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User interface design improvement for the institute of education on flight attendant website

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Abstract

An education of flight attendant website serves as the primary source of information for prospective students. However, an initial evaluation identified several user interface issues that negatively affect usability. This study aims to identify user needs, evaluate the current usability level, and develop an improved user interface prototype that better aligns with user requirements. A quantitative usability testing approach was employed, focusing on three key attributes: effectiveness, efficiency, and satisfaction. The study was conducted in three stages: an initial quantitative evaluation of the existing website, a qualitative phase to support the redesign process, and a final quantitative evaluation of the proposed prototype. The results show that the existing website achieved an effectiveness score of 74.29%, an efficiency score of 74.19%, and a System Usability Scale (SUS) score of 59. After implementing the proposed improvements, effectiveness increased to 94.29%, efficiency to 95.57%, and the SUS score improved to 86. These findings indicate that the proposed user interface significantly enhances the usability of the website and can serve as a reliable foundation for future interface development.

Keywords*:* User Interface; Usability Evaluation; System Usability Scale; Performance Measurement

1. Introduction

In the modern era, information technology has developed rapidly and become an essential part of daily life [22]. Websites serve as the primary internet-based medium for providing information and supporting promotional activities for organizations [4]. In the context of educational institutions, websites play a significant role in building a positive public image and enhancing competitive advantage [8]. Furthermore, websites are considered a key factor in the future development of educational institutions, as they function as tools for administration, information dissemination, academic communication, public engagement, and institutional promotion in the 21st century [1].

An educational institution located in Semarang, Central Java, Indonesia, focusing on human resource training in the aviation and hospitality industries, currently has more than 200 active students across eight study programs, namely marshaler, aviation security, ground staff, hospitality, flight attendant, tourism management, recurrent AVSEC, and secretary. Although established in 2008, this institute only launched its official website in early 2021. The website was developed in response to the COVID-19 pandemic, which limited prospective students' ability to obtain information and complete registration processes through direct visits. Since then, the website has been used as a promotional platform and an information hub, providing details on study programs, alumni profiles, class activities, tuition fees, and registration procedures.

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To achieve the intended objectives of the website, it is important to evaluate whether the platform effectively delivers information to its users. The success of a website is closely related to user experience [9], making user-related aspects critical in determining overall website performance.

A preliminary study was conducted through interviews with 10 randomly selected students to explore their experiences and perceptions of the website. The findings indicate that students typically accessed the website during their final year of high school, with a usage frequency of 3–7 times prior to enrollment. While students expressed positive feedback, such as the ease of finding contact information and the availability of aviation-related articles, several usability issues were also identified. These issues mainly relate to the website's features and interface design. A summary of these negative findings is presented in Table 1.

Table 1 Negative Feedback on the Website

No.	Issues	Percentage
1	The presentation of content or information is poorly organized and confusing	20%
2	Difficulty in finding the required information	17%
3	Inconsistent text and background color combinations, making the content difficult to read	15%
4	Too many visually striking elements on the homepage, causing distraction	10%
5	Users initially did not notice the button to return to the homepage	18%
6	Too many menu options, leading to confusion	12%
7	Some information is duplicated and lacks dates, causing uncertainty	8%

Based on the identified issues, this study aims to evaluate and improve the user interface design of the institute website in order to enhance user comfort. The proposed improvements are developed in the form of a user interface prototype using Figma as the design tool. This study applies a usability evaluation method with a quantitative usability testing approach using performance measurement techniques to assess website performance, as well as qualitative methods, including the think-aloud technique and interviews, to gain deeper insights into usability issues based on user experience. Additionally, the System Usability Scale (SUS) questionnaire is used as a post-study instrument to evaluate user satisfaction for both the existing website and the improved interface. The SUS questionnaire is selected due to its simplicity, consisting of 10 items with a 5-point Likert scale, while still providing valid and reliable results even with a relatively small sample size [20].

2. Materials and Methods

This study employs a sequential explanatory approach that combines quantitative and qualitative methods in a sequential manner [17]. The evaluation of the user interface of website is conducted using a usability evaluation approach, which includes both testing and inquiry techniques

The testing technique is carried out through usability testing by applying performance measurement on the existing website to assess effectiveness and efficiency. In this process, users are assigned a series of tasks, while the researcher records task completion success rates and the time required to complete each task.

In the evaluation of the proposed design improvements, the think-aloud method is used to identify user difficulties during interaction with the prototype. Meanwhile, the inquiry technique is conducted through interviews, focus group discussions (FGD), and the System Usability Scale (SUS) questionnaire to collect user feedback regarding their experience and to measure user satisfaction with both the existing website and the proposed interface design.

3. Results and discussion

3.1. Quantitative Usability Testing Results of the Existing Website

Quantitative usability testing was conducted on the existing website to evaluate the performance of the user interface based on three main usability attributes: effectiveness, efficiency, and satisfaction.

The effectiveness attribute was analyzed using the success rate calculation, where each task was classified as either successful or unsuccessful. A task was considered successful if the user was able to complete the given scenario without giving up or requesting assistance from the moderator in the form of hints or guidance. The results of the effectiveness evaluation for the existing website are presented in Table 2.

Table 2 Effectiveness Scores of the Existing Website

User	Success or Fail						
	T1	**T2**	**T3**	**T4**	**T5**	**T6**	**T7**
R1	1	1	0	1	1	1	1
R2	1	1	1	1	1	0	1
R3	0	1	0	1	1	0	1
R4	1	1	1	1	1	1	1
R5	0	0	0	1	1	1	0

Note: 1 = success; 2 = failure

$$Sucess\ Rate = \frac{Number\ of\ sucessfully\ completed\ subtask}{Total\ number\ of\ subtask\ undertaken} x100\%$$

$$Sucess\ Rate = \frac{26}{35} x100\% = 74{,}29\%$$

Based on the calculation results, the website before improvement obtained an effectiveness score of 74.29%. According to Sauro [13], a success rate threshold of 78% is commonly used to assess system effectiveness. Therefore, the effectiveness level of the website is still below this threshold and cannot yet be considered optimal.

The efficiency attribute was measured using the overall relative efficiency method. In this measurement, the time required for users to complete each task was recorded in seconds, including both successfully and unsuccessfully completed tasks. The results of this measurement were then used to evaluate the efficiency level of the existing website, as presented in Table 3.

Table 3 Efficiency Score of the Existing Website

User	Time (second)						
	T1	T2	T3	T4	T5	T6	T7
R1	182	78	155	110	72	118	46
R2	191	64	92	121	68	60	52
R3	95	52	67	146	88	75	50
R4	170	59	85	103	63	97	44
R5	105	138	106	152	84	122	42

$$Overall\ relative\ efficiency\ = \frac{\Sigma_{j=1}^{R}\Sigma_{i=1}^{N} n_{ij}t_{ij}}{\Sigma_{j=1}^{R}\Sigma_{i=1}^{R} t_{ij}}\ x\ 100\%$$

$$Overall\ relative\ efficiency\ = \frac{2487}{3352} x100\% = 74{,}19\%$$

The efficiency calculation using the overall relative efficiency method on the website resulted in a score of 74.19%. According to Subiyakto et al. [16], a value above 50% indicates a fairly good level of efficiency. Therefore, the website can be categorized as sufficiently efficient, and the efficiency attribute is considered successful if there is an improvement in the evaluation results of the proposed prototype.

The satisfaction attribute was measured using the System Usability Scale (SUS) questionnaire, which was distributed to users after completing all tasks. All participants were asked to complete the SUS questionnaire, and the scores for each item were compiled for further analysis. The evaluation results show that the website obtained an SUS score of 59. Referring to Sauro [14], this score falls into the "OK" category and is within the marginal acceptability range; however, it is still classified as grade D and below the average usability score of 68 according to Bangor et al. [3]. Therefore, the level of user satisfaction with the website is still relatively low and requires further improvement.

3.2. Website Improvement and Redesign

3.2.1. Discussion of Issues in the Existing Website

Table 4 are the issues identified during the preliminary study and quantitative usability testing, obtained from interviews conducted after task completion:

Table 4 User Issues of the Existing Website

No.	Issues	Page
1	Too many menu options on the homepage with similar meanings, causing user confusion	Homepage
2	Two main menu buttons have identical labels but different functions, leading to ambiguity	
3	Poor contrast between menu text and background, making it difficult to read	
4	The "Learning Program" text appears like a button, causing it to be misinterpreted as an interactive element	
5	The "Read More" button in single articles creates confusion about information direction	Learning Activities
6	The layout of images and text is not well organized	
7	Study programs are not clearly grouped	Study Program
8	Duplicate information on tuition fees	Tuition Fees
9	Company partnership information takes too long to access because users must watch a video	Job Prospects
10	The registration form is difficult to read due to similar colors between fields and background	Registration
11	Articles are too long and the button to return to the homepage is unclear	Article
12	The comment section has an unclear outline	

3.2.2. Analysis of User Interface Principles on the Website

This study also analyzes the user interface design of the website by referring to UI/UX principles, namely Shneiderman's Eight Golden Rules and the Laws of UX. The results of the analysis are as follows.

On the homepage, the interface does not fully comply with the first principle of the Eight Golden Rules (strive for consistency), as inconsistencies are found in the shape, size, color, button animations, and typography, which may lead to ambiguity and reduced readability. In addition, the homepage does not meet the second principle (enable frequent users to use shortcuts), as the menu structure does not directly guide users to frequently accessed information, requiring manual scanning. From the perspective of the third principle (offer informative feedback), interactive feedback is not consistently applied across all elements, making it difficult for users to distinguish clickable components. Based on the eighth principle (reduce short-term memory load), the large number of menu items increases users' cognitive load. This condition is also related to Hick's Law, where an increased number of choices slows decision-making, and Miller's Law, which suggests limiting the number of items to align with short-term memory capacity. From the Law of Proximity perspective, all menu items are presented in a single long block without clear visual grouping, resulting in poor information organization. Furthermore, based on the Aesthetic–Usability Effect, a dense, repetitive layout with minimal visual hierarchy may lead users to perceive the system as difficult to use, even if it is functionally operable.

On the student activity page, the interface also does not fully comply with the first principle (strive for consistency), as inconsistencies in layout structure, title spacing, element placement, and image usage increase the risk of visual fatigue. The page also does not meet the eighth principle (reduce short-term memory load), as activities are presented in a long vertical list without categorization or time grouping, increasing users' cognitive load. From the Law of Proximity perspective, the lack of strong visual separation between articles causes content to appear merged, making it difficult for users to distinguish between activities. On the classroom and intensive class pages, issues related to consistency are also identified in irregular spacing, image sizes, and inconsistent typography. Based on the Aesthetic–Usability Effect, repetitive layouts with minimal white space reduce the perceived modernity and dynamism of the interface. Additionally, the second principle (enable frequent users to use shortcuts) is not optimally implemented, as accessing information still requires multiple navigation steps, reducing interaction efficiency.

On the study program page, the implementation of the first principle (strive for consistency) is not optimal, as information across programs is presented inconsistently in terms of images, description length, and content structure, making it difficult for users to compare programs. The eighth principle (reduce short-term memory load) is also not satisfied, as all programs are displayed in a single flow without clear categorization, increasing cognitive load during information search. From the fifth principle (prevent errors), the lack of a structured and systematic information hierarchy may lead to misinterpretation, such as misunderstanding differences between programs or overlooking important details.

On the tuition fee page, the first principle (strive for consistency) is not fully applied, as inconsistencies in title formatting for similar topics create visual inconsistency and increase cognitive load. According to Hick's Law, the presence of multiple articles with similar content introduces unnecessary choices, slowing down information retrieval and decision-making. In addition, based on the sixth principle (permit easy reversal of actions), the lack of a clear navigation button to return to the homepage makes it difficult for users to undo or repeat actions, potentially causing confusion.

On the partnership (job prospects) page, the eighth principle (reduce short-term memory load) is not optimally implemented, as partner company information is presented through long-duration videos without clear visual structure, increasing users' cognitive load.

On the registration page, the third principle (offer informative feedback) and the fourth principle (design dialogs to yield closure) are not well implemented, as there are no clear indicators or confirmations after form submission, leaving users uncertain whether the process was successful. Additionally, inconsistencies in label formatting and required field indicators (strive for consistency), such as inconsistent capitalization, disrupt visual hierarchy, slow comprehension, and increase the likelihood of input errors.

On the article page, the eighth principle (reduce short-term memory load) is not fully applied, as article content is presented in a long continuous flow without clear grouping, requiring users to scan titles and excerpts individually, which increases visual fatigue. Furthermore, based on the principle of simple error handling, the comment section does not provide clear indicators for required fields before submission, causing errors to only appear after submission and forcing users to repeat the process.

3.2.3. Wireframe Development

In the initial stage, the redesign of the website began with the development of page structures in the form of wireframes, created using Figma. The wireframes were designed based on the analysis of UI/UX principles and user complaints identified during task execution in the usability testing phase. The following section describes the developed wireframes.

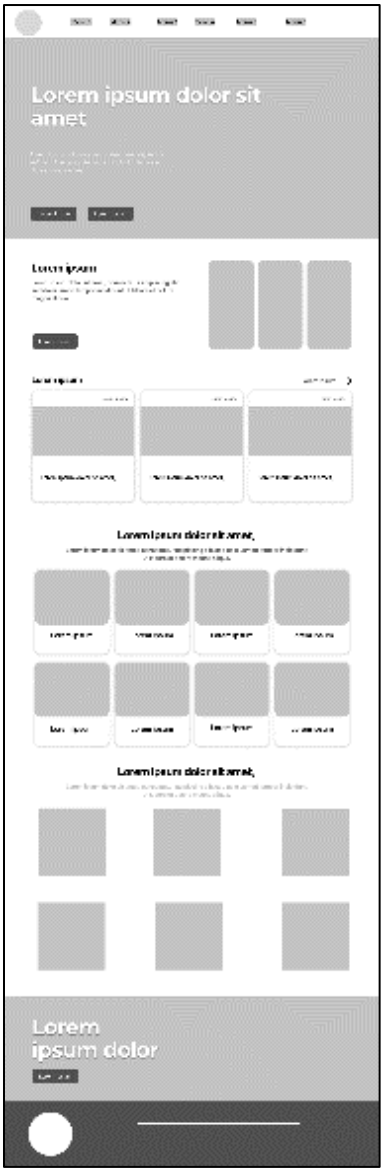

Figure 1 Homepage Wireframe Design

The improved wireframe of the homepage (as shown in figure 1) was designed by restructuring the page layout and content flow to enhance information clarity and help users quickly understand the website's purpose upon first access. Key elements such as institutional identity, page title, and call-to-action buttons are placed at the top of the page to ensure visibility and immediate comprehension, in line with Weinschenk [21], who states that users tend to focus on the first visible information.

The navigation structure and content hierarchy are simplified and arranged progressively, starting from institutional introduction to study program and partnership information, to support a more logical and guided understanding of the system, as suggested by Garrett [5]. Study program information is presented using a visual card-based grid layout to facilitate quick information scanning without requiring users to read lengthy text, following the visual grouping principles proposed by Tidwell [18]. Overall, the homepage wireframe is designed as a clean, structured, and professional interface foundation, which, according to usability principles, can influence perceived quality and ease of use.

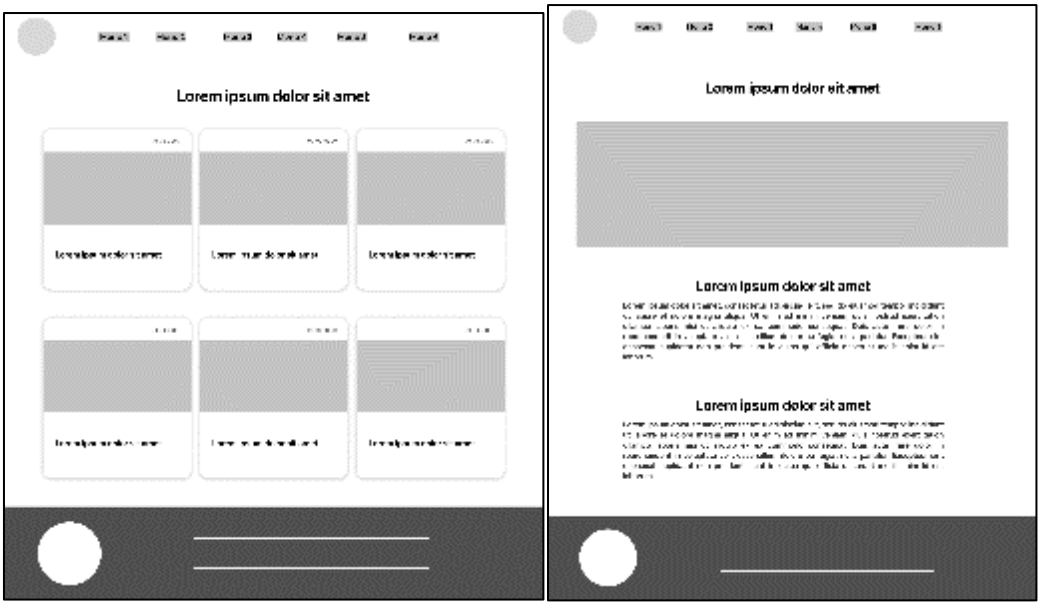

Figure 2 Class Activity Wireframe Design

The wireframe for the class activity page (as shown in figure 2) is structured by clearly separating the activity list page from the activity detail page to avoid information overload within a single view. The activity list presents summaries in the form of cards containing images, titles, and dates, enabling users to scan and compare available activities efficiently. Meanwhile, the detail page provides more comprehensive information in a gradual manner, allowing users to better understand the context without confusion.

This approach aligns with Rosenfeld and Morville [12], who emphasize that well-structured information architecture should distinguish between summary-level and detailed information to improve user navigation. Additionally, the content on the detail page is organized sequentially, starting from the activity title, followed by visual documentation and descriptions, to support efficient and structured information retrieval.

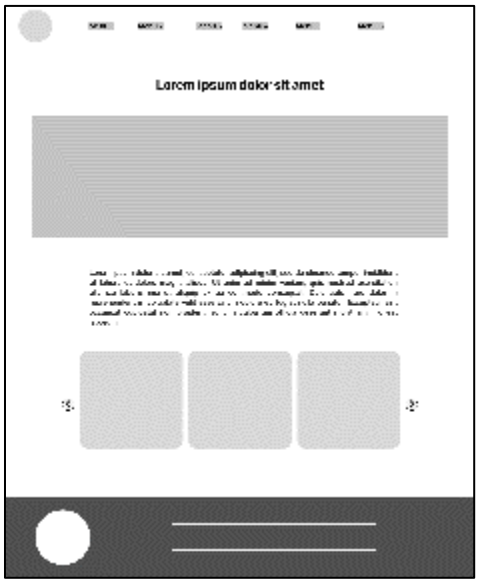

Figure 3 Classroom Wireframe Design

The improvement of the classroom page wireframe (as shown in figure 3) focuses on managing visually dominant content by presenting images in a carousel format, ensuring that the layout remains clean and does not extend excessively downward. The use of a carousel helps reduce visual clutter while allowing users to explore content

progressively without losing focus. This approach is supported by Babich [2], who states that carousels are effective for displaying multiple visual elements within limited space when navigation remains clear and controlled.

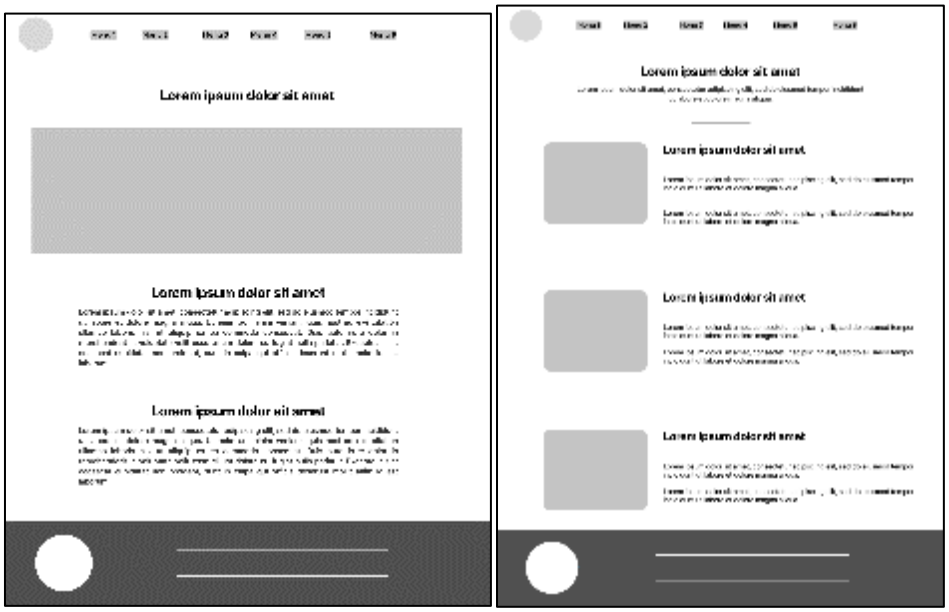

Figure 4 Intensive Class & Study Program Wireframe Design

The improved wireframe for the study program page (as shown in figure 4) presents each program in a structured summary format, including titles, images, and brief descriptions, to enhance clarity and differentiation between programs. This approach aims to reduce cognitive load and accelerate user understanding, in line with Tufte [19]. All programs are displayed within a single page flow to provide a comprehensive overview and support more effective decision-making, as described by Shneiderman [15].

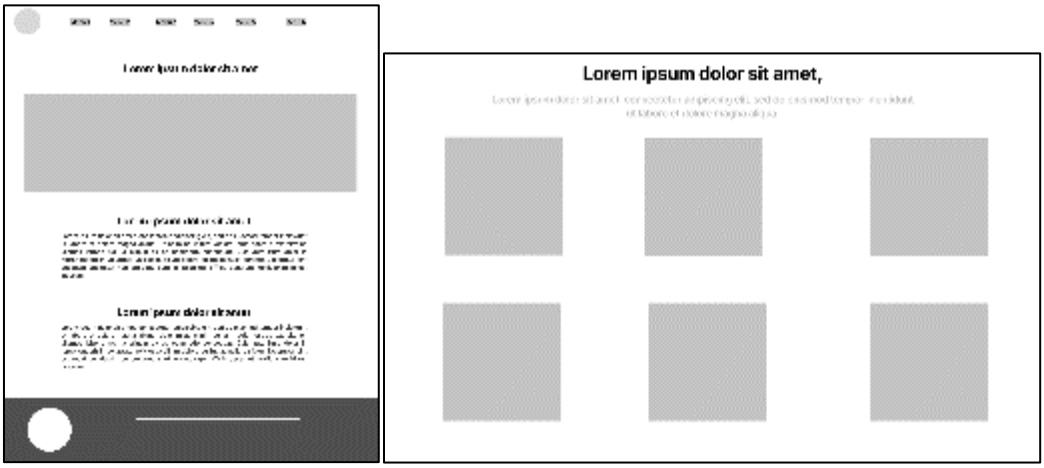

Figure 5 Tuition Fees & Partnership (Job Prospects) Wireframe Design

The improved partnership page wireframe (as shown in figure 5) places the industry partner information at the bottom of the homepage, just above the footer, allowing users to access it directly without navigating to a separate menu. The information is presented in the form of logos and a partner list, enabling users to quickly scan and understand collaboration details.

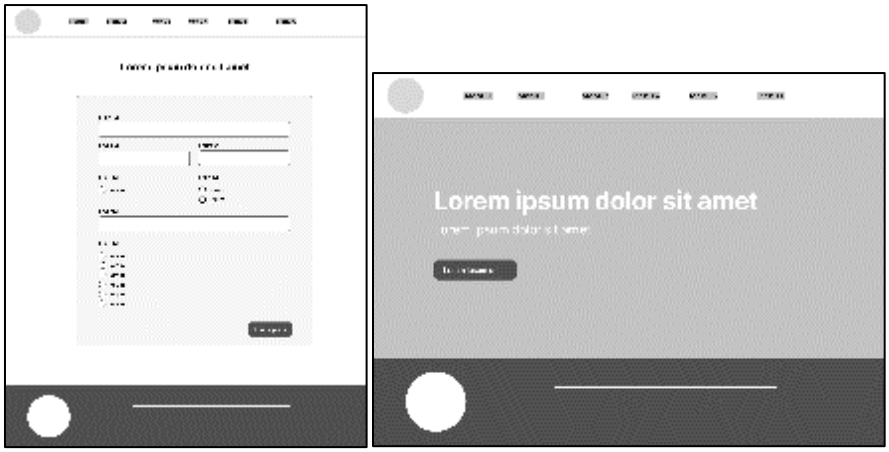

Figure 6 Registration Wireframe Design

The improved registration page wireframe (as shown in figure 6) enhances form fields by applying more contrasting borders to improve readability and visibility. Additionally, a confirmation page is introduced after submission to provide clear feedback and reduce user uncertainty regarding the registration process.

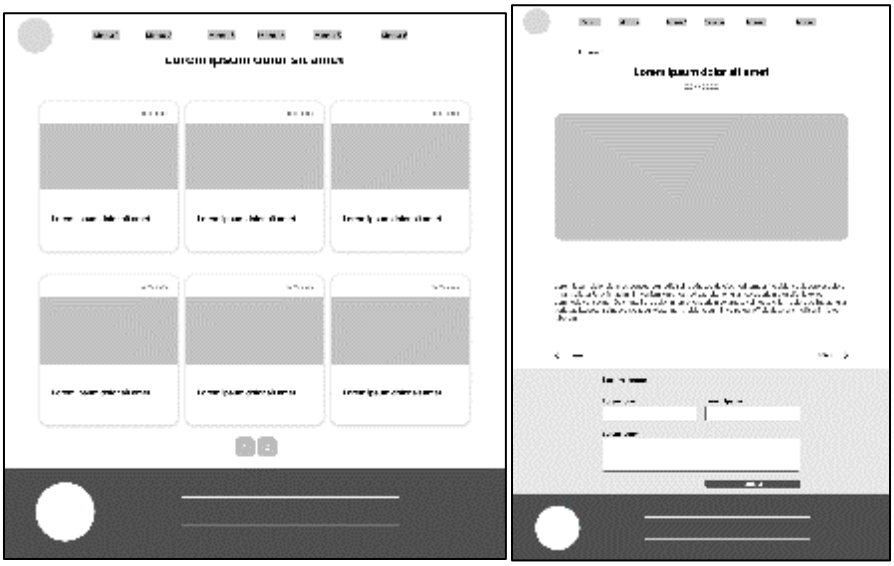

Figure 7 Article Wireframe Design

The improved article page (as shown in figure 7) adopts a similar pattern to the class activity page by organizing articles in a grid layout that includes images, titles, and dates, allowing users to quickly scan key information. This approach reduces the need for excessive scrolling and maintains layout consistency across pages, enabling users to better understand navigation patterns and interface structure.

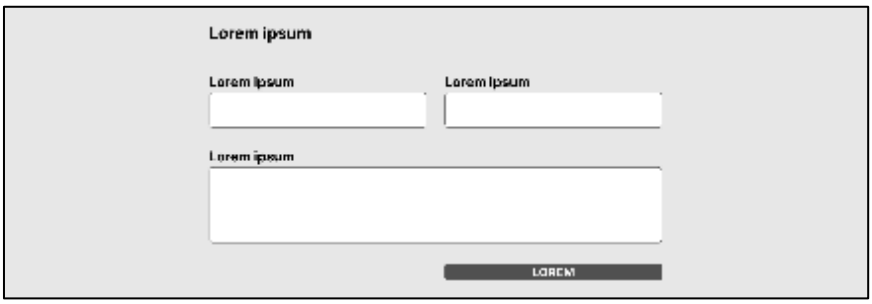

Figure 8 Comment Section Wireframe Design

The improved comment section wireframe (as shown in figure 8) applies a neutral background color combined with high-contrast input field borders to enhance readability and improve the visibility of interactive elements.

3.2.4. High-Fidelity Prototype Development

The high-fidelity prototype was developed based on the previously designed wireframes, incorporating visual elements, layout integration, and color scheme considerations for each page using Figma.

3.2.5. Qualitative Usability Testing of the Proposed Prototype

Qualitative usability testing was conducted by involving users to interact with the improved prototype. During the process, users were asked to complete a set of predefined tasks without time constraints, ensuring that they were not aware of any time limitations during testing. This approach applies the think-aloud method, which aims to collect user feedback, opinions, and suggestions regarding the proposed design improvements. The results of this evaluation are presented on Table 5:

Table 5 User Responses

No.	Name	User Responses
1	AR	Difficulty in recognizing the current page, especially when reading articles
		Back and next buttons are visually similar to content, reducing distinguishability
2	DP	Lack of visual cues on the homepage indicating additional content below
		Assumption that all pages can only be accessed through the navigation bar
3	FN	Difficulty in identifying the currently active page on the student activity section
		Navigation buttons on the article page are not clearly perceived as interactive elements
4	RS	Homepage initially appears to contain only banners and menus
5	MK	Uncertainty in identifying the current page
		Homepage is overly focused on the banner section
		Article navigation buttons lack visual distinction from content

3.2.6. Initial Website Redesign Improvements

Based on the identified issues, the following design improvements were proposed:

- Users were unable to clearly identify their current page location, particularly on the article and student activity pages. According to Krug [7], clear location indicators such as breadcrumbs can reduce user confusion by providing consistent information about page position and supporting navigation orientation within the website structure.
- The initial homepage design, which primarily displayed a full banner and navigation bar, caused users to overlook additional content below the fold. Weinschenk [21] explains that user attention tends to focus on the above-the-fold area, leading to lower visibility of content placed below. Therefore, a scroll indicator was added as a visual cue to encourage users to scroll and understand that the page extends vertically.
- The back, previous, and next buttons previously had colors that blended with the article content, making them less distinguishable as navigation elements and difficult for users to recognize. According to usability guidelines from Nielsen Norman Group, navigation controls should have clear visual contrast to ensure recognizability and reduce confusion. Therefore, the button color was adjusted to a darker gray to improve visibility while maintaining a balanced visual hierarchy, in line with Google Material Design guidelines for secondary buttons.

The resulting high-fidelity prototype was then discussed with stakeholders from the institute as part of the final interface evaluation. Based on stakeholder feedback, access to the institution's official social media and email information was added to the footer to strengthen the website's identity and credibility, as well as to facilitate user access to official communication channels beyond the website.

3.2.7. Final Improved Prototype Results

The following link presents the final improved prototype, which has been refined based on the results of the qualitative testing and previous focus group discussions (FGD): https://bit.ly/desainfigma2

3.3. Final Design Evaluation

Quantitative usability testing was conducted on the final improved prototype of the website to evaluate user interface performance based on three main usability attributes: effectiveness, efficiency, and satisfaction. Table 6 presents the results of the effectiveness evaluation of the improved prototype.

Table 6 Effectiveness Score of the Improved Prototype

User	Success or Fail						
	T1	T2	T3	T4	T5	T6	T7
Q1	1	1	1	1	1	1	1
Q2	1	1	1	1	1	1	1
Q3	0	1	1	1	1	0	1
Q4	1	1	1	1	1	1	1
Q5	1	1	1	1	1	1	1

Note:
1 = success; 2 = failure

$$Sucess\ Rate = \frac{Number\ of\ sucessfully\ completed\ subtask}{Total\ number\ of\ subtask\ undertaken} x100\%$$

$$Sucess\ Rate = \frac{33}{35} x100\% = 94{,}29\%$$

After the improvements, the effectiveness score of the website reached 94.29%, showing a significant increase compared to the initial condition and exceeding the success rate threshold of 78%.

Table 7 presents the results of the efficiency evaluation of the improved prototype.

Table 7 Efficiency Score of the Improved Prototype

User	Time (second)						
	T1	T2	T3	T4	T5	T6	T7
Q1	95	48	55	42	60	70	22
Q2	102	52	58	45	63	68	25
Q3	52	46	54	39	58	32	28
Q4	97	50	56	44	61	66	24
Q5	92	49	57	41	59	64	23

$$Overall\ relative\ efficiency\ = \frac{\Sigma_{j=1}^{R}\Sigma_{i=1}^{N} n_{ij}t_{ij}}{\Sigma_{j=1}^{R}\Sigma_{i=1}^{R} t_{ij}}\ x\ 100\%$$

$$Overall\ relative\ efficiency\ = \frac{1813}{1897} x100\% = 95{,}57\%$$

The efficiency score of the website prototype reached 95.57%, showing a significant improvement compared to the existing website and exceeding the 50% threshold.

The satisfaction evaluation of the website prototype resulted in an SUS score of 86, which, according to Sauro [14], falls into the "excellent" category, within the acceptable range, and corresponds to grade A.

3.4. Analysis

3.4.1. Analysis of Performance Measurement of the Existing Website and the Improved Prototype

The effectiveness analysis was conducted using the success rate to evaluate users' ability to complete tasks, where a score of 1 indicates a successful task and 0 indicates a failed task. The usability testing results on the existing website show a success rate of 74.29%, which is below the 78% threshold [13]. The highest failure rates occurred in Task 1, Task 3, and Task 6 due to unclear navigation and tuition fee information with similar titles and no time indicators. In contrast, Task 4 and Task 5, which featured clearer visual design and simpler structures, showed higher success rates. After the improvements, the success rate increased significantly to 94.29%, with failures occurring in only 2 out of 35 subtasks. These failures were caused by differences in user perception of information depth rather than navigation issues. This result indicates that the improved prototype provides better effectiveness and supports users in completing tasks more successfully compared to the existing website.

The efficiency analysis was measured using the overall relative efficiency method by comparing the total time required for successfully completed tasks with the total task completion time. The results on the existing website show an overall relative efficiency score of 74.19%, which exceeds the 50% efficiency threshold [16], but still indicates that users required relatively more time for tasks involving page transitions and repeated information searching. After the interface improvements, the evaluation of the prototype shows a significant increase in overall relative efficiency to 95.57%, indicating that users were able to complete tasks more quickly and with a more efficient interaction flow. These findings demonstrate that the interface improvements significantly enhanced the efficiency of the website compared to its previous condition.

The satisfaction analysis was measured using the System Usability Scale (SUS), which consists of 10 Likert-scale items administered after users completed all tasks. The existing website obtained an SUS score of 59, which falls into the "OK" adjective rating category, within the marginal acceptability range, and corresponds to grade D [3]. After the improvements, the SUS score increased to 86, categorized as "Excellent" within the acceptable range, with grade B, reflecting an improvement of 27 points. This increase indicates that the improved prototype significantly enhances user satisfaction, supported by findings that the interface became easier to understand, navigation clearer, and information retrieval more straightforward compared to the existing website.

3.4.2. Analysis of User Interface Structure Before and After Improvement

The existing website exhibited issues related to navigation structure, clarity of interactive elements, and visual consistency, which increased users' cognitive load in understanding the interaction flow. This condition made it difficult, especially for new users, to recognize element functions and determine appropriate actions.

In the improved prototype, the navigation structure was simplified and organized hierarchically through the main navigation bar, resulting in clearer and more consistent access to information. The clarity of interactive elements was enhanced through consistent use of shapes, colors, and positioning as call-to-action elements, thereby reducing false affordance.

Additionally, improvements were made to typography, color, and visual layout to strengthen information hierarchy and enhance readability. Content presentation was refined using card and carousel systems to reduce visual density and make information easier to process.

Overall, the user interface improvements in the website prototype focus on enhancing navigation clarity, visual consistency, and interaction ease, which positively impact user experience quality, as evidenced by the usability testing results.

4. Conclusion

This study demonstrates that improving the user interface design of the website significantly enhances its usability. The existing website showed limitations in effectiveness, efficiency, and user satisfaction due to unclear navigation, inconsistent visual elements, and poorly structured content.

After the redesign, substantial improvements were observed across all usability attributes. The effectiveness score increased from 74.29% to 94.29%, efficiency improved from 74.19% to 95.57%, and user satisfaction rose from an SUS score of 59 to 86. These results indicate that users were able to complete tasks more successfully, more efficiently, and with a higher level of satisfaction.

These findings highlight the importance of applying user-centered design principles in developing educational websites, as a well-designed interface can directly improve user experience and facilitate better access to information.

Compliance with ethical standards

Acknowledgement

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Disclosure of conflict of interest

No conflict of interest to be disclosed.

Statement of informed consent

Informed consent was obtained from all individual participants included in the study.

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