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Usability testing for learning media application Al-Qur'an Hadith

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Abstract - The ever-developing technology has an impact on all aspects of life, including education. One of the innovations in the field of education is the adoption of multimedia concepts in the teaching and learning process. Why multimedia? because with multimedia we can combine several elements at once including text, images, sound, video, and animation. An interactive multimedia-based learning application has been developed for Al-Qur'an Hadith subjects. Applications are made to attract interest in learning and make the learning process of teaching fun. The objective of this study is to get evaluations from users in terms of user satisfaction using the application with a usability test. Usability testing is carried out using the SUS (System Usability Scale) approach. The results of this study show that an interactive multimedia learning media application for learning the Al-Qur'an Hadith based on usability testing by 20 respondents, using the SUS approach, got an SUS Score is 81. The grade scale application is "A" and also application gets "acceptable" in acceptability ranges.

Keywords: education, interactive multimedia, SUS (System Usability Scale), usability testing

1 Introduction

Technology is increasing so fast at present. It has an impact on the education field. One of the technological developments is being of multimedia technology in the field of education [1]. Multimedia technology has become commonly used because makes the teaching and learning process interesting. Apart from that, it can support the education system by increasing knowledge and making people think creatively [2]. Abstract learning designs will be realize with attractive and interactive visual displays [3]. The teaching and learning process using multimedia can provide variation in learning. The expectancy is learning process can be more effective, efficient, interactive, and interesting, so the students will be motivated to learn [4].

One category of multimedia used in education is interactive multimedia [5]. Interactive multimedia is a type of media capable of displaying visuals from text, images, audio, video, and animation [6]. Interactive multimedia is completed with a controller that allows users to interact directly. For example, users can determine and choose what to do at the next stage. Examples of the interactive multimedia category are game applications, interactive learning multimedia, etc. [7].

Based on the results of observations at one of the schools in Ponorogo city, they still use conventional teaching approaches. This school has not utilized technology, especially multimedia technology, in the teaching and learning process. The conventional teaching approach asks students to sit and listen in a conducive manner as the teacher explains the lesson[8]. The learning process that

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uses that approach is considered less varied in using the media. Thought to cause students' learning motivation to be low [9].

After conducting discussions with teachers, especially teachers of Islamic Religion, for class 1 in Al-Qur'an Hadith subjects, it was found that there were still many students did not memorize the hijaiyah letters. Apart from that, many of them have not been able to memorize the surah of the Al-Qur'an in the Al-Qur'an Hadith subjects. Some of the obstacles that exist include students quickly getting bored with the methods, just reading from books or Student Worksheets. For this reason, based on system requirements analysis, the application was developed based on a desktop, because can be opened at any time without having to be connected to an internet network. In this school, many students are not allowed to bring smartphones, so the application is only developed on a desktop for learning media in class.

Usability is one of the crucial factors in application development [10]. This study aims to get an evaluation from users in terms of user satisfaction with using applications with a usability test. Usability Testing is a type of software testing. Many methods can be used to test a system in terms of user satisfaction, one of which is the System Usability Scale (SUS) [11].

Application tested on 20 users. This method has proven to be a reliable test method for evaluating usability based on industry standards because it has been widely used and tested for decades [12]. The SUS questionnaire consists of 10 questions to measure user comfort when using the application [13]. The SUS has three advantages (flexibility for many technologies, quick and easy to use, and score on a scale that is easy to understand) [14].

2 Materials and methods

There are several steps that being conducted in this research, including the following below:

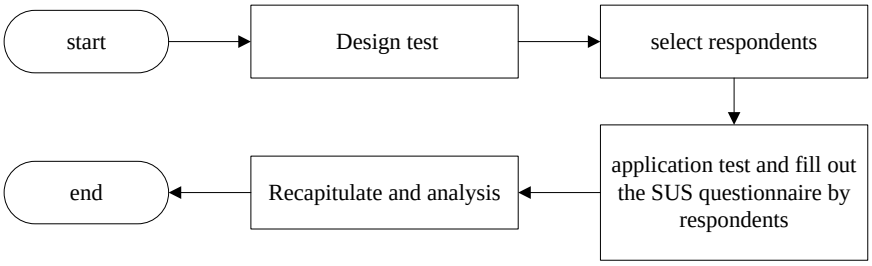

Fig. 1. Research Steps

2.1 Design Test

1. I think that I would like to use this system frequently
2. I found the system unnecessarily complex
3. I thought the system was easy to use.
4. I think that I would need the support of a technical person to be able to use this system
5. I found the various functions in this system were well integrated
6. I thought there was too much inconsistency in this system.
7. I would imagine that most people would learn to use this system very quickly
8. I found the system very cumbersome to use
9. I felt very confident using the system
10. I needed to learn a lot of things before I could get going with this system

Fig. 2. The questions of System Usability Scale (SUS)

The SUS method consists of 10 questions and 5 alternative answers. For the question instrument, shown in Fig. 3

Level of Teaching Experience :

Choose one answer to describe your experience after using an interactive learning media application to learn the Qur'an Hadith

		Strongly disagree				Strongly agree
1	I think that I would like to use this system frequently	☐	☐	☐	☐	☐
2	I found the system unnecessarily complex.	☐	☐	☐	☐	☐
3	I thought the system was easy to use.	☐	☐	☐	☐	☐
4	I think that I would need the support of a technical person to be able to use this system.	☐	☐	☐	☐	☐
5	I found the various functions in this system were well integrated.	☐	☐	☐	☐	☐
6	I thought there was too much inconsistency in this system.	☐	☐	☐	☐	☐
7	I would imagine that most people would learn to use this system very quickly.	☐	☐	☐	☐	☐
8	I found the system very cumbersome to use.	☐	☐	☐	☐	☐
9	I felt very confident using the system.	☐	☐	☐	☐	☐
10	I needed to learn a lot of things before I could get going with this system.	☐	☐	☐	☐	☐

Fig. 3. Item Questionnaire with 5 Alternative Answers

Fig. 3. Shows that respondents must choose one answer from 5 alternative answer choices. Answer choices consist of strongly disagree, disagree, neutral, agree, and strongly agree.

2.2 Select Respondents

In this research, tested of interactive learning media applications for learning the Al-Qur'an Hadith was carried out by 20 respondents. Respondents consist of teachers, prospective teachers, and experts.

2.3 Application test and fill out the SUS questionnaire by respondents

At this stage, respondents tested the application by opening the application first and running all menus in the application. In general, the application consists of two main parts, namely learning and playing. On the learning menu, there are two categories, namely semester 1 and semester 2. Semester 1 consists of sub-material Hijaiyah 1, Surah Al-Fatihah, Surah An-Nas, Surah Al-Falaq, Surah Al-Ikhlas, and Surah Al-Lahab. Semester 2 consists of sub-material Hijaiyah 2, Surah An-Nashr, Surah Al-Kafirun, Surah Al-Kautsar, Surah Al-Ma'un, And Surah Quraish. The main view of the application is shown in Fig. 4.

Fig. 4. Main View of the Application

For the quiz menu, there are 3 options, namely KUIS 1 (multiple choice questions), KUIS 2 (puzzles), and KUIS 3 (connecting verses from surah). The Quiz menu is shown in Fig. 5.

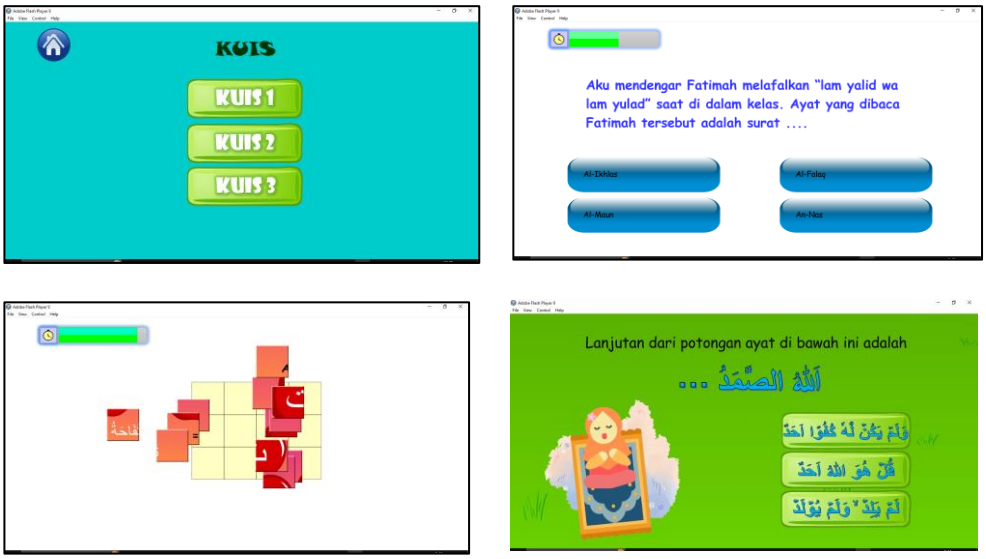

Fig. 5. The Quiz Menu (Multiple Choice Questions, Puzzles, And Connecting Verses from Surah)

2.4 Recapitulation and analysis

At this stage, the results of the questionnaire were recapitulated. There are several conditions for knowing the final score, including: for odd items, subtract one from the user response; for even-numbered items, subtract the user response from 5; this scales all values from 0 to 4 (with 4 being the most positive response); add up the converted response for each user and multiply that total by 2.5; this converts the range of possible values from 0 to 100 instead of from 0 to 40 [16].

3 Results and discussion

The results of the questionnaire filled out by respondents will be presented. Respondents have different backgrounds. In this research, respondents differentiated based on their teaching experience at the educational level and study program they have taken. The information of the respondents is shown in Table 1.

Table 1. List of Respondent

No.	Study Program	Number of Respondent	Level of Teaching Experience
1	Education For Islamic Elementary School Teachers	11	Islamic Elementary School
2	Islamic education	2	Islamic Elementary School
3	Arabic	1	Islamic Elementary School
4	Informatics Engineering	5	Islamic Elementary School
5	telecommunications engineering	1	Islamic Elementary School

Table 1 shows that the respondents come from different backgrounds, such as study programs and levels of teaching experience. Some educational backgrounds are from the majors Education for Islamic Elementary School Teachers, Islamic Education, Arabic, Informatics Engineering, and telecommunications engineering. The next step is summarizing the answers to the questionnaire. The respondent's original answer is shown in Table 2.

The next step is to apply the provisions in the SUS scoring. For odd items: subtract one from the user response; for even-numbered items; subtract the user responses from 5; this scales all values from 0 to 4 (with 4 being the most positive response); add up the converted responses for each user and multiply that total by 2.5. The calculation results are shown in Table 3.

Table 2. The Respondent's Original Answer

No	Respondent	Questions									
		1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
1	Respondent 1	5	1	4	2	5	2	5	1	4	2
2	Respondent 2	3	2	5	1	4	2	5	1	5	3
3	Respondent 3	4	2	4	2	4	2	3	2	4	3
4	Respondent 4	5	1	5	1	5	1	5	1	5	4
5	Respondent 5	5	1	5	1	5	1	5	1	5	2
6	Respondent 6	2	1	2	4	3	1	2	2	3	2
7	Respondent 7	5	2	5	2	4	2	4	3	4	4
8	Respondent 8	4	2	4	1	4	2	4	2	4	1
9	Respondent 9	5	3	4	1	4	3	4	3	4	4
10	Respondent 10	4	2	5	1	4	4	5	2	5	2
11	Respondent 11	5	2	5	2	5	1	5	1	5	1
12	Respondent 12	4	2	5	1	5	2	5	1	5	2
13	Respondent 13	4	3	4	1	4	2	4	2	5	2
14	Respondent 14	4	2	4	2	5	4	4	1	4	2
15	Respondent 15	5	2	5	2	4	2	4	2	4	3
16	Respondent 16	5	2	4	1	4	2	4	2	5	2
17	Respondent 17	4	2	5	1	5	2	5	1	5	1
18	Respondent 18	4	1	5	2	5	2	5	2	4	2
19	Respondent 19	4	1	5	2	5	2	5	1	5	5
20	Respondent 20	5	2	5	2	4	2	4	3	4	4

Table 3 shows average SUS score is 81. The next step is to interpret the data. SUS is a global assessment of how users feel about what is being tested, from effectiveness to efficiency, and satisfaction [17]. We can interpret SUS from questionnaire results in at least five ways [18]. The summary of these approaches in these five ways is shown in Fig. 6. Table 3 shows the maximum sum of the results for each question. The maximum amount in question number 3 and 9. The minimum

amount in question number 10. The average SUS score is 81. Based on Fig. 6 shows the position of the application. Table 4 shows that the application has a grade of A, including the category of Excellent and Acceptable, and the NPS value is Promoter.

Table 3. SUS Calculation Results

Respondent	Questions										Total	SUS Score (Total x 2.5)
	1	2	3	4	5	6	7	8	9	10		
1	4	4	3	3	4	3	4	4	3	3	35	88
2	2	3	4	4	3	3	4	4	4	2	33	83
3	3	3	3	3	3	3	2	3	3	2	28	70
4	4	4	4	4	4	4	4	4	4	1	37	93
5	4	4	4	4	4	4	4	4	4	3	39	98
6	1	4	1	1	2	4	1	3	2	3	22	55
7	3	3	3	3	3	3	3	3	3	1	28	70
8	3	3	3	4	3	3	3	3	3	4	32	80
9	4	2	3	4	3	2	3	2	3	1	27	68
10	3	3	4	4	3	1	4	3	4	3	32	80
11	4	3	4	3	4	4	4	4	4	4	38	95
12	3	3	4	4	4	3	4	4	4	3	36	90
13	3	2	3	4	3	3	3	3	4	3	31	78
14	3	3	3	3	4	1	3	4	3	3	30	75
15	4	3	4	3	3	3	3	3	3	2	31	78
16	4	3	3	4	3	3	3	3	4	3	33	83
17	3	3	4	4	4	3	4	4	4	4	37	93
18	3	4	4	3	4	3	4	3	3	3	34	85
19	3	4	4	3	4	3	4	4	4	0	33	83
20	4	3	4	3	3	3	3	2	3	1	29	73
Total	65	64	69	68	68	59	67	67	69	49	645	1613
Average SUS Score												81

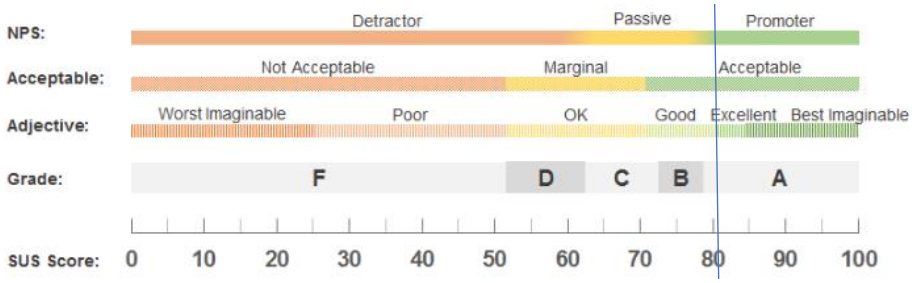

Fig. 6. Grades, adjectives, acceptability, and NPS categories with SUS scores

Table 4. The Position of Application

SUS Score	Grade	Adjective	Acceptable	NPS
81	A	Excellent	Acceptable	Promoter

4 Conclusion

The results of this research show that based on usability testing by 20 respondents, using the Software Usability Scale (SUS) approach, an interactive multimedia learning media application for learning the Al-Qur'an Hadith, shown an SUS Application Score is 81. Question number 3 and 9 had the higher answers. Included in the grade A and indicates the application is Acceptable. However, after analyzing each questionnaire, and accumulating the values of the answers from respondents, it showed that question number 10 had the lower answers. Of course, this will be a consideration for improvements in application development. Question number 10 (I needed to learn a lot of things before I could get going with this system). To overcome this point, we will improve the layout of the user interface, such as choosing more familiar icons, menu layout, and color selection.

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