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Design of Android-Based PAI Learning Media Using Mit App Inventor in Class X SMAN 1 Pasaman Regency

Nera Efprianti[1], Supriadi[2], Supratman Zakir[3], Liza Efriyanti[4]
[1,2,3,4] *Universitas Islam Negeri Sjech M. Djamil Djambek Bukittinggi, Indonesia*
Corresponding Author: ainunmardiah1002@gmail.com

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ABSTRACT

This research focuses on the problem of limited use of technology in Islamic religious education media which was previously used at SMAN 1 Panti. The aim of using Mit App Inventor in the learning media for the Android-based Islamic Religious Education program is to help teachers maximize the use of Mit App Inventor in teaching media and increase student motivation in taking Islamic Education lessons. This research uses any recognized research and development methodology. In this research, the author uses the 4D design paradigm, Define, Design, Develop, and Disseminate. The results of this study use the Aikens V hypothesis for assessing validity, the Moment Kappa hypothesis for assessing practice, and the R.Hake hypothesis (G-Score) for assessing effectiveness. Validity test results with a minimum score of 0.87 indicate the test is valid. Effectiveness testing which is said to be "Very Effective" is valid with a value of 0.83, is said to be "High" and product practicality testing is obtained with a value of 0.90. This research shows that using Mit App Inventor as an Android-based Islamic Religious Education platform is very effective.

Key Word *Learning Media, Android, Mit App Inventor*

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INTRODUCTION

The rapid development of technology that exists today has developed in various circles including education. In the world of technology education, currently continues to be developed including technology in learning media. The role of learning media is clearly important in the learning process. With the help of educational media, it can make it easier for teachers to explain the material to be given, and students can listen and understand clearly the content of the material conveyed by the teacher (Annisa et al., 2022).

According to the Law on National Education Standards No. 19 of 2005, Indonesia has set standards for the use of learning tools, especially learning

tools that are organized for the purpose of intelligence, motivation, fun, challenge and to encourage effective student participation (PP no. 19 year, 2005). Multimedia technology is a suitable combination of hardware and software. For the development of media technology itself, it has been widely used in many circles (Zakir, 2015). Learning through media plays a very important role in the teaching process because teachers can convey knowledge to students more clearly. Educational media is an important part of educational activities (Okra & Novera, 2019).

Learning media is very diverse, one of which is learning media that uses technology, it is not surprising that today's technology is ingrained in the world of education because the use of technology can facilitate all kinds of learning processes. Learning technology emphasizes as an aspect of learning media needs which is seen as a field that participates in the learning process through systematic identification, development, organization and use of various learning resources that can occur through the management of these processes (Fameska et al., 2023).

Technology learning media is also divided into several parts, one of which is *android-based*. *Android* is an *OS* that is still used by many people because it contains many features that are easy for users to understand. Android-based learning environment is still something new in the world of education, learning environment. Products that have been designed as learning material applications are downloaded on *smartphones* with operating systems, usually can be shared through various intermediaries including via *flashdisk*, direct sharing, *barcode scanning* or *playstore*. Teachers can use this Android-based learning media in their lesson plans (Sari & Okra, 2020).

From the results of observations carried out at SMAN 1 Panti, the learning process of Islamic religious education teachers still rarely use technology in educational media. Teachers more often use textbooks in the learning process, so that the possibility of weakening student learning outcomes according to the material presented.

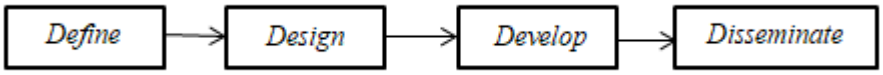
Based on the above problems, students need new learning media for them that can help students learn at home. Therefore, researchers plan to create a product in the form of an *Android-based* learning environment on the *Mit App Inventor website*, which aims to use *Mit App Inventor* to design an *Android-based* PAI learning environment that can be used anywhere and anytime.

RESEARCH METHOD

In this research, the analysis and development method applied is the research and development method. Research and development, or *R&D*, is a

process or approach used to create new products or refine and improve existing ones. It is also used to improve product efficiency (Okpatrioka, 2023). In the field of education, research and development (*R&D*) is the process of developing teaching materials by using several methods in a series resulting from different approaches (Ernawati, 2018).

The method used by the author in this study is based on Thiagarajan's 4-D Development (*Four D Model*), which indicates that the 4-D scale is used for writing and development, namely (Hughes, 2008):



The steps taken are:

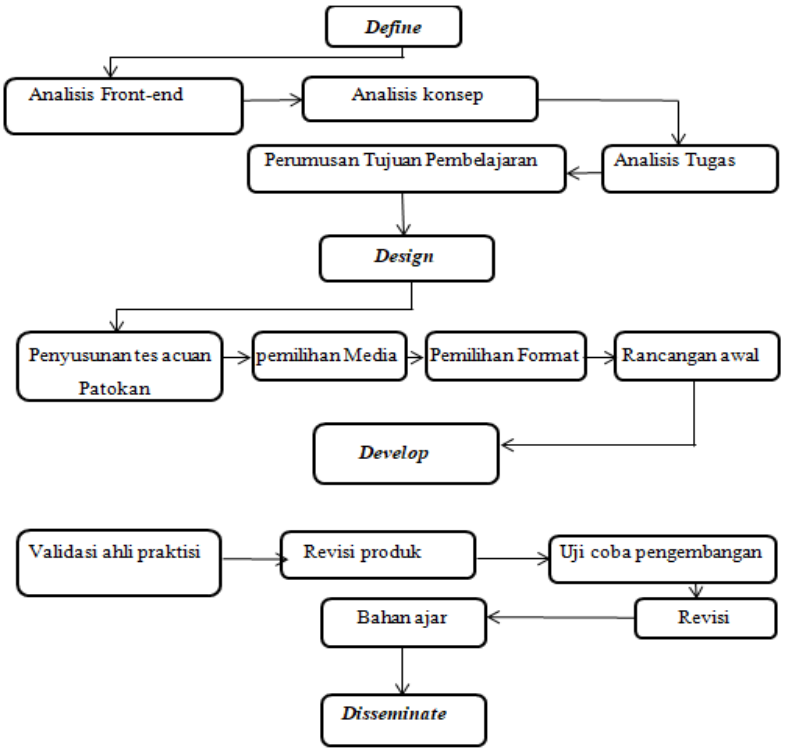


Figure 1.
Stages of the 4D model

The details of the 4-D stages:

Define is the defining stage. In this step, the author conducts direct research called observation or observation, with the aim of obtaining information about existing old media and finding and clarifying opportunities and problems that exist in the research site.

The second stage is Design. At this stage, it will form a learning media using *Mit App Inventor* that can be applied to PAI learning. The third stage is develop where this stage is the stage of designing functions to get android

learning media using *Mit App* Inventor. The last stage is Disseminate. This stage is the distribution of product results, namely *android-based* learning media using *Mit App* Inventor.

Media results obtained through the process of testing the validity, practicality, and effectiveness of the product. Validity testing is a type of investigation used to determine how acceptable a particular measure is for changing relevant aspects.(Sanaky, 2021). In the validity test the author uses the Aiken's V formula. The formula spread by Aiken is as follows:

$V = \sum s / [n(C-1)]$

Notes:

S = r - lo

Lo = lowest rating number (e.g. rating 1-5, then value

Lo = 1)C = highest rating (e.g. rating 1-5, then value C = 5)

r = the number given by the rater

n = number of validators

The "V" value is determined by dividing the total by the interval between 0.00 and 1.00. A product is considered valid if the Aikens value is between 0.60 and 1.00, and invalid if it is less than 0.60. The implementation of the module was carried out with a practical approach (Practicality Test). The information obtained by analyzing the kappa moment formula is (AI Agustina, 2022):

$$\textit{Moment kappa}\ (k) = \frac{po-pe}{11-pe}$$

Description:

K = Moment kappa which indicates the validity of the product.

ρo = The realization ratio is calculated by dividing the number of values given by the validator by the maximum number of values.

ρe = Unrealized fraction calculated by subtracting the total number of maximum values from the total number of values given by the validators divided by the maximum number of values.

Decision categories are based on kappa (k) subsections:

Table 1.
Kappa Moment Categories

Interval	Category
0,80 - 1,00	Very High
0,61 - 0,80	High
0,41 - 0,60	Medium
0,21 - 0,40	Low
0,01 - 0,20	Very Low
0,00	Invalid

Next, determine its effectiveness. The most effective test that the author found came from a school that did not use Android-based teaching materials using Mit App Inventor. The questionnaire test was conducted using Richard R. Hake's statistical algorithm (*G-Score*), namely (Sari & Okra, 2020):

G-Score = (%<S*f*>-%<Si>)
(100-%<Si>)

Notes:
G : G-Score
Sf: Last Score
Si: First Score

Table 2.
G-Score Determination Criteria

Value	Clarification
<g> > 0,3	Less Effective
0,7> <g> >0,3	Effective Enough
<g> >0,7	Highly Effective

RESULTS AND DISCUSSION

In accordance with the method described earlier. The following is a description of the results of the development of a teaching media product that has been designed by the author, namely android-based PAI learning media using mit app inventor:

Results

Based on the results of the research, PAI learning media products that can be accessed through *Android smartphones* have been developed. Research and development is carried out with the 4D approach. There are four stages in this process, namely:

1. Define stage

Activities in this stage include analyzing and collecting data to define and inform the creation of the next media product. There are 4 main stages in this stage, namely:

Initial Analysis (*front analysis*). This analysis is focused on the rate of product development. This analysis is useful to determine whether or not an Android-based learning program in Islamic Religious Education is necessary. Based on observations and test results of several students, students need an *Android-based* Islamic learning environment. Given the rapid advancement of technology, educational media currently using *Android* can be utilized.

Based on the results of interviews obtained from Islamic religion teachers, the educational materials used are only limited to books, causing students to

become bored and the learning process becomes monotonous. For this reason, there is a need for continuous development of educational materials made with *Mit App Inventor* for Islamic education based on *Android smartphones* to bring new innovations to the classroom, assist teachers in the teaching process, and student understanding of what is presented.

Second, concept analysis. In PAI learning conducted at SMAN 1 Panti, students are interested in Android-based learning materials in the form of *Android* applications. This application must function properly and in accordance with the content of the material in the first semester PAI lesson in class X. The author analyzes the concept using interviews to understand the main concepts that will be discussed later. With the help of concept analysis, the researched factors are explained and the related formats are developed as learning media.

This stage resulted in the following:

Material 1 : Abstaining from Adultery and Promiscuity To See Human Rights and Dignity.
Material 2 : Tawakal, Khauf, Raja, and the Essence of Loving Allah Swt to her.
Material 3 : Practicing Good Manners and Avoiding Bad Manners Madzmumah for a More Comfortable and Blessed Life.
Material 4 : Incorporating Al-Kulliyatu Al-Khamsah into Life Everyday.
Material 5 : The Role of Ulama in the Spread of Islam in Indonesia (Method Islamic Education by Sheikh Songo in Java).

Third, task analysis. In the task analysis, an analysis of learning outcomes (CP) is made, which is used in the design of the learning environment. Based on the task analysis conducted by the researcher, a presentation of the task to be carried out is given, namely the learning media must be in line with the learning outcomes.

Finally, the Critical Analysis of Educational Objectives. The author highlights the key findings from the concept analysis and objective analysis for the research object. The above inputs are considered fundamental for the development and creation of *Android-based* educational media using *Mit App Inventor* for Islamic Religious Education.

2. Design Stage

This lesson covers the process of using Android-based learning media design to extract the fundamental idea of a learning media application. The media to be created is *Android-based* PAI learning using *Mit App Inventor*. The design example is:

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Figure 2.
Intro and Main Menu Display

The intro page is the opening page of the application that has been designed, which contains the name or title of the learning media application. On the page there are two buttons "*Click Here To Menu*" and "*Exit*" button. If the user presses the "*Click Here To Menu*" button, the display will switch to the main menu section.

The main menu display also contains eight buttons that will show the learning material page, learning video, teaching module, CP/ATP & (KI and KD), Quiz, about & objectives, profile and back.

Figure 3.
Display of Learning Materials and Videos

The material page appears when the user presses the learning material button, which on the page contains 5 sub-chapters of material. Furthermore, the user will be taken to the learning video page when the user presses the learning video button on the main menu page, which this page contains an explanation of the material.

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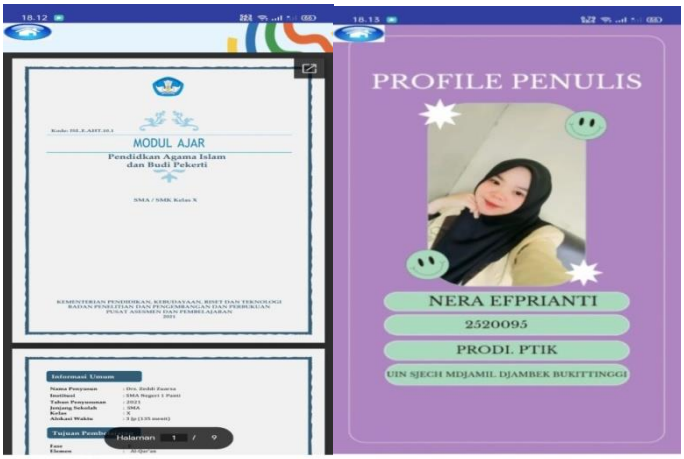

Figure 4.
View of Teaching Module and Profile

The teaching module page is a page that contains teaching modules for each sub-material. While the profile page is a page that contains the author's identity.

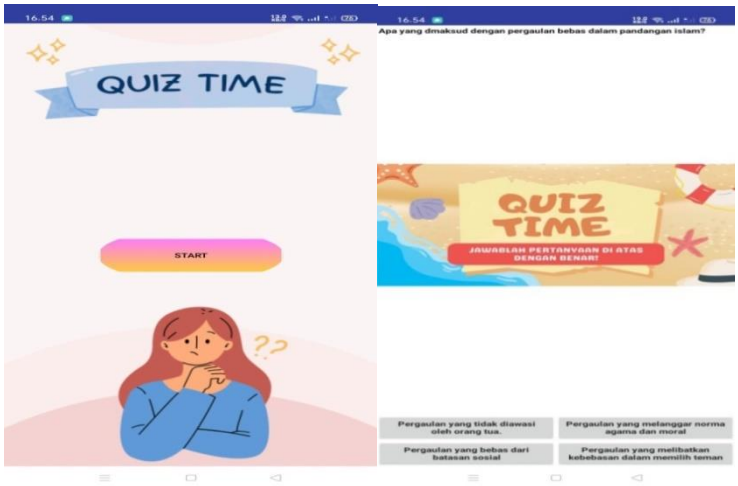

Figure 5.
Quiz view

This quiz page is a page that contains several questions that are in the *android* learning application created by the author and can be used properly....

3. Development stage (Develop)

The development stage is the design of *android-based* PAI learning media using *Mit App Inventor* which has been revised or improved after getting criticism and suggestions from validators in accordance with their respective fields. The steps taken by the author at this stage are as follows:

First Validation. Earned by one selected material expert validator:

Table 3.
Material Expert Validation Results

No.	Validator		
	Mr. Drs. Zeddi Zuarsa		
	Suspension/s	S	V
1	5	4	1
2	4	3	0,75
3	5	4	1
4	5	4	1
5	5	4	1
6	5	4	1
7	4	3	0,75
8	5	4	1
Total			7,5
Average			0,93

Based on the acquisition of material validation that has been carried out to material experts. Then obtained an average value of V value of 0.93 criteria "valid".

Acquisition of media validators:

Table 4.
Media Expert Validation Results

No.	Validator		
	Mr. Dr. Iswantir M, M.Ag		
	Score/s	S	V
1	5	4	1
2	5	4	1
3	4	3	0,75
4	3	2	0,5
5	5	4	1
6	4	3	0,75
7	4	3	0,75
8	4	3	0,75
9	5	4	1
10	4	3	0,75
Total			8,25
Average			0,82

Based on the results of media validation research on *android-based* PAI teaching media using *Mit App Inventor*, the average V value **is** 0.82 **for** suitable criteria for language validator acquisition:

Table 5.
Results of Linguist Validation

No.	Validator		
	Mrs. Gustina, S.Pd		
	Score/s	S	V
1	5	4	1
2	5	4	1
3	4	3	0,75
4	5	4	1
5	4	3	0,75
6	4	3	0,75
7	4	3	0,75
Total			6
Average			0,85

Based on the results of language validation research on *android-based* Islamic religious education media using *Mit App Inventor*, the average V value is 0.85 for valid criteria.

After conducting several tests, the authors then conducted an attractiveness test or a practicality test. This practicality test was given to a math teacher Mrs. Astari Asrar, S.Pd and one of the PAI teachers Mrs. Siska Permata Sari, S.Pd. With an average value of 0.91, where the resulting practicality value is 0.61-0.80 with a high category. While testing was carried out using a large scale, namely to 24 students from class X, with the final score obtained of 0.83 which was categorized as very effective.

4. Disseminate

The activity at this stage is to disseminate learning media products that have been designed for class X students as learning media in PAI lessons at SMAN 1 Panti.

The research and development was conducted to produce *Android-based* PAI learning media using *Mit App Inventor*. In this analysis and development, the author uses 4D analysis and development in the development phase, namely: (*define, design, develop* and *dessiminate*).

Define is the first step of the research and development stage, where the purpose of define is to explain the initial analysis to define and determine the needs of the learning environment to be created. There are four main stages in

this stage, namely concept analysis (*front end analysis)*, *task* analysis (*Task Analysis*) and learning objectives.

Design is the step after defining in designing an educational media product to get the first design. There are several stages that can be done in this stage, namely test preparation, choosing media, choosing a format, and the first design. At the test preparation stage, the author prepares a questionnaire that is given to the validator, after which students evaluate the product made. Then at the media selection stage, the media chosen is *Android-based* media designed using *Mit App Inevntor*. Then you need to choose shapes such as backgrounds and button properties. After all the previous steps are completed, followed by the initial design of the media which is evaluated by the validator to ensure the media product is suitable for use.

Develop is a step or stage of development that creates Android-based learning media using *Mit App Inventor*, refined by validators with input and suggestions.

Furthermore, the purpose of product validation is to obtain a product that is suitable for use, so product validation is carried out. The content product validity test is used to determine the accuracy of the product in providing results. As a test validator, product quality is assessed using relevant media, language, and materials. It takes for three experts to validate the author's design, namely to Mr. Drs. Zeddi Zuarsa, Dr. Iswantir M, M.Ag and Mrs. Gustina, S.Pd. With the final value calculated using the Aikens statistical formula of 0.87, which means that the design of *Android-based* Islamic Religious Education Learning Media Using *Mit App Inventor* in Class X SMAN 1 Panti is declared valid.

Second, the product practicality test. The practicality of the product can be measured and seen from the teacher's opinion, whether they feel practical and easy to use. This practicality test was given to a math teacher, namely Mrs. Astari Asrar, S.Pd and one of the PAI teachers, namely Mrs. Siska Permata Sari, S.Pd. With an average value of 0.91, where the resulting practicality value is 0.61-0.80 with a high category.

Finally, the product effectiveness test, which shows the attitude and motivation of students when operating the product, how students can be interested in operating the application as a learning tool. The product effectiveness test, aimed at 24 class X students and obtained a final result of 0.83 which is classified as very effective.

CONCLUSION

Based on the findings of research and scientific work that has been made before, it can be concluded from this study by making *Android-based* PAI learning media using *Mit App Inventor* for Class X SMAN 1 Panti and helping teachers in achieving learning objectives. validation testing resulted in three validators with a value of 0.87 which means "Valid"; for the practicality testing section the author produced two teachers with a value obtained of 0.90 which means "High"; for the acquisition of the effectiveness test is 0.83 which means "very effective) which the author produced from 24 (twenty four) students. From the results of the study it can be concluded whether the product in question is suitable for use in Islamic education for students or not.

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