

## Implementation Of M-Learning to Improve Learning Effectiveness In PAI Evaluation System Courses

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### Abstract

The digital era greatly influences learning activities and facilitates access to learning materials anywhere and anytime. Flexibility of learning, high interactivity, personalization of learning are the basic considerations of IT utilization. The purpose of this research is to develop an M-learning-based lecture room application in PAI evaluation courses. This study is a research and development (R & D) study with the ADDIE model. The subjects of this study were 5th semester students of PAI Study Program as many as 132 people. Sampling using saturated sample technique. Data collection used observation, interview and questionnaire distribution. Product validity is assessed by experts and students as a feasibility test using independent sample t test analysis. Assessment by expert judgment shows that the value is very good, namely an average of 4.67 by media experts. The results of the study with independent sample t-test showed a significance value of 0.00 probability with a significance of 0.05, which means that there is a significant difference between classes that use discussions and classes that are accompanied by the lecture hall application. This product has a very practical assessment by students as a reference for independent learning with an average score of 3.78. This M-Learning contributes more effectively and efficiently if done outside the classroom as a companion to independent learning.

Keywords: Effectiveness, M-Learning, ADDIE, PAI Evaluation course

### Abstrak

Era digital sangat mempengaruhi aktivitas pembelajaran serta memudahkan akses terhadap materi pembelajaran dimanapun dan kapanpun. Fleksibilitas pembelajaran, interaktivitas yang tinggi, personalisasi belajar merupakan dasar pertimbangan pemanfaatan IT. Tujuan penelitian ini adalah mengembangkan aplikasi ruang kuliah berbasis M-learning pada mata kuliah evaluasi PAI. Penelitian ini, merupakan penelitian research and development (R & D) dengan model ADDIE. Subjek penelitian ini adalah mahasiswa semester 5 Prodi PAI sebanyak 132 orang. Pengambilan sampel menggunakan teknik sampel jenuh. Pengumpulan data menggunakan observasi, wawancara dan penyebaran angket. Kevalidan Produk di nilai oleh ahli dan Mahasiswa sebagai uji kelayakan menggunakan analisis independent sample t test. Penilaian oleh expert judgment menunjukkan bahwa nilai sangat baik yaitu rata-rata 4,67 oleh ahli media. Hasil penelitian dengan independent sample t-test menunjukkan nilai signifikansi probabilitas 0,00 dengan signifikansi 0,05 yang berarti bahwa ada perbedaan yang signifikan antara kelas yang menggunakan diskusi dengan kelas yang didampingi dengan aplikasi ruang kuliah. Produk ini memiliki penilaian sangat praktis oleh mahasiswa sebagai acuan pembelajaran mandiri dengan skor rata-rata nilai 3,78. M-Learning ini memberikan kontribusi lebih efektif dan efisien jika dilakukan diluar kelas sebagai pendamping belajar mandiri.

Kata Kunci: Efektivitas, M-Learning, ADDIE, Mata kuliah Evaluasi PAI

## INTRODUCTION

The development of technology today is very important in influencing the improvement of education (Cholid, 2022). The utilization of technology in learning is very important in an effort to be media literate (Suraya et al., 2023). Education in Indonesia, compared to other countries, is very behind in terms of the use of educational technology. The impact of the quality of education that lags behind other countries is limited infrastructure, less than optimal human resources, and not optimal public awareness regarding the technology used in learning. Therefore, as an educator, I invite the community to be media literate as an alternative to improving learning (Sarnoto et al., 2023). The use of this technology is important in developing learning innovations, making it easier to access teaching materials, and also increasing learning interaction.

Technological developments can produce new things both from general matters and the field of education. Technological developments in the field of education such as e-books, web, e-modules and many more (Sejati & Zulfa, 2022). Media used in the form of audio, visual, and audio visual (Nurdianzah et al., 2024), Many studies that use digital media for learning are carried out by Indonesian researchers also from outside Indonesia, namely: (Andani & Yulian, 2018; Fauziah, 2016; Laseinde & Dada, 2023; Logan et al., 2021; Nanda Safitri et al., 2021). With this E-module, it is easier to access learning information. Communication technology plays a pivotal role in providing resources, fostering collaboration, and ensuring effective information exchange between teachers and students.

According to Depdiknas (2010), the development of teaching materials is grouped into 5 types, namely: 1) printed teaching materials such as books, modules, posters, and lks; 2) audio-based teaching materials such as compact disks, radios, and cassettes; 3) audio-visual-based teaching materials such as films; 4) interactive multimedia teaching materials such as CAI (computer-assisted instruction), compact disc (CD) interactive learning multimedia; and 5) web-based learning materials.

Electronic book-based teaching materials (e-books) are very effectively used in

learning chemistry and are effective and efficient in use (Andani & Yulian, 2018). E-books are now more accessible with mobile learning because almost all students now have an Android. Mobile learning makes it easier for students to access teaching materials remotely (Rosyadi, 2022).

Learning now requires integration with adequate technology. Not just face-to-face learning but utilizing time and media as a means of supporting learning. Students have begun to be bored with learning in any course. Students often use smartphones to access various social media sites. It is not uncommon for students to learn to use smartphones when doing assignments, completing quizzes, or searching for knowledge related to lectures (Teuku Fadjar Shadek, 2017). Learning can be done through communication using modern technology, namely cellphones, Androids, tablets, etc. Mobile learning is one of the modern media that students can use according to their needs (Handayani, 2014), and also has the advantage of being open source, which allows everyone to access it as a learning resource (Azwar Anas & Sondang sumbawati, 2020). In addition, digital learning based on mobile learning helps students learn anywhere, anytime, and can foster interest and improve student academic achievement (Kartika, et al, 2020) . While technology offers advantages such as improved learning outcomes, enhanced skills, and enriched content, it also poses challenges such as dependency and potential distractions. Therefore, to reduce these distractions, good communication is required. Effective communication through technology helps to create a collaborative and engaging learning environment, emphasizing the importance of choosing the right learning medium for comprehensive knowledge delivery.

Some previous studies provided literacy for an educator in developing teaching materials in digital form. The PAI evaluation system has an important role in teaching prospective teachers how to develop assessments properly. In particular, the teaching materials of the PAI evaluation system in the form of M-learning support the use of various evaluation methods such as formative tests, portfolio-based assessment, and self-assessment. This allows for a more comprehensive and

continuous evaluation. M-learning is often integrated with various online platforms and databases that can enrich learning materials and provide a broader context.

The PAI Evaluation System course is one of the courses that equips students to not only teach (transfer of knowledge) but also become experts in assessment (transfer of value). This learning is also considered difficult because it is not only learning theory but also practice in compiling learner assessment instruments to assess actual learners. In addition, it also learns how to compile valid test instruments to determine the actual competence of students. from these problems, it is necessary to know How is the effectiveness of the development of mobile learning-based teaching materials in the PAI evaluation system course?

## METHOD

This type of research is research and development (R&D) with the ADDIE model. The steps of developing this E-module are: 1) analysis; 2) design; 3) development; 4) implementation; and 5) evaluation. These structured stages are iterative in nature, which helps in ensuring that all important aspects of the process are evaluated. The subjects of this study were Universitas Islam Nahdlatul 'Ulama Jepara PAI study program students who took the PAI evaluation system course, namely semester 5, namely 132 students.

This sampling technique is a saturated sample from the entire population sampled in the study. The selection of research subjects on the grounds of the need for learning innovation at the research location is still very simple in developing lecture teaching materials. This research data collection technique uses interviews, observations, and tests. This research instrument is a product assessment instrument by scientific field experts and product assessment by students. This data analysis technique uses descriptive analysis to determine the assessment of teaching materials by experts and students and an inferential statistical analysis test, namely the comparison test (t test) with an independent sample t-test with a posttest control group design.

## RESULT AND DISCUSSION

To improve the quality of human resources in education, one of them is to change effective learning strategies. The existence of learning provisions with the identity of independent learning is intriguing for educators, including lecturers, to follow the reference to independent learning, one of which is an increase in independent and innovative learning models.

The improvement of the learning model cannot be separated from the teaching materials used by students in independent learning. This research contributes to improving the quality of learning, namely the development of M-Learning-based lecture room applications for PAI learning evaluation system courses. This research is a type of R&D research with the design of adopting the ADDIE research flow. The stages of this research include: 1) analysis; 2) design; 3) development; 4) implementation; and 5) evaluation. The following are the results of the research stages, as follows:

### Analysis

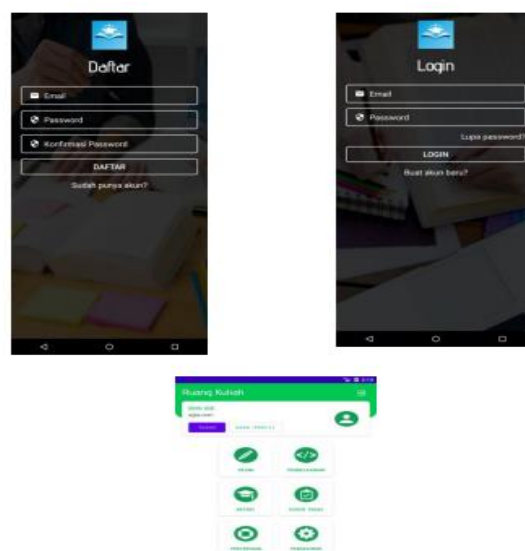
In this stage, the researcher digs up information from user responses, namely students. This course is related to how an educator not only conveys teaching material but also is proficient in assessing students. This is one of the courses with learning outcomes, namely students being able to compile student assessment instruments for assessing the real learning process. The results of interviews with students stated that so far, the learning of PAI evaluation system courses has only been done through joint discussion with the guidance of handbooks in the library. The use of this course handbook is very common in almost every course. However, the module construct seems to have no innovation or visual appearance, even though the module construct is very influential on student learning motivation and learning improvement. Some student respondents stated that lecturers explained the subject matter using conventional methods with only a little collaboration and discussion to answer questions from students.

Due to the existence of these problems, students only learn in class; there has been no development of learning innovations through digital teaching materials in the form of M-learning, so it is necessary to develop these teaching materials so that students can learn independently to achieve maximum learning goals. The current paradigm shift requires online-based learning to make it easier for students to learn independently without having to study in class. This teaching material is a form of learning innovation for students in the era of technology, where they prefer electronic media. Not only the needs analysis stage but also the concept analysis stage, to determine the theory that is included in the product development of M-Learning-based lecture room applications for PAI evaluation system courses.

## Design

After collecting several references to be used as material for the e-module research method, then the application design stage using Adobe Flash. This application is designed to create animations that can then be used to create applications in the form on the Android OS (output form.apk). The components of this e-module application are: discussion material, profile, information, and user instructions. The image of the display of mobile learning-based teaching materials is:

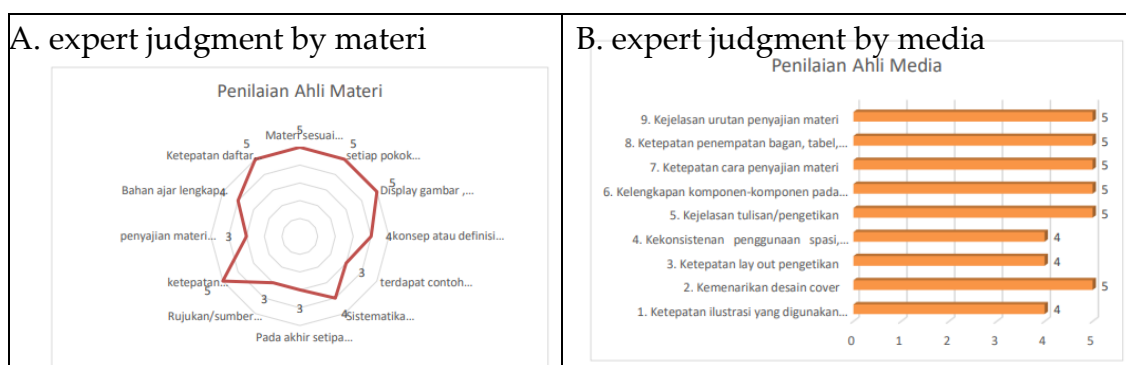
**Picture 1. Display of Mobile Learning-Based Teaching Materials**



## Development

At this stage, follow up on the design of the lecture hall that has been developed by experts in the field of making applications. This lecture room application is developed in the form of M-Learning, an application to facilitate students accessing online learning. There are several items assessing the feasibility of lecture hall application products, namely the content, language, and material constructs contained in the lecture hall application. This lecture room begins with the development of PAI evaluation system teaching materials. According to the results of the teaching materials, the material is embedded in the lecture room application. This development stage includes the feasibility test of media expert assessment, namely layout, attractiveness in appearance, clarity of writing, completeness of teaching material components contained in the module, and image suitability with the topic of discussion. In addition to the feasibility tests of teaching material and media reviews, practicality tests were also carried out on users, namely students who had received PAI evaluation system lectures. From the following graph, A shows the assessment of the content of the material by expert judgment, stating that the assessment with a very good category of 5-scale assessment is the accuracy of chapter titles, presentation of images, tables, or illustrations that match the content and summaries contained in the learning evaluation material.

**Picture 2. Expert Judgment and User**







From the results of Figure B above, it shows that almost all the assessments for the lecture hall application reviewed by media experts are worth a scale of 5, which is a very good category. The review provides input to improve the appearance of the application so that it has a positive impact on students and increases their motivation to learn independently.

Furthermore, the assessment by the user response (Figure C) is the assessment of students. The average assessment by students of the appearance of the e-module teaching material shows a value of 3.782, which is in the good category. In the following graph, 4.3 shows a low assessment, namely the end-of-chapter test indicator. This application has not been refined for the addition of tests at the end of the chapter. This assessment provides a revision for the author to improve the test section to be used at the end of each test. This test is used to determine the final competence of students in the learning process.

### Implementation

In the next stage, the product implementation of the lecture room application used by students in the PAI evaluation system course. The following are the results of product trials of learning implementation using the lecture room application with a control group design model. This analysis uses an independent sample t-test.

**Table 1. Independent Sample t-Test**

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**Hasil Analisis Uji Coba Produk**

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		Equal variances Assumed	Equal variances non Assumed
Levene's Test for Equality of	F	5,094	
	Sig	0,018	
t-test for Equality of Means	T	8,382	8,382
	Df	64	58,42
	Sig(2-tailed)	0	0
	Mean	8,424	8,424
	Differences		
95% Confidence Interval of the Difference	Std.Error Differences		
	Lower	6,416	6,413
	Upper	10,432	10,436

The results of the application of learning using e-modules in this research method show a probability of 0.000 with a significance of  $<0.05$ , which means  $H_0$  is rejected and  $H_a$  is accepted. The results of this product trial show that there is a significant difference between learning with treatment using the lecture room application compared to learning only through discussions. This lecture hall application is based on M-Learning to facilitate students in learning independently. Not only utilizing the ability on concepts but information technology in terms of facing the era of the industrial revolution 4.0 at this time.

### Evaluation

In this stage, the results of the review of the product development process are evaluated. The results show that it is still low for assessment, content framework, application construct, and appearance. The improvement that must be made is to provide concrete examples, according to the current assessment problems in PAI subjects. The development of this application can facilitate students in preparing assessment instruments, both tests and non-tests, correctly as needed.

This research is R&D research by adopting the stages of ADDIE. The final product of this development is an M-Learning-based lecture room application in the

PAI evaluation system course. This development stems from the unrest of students in learning independently and also following learning that has a different paradigm, namely using a digital base. IT utilization in learning is now needed by students to provide convenience and efficiency in learning. This teaching material discusses learning assessment for special students in PAI subjects. The availability of teaching materials for PAI special learning evaluation is very limited, so it is necessary to develop this teaching material as a student's guide in self-study. Learning evaluation is the process of measuring and assessing students' learning abilities, including knowledge, attitudes, and skills, to make decisions about their abilities (Asrul, 2015). The development of learning evaluation teaching materials for the PGSD study program is on the basis that students do not have references that suit their needs in assessing students. The results of the study indicate that from the expert assessment, namely the development of teaching materials as a whole and the sources used according to the content of teaching materials, student assessment of the response to this development shows a value of 49.84% with a good category of material according to student needs (Purnomo & Wulandari, 2019).. The same research develops evaluation teaching materials but does not use technology in the development and teaching materials aimed at prospective primary education teachers.

The development of teaching materials at this time must be in accordance with the independent curriculum for independent campus learning, which focuses more on students taking an active role in learning and utilizing technology in the learning process. In accordance with the results of research that develops electronic book-based teaching materials, namely making learning handles more efficient to carry everywhere, not limited to places, and providing opportunities for students to learn anytime and independently, improving their cognitive abilities (Imam, 2018).

## **The Results**

The results of the expert assessment show that this mobile learning-based teaching material has very good criteria, namely an average of 4.67. Similar to research by (Azwar Anas & Sondang sumbawati, 2020; Pradana & Husna, 2020; Sakiyah &

Yani, 2022) expert assessment above 90%. This is a strength that learning using mobile learning media can have a positive effect on improving learning. Previous research has developed teaching materials for learning evaluation courses for prospective elementary school teachers (Purnomo, 2019; Purnomo & Wulandari, 2019) and also (Ananda & Rafida, 2023) developing transdisciplinary-based learning evaluation teaching materials with religious science. The similarity of developing teaching materials is to help prepare prospective teachers to implement assessments according to principles and concepts. The difference from this research is that the development of teaching materials is not packaged in digital form or based on mobile learning.

The world of education now has a different paradigm than in the previous year. The use of information technology is needed in learning, one of which is the innovation of developing teaching materials based on mobile learning. Almost all humans in this world use a digital base in any aspect, including education. The development of mobile learning-based teaching materials has received a very good response from students as users of teaching materials. This mobile learning medium is an alternative for lecturers to improve student competence by combining various media (Hidayat, Wahyu Elsa & Djatmiko, 2018). The use of M-learning is influenced by several factors, namely the environment, individual differences, and the psychological process of the student (Arfian & Yoraeni, 2019).

The development of teaching materials in this lecture adapts to learning needs. In the development of m-learning, it pays attention to learning theory, where this learning pays attention to problems that must be faced by students with information that has been obtained to achieve understanding and form students' critical thinking skills (Sakiyah & Yani, 2022) and also self-learning (Yanuarti et al., 2022). In developing this m-learning teaching material, it should allow students to use smartphones during lecture activities because this product can only be opened on smartphones with Android OS. Then the lecturer should consider the time spent on lecture activities so that they can run smoothly.

The development of e-modules based on mobile learning is an alternative to increasing student competence, especially skills as prospective teachers in preparing student assessments correctly to determine the ability of students. This e-module provides an alternative for students to learn independently, more efficiently, and effectively in the learning process outside the classroom.

## CONCLUSION

In fact, the learning media found in the research location needs improvement in order to adapt to the current era. The development of this teaching material is carried out to meet the urgent needs of students, ensuring that the material taught meets the applicable curriculum as well as the needs and level of understanding of students. This mobile learning-based teaching material provides accessibility and flexibility, increases student participation and motivation, forms personalized learning, and utilizes the latest technology. This has been proven in the implementation of mobile learning-based teaching materials carried out in lectures as a strategic step to improve the quality of education, make learning more accessible and interesting, and prepare students for an increasingly digital future. With this learning evaluation system teaching material, it makes it easier for prospective teachers to apply later how to become a teacher who not only transfers knowledge but also has transfer of value skills.

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