

# Improve Learning Outcomes In-Office Technology Lessons by Using Appypie

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## ABSTRACT

The fast development growing of technology and information that causes almost all human activities can be controlled by technology. One technology that is currently widely used by everyone, namely smartphones. Activities in the educational environment also make this technological progress as an opportunity Design of learning resources. The goal of this research was to develop an Android-based learning media by using Appypie in Office Technology subjects to improve learning outcomes in students. The product is tested for eligibility by expert validators and trial subjects. This type of research was Research and Development by Borg & Gall which has been simplified into eight steps. Data collection instruments used a media expert validation questionnaire, a material expert validation questionnaire, a trial questionnaire, documentation, and a test which was then analyzed using SPSS for the Independent Sample t-Test. The results of this study indicate that the android-based learning media by using Appypie meet the eligibility criteria and are declared to be very feasible and the application of the product have succeeded in improving student learning outcomes.

**Keywords:** *Android, Appypie, Learning media, Learning outcomes, Office technology.*

## 1. INTRODUCTION

The rapid development of information technology causes almost all human activity to be controlled by Science and Technology. One of the technological developments that many people use is smartphones. Almost everyone owns and can operate it. Even activities in educational institutions in both schools and universities have made use of smartphones, which can be used as a learning device development opportunity. This is also explained by Harlis & Budiarta [1] and Sudarsana, et al. [2], who stated that technological sophistication can be used in the learning process in both developing learning tools and learning media.

Budiman [3], state that the media is the intermediary or delivery of messages and from sender to the receiver of the message. Mudlofir & Rusydh [4], also define learning media as intermediaries or intermediaries from the sender to the recipient so that the recipient has the motivation to learn so that it is expected to obtain more satisfactory learning results. It can be inferred from the view of the experts alluded to above the learning media

is a tool used in the learning process of teaching by the message giver (educator) to the recipient of the message (learner) which aims to attract attention and stimulate the mind, feelings and skills or skills of the learner. Learning media must be packaged as interestingly as possible so that students can easily understand a material. One of the learning media that can support the learning of students following the development of the era is mobile learning based on android [5].

Kattayat, et al. [6] and Rodriguez, et atl. [7], explains mobile learning is one alternative that learning services should be implemented anywhere and anytime. The question explains that the use of mobile learning can be used as an alternative to more practical learning media because users can operate learning media anywhere and anytime. Astuti, et al. [8], also mentioned mobile learning is a learning medium that utilizes mobile phone technology that can be used as an alternative in learning.

Android can be interpreted as software consisting of an operating system (OS), middleware, and some basic applications released directly [9]. So in other sense

androids can be interpreted as a complete application ranging from basic to development. Android app development has two ways of programming with coding or no coding [9].

The creation of android-based learning media used in this research and development is appypie. Appypie is a website that provides templates in the creation of android apps for free and paid [8]. The app provides an open-source service (free version) and a premium (paid) version. Appypie can make it easier to develop apps without requiring commands in the programming language as is common in the creation of an app. App creation through appypie requires only a simple command that is only the process of inputting data and using features that appypie has provided, such as layouts, icons, and buttons already available in builders with many options. This appypie can support the process of creating learning apps based on Android, Mac OS, Windows Phone, Blackberry, and HTML 5.

Proper media mastery will appeal to students in learning higher which is expected to improve the learning outcomes of students. Purwanto [10], states that learning outcomes are a process in individuals who interact with the environment to get changes in their behavior. Nurmala [11], also stated that learning results are the abilities that students have after receiving the learning experience.

Based on the results of observations and interviews with one of the teachers of Office Technology class X Automation and Office Governance (AOG) subjects obtained information that the limitations of the facilities and pre-existing students that make the office technology learning process less maximal. Students are also still experiencing a lot of difficulties, which leads to low student scores even below Minimum Completeness Criteria (MCC).

Efforts to solve the problem, then researchers want to expand android-based learning media by using appypie which will be used in office technology subjects Office Technology is one of the 2013 curriculum subjects contained in the Office Governance Automation Skills Program at Vocational High School on basic competencies 3.7 Analyzing information from the internet for office work and 4.7 Using information from the internet to support office activities. The learning media developed by researchers is expected to support the learning of students and can improve the learning outcomes of the learners. This is in line with several previous studies, such as those conducted by Harlis & Budiarta [1] in his research obtained the result that appypie-based android application media as a learning medium of monera taxonomy and algae material Protista meets the eligibility for use in the learning process and is very practical to use by students. Other research conducted by Astuti, et al. [8], also obtained the results in online marketing materials using

social media using Appypie learning media can improve the learning outcomes of students.

## 2. METHOD

The method used in this study is a research and development method (Research and Development) adapted from the development model driven by Borg and Gall [12]. The model developed was simplified by researchers from 10 steps to 8 steps tailored to environmental conditions, time constraints, power constraints, and costs. Therefore, this study took eight steps that included: (1) Preliminary Information Collection; (2) Planning; (3) Early Product Format Development; (4) Initial Product Trial; (5) Revision of Initial Trial Results; (6) Small Group Trial; (7) Product Revision of Small Group Trial Results; and (8) Field Execution Test.

This research will produce a product in the form of a teaching medium named Diandroteran (Media Learning Office Technology) which will then be conducted validity test to find out the feasibility of the product that has been made.

This stage of data collection from research and development is obtained from interviews, questionnaires, documentation, and test questions. Interviews are used to analyze needs. Polls are used to test media experts, materials experts, and users. Documentation is used to take pictures of any activities performed during the research process. While the test is used to measure the results of learning between the experiment class and the control class measured from the cognitive realm and the psychomotor realm. The types of data used in this study are quantitative and quantitative data. Quantitative data is obtained from the results of polling by validators, users, and posttest values, while qualitative data obtained from interview results and suggestions provided by validators and users. Expert validation is shown to measure the feasibility of the learning media to be used. The technique of collecting validation questionnaire data using Likert scale [13].

Besides, field trials were conducted to determine the effectiveness of appypie learning media in improving students' learning outcomes. In this study, post-test scores were used to determine the average difference in students' learning outcomes between experiment classes that used appypie learning media during the learning process and control classes that did not use appypie learning media. If the learning results of students who use appypie learning media are better than students who do not use appypie learning media, then the appypie learning media developed can be said to be effective in improving the learning outcomes of students. The average calculation of students' learning results was done using the help of SPSS version 16 for windows with tests.

### 3. RESULTS AND DISCUSSION

This research and development were done to produce products in the form of android learning media using appypie named Diandroteran. This research was conducted to find out the level of feasibility and differences in student learning outcomes through product trials. The first step taken before conducting a field trial is a product trial to the validator to find out the feasibility of the learning media to be developed, for which expert validation is carried out.

The validation was carried out by a material expert validator and media expert validator, and a limited trial was conducted by 6 X AOG 1 students as a control class. Material expert validators provide assessment and advice on material content aspects, learning strategies, and obtained results of 81.37% with highly feasible criteria. Media expert validators provide media assessments and suggestions such as engineering design and display formats that get 97.64% results with highly feasible criteria. Limited trials provide assessment and advice on media use trials, and the number of validation results obtained is 88.13% with very feasible criteria. So the results obtained from the calculation of the questionnaire that has been filled by the validator are the first material expert, the second material expert, and the module expert, and a limited trial of 6 students stated that android learning media using appypie (Diandroteran) is valid and worth using in the learning process.

This is supported by the results of Muyaroah & Fajartia [14], which stated that from the study results of students using android learning media expressed Elektrik which was then reinforced by research conducted by the researchers which stated that there was an increase in the trial that got a standard gain score of 0.81 in the high category, which means that the learning results of students rose after using android-based mobile learning. Further, the influence of android-based learning media on student learning outcomes was proven Yektyastuti & Ikhsan [15], in his research which resulted in the conclusion that media deserves to be used in high school chemistry learning solubility materials. The results of field trials conducted on 1 class of experiments using android-based chemical learning media influenced the improvement of academic performance in the form of learning motivation and cognitive learning results of high school students.

After the learning media is enhanced according to the advice given by the validator, it will then be tested in the experiment class namely class X AOG 1. This trial aims to find out the difference in the learning outcomes of students who use Diandroteran with those who do not use Diandroteran. The measurement of the study results was done through a posttest in the cognitive realm consisting of 20 multiple choice questions to find out the learner's understanding of the material that has been taught.

As for the realm of psychomotor measurement of the posttest, study results are carried out using practical activities carried out in the laboratory.

After the trial of the use of the product, then the measurement of the study results is followed. Learning outcomes are changes in a person's practice that can be observed and measured in the form of knowledge, attitude, and skill [16]. Based on the results of the study obtained by the students shows that there is a difference in the learning results between the experiment class and the control class this is evidenced by the calculation results using the Independent Sample t-Test. To measure the results of students' studies, the researchers gave a test in the form of exercise questions in each class. The study, using two classes to compare the learning outcomes of students who used android-based learning media using appypie and students who were not android-based learning media by using appypie. The class that uses android-based learning media using appypie class X AOG 1 as an experimental class consisting of 35 students and classes that do not use android-based learning media using appypie class X AOG 2 as a control class consisting of 34 students.

#### 3.1 Normality Test

The normality test in this study was conducted using the Kolmogorov-Smirnov test with the help of SPSS version 16. Normality test data was conducted on the students' study results from experiment class pretest-posttest scores and control class pretest-posttest scores performed by students. The results of the pretest-posttest normality test can be seen in the following table.

**Table 1.** Normality Test Results of Learning Results

Tests of Normality				
	Class	Kolmogorov-Smirnov <sup>a</sup>		
		Statistic	df	Sig.
Student Learning Outcomes	Pre-Test Experiments	.118	35	.200*
	Post-Test Experiments	.130	35	.146
	Pre-Test Controls	.092	34	.200*
	Post-Test Controls	.151	34	.047

Results from the Kolmogorov-Smirnov normality test showed that the results of the experiment class pretest-posttest and control class pretest-posttest values had a value of significance of 0.200 for the experiment class pretest score, 0.146 experiment class posttest value, 0.200 control class pretest value, 0.047 control class posttest value, of which the result is  $> 0.05$ . From that value, it can be concluded that the result of the pretest question value and the value of the posttest question are distributed normally.

### 3.2 Independent Sample t-Test

The independent sample t-Test in this study was conducted to test the difference in the results of the experiment class score (using media) and the results of the control class value (which does not use media). This test aims to see if there are differences in the learning outcomes that students have done. This can be seen in the table showing the results of the independent sample t-Test test from the posttest results of the experiment class and the posttest class control.

Before conducting the independent sample t-Test, a variance test is required between the experiment class and the control class. So a formula was used on Sig. Levene's Test for Equality of Variances is as follows:

- a. If the significance value (sig) > 0.05, then  $H_0$  is accepted and  $H_a$  is rejected, which means that variance is assumed to be the same.

b. If the significance value (sig) < 0.05, then  $H_0$  is rejected and  $H_a$  is accepted, which means that the assumed variance is not the same.

The Levene measure for the equality of differences is  $0.722 > 0$ . class posttest is 91.14, while for the control class posttest is 86.97, with an average difference of 4.17. Thus, statistically descriptively, it can be inferred that there is an overall difference in learning outcomes between the experimental class and the control class.

It can also be inferred that the use of android-based learning media by using appypie in Office Technology subjects is effectively used in the learning process because it is significant in improving the learning outcomes of students.

**Table 2.** Independent Sample t-Test Results

Independent Samples Test										
		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	Df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
student learning outcomes	Equal variances assumed	.128	.722	-4.853	68	.000	-4.771	.983	-6.733	-2.809
	Equal variances not assumed			-4.853	67.965	.000	-4.771	.983	-6.733	-2.809

**Table 3.** Descriptive Statistics Results Table

Descriptive Statistics					
	N	Minimum	Maximum	Mean	Std. Deviation
Pre-Test Eksperimen	35	75	95	86.37	4.066
Post-Test Eksperimen	35	82	98	91.14	4.160
Pre-Test Kontrol	34	77	92	84.38	3.618
Post-Test Kontrol	34	80	93	86.97	4.260
Valid N (listwise)	34				

## 4. CONCLUSION

Based on product studies that have been created and developed by researchers, several conclusions can be described as follows.

1. Development results in this research in the context of Appypie-based Android-based Learning Media named DIANDROTERAN (Android Learning Media Office Technology) used for class X Office Governance Automation Skills Program in Vocational High School 1 Pasuruan, East Java Indonesia;

2. Based on validation or due diligence by media experts, material experts, and small group trial subjects it is known that android-based learning media using appypie that has been created and developed has been tested the level of validity evidenced by the acquisition of material expert validation results of 81.17%, validation of media experts of 97.64% and from small group trials obtained 88.13% which if flattened overall of 88.98% then the learning media developed can be said to be feasible and can be used in subjects Office Technology;

3. After research using android-based learning media using Appypie, there are differences in learning outcomes between experimental classes or classes that use learning media with control classes or classes that do not use learning media. So it can be concluded that android-based learning media using appypie that has been developed can improve students' learning outcomes judging by the average learning results of students.

Based on the conclusions obtained, the researchers advise the next researcher as follows.

1. It is hoped that researchers will further have more creativity in designing and designing learning media, to make the media more interesting and increase the user's interest in using android-based learning media;
2. Product development is still limited to materials using the internet to support the needs of the office so it will only be useful for some meetings, of course, further developers need to be done for other materials;
3. The next developer to be able to make this media accessible without using strong internet or can be used online or offline;
4. For further researchers, this media should be expanded through the google play store so that to support research results.

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