LMS TO SUPPORT DIGITAL LEARNING AT SMP NEGERI 1 KOLAKA

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ABSTRACT

The digital transformation in education demands the development of adaptive and effective learning media. This study aims to develop digital learning media by integrating Alef Education content into the Moodle Learning Management System (LMS) platform at SMP Negeri 1 Kolaka. The research employed a Research and Development (R&D) method using the ADDIE model, which includes five stages: Analysis, Design, Development, Implementation, and Evaluation. Validation results from media and content experts indicate that the developed learning media is highly valid, with scores of 87.78% and 92%, respectively. Analysis of student and teacher response questionnaires shows that the media is practical, with practicality scores of 77% and 68%. The study concludes that the collaboration between Alef content and Moodle LMS positively impacts the quality of learning. Further research is recommended to develop Alef content for varying student ability levels and to explore its implementation in other schools.

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1. INTRODUCTION

In recent years, the integration of digital technology in education has experienced rapid growth. This development compels educational institutions to continuously innovate in delivering effective and efficient learning processes. The digitalization of education has become not only a global trend but also a local necessity, particularly in improving the quality of teaching and learning in schools(Saxena et al., 2022).

One of the major challenges in implementing digital learning lies in aligning content with students' varying levels of ability. While many interactive tools such as *Quizizz*, *Wordwall,* and *Kahoot* have been widely adopted, they often provide only surface-level engagement and lack comprehensive assessment features. Therefore, a learning system that is not only interactive but also structured and adaptive is needed.

Learning Management Systems (LMS) offer a common solution to support digital learning. *Moodle*, as an open-source LMS platform, provides a wide range of features such as pre-tests, instructional materials, videos, discussion forums, post-tests, and assignments that enable educators to design comprehensive learning experiences (Sastro et al., 2020). However, another challenge arises when the content integrated into the LMS fails to address the needs of lower-achieving students, as most of the content is designed for learners with medium to high academic abilities.

On the other hand, Alef Education is a K–12 digital learning platform developed in the United Arab Emirates, offering instructional content in the form of step-by-step video lessons that are easy to understand (Fahril et al., (2022); Fitri & Hardiyanto, (2024)). This platform has proven effective in facilitating technology-based learning, but currently, its access is limited to schools under the Ministry of Religious Affairs in Indonesia (Damopolii et al., 2024).

Considering these limitations, the integration of Alef Education content into the Moodle LMS platform represents a promising alternative solution. This collaboration is expected to broaden access to adaptive learning content and improve the overall quality of education in schools under the Ministry of Education, Culture, Research, and Technology, including SMP Negeri 1 Kolaka.

Based on this background, this study aims to develop digital learning media through the integration of *Alef Education* content into the *Moodle* LMS platform to support adaptive and high-quality digital learning at SMP Negeri 1 Kolaka.

2. METHOD

This study employs the Research and Development (R&D) method to create a digital learning system that aims to develop a digital learning system based on *Learning Management System* (LMS), which is integrated with content from *Alef Education* through the video upload feature and the addition of media in *Moodle*. The development procedure follows the ADDIE model (Analysis, Design, Development, Implementation, and Evaluation) proposed by Branch (2009). The development procedure that has been applied results in the formulation and explanation of the stages and framework of research and the development of teaching materials, as illustrated in Figure .

This research was conducted at SMP Negeri 1 Kolaka involving 21 students of class 8D and 1 Mathematics teacher who taught the class as the research subjects. Students need learning content that suits their ability level, while teachers need tools to manage the class effectively, especially in online learning.

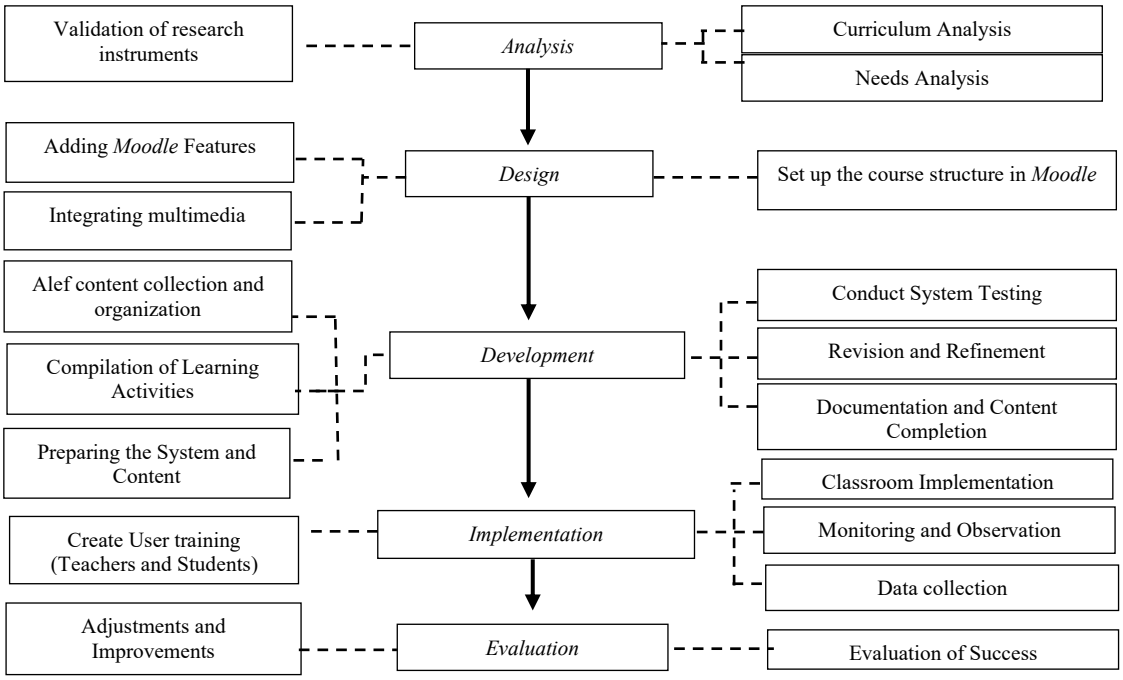

Figure1 . Research Procedure Flow Chart

Data was collected through the provision of material and media expert validation sheets to expert validators to assess the validity of the content, student and teacher response questionnaire sheets to assess the practicality of the system. The validation sheet consists of several items that assess the quality of the content and the student response questionnaire sheet uses a Likert scale to measure respondents' responses with modified aspects of the LORI. Based on the research proposed by Nabilah et al., (2023), LORI (Learning Object Review Instrument) is an important tool to evaluate the effectiveness and quality of learning objects developed by John Nesbit. There are aspects in assessing learning objects based on LORI including: content quality, learning goal alignment, feedback and adaptation, motivation, presentation design, interaction usability, accessibility, reusability, and standard compliance.

Data obtained from the results of validation sheets and questionnaires were analyzed using validity and practicality data analysis techniques. Analysis of validity data, to analyze expert validity data, descriptive quantitative analysis was used, followed by revisions based on expert feedback. The results of this analysis are used to revise the *Moodle* LMS integrated with alef content that has been made by researchers. To calculate the validity results, the formula proposed by Wahyuni (2022) is used, as follows:

$$\text{Validity} = \frac{\text{Score obtained}}{\text{Highest score}} \times 100\%$$

After the percentage value is obtained, the percentage will be adjusted to the categorization according to the guidelines proposed by Riduwan in Tafari & Sari (2021)The following table presents the validation interpretation criteria:

Table1 . Validation Data Interpretation

Interval	Criteria
81% < P < 100%	Very Valid
61% < P ≤80%	Valid
41% < P ≤ 60%	Fairly Valid
21% < P ≤ 40%	Less Valid
0% < P ≤ 20%	Invalid

Practicality data analysis, This analysis data is based on the results of student and teacher response questionnaires used to determine the opinions of students and teachers regarding the collaboration of *Alef* content in the *Moodle* LMS as an effort to digitize learning. Data from student response questionnaires in the form of scores obtained using a *Likert* scale will be analyzed (Wahyuaji & Taram, 2018) .

Table2 . Likert Scale

Description	Statement Score	
	Positive	Negative
Strongly Agree (SS)	5	1
Agree (S)	4	2
Undecided (RG)	3	3
Disagree (TS)	2	4
Strongly Disagree (STS)	1	5

After the questionnaire data from students and teachers were collected, the data were analyzed using the practicality level formula proposed by Wahyuni (2022) , as explained below:

$$\text{Practicality} = \frac{\text{Score obtained}}{\text{Highest score}} \times 100\%$$

Practicality percentage data is interpreted based on categorization according to the guidelines proposed by Riduwan in Tafari & Sari (2021). The following table presents the interpretation criteria for student and teacher responses:

Table 3 . Interpretation of Learner and Teacher Response Percentages

Interval	Criteria
81% < P < 100%	Very practical
61% < P ≤80%	Practical
41% < P ≤ 60%	Practical enough
21% < P ≤ 40%	Less Practical
0% < P ≤ 20%	Not Practical

3. RESULTS AND DISCUSSION

3.1. Results

The results of the development research were obtained from the results of material expert validation, the results of media expert validation, the results of the analysis of student and teacher response questionnaires.

3.1.1. Media Expert Validity Test Results

Table4 . Media Expert Validation Results

Assessed Aspect	Indicator	Validator		Score obtained	Highest Score	Percentage (%)
		I	II			
Visual Design and Aesthetics	Visual design is attractive and in line with the learning theme	4	5	9	10	90%
	The use of colors, fonts, and layouts are consistent and easy to read.	12	15	27	30	90%
	The quality of the images and videos used and support the material	9	10	19	20	95%
Media Integration with Moodle LMS	Media supports student activity tracking through *Moodle* LMS reporting features	8	10	18	20	90%
	The media supports features in the *Moodle* LMS, such as quizzes and discussion forums.	9	10	19	20	95%
	Media can be accessed easily by *Moodle* LMS users	8	10	18	20	90%
Technical Quality	Media functions properly without any bugs or technical errors	7	7	14	20	70%
	Media can be accessed quickly and responsively	8	8	16	20	80%
	Media is compatible with various devices and browsers	8	10	18	20	90%
Grand Total		**73**	**85**	**158**	**180**	**87,78%**
Category						**Very Valid**

Based on Table 1 shows that this media obtained a total score of 158 out of a maximum score of 180, with a percentage of 87.78%. This score falls into the **Very Valid** category**.** Aspects of image and video quality and feature support in the Moodle LMS were rated as very strong, although aspects of system stability showed the need for improvement on the technical side.

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3.1.2. Material Expert Validity Test Results

Table 5 . Material Expert Validation Results

Assessed Aspect	Indicator	Validator		Score obtained	Highest Score	Percentage (%)
		I	II			
Suitability of Material with Curriculum	Materials in accordance with applicable curriculum standards	8	10	18	20	90%
	The material supports the achievement of basic competencies and indicators of competency achievement	9	9	18	20	90%
	The material is relevant to student needs	5	5	10	10	100%
Content Quality	Content is presented clearly and systematically	10	9	19	20	95%
	Content has sufficient depth of material	5	5	10	10	100%
	Engaging and interactive content	8	9	17	20	85%
Student Engagement and Interactivity	Student engagement in learning	4	5	9	10	90%
	Provide interactive activities	8	10	18	20	90%
	Learn independently	10	9	19	20	95%
Grand Total		**67**	**71**	**138**	**150**	**92%**
Category						**Very Valid**

Based on Table 2. The material expert validation showed that the total score was 138 out of 150, with a percentage of 92% which is also included in the **Very Valid** category. The most prominent aspects were the relevance of the material to students' needs and the depth of content, each of which scored 100%. This indicates that the instructional content is aligned with the curriculum standards and relevant to students' needs.

3.1.3. Results of Student Response Questionnaire Analysis

Table 6 . Student Response Questionnaire Results

Assessed Aspect	Indicator	Score obtained	Maximum Score	Percentage (%)
Content Quality	Clarity of material and relevance to the curriculum	151	210	72%
	Depth of material and use of relevant examples	169	210	80%
Accessibility	Ease of access and loading speed.	147	210	70%
	Compatible with various devices	89	105	85%
Use of Technology	Multimedia integration, use of LMS features	162	210	77%
	Technological innovation, video and audio quality	179	210	85%
Learning Motivation	Increased interest in learning and active engagement	316	420	75%
	Influence on academic performance and self-confidence	146	210	70%
Learning Support	Availability of additional learning resources and technical assistance	161	210	77%
	Teacher support and usage guide	88	105	84%
Grand Total		**1.608**	**2.100**	**77%**
Category				**Practical**

A total of 21 students who have filled out the questionnaire, where there are 20 statements, obtained the results contained in Table 3. Analysis of the student response questionnaire shows that the total score is 1,608 out of 2,100, with a percentage of 77% classified as **practical** according to students. This shows that students found the media accessible and motivating, although some experienced problems with access speed.

3.1.4. Teacher Questionnaire Analysis Results

Table7 . Teacher Response Questionnaire Results

Assessed Aspect	Indicator	Score obtained	Maximum Score	Percentage (%)
Content Quality	Relevance to the curriculum	6	10	72%
	Ease of student understanding	16	20	80%
	Ease of access.	2	5	70%

Use of *Moodle* LMS	Integration of *Alef* content in LMS	8	10	85%
	Effectiveness of *Moodle* features in supporting learning	4	5	85%
Use towards learning	Increased student learning motivation	10	15	77%
	Student digital skills development	4	5	85%
Technical and implementation support	Technical support provided	2	5	40%
	Ease of implementing *Alef* content.	9	15	70%
Time efficiency	Time saving in material preparation	4	5	77%
	Time saving in learning implementation	3	5	84%
Grand Total		**68**	**100**	**68%**
Category				**Practical**

Based on Table 4. Analysis of the teacher response questionnaire showed that the total score was 68 out of 100, with a percentage of 68%, which is also in the **practical** category. The most appreciated aspects were the integration of *Alef* content in the LMS, the effectiveness of *Moodle* features, and the development of students' digital skills. However, technical support is still a challenge.

3.2. Discussion

Based on previous research which shows that the use of LMS *Moodle* is effective in increasing student engagement and interest in learning. According to Solihah (2023), *Moodle* LMS can optimize distance learning and increase student engagement. In addition, research by Rahayu & Laksana (2023) also shows that *Moodle* LMS can improve the quality of learning by providing interactive features that support the teaching and learning process. However, this study adds that the integration of *Alef* content in the *Moodle* LMS provides added value by providing more structured and in-depth materials, as well as supporting students' independent learning.

The findings of this study have significant implications in the context of digital education. The collaboration between *Alef* content and *Moodle* LMS not only improves the quality of learning but also provides easy access for students and teachers. With structured and interactive content, students can learn independently and be more engaged in the learning process (Emara et al., 2023). In addition, teachers can manage the class effectively and provide timely feedback to students. The practical implication of this research is the improvement of the quality of education in SMP Negeri 1 Kolaka and the potential to be applied in other schools.

This research is supported by theories on the effectiveness of LMS and digitalization of learning. According to Thakre (2024), LMS is software that facilitates the administration, tracking, and delivery of educational courses, enhancing interactions between educators and learners. In addition, research by Davidavičienė & Limanovskaja (2024) and Manoharan et al. (2024) shows that digitization of learning changes the educational paradigm by integrating digital technologies to improve interactivity,

efficiency, and accessibility. This research is also relevant to the study by Muttaqiyyah (2024) which shows that Alef Education with attractive digital features is effective in motivating students and improving learning outcomes.

This study successfully answered the research questions about the validity and practicality of the *Alef* content collaboration and the *Moodle* LMS. The new finding of this research is that the collaboration of *Alef* content and *Moodle* LMS provides added value in improving the quality of learning and supporting students' independent learning. The research objectives were achieved by showing that the *Moodle* LMS integrated with *Alef* content is highly valid and practical for use in learning. Although there are some exceptions related to internet access and system stability, the results of this study are in line with previously published work on LMS effectiveness and digitization of learning.

Although the learning media was rated as highly valid by experts, a notable discrepancy was found between the practicality assessments by teachers and students. While students gave high ratings for usability and engagement, teachers expressed concerns regarding technical support and classroom readiness. The particularly low score on the technical support aspect (40%) from teachers indicates that the success of implementing this media largely depends on infrastructure readiness and adequate teacher training. Therefore, there is a need for more detailed implementation guides and mentoring strategies to ensure that teachers feel confident using the media effectively.

These findings are consistent with prior research emphasizing the importance of technological readiness in implementing LMS-based media. Based on research from Suad et al. (2023) and Andayani et al. (2024), that while Moodle-based multimedia learning platforms could enhance student motivation, technical challenges remained a key barrier. Thus, the validation and practicality results of this study reinforce earlier findings and highlight the necessity of a comprehensive approach—not only focusing on content quality but also on the technical functionality and user support required for successful field implementation.

4. CONCLUSION

Based on the results of the research and development conducted, it can be concluded that the digital learning media based on Moodle LMS integrated with Alef Education content is highly valid and practical for use in the learning process. Validation results from media and material experts indicate a “Very Valid” category with percentages above 87%, while the student and teacher response questionnaires showed a “Practical” category with percentages of 77% and 68%, respectively.

This media has proven to offer practical benefits in supporting teachers in managing online learning and providing students with an interactive learning experience. The integration of Alef content into Moodle LMS presents opportunities to enhance student learning motivation and digital skills. With features such as activity tracking, quizzes, and discussion forums, this media increases the effectiveness and efficiency of learning.

The study has successfully achieved its primary objective, which is to develop digital learning media that align with student needs and support curriculum implementation. However, there are limitations, including the need for better technical support and adequate infrastructure to ensure optimal implementation.

Future development recommendations include content customization for different student ability levels, improvement of technical aspects, and the addition of interactive

elements such as gamification or adaptive learning. This development model also has the potential to be replicated in other schools or adopted in broader digital learning contexts.

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