

Usability Evaluation of Mobile-Based Application for Javanese Script Learning Media

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Received 15 May 2018; accepted 25 August 2018

Abstract. Indonesian people should actively preserve Indonesian culture. A way to preserve Indonesian culture can be done by using Javanese scripts as a local content subject at elementary to middle school level. In the conventional learning method, almost all teachers teach writing Javanese manuscript with conventional instructional media by using a white board. We proposed a mobile application that can help students to learn how to write Javanese script in attractive way by using their finger. Since this application still in prototype stage, further study and analysis of the usability of this application are necessary to validate the feasibility in real implementation. Usability testing using USE questionnaire had been conducted to find out if application of Javanese script writing can be accepted by users. We give 30 questions about usability to 5 respondents that are familiar with android application. The result show that, the proposed application is acceptable to users in term of Usefulness, ease of use, ease of learning and satisfaction.

Keyword: usability, Javanese script, learning media, and android application.

1 Introduction

Indonesia has a rich history of culture, one of them are from Java. The richness of Javanese culture can be seen in many historical artifacts, including the traditional Javanese Chronicle, life philosophy, arts, literatures and ancient manuscripts [1,2]. All of these were written with Javanese manuscripts. Indonesian people should preserve these cultures as part of the relic of Javanese ancestors that can be preserved by using Javanese scripts as a local content subject at elementary to middle school level.

Almost all teachers teach Javanese manuscript with conventional instructional media by using a white board. It makes the learning process is less attractive. This makes the young generation face the difficulties to comprehend the Javanese manuscripts easily. Thus, we proposed a mobile application that can help students to learn how to write Javanese script in attractive way by using their finger. Since this application still in prototype stage [3], further study and analysis of the usability of this application are necessary for implementation in real implementation.

There are many research that conduct usability testing from end-users perspective [4,5,6,7]. Usability is one of the key parameters to make a mobile application used and loved by the users, and also enabling users achieving their specified goals.

Efficiency, effectiveness, and satisfaction are key factors that determine user experience when they are engaging with an application. This research focused on evaluate the usability of mobile-based application for Javanese script learning media by using USE questionnaire [8].

The main objective of this study is to provide an interactive and easy to use mobile learning media application and analyze the feasibility of this application when being used by young generation to learn Javanese scripts. Hence, this work focus to analyze the usability of the application to validate the feasibility in real implementation.

2 Application Review



Fig. 1 Home page of application

There is an Android mobile application that has been developed which named Ngaksara Apps. The screenshot of Ngaksara Apps shown in Figure 1.

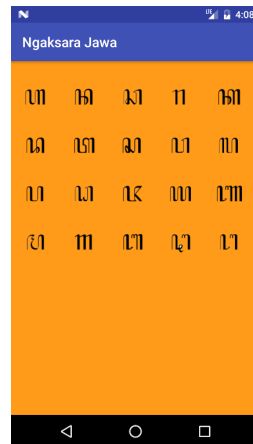


Fig 2 Javanese scripts page

Ngaksara Apps use canvas for Javanese script writing. First, the user chooses one

of the Javanese Script as can be seen in Figure 2.



Fig 3 Canvas to write Javanese script

A canvas would appear as a medium for writing the Javanese script as can be seen in Figure 3. The image was read in the one of the Javanese Script form and it would be matched to the template by the system when process button pressed. On scoring phase, the method by Priandani, et.al [9] is used. In the final stage, resulting score will be displayed.

3 Methodology

This research focused on evaluating the usability of mobile-based application for Javanese script learning media by using USE questionnaire. This usability evaluation aims to find out how far users can interact effectively and how far the system provides user guidance, provide information, and provide consistent interaction [10]. The way to do usability testing is use a questionnaire, one of which is USE questionnaire.

USE questionnaire use 30 questions to evaluate the application from 4 aspects: ease of use, satisfaction, usefulness, and ease of learning in user perspective. The 30 questions are given for 5 respondents on March 2018 in Malang. The respondent's profile consists of five informatics students that familiar with android device.

Users will be assigned a device consisting of Javanese script learning application, and they are required to write one of the available Javanese script, the application will bring up the result of writing. After doing that task, we give 30 usability questions. This work used 30 usability questions to evaluate the application from 4 aspects: ease of use, satisfaction, usefulness, and ease of learning in user perspective as can be seen in Table 1. Descriptive analysis of this questionnaire was conducted after users answered all of the questions.

After respondents answered all of these questions, analysis of this questionnaire was conducted. Every question has index value that can be calculated using Equation 1.

$$Index(\%) = \frac{(\sum SDA*1) + (\sum DA*2) + (\sum N*3) + (\sum A*4) + (\sum SA*5)}{Max Likert score * \sum response} * 100 \quad (1)$$

If index value 0-19,9% it means that repondent is strongly dissatisfied with the question, if index 20%- 39,9% it means that repondent is dissatisfied, 40%-59,9% value means neutral opinion of respondent, 60%-79,9% means that respondent is satisfied with this question and 80%-100% means respondent is strongly satisfied [11].

Table 1 Usability Aspect

Aspect	Statement
Usefulness (US)	It helps me be more effective.
	It helps me be more productive.
	It is useful.
	It gives me more control over the activities in my life.
	It makes the things I want to accomplish easier to get done.
	It saves me time when I use it.
	It meets my needs.
Ease of Use (EU)	It does everything I would expect it to do.
	It is easy to use.
	It is simple to use.
	It is user friendly.
	It requires the fewest steps possible to accomplish what I want to do with it.
	It is flexible.
	Using it is effortless.
	I can use it without written intructions.
	I don't notice any inconsistencies as I use it.
	Both occasional and regular users would like it.
I can recover from mistakes quickly and easily.	
Ease of Learning (EL)	I can use it successfully every time.
	I learned to use it quickly.
	I easily remember how to use it.
	It is easy to learn to use it.
Satisfaction (SC)	I quickly became skillfull with it.
	I am satisfied with it.
	I would recommend it to a friend.
	It is fun to use.
	It works the way I want it to work.
	It is wonderful.
	I feel I need to have it.
It is pleasant to use.	

4 Results and Analysis

Usability testing of the application had been done to find out feedbacks from 5 respondents. Respondents are informatics students that familiar with android application. We asked 30 questions about usability from 4 aspects (Usefulness, ease of use, ease of learning and satisfaction) of USE questionnaire. Index for every question was calculated from equation 5 and results in index percentage. The results from respondents is shown in Table 2.

Based on Table 1, in usefulness aspect (questions number 1-8) respondents are agreeing that this application is useful and strongly agree that this application does everything the respondents would expect it to do as can be seen in question number 8 that has 80% index percentage. In ease of use aspect, respondents are agree that this application is easy to use and strongly agree in 6 questions about ease of use, there are question number 9 (it's easy to use) that has index percentage 94%, question number 10 (It's simple to use) that has index percentage 97%, question number 12 (It requires the fewest steps possible to accomplish what I want to do with it) that has index percentage 83%, question number 14 (using it is effortless) that has index percentage

93%, question number 18 and 19 (I can recover from mistakes quickly and easily; I can use it successfully every time) that has index percentage 83%.

In ease of learning aspect, respondents are strongly agree with all questions in ease of learning aspects. It can be seen from questions 20 until 23 that has index percentage above 80%. In satisfaction aspect, respondents are agree in 6 questions about satisfaction, but in question number 29 (I feel I need to have it) respondents has neutral opinion.

Table 2 Usability Results

No.	Usability Questions	Index
1	It helps me be more effective.	0.67
2	It helps me be more productive.	0.70
3	It is useful	0.71
4	It gives me more control over the activities in my life	0.67
5	It makes the things I want to accomplish easier to get done.	0.71
6	It saves my time when I use it.	0.69
7	It meets my needs	0.72
8	It does everything I would expect it to do	0.80
9	It is easy to use.	0.94
10	It is simple to use	0.97
11	It is user friendly	0.69
12	It requires the fewest steps possible to accomplish what I want to do with it.	0.83
13	It is flexible	0.74
14	Using it is effortless.	0.93
15	I can use it without written instructions	0.66
16	I don't notice any inconsistencies as I use it	0.69
17	Both occasional and regular users would like it.	0.73
18	I can recover from mistakes quickly and easily.	0.83
19	I can use it successfully every time.	0.83
20	I learned to use it quickly.	0.94
21	I easily remember how to use it.	0.97
22	It is easy to learn to use it	0.86
23	I quickly became skillful with it.	0.80
24	I am satisfied with it.	0.70
25	I would recommend it to a friend	0.67
26	It is fun to use.	0.73
27	It works the way I want it to work	0.77
28	It is wonderful.	0.67
29	I feel I need to have it	0.57
30	It is pleasant to use	0.70

5 Conclusions

Usability testing using USE questionnaire had been conducted to find out if the application of Javanese character writing can be accepted by users. We give 30 questions about usability to 5 respondents that are familiar with android application. From all of these questions, respondents mostly agree that the application is useful, easy to use, easy to learn and satisfied with it. This application has low index percentage (57%) in question number 29 (I feel I need to have it). But, it also has high index percentage (above 80%) in all of ease of learning questions, has 80% index percentage in question about user expectation about what application will do, and also has high index percentage (above 80%) in 6 questions about ease of use questions. The excellence of this application is it is simple to use that has index percentage 97 %.

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