

Evaluating the Impact of Intuitive Design Elements on Usability in the DreamDex App

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ABSTRACT

This study examined how certain intuitive design elements impacted user orientation and task efficiency in DreamDex, a newly developed mobile app with a focused and compact design. Through within-subjects usability testing, participants completed various tasks while usability metrics such as task completion time and success rate were recorded alongside qualitative observations of user behavior. The findings assessed the app's navigation, visual cues, and overall usability, offering actionable recommendations to enhance DreamDex's user interface and user experience.

1 INTRODUCTION

This study explored how intuitive design elements, such as consistent navigation and clear visual feedback, affect the usability of DreamDex. DreamDex is an interactive character discovery app designed for anime and manga enthusiasts, offering users the opportunity to explore a vast collection of characters (over 17,000 characters). One of its unique features is that users cannot directly search for specific characters. Instead, they must explore the app, discovering new characters as they go. Users can learn more about each character and curate their own personalized collection by adding their favorites.

The design elements chosen for this study, including consistent navigation placement, intuitive icons, and clear feedback mechanisms, are critical for enhancing the user experience. These elements reduce cognitive load, simplify navigation, and promote efficient task completion. Consistent navigation helps users locate key features easily, intuitive icons provide immediate understanding of app functions without the need for detailed instructions, and clear feedback ensures users are informed of their actions and the app's response, increasing their confidence.

Based on this, the hypothesis suggested that these design elements are crucial and will positively impact users' ability to navigate the app and complete tasks efficiently.

For the within-subjects usability testing, five participants, aged 21 to 58, were assigned usability tasks. This group included both anime/manga enthusiasts and non-enthusiasts. Including non-enthusiasts ensured that the app was intuitive, accessible, and appealing to a broader audience, identifying potential usability issues and improving the overall experience. Tasks were evaluated based on completion time, success rates, and qualitative observations of user behavior, capturing moments of

confidence, hesitation, or frustration to identify areas for design improvement. All testing was conducted in person, allowing for direct observation of participants' interactions with the app.

2 HEURISTIC EVALUATION

1. Visibility of System Status

- **Strengths:** The bottom menu navigation included icons that would inform users about their current location within the app. When a user navigated to a page, the corresponding icon transitioned from an outlined icon to a filled icon, providing clear visual feedback about the selected page).
- **Potential Issues:** While there is an icon confirmation when favoriting/unfavoriting characters, there wasn't a written confirmation (The immediate feedback by the heart icon getting filled when a character is favorited might be too small to notice).

2. Match Between System and the Real World

- **Strengths:** Intuitive icons were selected to align with users' real-world expectations in the navigation bar.
- **Potential Issues:** Providing a one-word description below the icons could enhance user understanding and improve accessibility.

3. User Control and Freedom

- **Strengths:** Users could quickly unfavorite a character by simply clicking the filled heart icon, which returned the heart outline, making it as easy to remove favorites as it is to add them.
- **Potential Issues:** On the browse screen, the characters' details page was inaccessible after the first page of the list of characters. However, the details page became accessible when the character was viewed from the favorited page.

4. Consistency and Standards

- **Strengths:** The interface maintained consistency across the app to support intuitive navigation.

- **Potential Issues:** The character data output could sometimes appear disorganized due to inconsistent formatting from the API, which can affect the overall professionalism of the presentation.

5. Error Prevention

- **Strengths:** The system was designed to minimize the chances of errors, with very few opportunities for mistakes.
- **Potential Issues:** It would have been beneficial to include confirmation prompts when unfavoriting a character from the favorites collection, as users could only search for characters one page at a time (meaning finding the character again could be difficult).

6. Recognition Rather Than Recall

- **Strengths:** The heart icons on character images clearly indicate whether a character has been favorited.
- **Potential Issues:** It was not possible to favorite the character from its details page.

7. Flexibility and Efficiency of Use

- **Strengths:** Users could navigate back to the homepage either by clicking the home icon in the navigation bar or by tapping the DreamDex logo at the top of the page.
- **Potential Issues:** Users were required to navigate back manually, as there was no visible exit option on the details screen.

8. Aesthetic and Minimalist Design

- **Strengths:** The navigation bar included only the most critical actions, and the overall interface was uncluttered. Characters were displayed symmetrically, creating a visually pleasing layout.
- **Potential Issues:** Adding a pagination option to select pages directly would have been helpful, as users are currently required to repeatedly press "More Characters" to navigate.

9. Help Users Recognize, Diagnose, and Recover from Errors

- **Strengths:** If the app fails to display content (e.g., due to a poor internet connection), it provides messages to inform the user.

- **Potential Issues:** The messages are currently small and do not provide guidance on how to resolve the issue.

10. Help and Documentation

- **Strengths:** The app's design is intuitive, so users may not immediately require help.
- **Potential Issues:** A dedicated information page would be helpful (e.g., informing users that the app may not function properly on restricted Wi-Fi, as the API may fail to load)

3 USER STUDY

This study was a within-subjects usability test that evaluated design elements such as consistent navigation and clear visual feedback to assess their impact on the usability of DreamDex.

Research Question:

The research question explored the relationship between consistent navigation elements and intuitive design features and their impact on users' ability to orient themselves and complete tasks efficiently within the app. The independent variables were consistent navigation elements and intuitive design features, while the dependent variables included users' ability to navigate the interface and successfully complete tasks.

Methodology:

1. **Data Collection:** Quantitative data, such as task performance metrics and SUS scores, were collected alongside qualitative observations of user behavior, including signs of confidence and frustration or hesitation.
2. **Tools Used:** The tools used were a stopwatch for task completion time, a laptop for digital notetaking and recording observations, and a phone that could display the DreamDex app.
3. **Experimental Design:** There were five participants performing the same tasks on the phone provided for them, allowing a within-subjects testing approach. Participants were introduced to the study's purpose and received instructions for the tasks to be completed. When starting each task, the participants were required to start each task from the browsing screen before proceeding to the next task.

Tasks:

Each group was tested on three tasks, with performance measured by task completion time:

1. Navigate to the details page of the 'Character Randomizer.'
2. Add Luffy to your Favorites and confirm that he appears in the Favorites section.
3. Locate Luffy in the Favorites page and unfavorite him.

After each task, the participants completed a subjective ease-of-use question: "How was the task?" After completing all tasks, they filled out a post-test survey, the SUS evaluation, which included questions app usability, user experience, and interface design clarity. The questions included:

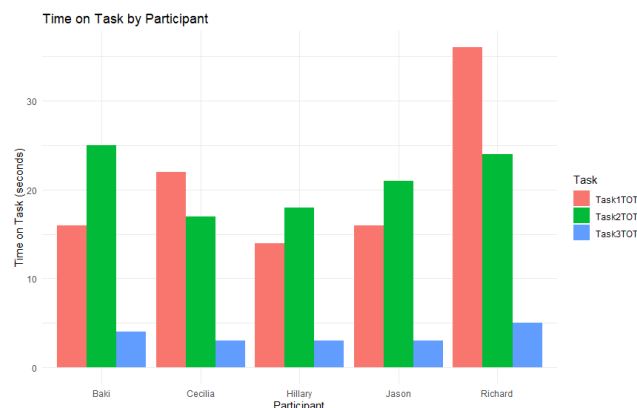
1. I think that I would like to use this system frequently.
2. I found the system complex.
3. I thought there was consistency in this system.
4. I think most people would find this system difficult to learn.
5. I felt very confident using the system.
6. The feedback provided (e.g., icons) was not helpful.
7. The app's design is visually appealing.
8. The icons used in the app were difficult to understand.
9. I always knew where I was in the app.
10. I felt the app lacked important functionality.

Participants:

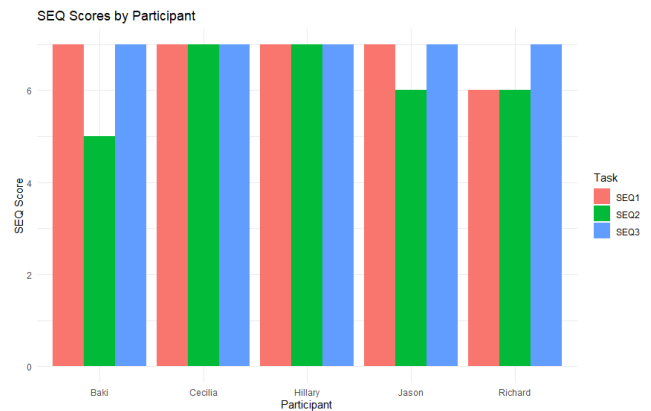
The sample consisted of a diverse group of participants aged 21–58, with a gender distribution of 3 men and 2 women. Among them, 3 participants were anime/manga enthusiasts. We also included non-enthusiasts to evaluate the app's usability from a broader perspective. This allowed us to assess whether the app was intuitive and accessible to users regardless of their familiarity with anime and manga content, ensuring a more inclusive design.

4 RESULTS

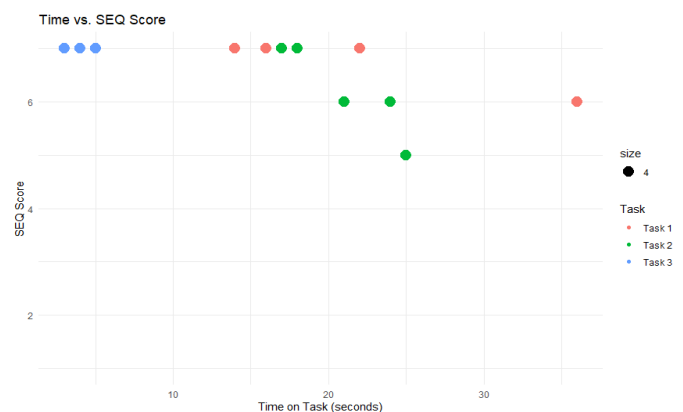
Plots on Task Completion time and SEQ Scores:



The plot displays the time each user spent on each task. Task 3 was the easiest, with all participants completing it in 5 seconds or less. While task 2 was new to them, task 3 felt more familiar. The favorites page had already been introduced in task 2 when participants had to confirm that a character was favorited. As a result, it was intuitive for them to unfavorite a character by clicking on the filled heart icon, mirroring the action of favoriting a character by clicking the outlined heart in task 2. Task 2 took the longest for most participants, except for Richard, who spent the most time on task 1. Richard initially struggled to realize that the character needed to be tapped to view the character details.



The plot displays the SEQ scores based on the question, "How was the task?", which participants answered after each task. Most participants, except for Richard, gave Tasks 1 and 3 the highest SEQ scores. During the study, Baki, Jason, and Richard were confused by the absence of an "Add to Favorites" button on Luffy's details page. They later mentioned that this design choice contributed to their lower ratings.



The scatterplot reveals a correlation between task completion time and SEQ scores:

participants who completed tasks more quickly tended to give higher SEQ ratings.

SUS Score:

SUS	1	2	3	4	5	6	7	8	9	10	ADI	ODD	ADI	EVEN	SUM	X 2.5
Richard	5	3	2	3	4	4	5	4	4	3	16	10	26	65		
Jason	5	1	2	3	4	3	4	3	3	3	19	14	33	82.5		
Cecilia	5	2	4	2	4	2	3	3	4	4	19	12	31	77.5		
Baki	5	3	3	2	4	4	5	4	4	3	17	9	26	65		
Hillary	5	1	5	3	5	2	5	2	5	4	20	15	35	87.5		
											SUS Score		75.5			

The SUS Score was 75.5, which, according to the Usability Interpretation, is classified as 'Good' (Above Average).

The key takeaways were that users generally found the system easy to use and visually appealing. Some participants struggled with complexity (Q2, Q4) and feedback clarity (Q6). Navigation and confidence (Q5, Q9) scored well, suggesting a strong overall user experience.

There were areas for improvement, but the system was overall well-received.

All users suggested that the "Add to Favorites" functionality should also be added to the character details page for a more seamless experience. In terms of technical issues, participants noted that after the first page, they were unable to access the character details page (the characters' detail page can be accessed from the favorites collection). Finally, Richard suggested adding an option to group characters in the favorites list, which would provide users with a more organized and personalized way to manage their favorite characters.

5 CONCLUSIONS

This study aimed to explore how intuitive design elements, such as consistent navigation and clear visual feedback, impact the usability of the DreamDex app. The hypothesis proposed that these design elements would positively affect users' ability to navigate the app and complete tasks efficiently.

The results supported this hypothesis, as users found the app generally easy to use and visually appealing, with high confidence in completing tasks related to navigation and functionality. User feedback on improving the app primarily focused on enhancing navigation and feedback mechanisms. Key suggestions included ensuring that the character details page is accessible from any point in the app, which would contribute to more consistent navigation, and adding an "Add to Favorites" option directly on the character details page to provide more intuitive feedback and clarity in user actions. These improvements emphasize the need for a seamless navigation flow and immediate, clear responses to user interactions.

The absence of these features contributed to lower SEQ scores, particularly for task 2. Users expected that by clicking on a character to view their details, they would also have the option to favorite the character directly from the details page. This expectation was not met, leading to confusion and frustration, which ultimately resulted in lower ratings for the task.

The SUS score of 75.5 classified the system as "Good" (Above Average), reflecting strong user

satisfaction with the app overall. The results indicate that DreamDex provides an intuitive and efficient user experience, especially for anime and manga enthusiasts, while also being accessible to non-enthusiasts, who want to start getting into this anime and manga.

If this app is further developed in the future, these steps would be targeted for improvement: adding the option to group favorited characters, fixing the display of character information on the details page (particularly the issues with underscores), resolving the bug that prevents users from viewing the details page of characters who appear after the first page, adding a heart icon on the details page for favoriting characters, and incorporating pagination to allow users to jump directly between different pages.