Evaluation of Animation-Based Reading Learning System during the Covid-19 Pandemic Using the Usability Scale System

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Abstract

In recent years, the world is facing a big problem that started with the emergence of an outbreak of a disease caused by the corona virus or familiarly called Covid-19. Almost all aspects of life are affected and undergo significant changes. So because Covid-19 pandemic teaching and learning activities apply distance learning from home with an online model or online learning. Distance learning is a planned teaching and learning activity outside the classroom environment and there is no face-to-face interaction between students and teachers this learning emphasizes independent learning. This policy requires all educational institutions to be active and innovative in designing their learning activities. With innovations in distance learning during the Covid-19 pandemic, students will feel enthusiastic and lose boredom during activities, learning is more varied and students are not bored to increase the interactiveness of learning, it uses an animation-based reading system to see what features are lacking, so it is necessary to evaluate so that there will be improvements in the future. System Usability Scale is one of the evaluation methods used to see the usability of a software product. Usability evaluation was carried out to 10 student user respondents across generations. Based on the results of the Usability evaluation, the animation-based learning to read platform has a score of 88 and is considered to have met the Usability element.

I. Introduction

In recent years, the world is facing a big problem that started with the emergence of a disease outbreak caused by the corona virus or familiarly called Covid-19. Almost all aspects of life are affected and undergo significant changes. Various efforts have been made to minimize the spread of this virus, one of which is social distancing.

All sectors inevitably have to follow this policy, starting from the economy, tourism, social, to education. In the circular letter of the Minister of Education and Culture of the Republic of Indonesia No. 3 of 2020 explains that during the Covid-19 pandemic teaching and learning activities apply distance learning from home with an online model or online learning. Distance learning is a planned teaching and learning activity outside the classroom environment and there is no face-to-face interaction between students and teachers, this learning emphasizes independent learning. This policy requires all educational institutions to be active and innovative in designing their learning activities. With innovations in distance

learning during the Covid-19 pandemic, students will feel enthusiastic and lose boredom during activities, learning is more varied and students are not bored (Z. Yu, 2021). Learning is an increase in skills and knowledge of the best public policies in the learning process in schools. Learning media in the form of information technology developments that can be used are (learning, online). The role of learning media in the teaching and learning process is an inseparable part of the world of education. Learning media are facilities or instruments that encourage the effectiveness and efficiency of learning activities, especially when students are required to study from home during the corona virus pandemic (COVID 19). Computer networks are interconnected with other computer networks throughout the world which are defined as online learning. Skills are valuable when entering the workplace and are skills that are difficult to teach through traditional and online learning. The process that occurs during learning activities is that students tend to seem reluctant to express opinions and only become listeners and tend to be passive. (R. Vishkaie, 2020) In the learning process at home, the media is also very much needed to determine learning outcomes, students tend to only focus on studying on campus. Students and online learning teachers have their respective roles, students have roles as knowledge constructors, while teachers have roles as facilitators and mentors in learning activities, problem solvers. . Online learning is learning that uses the internet network with accessibility, connectivity, flexibility, and the ability to give rise to various types of learning interactions. The main learning of students that is very prominent is the willingness to direct themselves to the learning process according to their needs which is called SDL (self-directed learning). The management of learning activities mainly helps students and teachers to take advantage of this learning model. Learning resources for the evaluation of efficient learning with information technology serves as a medium that provides between students and teachers. The progress of the times and science and technology can create different ways of thinking, especially regarding learning theory, which has encouraged and inspired many learning innovations. (B. L. Moorhouse, 2022). The shift from the term "teaching and learning process" to "learning" should not only be seen from a change, but is very profound and must be understood with the philosophical foundation and paradigm shift contained in it. The ideal condition that causes renewal in learning is the existence of one of the determining factors for the success of the teaching and learning process in the classroom because of the use of animation media applications in learning as an appropriate innovation of facilities and infrastructure. , because the application of animation media in learning is adjusted to the characteristics of students, materials, and supporting infrastructure (H. Tkacová, 2022).

So that if the application of animation media in learning is used properly, then the learning objectives in the cognitive, psychomotor domain will be achieved. While the facts on the ground that are not in accordance with these ideal conditions cause the learning outcomes achieved by students are not as expected. One of the contributing factors is the use of the application of animation media in learning that is less/inappropriate and the use of the application of animation media in learning that does not vary. Because there are two things that cause the phenomenon of using appropriate and non-variative learning models, it is necessary to present a discussion of various learning models in the hope of providing additional knowledge, so that they can be implemented in teaching and learning activities. (M. A. Flores, 2020).

Distance learning is carried out by teachers through online media such as Whatsapp, Google Meet, Google Form and other types. However, this system requires special learning designs and techniques to be implemented. Policy evaluation needs to be carried out to evaluate the distance learning system that has been implemented in schools at all levels of education. Based on the observations made by the authors, it is found that distance learning is

considered ineffective and maximal if it is applied to schools with inadequate infrastructure. This is because technology-based distance learning requires a different approach in terms of planning, implementation and evaluation. (S. Palvia et al., 2018) In implementing distance learning, students need special attention, especially the infrastructure used, an adequate internet network and self-motivation to be able to follow the learning process independently. Distance learning problems include uneven internet network access, inadequate equipment, high cost quotas, uneven mastery of science and technology among educators or teachers, unprepared implementation of the teaching and learning process using distance learning methods, and difficulties for parents. in accompanying their children. their children doing teaching and learning activities are an obstacle faced during the distance learning process. (A. Karakolidis, 2021). The COVID-19 pandemic has had a significant psychological impact on vulnerable groups, especially students.

Cooperation between the school and the organizers to improve internet services in schools is one of the efforts to overcome the problem of limited facilities and infrastructure supporting science and technology in schools for quality improvement. (S. J. Daniel, 2020) The importance of the principal's role in collaborating with providers in the process of providing quota subsidies is an aid that can relieve parents and students themselves. In terms of accompanying parents during distance learning, it takes commitment from parents to be willing to spend time accompanying students when carrying out learning activities. Supervise by asking children to schedule the learning process, participate in the process of checking the work being done. Taking the time is the only key in helping students during the distance learning process.

The current distance learning system according to the author's observations is still a burden for teachers, parents and students. The government needs to pay attention to the economic conditions of parents and students affected by the Covid-19 pandemic if the distance learning system is still an option. Sihombing (2020) state that Covid-19 pandemic caused everyone to behave beyond normal limits as usual. The outbreak of this virus has an impact especially on the economy of a nation and Globally (Ningrum, 2020). The problems posed by the Covid-19 pandemic which have become a global problem have the potential to trigger a new social order or reconstruction (Bara, 2021). The distance learning system implemented in the last few months according to the author has not been very effective.

For this reason, it is necessary to carry out a comprehensive evaluation by stakeholders, starting from the school, school committee, community leaders, parents, guardians of students and the Education Office so that the quality of education does not decrease. Because education is a long-term investment for a nation. About the future (Y.-C. Liao, 2021).

During an interview with one of the stakeholders, namely the teacher, the collection of assignments was still carried out in the wa group which was vulnerable to cheating because in the wa group, all members in the wa group could see the files that were sent and were vulnerable to file loss because in the wa group the files could be deleted. with a cleaner from cellphones and chat files sent can also be stacked with the latest chats, for learning to read still use google meet and zoom where not all students have capable gadgets and internet packages that are sufficient to take part in these reading learning activities, as well as good internet signals. not good because of the problem of inadequate internet infrastructure (X. Zhu, 2020) and some students are also less enthusiastic because learning is less interactive at home learning is also assisted by parents who are also less effective because of busyness. parent.

And also the use of animated video learning media also increases motivation, interest and student learning outcomes. The development of animated video learning media requires tools in the form of software to support the process of making animated videos (A. D. Sakti, 2022).

The reason for using Android to store animated media is that in this technological era, technological developments have shown a significant impact. Both positive and negative impacts. The impact of technology certainly affects various fields of life such as economic, social, cultural, or educational. Especially in the field of education which is now colored by the influence of globalization. One of the very rapid technological developments and is used as a learning medium is a smartphone. Learning becomes more fun and not boring with supporting media such as smartphones. Smartphones are an alternative for teaching and learning for students and teachers with modern and very practical concepts. (K. Le, 2020).

The learning animation system makes it very easy for students to do learning without direct interaction. The presence of a smartphone as a medium to support the learning process is needed for system implementation. Accompanied by the internet, the sophistication of smartphones to access various kinds of information will be faster and easier. The learning process between teachers and students will also be more interactive. Students will also be more enthusiastic in receiving learning materials that are not boring. But behind this positive impact there must be a negative impact that will arise when using a smartphone outside of a student's activity. So that teachers and parents must supervise the use of smartphones so as not to fall into harmful things.

Based on the problems above, the researcher feels it is necessary to evaluate the usability of the animated learning media used, so that learning during the Covid-19 pandemic can run according to the initial expectations and goals. Usability refers to the level of a certain product to achieve specific goals including efficiency, effectiveness, and satisfaction in a context of use (Kaya, A., 2020). In addition, usability serves to measure the level of user satisfaction with a product (Taylor, P., 2015).

One usability evaluation that can be done is by using SUS or System Usability Scale. SUS is an evaluation method used to determine the usability of a software product. SUS is also used to determine the level of student acceptance of various models of learning technology (Revythi, 2019). This evaluation is expected to determine the level of reusability of animated learning media so that they are able to provide good results and according to future goals, as well as facilitate learning activities during the Covid-19 pandemic.

II. Research Method

2.1 E-learning

E-learning is online learning is learning that uses the internet network with accessibility, connectivity, flexibility, and the ability to give rise to various types of learning interactions. The main learning of students that is very prominent is the willingness to direct themselves to the learning process according to their needs which is called SDL (self-directed learning). The management of learning activities mainly helps students and teachers to take advantage of this learning model. Learning resources for the evaluation of efficient learning with information technology serves as a medium that provides between students and teachers.

2.2 Animation

The learning animation system makes it very easy for students to do learning without direct interaction. The presence of a smartphone as a medium to support the learning process is needed for system implementation. Accompanied by the internet, the sophistication of smartphones to access various kinds of information will be faster and easier. The learning process between teachers and students will also be more interactive. Students will also be more enthusiastic in receiving learning materials that are not boring. But behind this positive impact there must be a negative impact that will arise when using a smartphone outside of a

student's activity. So that teachers and parents must supervise the use of smartphones so as not to fall into harmful things.

2.3 Usability

Usability is an indicator measuring the level of usability of a system or equipment. Usability is a concept that focuses on making systems that are easy to learn and use. Usability is very important in an interaction design, consisting of several aspects, namely: flexibility, efficiency, behavior, effectiveness, utility, ease of learning, ease of memory and security. According to Nielsen, usability is influenced by five quality components, including:

1. Efficiency.
   Once users learn, how quickly can they perform tasks?
2. Learnability.
   How easily can users complete basic tasks the first time they use it?
3. Error.
   How many errors do users make, how severe are these errors, and how easily can they recover from errors?
4. Memory.
   When the user returns to the design after a period of not using it, how easily can they rebuild their proficiency?
5. Satisfaction.
   How fun is it to use it?

2.4 System Usability Scale

Technically, SUS has 10 question items that are packaged in the form of a questionnaire, but in its development, it is possible to make it in the form of an image called Pictorial-SUS (Baungartner, 2019).

Table 1. 10 Items of the SUS Questionnaire

		Strongly Disagree				Strongly Agree
1	*I think that I would like to use Animation-Based Reading Learning frequently.*	1	2	3	4	5
2	*I found Animation-Based Reading Learning unnecessarily complex.*	1	2	3	4	5
3	*I thought Animation-Based Reading Learning was easy to use.*	1	2	3	4	5
4	*I think that I would need the support of a technical person to be able to use Animation-Based Reading Learning*	1	2	3	4	5
5	*I found the various functions in Animation-Based Reading Learning were well integrated.*	1	2	3	4	5
6	*I thought there was too much inconsistency in Animation-Based Reading Learning*	1	2	3	4	5
7	*I would imagine that most people would learn to use Animation-Based Reading Learning very quickly*	1	2	3	4	5

8	*I found Animation-Based Reading Learning very cumbersome (awkward) to use.*	1	2	3	4	5
9	*I felt very confident using Animation-Based Reading Learning*	1	2	3	4	5
10	*I needed to learn a lot of things before I could get going with Animation-Based Reading Learning*	1	2	3	4	5

The System Usability Scale (SUS) has 10 statement items, a 5-point Likert scale with response choices from "Strongly disagree" to "Strongly Agree", and the score weighting is between 0-100. Table 1. and table 2. are examples of 10 statement items in the System Usability Scale Questionnaire. Weighting System Usability Scale Score which is divided into 5 Letter Grades from A, B, C, D, and F with a choice of ratings of Excellent, Good, Ok, Poor, and Awfull.

Table 2. Weighting of SUS Questionnaire Scores

SUS Score	*Letter Grade*	*Adjective Rating*
Above 80.3	A	Excellent
Between 68 and 80.3	B	Good
68	C	OK
Between 51 and 67	D	Poor
Below 51	F	Awful

The method used in this research is quantitative method with quantitative data analysis to measure usability level. Learning to read based on animation using System Usability Scale (SUS).

For the number of respondents needed in this study as many as 10 respondents who are active students across majors. Where technically the 10 respondents were given the SUS Questionnaire for the animation-based Learning to read platform.
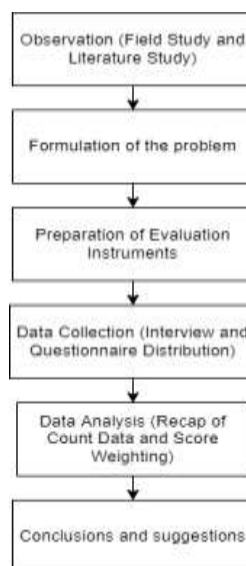
The overall flow of research activities is as follows:

Figure 1. *Research Activity Flow*

This study only used a questionnaire without the Pictoria-SUS. To make the System Usability Scale Questionnaire, the researcher used the SUS PDF generator which can be accessed via the https://www.usabilitest.com/sus-pdf-generator web page. This is done as an effort to facilitate researchers in preparing the System Usability Scale Questionnaire. For the collection of instruments, a Google Form was used where respondents filled out a questionnaire through the Google Form. While data processing using Ms. Excel. The following is the result of distributing the System Usability Scale Questionnaire.

Table 3. Data System Usability Scale Questionnaire for Learning to Read Based on Animation

No	Respondent	Animation Learning's Original Score									
		Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10
1	R1	5	2	4	2	5	1	5	1	5	1
2	R2	5	2	5	3	4	1	5	2	4	2
3	R3	5	1	4	1	5	2	5	2	4	2
4	R4	5	1	5	2	5	3	5	1	5	2
5	R5	4	3	4	1	4	2	5	1	5	1
6	R6	5	2	4	1	5	2	4	1	4	1
7	R7	3	3	5	3	5	1	4	2	3	1
8	R8	5	1	5	1	5	1	5	1	5	2
9	R9	5	2	5	1	5	2	5	2	5	2
10	R10	5	1	5	1	4	2	5	2	5	2

From these data, the researcher will calculate to give the weighting of the SUS Score. There are several rules in calculating the SUS Score, including the following:
1. In questions with odd numbers, the final score is the result of subtracting the user's score (x) minus
2. In questions with even numbers, the final score is the result of subtracting 5 minus the user score (x).
3. The weighting of the SUS score is obtained from the total result of the total user score multiplied by 2.5.

Table 4. SUS Questionnaire Calculation Data for Learning to Read Based on Animation

No	Respondent	Score results Calculate the Animation Learning assessment										Amount JML	Score JML*2.5
		Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10		
1	R1	4	3	3	3	4	4	4	4	4	4	37	93
2	R2	4	3	4	2	3	4	4	3	3	3	33	83
3	R3	4	4	3	4	4	3	4	3	3	3	35	88
4	R4	4	4	4	3	4	2	4	4	4	3	36	90
5	R5	3	2	3	4	3	3	4	4	4	4	34	85
6	R6	4	3	3	4	4	3	3	4	3	4	35	88
7	R7	2	2	4	2	4	4	3	3	2	4	30	75
8	R8	4	4	4	4	4	4	4	4	4	3	39	98
9	R9	4	3	4	4	4	3	4	3	4	3	36	90
10	R10	4	4	4	4	3	3	4	3	4	3	36	90
Total SUS Score on Learning to read based on animation													**880**

For further calculations, the SUS score of each respondent is sought for the average score by adding up the overall score and dividing by the number of respondents, the following formula is:

$$\bar{x} \quad = \quad \text{Average score}$$
$$\sum x \quad = \quad \text{Number Of Sus Score}$$
$$n \quad : \quad \text{Number of respondents}$$

Figure 2. The Formula for Calculating the SUS Score

From the calculation results above, the average score for learning to read based on animation is 88. with an "Excellent" and Letter Grade "A" rating. From the questionnaire given there are suggestions for improvement for learning to read based on animation, it is necessary to add features that integrate google meet or zoom into the application so that it is easier for students to read reading.

IV. Conclusion

Learning to read based on animation is an application-based reading learning application system so that the interactiveness of learning between students and teachers can increase and so that students can be more enthusiastic in learning to read, but to see what features are lacking, it is necessary to evaluate so that there will be improvements in the future. System Usability Scale is one of the evaluation methods used to see the usability of a software product.

From the calculation results above, the average score for learning to read based on animation is 88. with an "Excellent" and Letter Grade "A" rating. From these results, learning to read based on animation can meet the usability element, and from the questionnaire given there are suggestions for improvements to learning to read based on animation, it is necessary to add features that integrate google meet or zoom into the application so that it is easier for students to read reading.

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