

EVALUATING LABORATORY WEBSITE USABILITY THROUGH THE SYSTEM USABILITY SCALE (SUS)

Safarah Putri Ma'wa¹, Friska Damayanti¹, Niki Etruly^{1*}

¹Furniture Design, Politeknik Industri Furnitur dan Pengolahan Kayu

*email: *niki.etruly@poltek-furnitur.ac.id*

Abstract: The Manual Drawing Laboratory and Computer Laboratory of the Furniture Design Study Program are some of the infrastructures used to support learning and practicum in the Polytechnic of Furniture Industry and Wood Processing. Services at these two laboratories utilize the Laboratory website which can be accessed publicly via the address <https://labdesainfurnitur.poltek-furnitur.ac.id/>, in which the purpose of developing the website is to simplify the process for stakeholders to access information regarding practicum activities conducted in the laboratories. Ease of access to this information needs to be evaluated, especially related to usability on the website. The evaluation of the laboratory website's usability is performed using the System Usability Scale (SUS) method, which provides a structured approach to measuring the effectiveness and user experience of the website. It is hoped to obtain a representation of the user's experience of the function and appearance of the laboratory website as advice on what features might be developed to improve the services. According to the results of data processing from 44 respondents, the average SUS score was 59.32. Based on this score, the Acceptability Range category is still in the marginal range, meaning there are still several things that need to be corrected or improved so the website can help in the daily operational activities of the laboratory.

Keywords: laboratory; SUS; usability; user; website

Abstrak: Laboratorium Gambar dan Laboratorium Komputer Program Studi Desain Furnitur merupakan sarana penunjang praktikum di Politeknik Industri Furnitur dan Pengolahan Kayu. Pelayanan pada kedua laboratorium ini telah memanfaatkan website yang dapat diakses secara publik melalui alamat <https://labdesainfurnitur.poltek-furnitur.ac.id/>, pemanfaatan website bertujuan untuk memudahkan para pengguna dalam memperoleh informasi seputar kegiatan praktikum di laboratorium di setiap waktu. Adanya pemanfaatan teknologi informasi tersebut perlu dievaluasi untuk mengetahui kegunaan website bagi para pengguna serta sebagai masukan untuk pengelola laboratorium dalam mengembangkan website di masa mendatang. Evaluasi website laboratorium dilakukan dengan metode System Usability Scale (SUS). Melalui evaluasi kegunaan pada website laboratorium diharapkan diperoleh representasi pengalaman pengguna terhadap fungsi dan tampilan website laboratorium dan diperoleh saran fitur-fitur yang dapat dikembangkan untuk meningkatkan pelayanan di laboratorium. Data yang diperoleh sebanyak 44 responden menghasilkan skor SUS dengan rata-rata 59,32. Berdasarkan skor tersebut, rentang akseptabilitas website masih berada pada rentang marginal, sehingga masih ada beberapa fitur yang perlu ditingkatkan agar website dapat membantu kegiatan operasional laboratorium sehari-hari.

Kata kunci: kegunaan; laboratorium; pengguna; SUS; website

INTRODUCTION

Industry 4.0 has changed the behavior of using technology in educational institutions. Educational institutions are required to have sophisticated information and communication media to support learning on campus. The need for supporting facilities that can make work faster and easier is also a highlighted issue that makes information service providers compete to provide the best ideas and innovations to provide satisfaction to stakeholders [1].

The BPSDMI Corporate University of the Ministry of Industry is an idea to develop a global education organization aimed at all work units under the Ministry of Industry. The Polytechnic of Furniture and Wood Processing Industry as one of the industrial vocational polytechnic under the auspices of BPSDMI of the Ministry of Industry participates in implementing the internalization of Corporate University within its institution. The Corporate University at the Polytechnic of Furniture and Wood Processing Industry is being implemented by creating a smart and cyber campus. This development facilitates easier access to information and communication for stakeholders through all available campus infrastructure and facilities.

The Manual Drawing Laboratory and Computer Laboratory of the Furniture Design Study Program are infrastructures used to support learning and practicum within the Polytechnic of Furniture and Wood Processing Industry [2]. The services at these two laboratories have adopted information technology through a publicly accessible website, available at <https://labdesainfurnitur.poltek-furnitur.ac.id/>, the creation of the website aims to make it easier for stakeholders to access practicum mod-

ules, and obtain other information about practicum activities. Ease of access to this information needs to be evaluated, especially related to usability on the website [3].

Several previous studies have examined website usability. For instance, [4] found that while the Kerambitan 1 Public High School website met usability standards, it required further development due to its unappealing design and lack of community guidelines. Another study by [5] evaluated the GIS Simantan website, concluding that it was appropriate and well-received by respondents. Additionally, [6] noted that the Pacitan State Community Academy Management Information System (MIS) website functioned effectively for entering lecture journals, attendance, and grades for each student and course, but suggested improvements in appearance, user-friendliness, and overall performance. Usability is a tool used to measure the quality of user convenience in accessing the interface of a page [6].

Usability is related to the level of quality of a system that is easy to learn, easy to use, and encourages users to use the system as a tool that can solve problems. Usability is more emphasis on how good the usability of the function is for the user. Several prior studies addressing similar topics were conducted by [1] They asserted that the application of a public repository for agricultural research and development publications is already quite sound, albeit requiring improvements in administrative aspects such as identity management and visual elements like website navigation structure, layout, and color contrast. [7] stated that the website of the Tegal City government is still not usable, with potential declines in user engagement. This indicates the need for further evaluation and development of

the website, as the System Usability Scale (SUS) is not diagnostic, necessitating alternative methods for issue assessment. [8] declared that the PAON (Online Peer Assessment) system is acceptable to the public and worthy of further development and use. [9] worked with similar method uses the System Usability Scale to test SIMPONIK website. They stated that several things in SIMPONIK website such as appearance and user experience need to be improve in the term of practically and ease of access of the website, although overall website score as high as 76.025. Another study created the asahan covid-19 web portal that system. Based on SUS Score, the system needs to be evaluated and develop back to a better one [3]. Another study created online learning platform. Based on SUS score, the system stands at 71.52 that indicates the system usability is slightly above average, there is room for improvements [10]. Another research about analysis of camscanner that implies the application needs to improve the user experince to make it better [11].

Usability is a tool used used to evaluate the ease of user interaction with a page's interface [5]. Usability is about the quality of a system that is straightforward to learn, user-friendly, and promotes its use as a means to address problems. Usability is more emphasis on how good the usability of the function is for the user [12].

Evaluation regarding the usability of the Laboratory website is carried out using the System Usability Scale (SUS) method. SUS is a standardized questionnaire designed to assess user satisfaction with the system. SUS is also known as "quick and dirty", which means that the use of the SUS questionnaire is very fast and the resulting data can be trusted [13].

The SUS questionnaire comprises

ten statements, evenly balanced between positive and negative assertions in a 50:50 ratio [14]. Each statement is gauged using a Likert scale ranging from a minimum of one to a maximum of five. For the purposes of this study, only five Likert scales were employed, adhering to the standard SUS questionnaire. The Likert scale values were assigned as follows: (1) Number 1 representing strongly agree, (2) Number 2 representing disagree, (3) Number 3 representing neither/nor agree, (4) Number 4 representing agree, and (5) Number 5 representing strongly agree [15].

The provided questionnaire includes: (1) I would prefer to use this system more regularly, (2) I found the system to be overly complex, (3) I think the system is user-friendly, (4) I believe I need assistance from a technician to operate this system, (5) I notice that the system's features are seamlessly integrated, (6) I notice that there were excessive inconsistencies in this system, (7) I think that most users can easily grasp how to use this system, (8) I find this system to be quite challenging to use, (9) I am confident in my ability to use this website successfully, (10) I need to gain extensive understanding before getting started with this system [9].

The scoring guidelines for the questionnaire are as follows: (1) For positively phrased odd-numbered questions, deduct 1 from the respondent's score, (2) For questions with an even number containing negative language, the score is 5 minus the respondent's score, (3) After determining the cumulative score, it is multiplied by 2.5 to generate the SUS score, which falls within a 0 to 100 range [7].

Usability testing on this laboratory website is expected to obtain an overview of the comfort of the user's experi-

ence of the function and appearance of the laboratory website [6].

Through usability testing on this laboratory website, it is hoped to obtain a representation of the user's experience of the function and appearance of the laboratory website as advice on what features might be developed to improve the website [16].

METHOD

This research utilizes a quantitative approach. The steps involved are illustrated in Image 1.

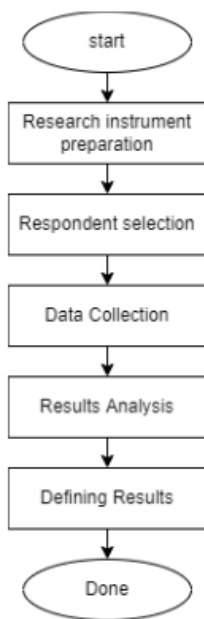


Image 1. Research Stages

The subject examined in this study is the website of the laboratory for furniture design under the Dell Lab program at the Furniture Design Study Program with the address labdesainfurnitur.poltek-furnitur.ac.id. This website encompasses several service features aimed at providing assistance to users. The service features are including: (1) Lab Schedule, (2) Lab Loan, (3) List of Lab

Asset, (4) List of Practicum Participant, (5) Practicum Module, and (6) Student Project. Those features can be seen in Image 2 to Image 7.

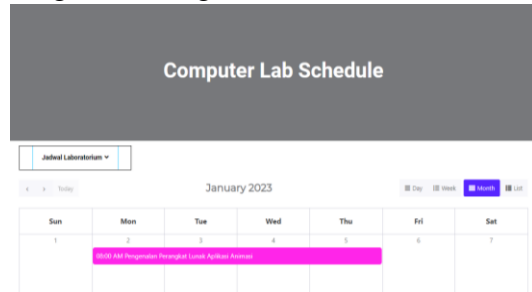


Image 2. Lab Schedule

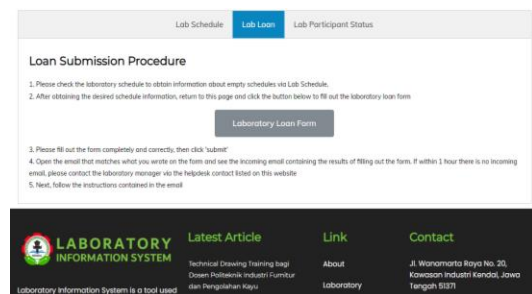


Image 3. Lab Loan

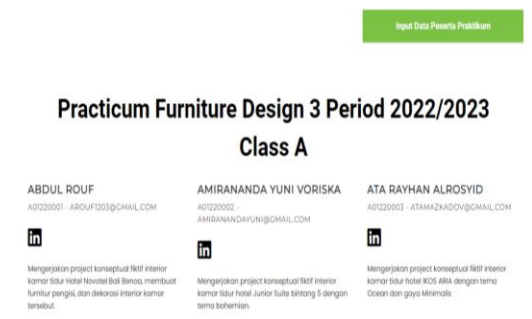


Image 4. List of Practicum Participant

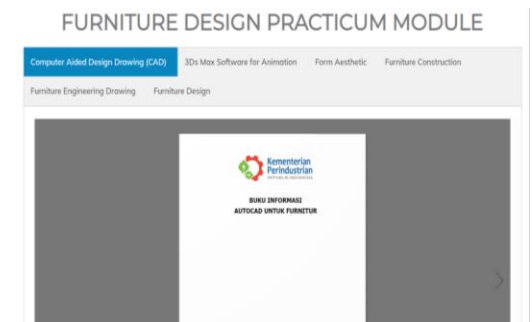


Image 5. Practicum Module

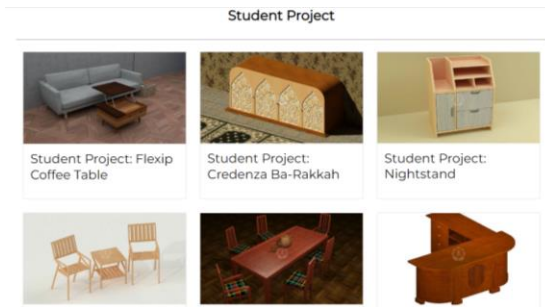


Image 6. Student Project

The collected data were analyzed using the System Usability Scale (SUS) by adding up all the values and then multiplying the total by 2.5. SUS is a technique for evaluating a website's usability based on users' subjective perspectives. [17]. SUS was developed by John Brooke in 1986.

Data was obtained from the results of a questionnaire distributed to students who used laboratory services in the furniture design study program. The sample used consisted of 44 respondents. The questionnaire is filled out using a Likert scale with the following conditions: number 1 represents strongly disagree, number 2 represents disagree, number 3 represents neutral, number 4 represents agree, and number 5 represents strongly agree [8].

RESULT AND DISCUSSION

The outcomes of the usability testing on the laboratory website of the Furniture Design Program with 44 respondents can be seen in Table 1.

The analysis of the processed data indicates that the average SUS score, calculated from the responses of 44 participants, is 59.32.

Table 1. Data Scoring

	Amount	Average
Q1	106	2,41
Q2	108	2,45
Q3	120	2,73
Q4	83	1,89
Q5	115	2,61
Q6	106	2,41
Q7	116	2,64
Q8	106	2,41
Q9	110	2,5
Q10	74	1,68
Total	1044	23,73
Score (Total * 2,5)		59,325

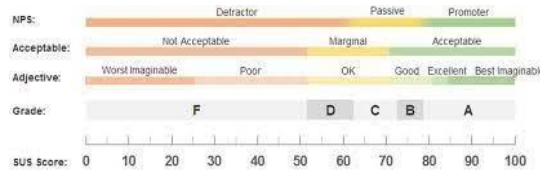


Image 7. SUS Score Interpretation Results

The results of the SUS score interpretation are shown in Table 2.

Table 2. Conclusion on the interpretation of SUS scores

Information	Result
Score SUS	59.32
Grade Letter	D
Adjective Ratings	OK
Acceptability Range	Marginal
Net Promote Score (NPS)	Passive

The conclusions drawn from the analysis of the data, as presented in Table 1, are based on the responses to the distributed questions, which are detailed in columns Q1 through Q10 of the table. These columns provide a comprehensive overview of the information gathered from the questionnaire.

According to the Table 1 column Q1 which illustrate question 1 (I would prefer to use this system more regularly), the average score acquired is 2.41. This implies that, overall respondents remain uncertain or perplexed whether to persist in using this website frequently. This may be because some of features have not been updated.

According to the Table 1 column Q2 which illustrate question 2 (I found the system to be overly complex), the average score acquired is 2.45. This implies that, overall respondents perceive that the website exhibits a relatively high level of complexity. Therefore, it needs simplification to enhance usability.

According to the Table 1, column Q3 which illustrate question 3 (I think the system is user-friendly), the average score acquired is 2.73. This implies that respondents express some hesitation about using the website but generally find it easy to use.

According to the Table 1, column Q4 which illustrate question 4 (I believe I need assistance from a technician to operate this system), the average score acquired is 1.89. This implies that respondents still strongly require guidance or clarification from a technician regarding the utilization of the website.

According to the Table 1, column Q5 which illustrate question 5 (I notice that the system's features are seamlessly integrated), the average score acquired is 2.61. This implies that respondents tend to believe that the website is well-integrated.

According to the Table 1, column Q6 which illustrate question 6 (I notice that there were excessive inconsistencies in this system), the average score acquired is 2.41. This implies that respondents tend to think that there are some inconsistencies in the website. This may be

because of the usage of many different colors and different layout for each page.

According to the Table 1, column Q7 which illustrate question 7 (I think that most users can easily grasp how to use this system), the average score acquired is 2.64. This implies that respondents believe that most users can learn how to use the website quickly, although some guidance may still be needed.

According to the Table 1, column Q8 which illustrate question 8 (I find this system to be quite challenging to use), the average score acquired is 2.41. This implies that respondents believe that the application is not practical and needs improvement.

According to the Table 1, column Q9 which illustrate question 9 (I am confident in my ability to use this website successfully), the average score acquired is 2.50. This implies that respondents tend to feel uncertain about using the website.

According to the Table 1, column Q10 which illustrate question 10 (I need to gain extensive understanding before getting started with this system), the average score acquired is 1.68. This implies that respondents still need to learn how to use the website.

Based on the average score results from each question, it can be concluded that in general the website still has a lot to improve, such as complexity, how to use it, practicality, and the menus on the website.

CONCLUSION

Based on the findings of this research, it is determined that the average SUS score is 59.32. In light of this score, the Acceptability Range category remains within the marginal range, indicat-

ing that there are still areas that need refinement or enhancement to ensure that the website can better contribute to the daily operational activities of the laboratory in the future.

BIBLIOGRAPHY

- [1] Henriyadi and R. Mulyati, "Usability Testing for Information System: A Case Study of IAARD Publication Repository Information System," *J. Perpust. Pertan.*, vol. 23, no. 2, pp. 54–63, 2014.
- [2] N. Etruly and S. Putri, "Analisis Kualitas Pelayanan Laboratorium Komputer Dell Politeknik Industri Furnitur Dan Pengolahan Kayu," *J. Ekon. dan Bisnis*, vol. 10, no. 1, pp. 43–60, 2023.
- [3] E. Kurniawan and A. K. Syahputra, "Usability Testing on The Asahan Covid-19 Web Portal using System Usability Scale (SUS)," in *International Conference on Social, Sciences and Information Technology*, 2020, pp. 131–140.
- [4] N. L. G. E. Aprilianti and I. N. T. A. Putra, "Analisis Sistem Informasi Sma Negeri 1 Kerambitan Menggunakan System Usability Scale," *Maj. Ilm. UNIKOM*, vol. 19, no. 1, pp. 3–11, 2021, doi: 10.34010/miu.v19i1.5069.
- [5] A. Y. Pangestu, R. Safe'i, A. Darmawan, and H. Kaskoyo, "Evaluasi Usability pada Web GIS Pemantauan Kesehatan Hutan Menggunakan Metode System Usability Scale (SUS)," *MATRIK J. Manajemen, Tek. Inform. dan Rekayasa Komput.*, vol. 20, no. 1, pp. 19–26, 2020, doi: 10.30812/matrik.v20i1.709.
- [6] V. Manik, C. H. Primasari, Y. P. Wibisono, and A. B. P. Irianto, "Investigasi Usability pada Aplikasi Mobile Pembiayaan Mobil di Indonesia," *J. Sains dan Inform.*, vol. 7, no. 1, pp. 1–10, 2021, doi: 10.34128/jsi.v7i1.286.
- [7] I. Aprilia, I. Santoso, and R. Ferdiana, "Pengujian Usability Website Menggunakan System Usability Scale," *J. IPTEKKOM J. Ilmu Pengetah. Teknol. Inf.*, vol. 17, no. 1, pp. 31–38, 2015, doi: 10.33164/iptekkom.17.1.2015.31-38.
- [8] K. Setemen, L. J. Erawati Dewi, and I. K. Purnamawan, "PAON Usability Testing Using System Usability Scale," *J. Phys. Conf. Ser.*, vol. 1165, no. 1, pp. 1–5, 2019, doi: 10.1088/1742-6596/1165/1/012009.
- [9] D. Saputra, E. Ardiyan Syah, and F. Darnis, "Usability Testing on the Simponik Website using the System Usability Scale (SUS)," *Sinkron*, vol. 7, no. 4, pp. 2584–2592, 2022, doi: 10.33395/sinkron.v7i4.11916.
- [10] O. Suria, "A Statistical Analysis of System Usability Scale (SUS) Evaluations in Online Learning Platform," *J. Inf. Syst. Informatics*, vol. 6, no. 2, pp. 992–1007, 2024, doi: 10.51519/journalisi.v6i2.750.
- [11] A. Sulhi and B. Y. Prayoga, "Usability Analysis of Camscanner Applications Using the System Usability Scale (Sus) Method," *J. Perangkat Lunak*, vol. 5, no. 2, pp. 177–186, 2023, doi: 10.32520/jupel.v5i2.2616.
- [12] E. Kaban, K. C. Brata, and A. H. Brata, "Evaluasi Usability

- Menggunakan Metode System Usability Scale (SUS) Dan Discovery Prototyping Pada Aplikasi PLN Mobile (Studi Kasus PT. PLN),” *J. Pengemb. Teknol. Inf. dan Ilmu Komput.*, vol. 4, no. 10, pp. 3281–3290, 2020.
- [13] D. W. Ramadhan, B. Soedijono, and E. Pramono, “Pengujian Usability Website Time Excelindo Menggunakan System Usability Scale (SUS) (Studi Kasus: Website Time Excelindo),” *JUPI (Jurnal Ilm. Penelit. dan Pembelajaran Informatika)*, vol. 04, no. 02, pp. 139–147, 2019.
- [14] Welda, D. M. D. U. Putra, and A. M. Dirgayusari, “Usability Testing Website Dengan Menggunakan Metode System Usability Scale (Sus),” *Int. J. Nat. Sci. Eng.*, vol. 4, no. 3, pp. 152–161, 2020, doi: 10.23887/ijnse.v4i2.28864.
- [15] M. L. Nuriman and N. Mayesti, “Evaluasi Ketergunaan Website Perpustakaan Universitas Indonesia Menggunakan System Usability Scale,” *Baca J. Dokumentasi Dan Inf.*, vol. 42, no. 2, pp. 253–269, 2020, doi: 10.14203/j.baca.v41i2.622.
- [16] A. Kurniawan, F. P. Utama, and F. Hadi, “Pengembangan Sistem Informasi Manajemen Laboratorium Berbasis Paradigma Pengguna (Studi Kasus: Fakultas Teknik Universitas Bengkulu),” *JSAI J. Sci. Appl. Informatics*, vol. 4, no. 2, pp. 126–134, 2021, doi: 10.36085/jsai.v4i2.1397.
- [17] M. Yusuf and Y. Astuti, “Analysis and Evaluation of Usability Aspects in the Pijar Career Center Application Using the System Usability Scale (SUS),” *Komputika J. Sist. Komput.*, vol. 9, no. 28, pp. 131–138, 2020, doi: 10.34010/komputika.v9i2.2873.