

System Usability Scale in Optimizing the Usability Value of the Tutoring and Private Lessons Ayo Pintar Application in Cirebon City

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Abstract

This study aims to evaluate the usability level of the Ayo Pintar website using the System Usability Scale (SUS) method. This research falls under the category of action research, where the usability test results are further analyzed to provide improvement recommendations that can enhance the quality of user experience. The evaluation was conducted through an SUS questionnaire consisting of 10 statements, using a Likert scale as the measurement tool. The findings indicate that the Ayo Pintar website has a good usability level, with a score of 87.8. However, the improvement recommendations derived from data analysis are expected to further optimize the website's usability, providing greater benefits to users and supporting the goal of flexible educational services.

Keywords: System Usability Scale, Web Application, Tutoring, Website

1. Introduction

The rapid development of information technology forces users to continuously adapt to these changes. The need for information and supporting tools that facilitate daily tasks has become a highly relevant issue in modern life. This condition drives various technology-based service providers to compete in offering the best solutions and innovations for their users. Ayo Pintar Tutoring and Private Lessons is an educational service based in Cirebon City, focusing on elementary to high school levels. This service prioritizes flexible learning with a unique model, where teachers visit students' homes to provide tutoring and private lessons. As an education service provider, having an informative and efficient web-based platform is essential. The official Ayo Pintar website (ayopintar.my.id) is designed to provide comprehensive information about services, profiles, and programs offered to potential users. However, like other digital platforms, the website still faces several challenges related to content management, accessibility, and optimal display.

Usability is one of the most important aspects of ensuring that a website delivers the best experience for its users [1]. According to Jakob Nielsen, usability refers to the quality of user experience when interacting with a system, whether it is a website, software application, or other technology [2]. High usability is crucial for a website to remain relevant and continuously attract visitors [3]. In particular, users generally expect information to be quick, relevant, and easily accessible.

Until now, the Ayo Pintar website has not undergone any usability evaluation. Therefore, testing is needed to determine the website's usability level. One of the methods suitable for this evaluation is the System Usability Scale (SUS). SUS is a quick and straightforward evaluation method first introduced by John Brooke in 1986 [4]. This method has been widely used for over 30 years and has proven effective in evaluating various systems, including websites and applications [5]. By using the SUS method, this study aims to measure and optimize the usability level of the Ayo Pintar website according to user needs.

2. Research Methods

2.1. Data Collection Method

Data collection in this study was conducted using a questionnaire method. A questionnaire is a data collection technique that involves providing a set of written questions or statements to respondents for them to answer. In this study, respondents were selected using a non-random sampling method, meaning they were not chosen randomly [6]. The selected respondents were internet users with backgrounds relevant to the Ayo Pintar Tutoring and Private Lesson services in Cirebon City. Based on Ayo Pintar's data from the 2021–2024 period, the total number of clients served each year was 63. Therefore, the questionnaire was distributed using the saturated sampling technique, in which the entire population within the designated group was included as respondents. This approach aims to obtain more representative data from the entire involved population [7].

2.2. Data Analysis Methods

The data analysis in this study was conducted quantitatively. The data obtained from the questionnaire was analyzed using computational methods based on formulas defined in the System Usability Scale (SUS) method [8]. The System Usability Scale (SUS) is a usability testing method introduced by John Brooke. SUS is a reliable and cost-effective evaluation tool for assessing the overall usability of a system. This method is based on a standardized Likert-scale questionnaire, producing an average usability score and user satisfaction level on a scale of 0-100. As an affordable yet effective method, SUS can be used to test the usability of various products, including websites, mobile applications, television software, and others. This method provides a simple and user-friendly scale ranging from 0 to 100 [9]. SUS is also recognized as an efficient evaluation tool that delivers adequate results, even with a small sample size and limited time and financial resources. The scores obtained through the SUS method serve as a reference in determining the feasibility of an application for further use or implementation.

Table 1: List of Questions

List of Questions	
1.	I think I will use this website again in the future.
2.	I find this website difficult to use.
3.	I find this website easy to use.
4.	I need help from others or a technician to use this website.
5.	I feel that the features on this website function properly.
6.	I feel that some elements on this website are inconsistent or not well-aligned.
7.	I believe other users will be able to understand how to use this website quickly.
8.	I find this website quite confusing.
9.	I do not experience any obstacles while using this website.
10.	I need to familiarize myself first before I can use this website smoothly.

System Usability Scale (SUS) can be interpreted into adjective ratings to provide a clearer depiction of a system's usability level. This interpretation is then translated into an acceptability range, which is used to determine whether a system is acceptable or not to its users [10].

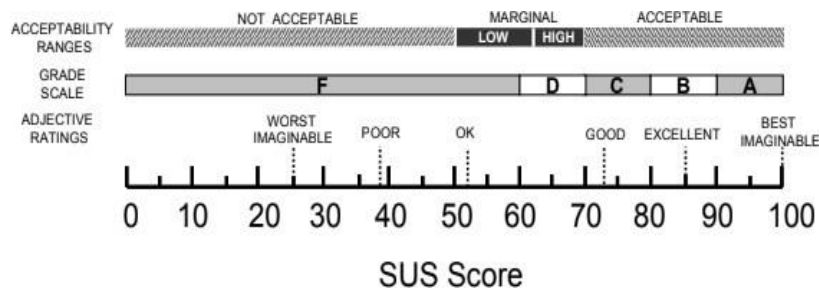


Fig. 1: SUS Score

SUS (System Usability Scale) evaluates product usability through several categories. Based on the acceptability range, scores are divided into not acceptable (below 50), marginal (50-69), and acceptable (70 and above). In the grade scale, scores are assigned letters, ranging from A+ (90-100) to F (below 50). Adjective ratings provide descriptions such as worst imaginable (<25), poor (25-50), ok (50-70), good (70-85), excellent (85-90), and best imaginable (>90) [11]. These scores help in understanding the level of usability, from unacceptable to exceptionally good.

The results of data processing from the questionnaire are further analyzed to provide recommendations for improving the usability of the Ayo Pintar website. The analysis process uses the SUS method to generate a usability score that serves as a reference for assessing the website's quality [12]. If the SUS score shows a significant improvement after the recommendations are implemented, it can be concluded that the recommendations are effective in enhancing the usability of the Ayo Pintar website. This analysis also helps identify aspects that require further improvement to optimize the user experience. Below is the formula for the System Usability Scale.

$$((\sum (S_i \times 2.5)) / N) \quad (1)$$

Before conducting measurements with SUS, it is important to perform a validity test to ensure that each question item in the questionnaire accurately measures the expected variable. The method used is the Pearson Product-Moment correlation, where the correlation value (r-count) of each item is compared with the critical value (r-table) at a certain significance level. If the r-count is greater than the r-table, the item is considered valid [13]. This test is conducted using data from respondents who have completed the SUS questionnaire to ensure that each question is relevant in measuring usability aspects. Below is the formula for the validity test.

$$(N \sum XY - (\sum X)(\sum Y)) / \sqrt{[(N \sum X^2 - (\sum X)^2)(N \sum Y^2 - (\sum Y)^2)]} \quad (2)$$

After conducting the validity test, the next step is the reliability test, which aims to measure the consistency of questionnaire results if repeated testing is performed. The method used is the calculation of Cronbach's Alpha value or the comparison of t-count with t-table. If the t-count value is greater than the t-table at a certain significance level, the questionnaire is considered reliable [14]. This test is essential to ensure that the questionnaire has a high level of reliability in consistently measuring the website's usability. Below is the formula for the reliability test.

$$t = (r\sqrt{N - 2}) / \sqrt{(1 - r^2)} \quad (3)$$

Through a combination of validity testing, reliability testing, and analysis using the SUS method, this study aims to provide a comprehensive overview of the usability level of the Ayo Pintar website. The results obtained will serve as the basis for formulating effective improvement recommendations, ensuring a significantly enhanced user experience.

3. Results and Discussion

The usability testing of the Ayo Pintar website using the System Usability Scale (SUS) method was conducted from December 1 to December 10, 2024. This study involved 63 respondents selected based on specific criteria, namely individuals with a background related to the tutoring and private learning services offered by Ayo Pintar, such as students. The selection of respondents with these criteria aimed to ensure that they could understand and visualize the implemented website improvements. This was necessary for respondents to provide an objective and accurate assessment of the statements in the SUS questionnaire. The collected data will serve as the basis for evaluating the website's usability level after the recommendations have been applied. Below is the list of respondents who participated in the testing.

Table 2: User List

User List	
Students	53
Teachers	10
Total	63

After the list of users or respondents has been collected, the next step is to conduct a validity test using the Product Moment Pearson method to determine whether each item in the questionnaire has an adequate level of validity. This validity test ensures that every statement in the SUS questionnaire accurately measures what it is intended to measure, namely the usability level of the Ayo Pintar website. In this test, the correlation value (r) of each question item is compared with the r -table value at a certain significance level, for example, 0.05. If the calculated r -value of an item is greater than the r -table value, the item is considered valid and can be used for further analysis. Conversely, if the calculated r -value is smaller than the r -table value, the item is considered invalid and must be excluded from the analysis. Below are the results of the validity test that has been conducted:

Table 3: Validity Test Results

	t_{count}	Information
1.	3.533	Valid
2.	7.623	Valid
3.	1.803	Valid
4.	7.167	Valid
5.	2.702	Valid
6.	4.987	Valid
7.	3.343	Valid
8.	6.709	Valid
9.	2.973	Valid
10.	3.623	Valid
	t_{table}	1.669

This validity testing process is essential to ensure that the data obtained from the questionnaire is reliable and provides credible results. Additionally, a high level of validity indicates that the questionnaire items align with the research objectives, namely to accurately measure the website's usability level. The results of the validity test show that most items in the questionnaire are deemed valid, meaning that respondents provided answers relevant to the aspects being measured.

After conducting the validity test, the next step is to perform a reliability test to measure the consistency of the data obtained from the questionnaire. The reliability test aims to ensure that the measurement tool used provides consistent results when applied under the same conditions at different times. In this study, reliability testing was conducted using the Cronbach's Alpha method or by comparing the calculated t -value (t -count) with the critical t -value (t -table). If the Cronbach's Alpha value exceeds 0.6 or if t -count is greater than t -table, the questionnaire is considered reliable. A high level of reliability indicates that respondents' answers to the questionnaire items follow a stable pattern and can be trusted for further analysis. Conversely, low reliability suggests inconsistencies in respondents' answers, requiring a revision or re-evaluation of the measurement tool. In this study, the reliability test was conducted on data collected from 63 respondents. Based on the data analysis, the reliability score indicates that the questionnaire has an adequate level of consistency, with a Cronbach's Alpha value of 0.61. This means that the SUS questionnaire used in this study is sufficiently reliable for measuring the usability of the Ayo Pintar website. The results of this reliability test enhance confidence in the validity of the data, ensuring that subsequent analyses accurately reflect respondents' actual perceptions of the website. The following section presents the reliability test results obtained in this study.

Table 4: Reliability Test Results

	Item Variance
1.	0.73733
2.	0.60727
3.	0.71633
4.	0.76498
5.	0.8807
6.	1.19355
7.	0.50435
8.	1.02304

9.	0.49053
10.	0.70046
Cronbach's Alpha Value	
Standard	0.611
Description	0.6 Reliable

The data processing results from the usability testing of the Ayo Pintar website, based on questionnaires completed by 63 respondents, provide a comprehensive overview of the website's usability level. The data collection process was conducted using the System Usability Scale (SUS) method, involving respondents with relevant backgrounds—specifically, users directly connected to tutoring and private learning services. From the SUS questionnaire data analysis, an overall average score was obtained, reflecting respondents' perceptions of their experience using the Ayo Pintar website. The following section presents the SUS calculation results.

Table 5: SUS Calculation Results

No.	P1	P2	P3	P4	P5	P6	P7	P8	P9	P10	Σ	Σ x 2.5 %
Respondent 1	4	3	5	2	5	2	5	3	5	2	36	90
Respondent 2	4	2	4	2	3	1	5	4	4	4	33	82.5
Respondent 3	5	3	2	3	5	3	5	3	5	4	38	95
Respondent 4	3	2	5	2	4	4	4	3	4	3	34	85
Respondent 5	4	2	4	2	5	4	4	1	4	3	33	82.5
Respondent 6	4	3	5	2	3	5	3	3	3	3	34	85
Respondent 7	2	2	4	2	4	3	2	2	4	3	28	70
Respondent 8	4	2	5	2	4	2	3	4	4	3	33	82.5
Respondent 9	4	3	5	3	4	3	5	4	4	3	38	95
Respondent 10	4	4	5	3	5	3	4	3	5	1	37	92.5
Respondent 11	5	3	5	4	5	1	3	3	5	2	36	90
Respondent 12	4	2	3	2	4	2	4	4	5	3	33	82.5
Respondent 13	4	2	5	2	5	2	5	2	5	3	35	87.5
Respondent 14	4	3	3	3	4	3	5	5	4	3	37	92.5
Respondent 15	4	2	5	4	4	4	5	3	5	4	40	100
Respondent 16	5	3	5	2	5	5	5	2	4	3	39	97.5
Respondent 17	4	3	2	3	4	3	4	3	4	3	33	82.5
Respondent 18	5	3	3	3	2	3	5	3	5	3	35	87.5
Respondent 19	5	2	5	2	5	4	5	1	4	2	35	87.5
Respondent 20	3	3	4	3	5	2	4	2	3	3	32	80
Respondent 21	2	2	5	2	4	4	4	2	4	3	32	80
Respondent 22	4	4	5	4	3	4	4	4	3	4	39	97.5
Respondent 23	5	3	5	3	5	3	5	3	5	4	41	102.5
Respondent 24	4	3	2	3	4	4	4	3	4	3	34	85
Respondent 25	5	3	5	3	5	4	5	3	5	3	41	102.5
Respondent 26	4	3	5	3	4	4	5	4	4	4	40	100
Respondent 27	5	2	4	3	5	3	4	3	3	3	35	87.5
Respondent 28	5	2	5	2	5	2	5	2	5	2	35	87.5
Respondent 29	4	3	3	2	4	4	5	4	3	4	36	90
Respondent 30	5	4	4	4	3	4	4	4	4	4	40	100
Respondent 31	1	2	5	2	4	3	5	2	5	3	32	80
Respondent 32	5	4	5	3	5	3	5	4	5	4	43	107.5
Respondent 33	4	2	4	2	4	2	4	2	4	3	31	77.5
Respondent 34	4	4	5	4	4	4	5	4	5	4	43	107.5
Respondent 35	4	2	4	2	4	2	4	2	4	3	31	77.5
Respondent 36	4	4	4	3	4	3	5	4	5	4	40	100
Respondent 37	5	2	5	2	5	2	5	2	4	2	34	85
Respondent 38	5	3	5	4	4	4	5	4	5	3	42	105
Respondent 39	5	4	4	4	3	4	5	4	5	4	42	105
Respondent 40	5	3	5	2	5	2	5	2	5	1	35	87.5
Respondent 41	5	4	4	4	3	4	4	4	5	3	40	100
Respondent 42	5	3	4	2	4	4	4	4	4	4	38	95
Respondent 43	4	2	4	2	3	2	4	2	4	3	30	75
Respondent 44	4	2	4	1	4	3	5	1	4	2	30	75
Respondent 45	4	4	4	3	4	4	4	3	4	4	38	95
Respondent 46	4	3	5	1	3	1	5	1	5	2	30	75
Respondent 47	5	3	3	3	4	1	5	2	4	2	32	80
Respondent 48	5	2	3	2	1	2	3	2	5	2	27	67.5
Respondent 49	4	3	4	2	5	4	4	2	4	3	35	87.5
Respondent 50	5	3	5	2	4	4	3	1	5	1	33	82.5
Respondent 51	2	1	5	1	5	1	5	1	3	4	28	70
Respondent 52	4	3	4	2	2	2	4	2	4	2	29	72.5
Respondent 53	4	1	4	2	4	3	4	3	5	3	33	82.5
Respondent 54	4	3	4	4	5	5	5	2	4	2	38	95
Respondent 55	5	2	5	1	3	2	5	2	2	3	30	75
Respondent 56	3	2	4	4	3	2	4	3	4	2	31	77.5
Respondent 57	4	2	4	2	2	3	4	2	4	3	30	75
Respondent 58	5	3	4	3	5	3	5	4	4	3	39	97.5
Respondent 59	4	2	3	1	4	4	5	2	4	2	31	77.5
Respondent 60	4	2	5	2	5	2	5	3	4	1	33	82.5

