The Effectiveness of Android Based Javanese Alphabet Learning Media on Student Learning Outcomes

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Abstract. Javanese alphabet as one of Indonesian culture gradually began to be forgotten along with the low interest of students to learn Javanese alphabet. Low student interest also affects learning outcomes. Factors affecting the suboptimal learning outcomes of Javanese alphabet there are no innovative learning media and attracting students' attention. The research method used Waterfall. The sample used 57 elementary school students in grades 4 and 5 in Kudus Regency. Data collection techniques that has been used were questionnaire, interview, pretest and posttest. The data analysis technique uses questionnaire. The result of this research, the average of pretest score is 59,925 and the average of posttest score is 77,765. It was proven that there was an increase in student learning outcomes. The conclusion of this research is Android-based Javanese alphabet learning media is effective to improve students learning outcomes in the content of Javanese language lessons in Javanese script.

Keywords: Learning Media, Effectiveness, Javanesse Alphabet.

1 Introduction

Javanese language is one of the most widely-used languages in Indonesia, it has millions of speakers. While the Javanese language still thrives in daily conversation, the number of users of Javanese script, the traditional script

of the language, decreases every day (Louis Lady Zhangrila, 2018). However, the people nowadays are facing the problem where not all the Javanese people are able to read the Javanese scripts, particularly the young generation people (Abdul Robby G., et al, 2019). Javanese alphabet as one of Indonesian culture gradually began to be forgotten along with the low interest of students to learn Javanese alphabet. Javanese alphabet is now very rarely used in written documents. Javanese people mostly translate using Latin letters to express Javanese (Heru Spriyanto, 2019).

In the past, Javanese alphabet was used to write literary works. Relics of this literary work can still be found in various museums and libraries. The number of relics is not only one, but thousands. However, because at this time there are not many people who can read and write Javanese, so many manuscripts are damaged but have not had time to read and know the contents (Venny Indria Ekowati,2014).

The effort to preserve Javanese alphabet was also pursued by the government by including it in the education curriculum. Javanese alphabet material began to be taught in grade 3 elementary school. A pretty good effort to introduce culture to the community early on, but still, there are still many students who find it difficult and less interesting to learn Javanese

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script. This happens because the use of learning media is less than optimal (Ervan Adi K., 2015).

Edgar Dale makes a level from concrete to abstract a media in the form of an experience cone or cone of experiment, in this cone the first student must play an active role in learning involving real experiences or meaningful learning, after that students as observers of real events, then students observe the events presented in the media used, in addition to observing events in the media the most recent is students observing the symbols presented (Daryanto, 2016).

From the results of observations that has been done by researchers at SDN 2 Mlati Norowito Kudus, the learning media that has been used by teachers are textbooks. Textbooks sometimes cannot be used all the time and are considered boring by some students (Marlinda R., 2015). However, textbooks also have some shortcomings, especially in this technological era (M Saputra, et al., 2018)

Development of learning media also has linear connection with technological advances. Media utilization is one of the efforts to create meaningful learning process and improves quality output. Advanced technology such as LCD, projector, e-library, and e-learning are already familiar in education. Currently, smartphone has great opportunities to be utilized as a learning media since its presence in 2010, it has distributed around the world and several operating system, but today Android became the most widely used platform in the world (U Cahyana et al., 2018)

Kominfo states that in 2018 the number of active smartphone users in Indonesia is more than 100 million people. With such a large number, Indonesia will become the country with the fourth largest active smartphone user in the world after China, India, and America. A new breakthrough in the world of education by utilizing smart phone is to be used as a kind of new media in teaching and learning. The results showed the use of media types android in the learning process is able to provide a positive impact to the indicated increase in the desire to learn new ones, and provide a major influence on students' psychological (Nugroho Prasetya Adi, et al,2016). Android is a software framework that includes overall mobile device and consists of an operating system, middleware and key applications set (Nugroho Prasetya Adi, et al, 2016).

In education world, it has found many technologies can support in teaching and learning activities because most of the lecturers and students have used various hardware and software of android as a tool to achieve maximum learning outcomes because students have experience and participate directly (E. A. Alghamdi and S. R. Shah,2018)

Heru Supriyono (2015) explained that the Javanese script application that he developed using Adobe Flash CS6 is suitable for use as a learning medium in the classroom. But with the development of gadget technology, almost all students have gadgets that support interactive media. Researchers assume that the use of flash as software is considered less flexible because it only runs on certain hardware. Research on the Javanese script learning media has been carried out by Nining Setiani (2017), an application developed named HANACARAKA. HANACARAKA is an android-based application that was developed using Android Studio tools with some good features, like Javanese script material features, Javanese to Latin script conversion, and evaluation features. The HANACARAKA application is proven to be able to increase student interest in learning. But the level of effectiveness of the media is not yet known.

Considering the high level of use of Android-based smartphones by Indonesian people and the low interest of students in learning Javanese script which has an impact on low student learning outcomes, the researchers took the initiative to develop an android-based javanese alphabet learning media. With the development of this learning media, it is expected to be able to help facilitate students in learning Javanese alphabet and improve student learning outcomes.

The purpose of this study is to knowing the effectiveness of Android-based Javanese

Script learning media to improve student learning outcomes in Javanese Literature subject matter in Elementary School level

2 Method

The development procedure that has been used in this research is the SDLC (System Development Life Cycle) method, with Waterfall development model. The waterfall model is widely used by researchers because the development process is organized. The Waterfall model was proposed by Royce in 1970 which is the SDLC (System Development Life Cycle) model. There are 5 stages in the waterfall model, including communication, planing, modeling, construction, and deployment (Pressman, 2015).

In this research there are several things that has been done by researchers : (1) Data collection which includes Java language syllabus of Elementary School grade 5, Javanese script history material, carakan script material, sandhangan material, and pasangan material. (2) Make an story board which will be used as a guide for the placement of the object layout and application navigation buttons. (3) Design assets of android based Javanese Alphabet learning media using Corel Draw X7. These assets include navigation buttons, background images, application logos, and titles. (4) Making animation and supporting music effects. (5) Creating an application project using Construct 2. (6) Exporting the project to html format. (7) Convert html files to apk format using the Website 2 APK Pro application. (8) Conduct testing of applications, including black-box testing, eligibility tests from media experts and material experts, as well as testing the effectiveness of applications for student learning outcomes.

3 Findings and Discussion

In education world, it has found many technologies can support in teaching and learning activities because most of the lecturers and students have used various hardware and software of android as a tool to achieve maximum learning outcomes because students have experience and participate directly (Y. Rathod, M. Dighole, and R. Sharma, 2018).

The results of this research is Android-based Java alphabet learning media application for elementary school students. This learning media application was tested at SDN 2 Mlati Norowito Kudus. Researchers conducted two meetings and twice learned to use the application. Things that were examined include: (1) the design of the development of an Android-based Java alphabet learning media application; (2) the feasibility of an Android-based Java alphabet learning media application; (3) the effectiveness of Java alphabet learning media applications.

3.1 Product Design

The design of an Android-based Java alphabet learning media application was made based on teacher interviews and syllabus of grade 5 SDN 2 Mlati Norowito Kudus.

Tools and materials used by researchers to create the applications include: (1) Lenovo B40 Intel Core i3 laptop (2) Corel Draw X7 to create application display designs; (3) Adobe Premier Pro 2015 to create animated scripts in a way; (4) Construct 2 for application programming; (5) Website 2 APK Pro to convert the project into an Android application.

3.2 Product Result

The results of this research is Android-based Java alphabet learning media application. Java alphabet learning media application is an android-based application that contains things that can facilitate elementary school students in learning Javanese Script. This application contains three main menus, namely the Learning Menu, Evaluation Menu, and Conversion

Menu. The material in it also varies, ranging from the script carakan, sandhangan, couples, and also the history of Javanese script.

This application has an evaluation feature to test the user's ability after learning and supported by animation and sound effects that make the application more interactive.

4 Test Result

Application testing is one of the stages of the Research and Development method which is carried out after the coding process is completed to determine the feasibility of the application. There are three aspects of testing carried out, namely functionality testing (black-box test), compatibility testing (application testing to several different versions of the Android OS), as well as feasibility tests by media experts and material experts.

4.1 Funcionality Testing Result

Functionality testing in this study was carried out using a black-box test which was carried out independently. The testing aspects include testing the function of buttons, menus, and views per page.

The results of the black-box test stated that the javanese aplhabet learning media application was in accordance with what was expected by being shown from the acquisition of the testing of each test case. Black-box testing has no bugs that are displayed from the display of the test results of each test case. So it can be stated that the black-box testing of android based javanese aplhabet application learning media is valid.

4.2 Compability Testing Result

Compatibility Testing is done by testing applications on various mobile device platforms, which include android versions, RAM sizes, internal memory sizes, and different types of processors. Tests carried out using various smartphone devices with Android versions above Android 4.4 (Kitkat).

There are 6 devices that are tested directly then a 100% percentage calculation or can be said to be "very good" from compatibility testing.

4.3 The Effectiveness of Android Based Javanese Aplhabet Application Learning Media

User tests were conducted on grade V and class IV SDN 2 Mlati Norowito, with a total 32 students. The average score of student learning outcomes in product trials before using the android-based Java alphabet learning media application was 56.25, while the average - the average score of student learning outcomes after using the application is 75.94. Student learning outcomes after using the Android-based Javanese Alphabet learning media application can be seen in table 2.

Table 1. Pretest and Posttest Result on SDN 2 Mlati Norowito

	Pretest	**Posttest**
Highest Score	80	100
Lowest Score	30	50
Average	56.25	75.94
The number of students completed	10	25
Percentage of students completed	31.25%	78.125%

Tabel 2. Pretest and Posttest Result on SDN 2 Jepang Pakis

	Pretest	Posttest
Highest Score	90	100
Lowest Score	30	50
Average	63.6	79.6
The number of students completed	12	25
Percentage of students completed	31.25%	92%

4.4 N-Gain Test

N-Gain Test was conducted to determine the increase in the pretest and posttest scores. The formula to find out applying the N-Gain test is as follows:

$$\text{N-Gain(g)} = \frac{\textit{Posttest Score} - \textit{Pretest Score}}{\textit{Maximum Score} - \textit{Pretest Score}} \quad (1)$$

The results of the average improvement test are presented in the following table.

Table 3. N-Gain Test Result on SDN 2 Mlati Norowito

Categori	Score
Average pretest score	56.25
Average posttest score	75.94
Difference in average	19.69
N-gain class	0.45
Criteria	Medium

Table 4. N-Gain Test Result on SDN 2 Jepang Pakis

Categori	Score
Average pretest score	63.6
Average posttest score	79.6
Difference in average	16
N-gain class	0.6
Criteria	Medium

Based on table 3 it can be seen that the increase in the average (gain) of the pretest data and the posttest score of fifth grade students of SDN 2 Mlati Norowito Kudus is 0.45 with difference in average score of 19.69.

Based on table 4 it can be seen that the increase in the average (gain) of the pretest data and the posttest score of fifth grade students of SDN 2 Jepang Pakis Kudus is 0. 6 with difference in average score of 16.

An increase in the average shows that the Android-based Java alphabet learning media application is effectively used to improve learning outcomes. Improved student learning outcomes are presented in the following diagram.

Fig. 1. Improved Learning Outcomes

5 Conclusion

Based on the results of research and discussion that has been outlined, it can be concluded that, Android-based Java alphabet learning media application is proven to be effectively used in learning activities in local Javanese language content. There is an increase in the learning outcomes of elementary school student in Kudus.

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