The Usability Testing on E-TOEFLGATE Media by Questionnaire

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Abstract-E-TOEFL is an alternative learning media designed to improve students' English skills. In order to create satisfaction in the E-TOEFL media that has been designed, it is needed a test by using usability testing. This study aims to analyze whether the E-TOEFL media has acceptability based on usability criteria. The research method was conducted by using the USE questionnaire as a research instrument consisting of 30 questions. The parameters used to measure usability are Usefulness, Ease of Use, Ease of Learning, and Satisfaction. Based on the four parameters which were used in the USE Questionnaire, a usability test was performed on the designed E-TOEFL media. The result of test the with the USE Questionnaire shows that the average value obtained is 80.42% with the meaning of the word E-TOEFL media testing which is designed to have good usability values and the system can be implemented at the University.

Keywords: Testing, E-Learning, E-TOEFL, Usability, Use, Questionnaire.

Introduction

The development of Information Technology is currently influential in various fields such as finance, banking, transportation, health, including education. One example of technological development in education is E-Learning. E-Learning is a learning media that can facilitate students to be able to learn independently anywhere and anytime. E-Learning is considered to have an important role in overcoming stagnant education problems by facilitating the provision of the latest features that support the learning process with a variety of learning styles. With the presence of E-Learning is expected to stimulate the educational process to be even better and is seen as a good medium for learning [1].

Several studies have been conducted on the impact of e-learning in the new millennium era [2].The learning patterns have changed in the center, from teacher to student. At the same time, the impact of e-learning also allows for unthinkable interactions and access to knowledge almost anywhere in the world [3]. E-learning gives humans a flexible and personal way of learning; allows learning as needed and can reduce learning costs.

E-learning has become the most influential media in the education sector and has been used extensively in various universitiMost universities use LMS to support and improve the learning and teaching process. The implementation of LMS by educational institutions has promised better quality and student-centered education [4]. Based on research conducted [1] [5] that 99% of Higher Education Institutions have a Learning Management System (LMS), and 85% of them have been used, and in the UK, 95% of higher education institutions have adopted LMS to support education services they [1] [[4]. In Australia, there has been a Digital Education Revolution in which technology investments have been made in schools at the state / territory level and at the national level [6]. The main examples of global e-learning systems are Coursera, EDX, Udacity, and Khan Academy, among others also known as Massive Open Online Courses (MOOCs) [3] [7]. E-learning learning can certainly be implemented and combined with conventional learning [8].

The introduction of a new learning system involves a complex process of change, and its benefit is being an important issue to be discussed. The issue of e-learning quality is also a prominent topic in several literature discussions, with several authors highlighting the lack of research on usability testing in e-learning [9]. This study aims to determine the level of acceptability based on usability criteria on E-Learning TOEFL (E-TOEFL) which is being developed at Bung Hatta University. Although the application of e-learning can provide new experiences that can increase interest in learning for students, professors and university staff through the latest forms of training and learning innovation [9], some experiments conducted on the implementation of e-learning sometimes also have high dropout rates . Some researchers mention that efficient e-learning implies alignment of students, technology and software design in the educational context [9] [10].

The student is a key holder in e-learning because they interacts directly with the context of education and technological innovation [11]. The usability test on e-toefl is the main focus of this study, especially testing at the user level, namely students and validators. Tests conducted for users include 4 aspects of usability, namely usefulness, ease of use, ease of learning and satisfaction (12). Thus, usability testing is very important in e-learning functions because it can reduce problems such as high dropout rates, low student satisfaction with the system built and heavy workload for institutional management staff. Some researchers also noted the importance of usability testing in the early stages of e-learning, this is due to the high dropout rate in the scope of e-learning

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which could have been caused due to poor design of e-learning applications to the lack of student motivation as users [13] [14].

Literature Review

E-Learning

E-learning has grown rapidly with various technological features and devices to access learning resources, such as laptops, computers, smartphones and tablets. The development of technology has greatly influenced education and methods of learning and teaching. In traditional learning methods, accessibility to learning material has been limited to a number of individuals. Collaboration and communication are also limited to students in the same class [1]. At present, a large number of learning resources in different formats (e.g. Text, images, audio, video) are available through the Internet which encourages independent learning and transcends geographical boundaries. In addition, e-learning features are available for extended collaboration and interactive communication, such as wikis, forums, chat and peer-to-peer activities.

E-Learning has been widely applied in various education sectors, such as nursing education [15], medical education [16], mathematics education [17], cognitive impairment [18] and especially in learning English [19]. Learning English using e-learning has been done a lot, one of the results of research conducted [20] revealed that e-learning can improve students' language abilities and facilitate the teaching process.

E-TOEFL Material

TOEFL stands for Test of English as a Foreign Language. TOEFL is a proficiency test that is used to measure a person's English ability without being directly related to the teaching and learning process. The TOEFL material used in this E-TOEFL media is the TOEFL with Paper Based Test (PBT) type. Where the material structure used is from Listening Comprehension, Structure and Written Expression, and Reading Comprehension.

The Study of Usability

Usability comes from the word Usable which generally means it can be used well. Something can be said to be useful well if the failure in its use can be eliminated or minimized and provide benefits and satisfaction to users [21] [22] [23] [24]. Usability refers to how users can learn and use products to achieve their goals and how satisfied they are with their users. The usability is the extent to which a product can be used by certain users to achieve targets set with effectiveness, efficiency and achieve satisfaction of use in certain contexts [25]. Context of use consists of users, tasks, equipment (hardware, software and materials). Based on this definition, usability is measured based on components, namely: a. Effectiveness is defined as how well the user reaches the goal in using the system. b. Efficiency is defined as the resources expended in order to achieve the accuracy and completeness of the objectives. c. Satisfaction is defined as freedom from inconvenience, and a positive attitude towards product use or subjective measures of how users feel how fast users are proficient in using the system as well as ease of use in carrying out a function and what users want they can get.

Methods

The Method of Collecting the Data

In this study to obtain the data needed, using the primary data collection method using a questionnaire. Data collection by questionnaire is to give some questions that will be given to respondents to determine aspects of usability measurement, namely efficiency, effectiveness and satisfaction of the use of existing service systems in pesakih flat. Its function is to find out how easy (usability) is on the E-TOEFL media that has been designed. One of the questionnaire packages used to measure the usability of an application is to use USE (Usefulness, Satisfaction, and Ease of use). The USE questionnaire covers 3 dimensions: Usefulness, Satisfaction, and Ease of Use [26]. The questionnaire model used for this usability test is a Likert scale. Likert scale is used to measure the attitudes, opinions, and perceptions of a person or group of people about social phenomena which is a bipolar continuum scale, at the left end (low number) illustrates a negative answer [27]. While the right hand end (high number), represents a positive answer. Likert scale is designed to convince respondents to answer at various levels on each item of questions or statements contained in the questionnaire. Data about the dimensions of the variables analyzed in this study, addressed to respondents using a scale of 1 to 5 to get data that is ordinal and scored as follows:

Table 1. Instrument Rule Score Table

Assessment	Information	Score
SS	Strongly Agree	5
S	Agree	4
CS	Pretty Good	3
KS	Agree Less	2
TS	Disagree	1

After the data is collected, data analysis is done using descriptive analysis with the following steps [28]

1. Calculate the average score of each instrument.
2. Calculating the average value of the total score of each aspect of the assessment.
3. Comparing the average total score of each component of the assessment aspects with predetermined criteria. The following is a table for converting quantitative to qualitative data and scoring the range of respondents' ratings.

Table 2. Converting Quantitative Data into Qualitative [29]

Formula	Range of Scores	Category
Mi + 1.80 SBi< X	4.3	Very good
Mi + 0,60 SBi< X ≤ Mi + 1,80 SBi	3,042<x≤4,206	Good
Mi - 0,60 SBi< X ≤ Mi + 0,60 SBi	2,589<x≤3,402	Pretty good
Mi - 1,80 SBi< X ≤ Mi - 0,60 SBi	1,794<x≤2,589	Goodless
X ≤ Mi - 1,80 SBi	x≤1,794	Not good

Information:
X = Score obtained
Mi = (1/2) x (the highest score is ideal + the lowest score is ideal)
SBi = (1/3) x (1/2) x (ideal highest score - ideal lowest score)
Ideal maximum score = highest score = 5 Ideal minimum score = lowest score = 1

The calculation results:
Mi = (1/2) x (5 + 1) = 3
SBi = (1/3) x (1/2) x (5 - 1) = 0,67
(Mi + 1,80SBi) = (3 + (1,80 x 0,67)) = 4,206
(Mi + 0,60SBi) = (3 + (0,60 x 0,67)) = 3,402
(Mi - 0,60SBi) = (3 - (0,60 x 0,67)) = 2,589
(Mi - 1,80SBi = (3 - (1,80 x 0,67)) = 1,794

Based on the formula for converting quantitative data to qualitative in table 2 and the calculation results above, the interval scores are obtained as qualitative data. the score interval is obtained as qualitative data

Table 3. Guidelines for Converting Interval Quantitative Data Scores into Qualitative

Range of Scores	Range of Scores	Category
Mi + 1.80 SBi< X	4,206 < X	Very good
Mi + 0,60 SBi< X = Mi + 1,80 SBi	3,402 < X = 4,206	Good
Mi - 0,60 SBi< X = Mi + 0,60 Sbi	2,589 < X = 3,402	Pretty good
Mi - 1,80 SBi< X = Mi - 0,60 Sbi	1,794 < X = 2,589	Goodless
X = Mi - 1,80 Sbi	X = 1,794	Not good

4. Determine the overall value of each aspect of the test by calculating the average score of all aspects of the assessment then changed according to the criteria in the table.
5. To find out the level of eligibility based on the assessment in the form of a percentage using the formula:

$$Percentage\ of\ Quality(\%) = \frac{\sum\ Observation\ Score}{\sum\ Total\ Score\ of\ Questions} \times 100\%$$

Score data (in%) obtained from the calculation results are then converted to qualitative data. Guidelines for changing the score interval can be seen in the table below:

Table 4. Guidelines for Changing Score Intervals

Percentage Range of Values	Category
80,1% - 100%	Very good
60,1% - 80%	Good
40,1% - 60%	Pretty good
20,1% - 40%	Goodless
0% - 20%	Not good

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Research Population and Samples

Population is a group or collection of individuals or objects of research that have certain standards of characteristics that have been determined previously. The number of respondents involved in this study were 40 respondents from a population, namely lecturers and students at Bung Hatta University.

Research Methodology

In this research, the first step taken is to identify the problem, followed by conducting a preliminary study, namely a literature study / literature study related to usability testing and also a preliminary study of the object to be observed, in this case e-toefl media that has been designed. This research method can be seen clearly in Figure 1.

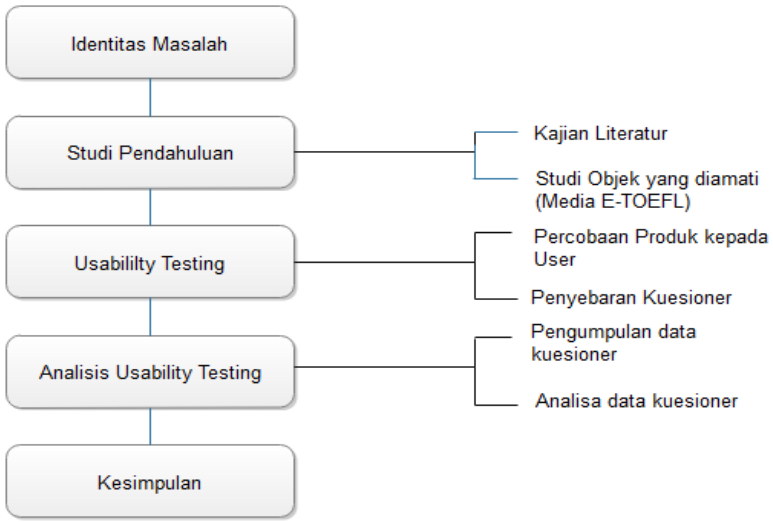

Figure 1. Research Steps

Results and Discussion

The Usability Testing

The e-toefl media trial was conducted on 40 respondents consisting of 40 students from the 2015-2018 class, from various majors at Bung Hatta University. The trial phase is used as a means of testing, that is, testing carried out by E-TOEFL media users. The E-TOEFL media trial activity begins with preparing the following matters:

1. Ensure the readiness of the device in the computer lab to be able to access the portal www.etoeflgate.com
2. Determine the schedule of meetings with student participants
3. Prepare a technical plan for conducting trials
4. Print student username and password to share
5. Prepare a attendance list

The Trial Product

The E-Toefl media trial was conducted for one face-to-face session in the classroom to give direction. If the materials, videos or exercises that have been done have not yet been completed, then further learning is carried out outside of the learning hours independently. The activities carried out during the E-TOEFL media testing process are as follows:

1. Class meetings include briefing students on how to use e-media and explain the difference with traditional learning
2. Share usernames and passwords with students. Directing how the steps in learning the E-TOEFL media
3. Directing students how to work on activities provided in e-toefl media.
4. Furthermore, students complete activities in the E-TOEFL media independently.

Spread Questionnaire

After the implementation of the learning trial using e-toefl is completed, students are asked to fill in a questionnaire in response to the e-toefl they use, and contain 30 questions that already represent all four aspects of usability. The user fills in a questionnaire that has been shared based on his experience (what he saw and felt) when carrying out these tasks. The results of student questionnaire responses can be seen in table 5.

Table 5. Item Usefulness Questionnaire

No	Grading Points	User Score	
		Score of 40 Users	Mean
A1	*E-Toeflinimembantusayabelajarbahasainggrishinggamencapaitujuanpembelajaran*	164	4.1
A2	*E-toeflinimembantusayabelajarbahasainggrisbelajarbahasainggrisdalamwaktu yang lebihsingkat*	162	4.1
A3	*E-Toeflinisangatbermanfaatuntukmendukungpembelajaranbahasainggrisdiluarkampus*	169	4.2
A4	*E-ToeflinimembantusayadalammengaturwaktusayadalammenyiapkanujianToefl Paper Based Test*	161	4
A5	*E-ToeflinidapatmembantusayamenjawabsoalujianToefl Paper Based Test denganlebihmudah*	156	3.9
A6	*E-Toeflinidapatmenghematwaktusayamencarimateri yang berkaitandenganUjianToefl*	163	4.1
A7	*E-Toeflinimenyajikanmateribelajarsesuaidengan yang sayabutuhkan*	156	3.9
A8	*E-Toeflinidapatmemberikaninformasisepertiapa yang sayaharapkan*	150	3.8
Mean			**4.00**
Category			**Good**

Table 6 Item Ease of Use Questionnaire

No	Grading Points	User Score	
		Score of 40 Users	Mean
B1	*E-ToeflInimudahdigunakan*	157	3.9
B2	*E-Tofliniпraktisuntukdigunakan*	163	4.1
B3	*Sayadapatmenggunakan tool yang tersedia di dalam e-toeflinidenganmudah*	155	3.9
B4	*Sayabutuhlangkah yang mudahuntukmelakukansesuatudengan e-toeflini*	160	4
B5	*E-Toeflinimudahdiaksesdaribermacam-macamaplikasi browser*	163	4.1
B6	*Setelahmengikutikursuslewat E-Toeflini, sayatidakkesulitanmenggunakannyakembali*	158	4
B7	*Setelahmengikutikursuslewat E-Toeflini, sayadapatmenggunakannyatanpabukupanduan*	152	3.8
B8	*Sayatidakmelihatadanyastruktur menu dan link yang membingungkanketikabelajarmenggunakan e-toeflini*	151	3.8
B9	*E-Toefliniakandisukaiolehbanyak orang. Baik yang jarangmenggunakanmaupun yang seringmenggunakan*	164	4.1
B10	*Apabilasayamelakukankesalahandalammenggunakan e-toeflinisayadapatmengatasinyadenganmudah*	153	3.8
B11	*Sayadapatmenggunakan E-Toeflinidimanasajadankapansaja*	153	3.8
Mean			**3.9**
Category			**Good**

Table 7 Item Ease of Learning Questionnaire

No	Grading Points	User Score	
		Score of 40 Users	Mean
B1	*Sayadapatmempelajaribagaimanacaramenggunakan E-Toeflinidengancepat*	160	4
B2	*Sayadapatmengingatbagaimanamenggunakan E-Toeflinidenganmudah*	159	3.98
B3	*Cara menggunakan e-toeflinidapatdipahamidenganmudah*	164	4.1
B4	*Sayadapatmenguasaibagaimanamenggunakan e-toeflinidengancepat*	158	3.95
Mean			**4.0063**
Category			**Good**

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Table 8 Satisfaction

No	Grading Points	User Score	
		Score of 40 Users	Mean
D1	*Sayamerasapuasdenganadanya e-toeflini*	170	4.25
D2	*sayaakanmenyarankan e-toeflinisebagai media belajarbahasainggrisdanpersiapanToeflkepadatemansaya*	168	4.2
D3	*E-Toeflinisangatmenyenangkanuntukdigunakandalampembelajaran*	168	4.2
D4	*E-toeflinidapatbekerjasepertiapa yang sayaharapkan*	159	3.975
D5	*E-Toeflinisangatbagus*	167	4.175
D6	*Inovasipembelajaramenggunakan e-toeflinisangatmemuaskansehinggapembelajarantidakterkesanmonoton*	172	4.3
D7	*Temansayaakanmerasaterbantudenganadanya e-toeflinikarenamudahnyacarapenggunaanya*	170	4.25
Mean			**4.19**
Category			**Good**

Based on the data obtained from the evaluation results that have been carried out by the e-toefl media users above, then the data is converted into qualitative data using a score conversion guide.

Formula	Range of Scores	Category
Mi + 1.80 SBi< X	4.3	Very good
Mi + 0,60 SBi< X ≤ Mi + 1,80 SBi	3,042<x≤4,206	Good
Mi - 0,60 SBi< X ≤ Mi + 0,60 SBi	2,589<x≤3,402	Pretty good
Mi - 1,80 SBi< X ≤ Mi - 0,60 SBi	1,794<x≤2,589	Goodless
X ≤ Mi - 1,80 SBi	x≤1,794	Not good

Based on this usability test, it can be analyzed that the first aspect of Usefulness obtained an average score of 4.0 with a good category, this means that respondents consider the existence of E-TOEFL can be useful and support the process of learning English especially for preparation of the TOEFL test independently. The second aspect, Ease of Use, obtained an average value of 3.93 in the good category, respondents considered that the E-TOEFL media designed was very easy and practical to use. In the third aspect, Ease of Learning, respondents gave a score of 4.1 in a good category, meaning that students could easily understand, remember and master the material delivered through E-TOEFL. And the fourth is the Satisfaction aspect, obtaining a score of 4.03, in this aspect students are satisfied with the existence of this E-TOEFL media because with this E-TOEFL, it can support the process of learning English especially in preparation for the Real TOEFL exam.

If presented as a percentage, the eligibility percentage can be calculated using the following formula:

$$Persentase\ Kualitas\ (\%) = \frac{\sum\ \ Skor\ hasil\ observasi}{\sum\ \ Skor\ total\ soal} \times 100\%$$

1

$$\text{Percentage of quality}(\%) = \frac{1181 + 1729 + 641 + 1174}{5x40x30} \times 100\%$$

$$\text{Percentage of quality}(\%) = \frac{1181 + 1729 + 641 + 1174}{5x40x30} \times 100\%$$

$$\text{Percentage of quality}(\%) = \frac{4825}{6000} \times 100\%$$

$$\text{Percentage of quality}(\%) = 80{,}416\% = 80{,}42\%$$

Based on these calculations, it can be concluded that the e-toefl media that has been designed is categorized as "Good" as a learning medium. "Good" category means that the developed e-toefl media meets the criteria of good learning media

From the results of this study it was suggested to the campus to use this E-TOEFL learning media as a means to prepare for the Real TOEFL Exam for Bung Hatta University students. The design of the E-TOEFL Media is intended to increase the ability and interest of students to learn English to be more active, where students and lecturers can study independently anytime and anywhere. E-TOEFL media focuses on Paper Based Test material

(Listening, Structure and Written expression and Reading) developed in accordance with the TOEFL format, especially for beginners.

Conclusion

The results of this study can be utilized by stake holders as a means to facilitate students in learning Toefl. This e-Toefl can be implemented for students and lecturers to facilitate English students, especially Paper Based Test based TOEFL material at Bung Hatta University. In this study the testing method used is the Model Use Questionaire. The media made already meet the 4 components of usability that have been tested so that the system is feasible to be operated / used by students and lecturers as a means of teaching. This E-TOEFL media is specifically for students of Bung Hatta University who are in semesters 4 to 8. The material standard used in this E-TOEFL refers to the TOEFL format and the standard that is organized by the TOEFL institution. Based on testing the usability testing analysis from the user side stated that the media were designed in the good category and obtained a percentage of 80.42%. This can be seen from the students' responses to the developed E-TOEFL media. For further research, it is necessary to do a usability testing on the E-TOEFL media on a smartphone so that it can be seen how the user's opinion with the implementation of E-TOEFL on a smartphone.

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