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Development of Android-based Learning Media Using Smart Apps Creator to Increase Self-Regulated Learning of Students

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Abstract

This study is based on the limited variation within the application of educational media, the absence of utilization of an android gadget in the process of education, and the low level of student learning independence. This research aims to develop android-based learning media using Smart Apps Creator, to order to ascertain the feasibility, practicality and effectiveness of learning media to rise the Self-Regulated Learning of students in class X TJKT 1 SMKN 1 Pandeglang. This research uses the Research and Development (R&D) method, using the ADDIE model, namely Analysis, Design, Development, Implementation, and Evaluation. Information gathering by observation is carried out to identify problems and needs that exist in the field. Questionnaire filling to assess the educational materials that have been created. Documentation to collect student data. The existing data set will be analyzed to learn how the results of the educational materials development research. The results shown that learning through android media developed with Smart Apps Creator. Android-based learning media gets a feasibility value from media experts with an average of 86% and material experts with an average of 90%. As well as the practicality test getting an assessment with an average of 81.09% and significantly effective for increasing the learning independence of X TJKT 1 class students with an average n-gain of 0.5 with moderate criteria. Thus, in this study it might be concluded that the development various instructional materials based on Android utilizing learning media using Smart apps Creator, is feasible, practical and effective for increasing the learning independence of X TJKT 1 class students

Keywords: learning media, android, SAC, self-regulated learning

INTRODUCTION

In the development of the times many things have changed, as well as technology. For for instance in the field of education, there are many positive aspects that technology provides to facilitate the learning process at school or at home. Education and technology are a unity that can never be separated from the times, education is always related to the formation of morals and the way people think.

Proser (Suyitno, 2020) argues that vocational education is an education concept to provide experience for individuals who learn to achieve success in the workplace. According to (Lalisu *et al.,* 2024) vocational education in Computer Network Engineering and Telecommunications is among the majors in vocational high schools (SMK) which focuses on learning various aspects of computers and computer networks.

Interactive learning media is medium that facilitates two-way learning. Learning media has many types, one of which is learning media based on android applications. This interactive media for android can be made with the help of an application called Smart Apps Creator. Smart Apps Creator is an application that has user friendly features, which can create an output in the form of android, iOS, and HTML5 applications (Dyah, 2022).

Based on observations carried out, at SMKN 1 Pandeglang, especially in class X TJKT 1. The media used are only modules and slides and the lack of student learning independence. So it is necessary to update the media that can increase student interest and help students to be able to have an independent attitude during the educational process.

According to the above problems, in the topic of Fundamentals of Computer Network Engineering and Telecommunications, the media and telecommunication network material will be made a teaching media formats, such as android-based learning. So that the learning process becomes more interesting. The feasibility, practicality, effectiveness of learning materials will be evaluated.

METHOD

This study makes use of the research and development (R&D) method, according to Sugiyono (Saputro, 2017) the R&D method is a strategy to research that is used to develop or test new products and improve products that have been made. Among the several R&D models, researchers use the ADDIE model, namely Analysis, Design, Development, Implementation, and Evaluation. The research subject were experts and students of class X TJKT 1.

The information gathered for this research were examined through analysis that is descriptive. Descriptive analysis is a data analysis method used to provide a description or explanation of the data collected without reaching broader conclusions or predictions with score guidelines are available from table 1 below:

Table 1. Scoring Guidelines for Validity and Practicality

Criteria	Point
Totally Agree	5
Agree	4
Less Agree	3
Disagree	2
Strong Disagree	1

To calculate the score that has been obtained, can be calculated using the form (Sari & Erita, 2024) as follows:

$$P = \frac{f}{n} \text{ x } 100$$

Description:

P : Percentage of questionnaire data

f : The number of scores obtained

n : The maximum number of scores

The formula (Sari & Erita, 2024) can be used to measure the value and calculation of the final results of the validity test that has been carried out by several validators.

$$\overline{x} = \frac{\Sigma\, xi}{n} \text{ x } 100$$

Description:

$\overline{x}$: Average

Σ xi : Total percentage value of each Subject

n : Number of Subjects

The percentage of learning media validation results can be grouped using a Likert scale to determine the level of validity can be determined as follows:

Table 2. Categories of Validity

Range %	Category
81% - 100%	Very Valid
61% - 80%	Valid
41% - 60%	Quite Valid

Range %	Category
21% - 40%	Less Valid
0% - 20%	Highly Invalid

The percentage of the results of the practicality of android-based learning media using Smart Apps Creator can be grouped using a Likert scale, so the criteria for determining the level of effectiveness can be determined as follows:

Table 3. Category of Practicality

Percentage	Category
80% < Skors < 100%	Very Practical
60% < Skors < 80%	Practical
40% < Skors < 60%	Quite Practical
20% < Skors < 40%	Less Practical
0% < Skors < 20%	not practical

Table 4. Learning Independence Score Guidelines

Criteria	Positive Statement	Negative Statement
Totally Agree	5	1
Agree	4	2
Less Agree	3	3
Disagree	2	4
Strong Disagree	1	5

Data obtained through giving a questionnaire sheet of learning independence to students, before and after calculating the scores that have been obtained, can be calculated using the formula (Sari & Erita, 2024) as follows:

$$P = \frac{f}{n} \text{ x } 100\%$$

Description:
P : Percentage of questionnaire data
f : The number of scores obtained
n : The maximum number of scores

After getting the scores from the initial scale and the final scale, N-gain data is needed, to get N-gain data, the initial and final scale scores are compared with the ideal maximum score and pretest. N-gain data gives an idea of how the increase in students' ability to develop in the classroom, to calculate the N-gain value of the student learning independence scale. The N-gain formula is as follows:

$$\text{N Gain} = \frac{Skor\ Postes - Skor\ Pretes}{Skor\ Ideal - Skor\ Pretes}$$

Description:
N Gain: The magnitude of the g factor
S Ideal: Maximum number of scores
S Pretest : Total Pretest (data before learning)
S Postes : Number of Postes (data after learning)

The N-gain index can be used to determine the level of student improvement. This index has categories based on the criteria listed in the following table:

Table 5. N-Gain Assessment Criteria

Magnitude of Factor (g)	Scoring Criteria
g > 0,7	High
0,3 < g < 0,7	Medium
g < 0,3	Low

RESULTS AND DISCUSSION

Research on the creation of educational materials for android that use Smart Apps Creator provides results that aim to develop and improve the learning independence of students in class X TJKT 1. The kind of study used is research on development or Research and Development (R&D), whose focus is to update educational media that can be installed and utilized on android. The study's development model uses ADDIE.

At the stage of analysis, researchers conducted an appraisal of needs and student character evaluation based on these results, it was discovered that there was still little usage of educational media and students' lack of attention to learning so that students did not have student learning independence.

The design stage of the data from the previous analysis is processed to create an learning resource based on android developed with Smart Apss Creator. on this stage the flowchart and storyboard are made which will be a citation for the development of educational materials.

The development stage makes study instruments in the shape of questionnaires from validity tests, practicality tests, effectiveness tests. Then proceed using Smart Apps Creator to create educational materials with reference to the storyboard and flowchart. Then the validity test will be conducted by experts. The implementation stage of the product that has been made will be tested at the field location, namely at SMKN 1 Pandeglang. The tests carried out include the practicality test and the effectiveness test. The evaluation phase is the last phase of the ADDIE development method. The evaluation stage includes an assessment from material and media experts.

Based on validation by two media experts received an average score of 86% with "very valid" criteria. and validation by two material experts obtained an average of 90% with "very valid" criteria.

Table 6. Test Results of Media and Material Experts

Validator	Result Analysis	
Media Expert Validator 1	Average Score	172
	Percentage	86%
	Criteria	Very Valid
Material Expert Validator 2	Avarage Score	180
	Percentage	90%
	Criteria	Very Valid

Considering the outcomes of the practicality test that has been carried left by 35 students of class X TJKT 1, an average of 81.09% is obtained with the criteria "very practical". Furthermore, conducting an effectiveness test, this test is carried out to measure how effective android-based educational resources is in increasing student Self-Regulated Learning.

Table 7. Test Results of Practicality test

Respondents	Result Analysis	
35 Students	Average Score	2838
	Percentage	81.09%
	Criteria	Very pratical

The outcomes of the effectiveness test on the evaluation of the learning independence questionnaire on the pre-test were 0.55 and on the post-test were 0.78. That way the average N-Gain obtained is 0.5 in the “medium” category, so that android-based media learning media can provide an increase in the learning independence of students in class X TJKT 1 in the “Medium” category.

Table 7. Test Result of Effectiveness test

Respondents	Pre-test Average	Post-test Average	N-gain
35 Students	0.55	0.78	0.5

Android-based learning media uses R&D research with the ADDIE model, at the analysis stage invetigator conduct observations to find problems or needs that exist at SMKN 1 Pandeglang, especially in class X TJKT 1. At the Design stage, researchers design in the form of making flowcharts and storyboards that are compiled from the needs needed to develop learning media. The development stage is carried out making use Smart Apps Creator to create educational media with reference with relation to the created design. At the Implementation stage, product trials that have been developed to class X TJKT 1 students are executed. At the evaluation phase, researchers get the results of the development carried out as educational materials built on Android that can be utilized as a learning facilitator.

After developing learning media, researchers conducted validity tests by material and media specialists. The validity test was carried out to ascertain the validity all the educational materials that had been created. The results of the validity test by media experts were good and required little revision, with an average acquisition of 86% with the criteria “very valid” in order for the educational materials to be annonced suitable for use. The findings of the validity test conducted by material experts were good and required little revision, with an average acquisition of 90% with the criteria “very valid” in order for the eduational materials was declared appropriate for usage.

During the product trial, studens were given surveys by researchers to gauge how useful android-based learning resources were. Considering the findings of the condsucted research, it might be seen that students' reactions to learning materials based on android have a good assessment. The practicality test conducted by X TJKT 1 class students was obtained at 81.09% with the category “very practical”. The accessibility aspect regarding ease of use has the highest score. The ease of use of educational media can affect students during the educational process. This is in line with Fitriya & Faizah (2021), with a practicality of 74.63% stating that the practicality of learning media will make the material taught easier to understand.

In the product trial,studens were given questionnaires by researchers to test the effectiveness of learning materials based on Android in promoting students’ independence in learning. Considering the findings of the conducted research, it might be seen that the students' response to the educational materials on android have a good assessment. The effectiveness test conducted by class X TJKT 1 students obtained an increase in student learning independence with an N-Gain of 0.5 in the “medium” category. In this manner, instructional materials based on Android is very effective for use in increasing student learning independence. This is in line

with Nafsiah (2023), with an effectiveness of 94% stating that effective learning media can be applied to enhance students' math problem solving skills.

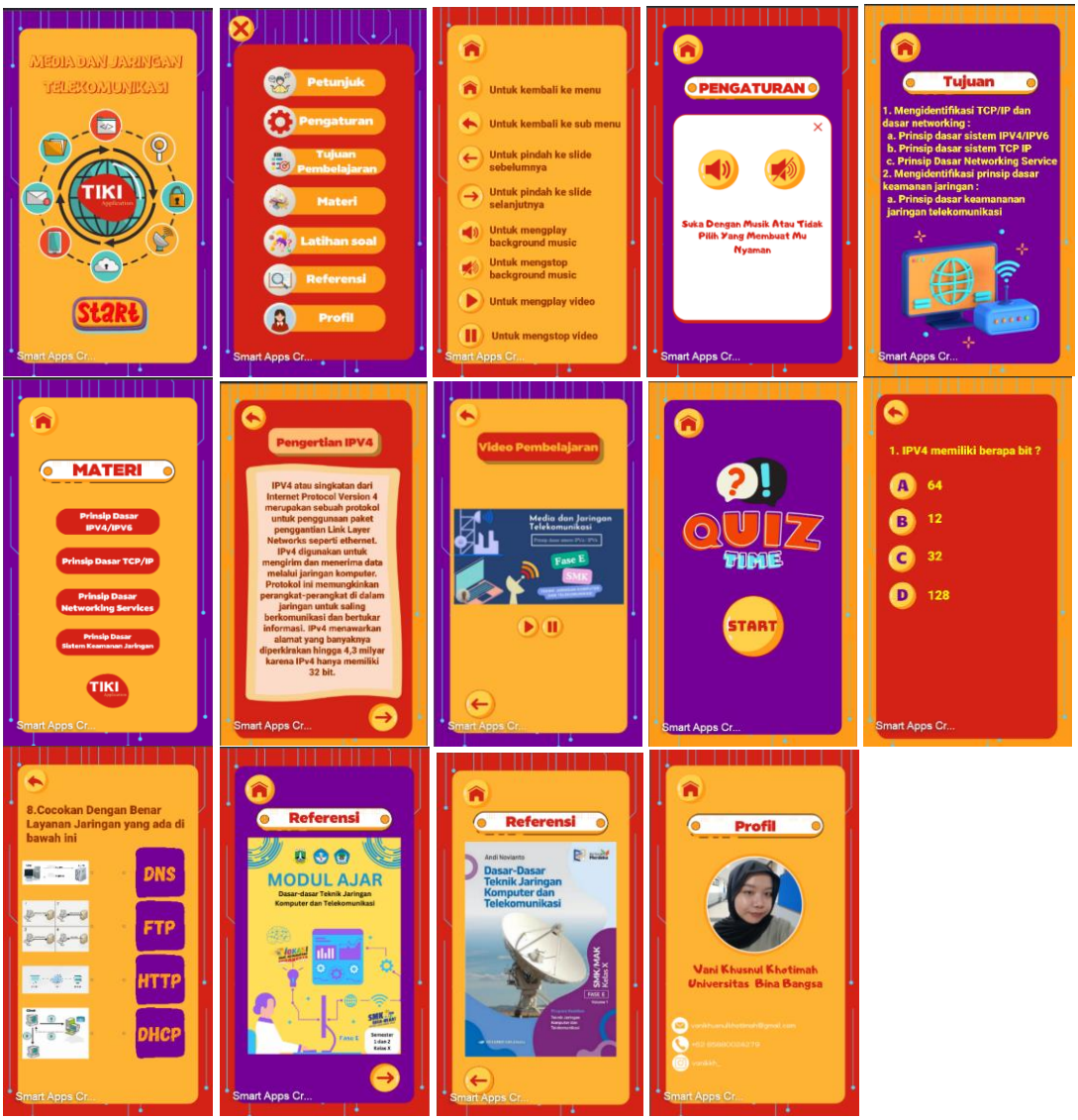

Figure 1. Learning Media Development Results

CONCLUSION

In light of the research and development that has been carried out, the final result is in the form of android-based learning media. With the results of the feasibility of "very valid" and the practicality results obtained the criteria "very practical" and android-based learning media is able to increase student learning independence with "moderate" criteria so that this media is effective for increasing the learning independence of class X TJKT 1 students.

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