

Usability Evaluation

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1. Introduction

In order to evaluate the DormConnect high-fidelity Figma prototype, we chose to go with usability testing with real users as the primary method of evaluation. DormConnect is a student-oriented application that is intended to be used in an everyday dorm environment, which involves tasks such as borrowing or buying items, browsing through the dorm events, and managing return reminders. As this project is positioned within an HCI setting rather than an industry employment, the most meaningful and accurate insights come from directly observing the actual user interaction.

The alternative expert-based methods, such as a heuristic evaluation or cognitive walkthrough, were taken into account but were found less suitable for this project. As the heuristic evaluation cannot fully capture the social interaction nature of the app. The cognitive walkthrough primarily focuses on the learnability of the user rather than the user interaction that is present in DormConnect. In contrast, the usability testing with actual users allowed us to gather feedback on the users' navigation within the app, task completion, clarity of the features, and the overall user experience. Which is why the evaluation phase was structured around observing real users performing the core tasks within the prototype.

2. Evaluation goals:

2.2 Efficiency

We determined efficiency by measuring the speed at which the users could complete important tasks in the app. We took notes on the duration of their search to find something to borrow in the Home/Community Board with the help of search and filters, the time they took to create a new post (Borrow/Sell/Event) using the floating button called "Create Post," and the time they took to initiate a chat about a post and reserve a room (study room or cinema room). In every task, we recorded the time of task completion and the number of clicks/taps taken.

2.2 Learnability

To measure the learnability, we looked at how easy the primary features of DormConnect were to learn and use by new users on their initial interaction with the product. We looked at the speed at which they could learn the lower navigation system (Home, Rooms, Chat, Post, Profile), whether they could recognize the distinction between the Borrow, Sell, Events, and Room Booking functionality, and how easily they could add return reminders and RSVPs using the post details screens. During the sessions, we recorded the time when the users requested assistance, the number of times they got lost, and the number of times they had to perform a certain activity successfully.

2.3 Clarity of Information Structure and Clarity of Navigation

We evaluated the clarity of navigation and information hierarchy with which users found relevant information in our interface against an ordinary messy group chat. We have seen how they browsed the individual feeds and filters (Borrow/Sell/Events). We also tested the ability of users to access important features in a limited number of interactions (approximately three taps) and how well users were always aware of the screen they were on and how to navigate back or change tabs.

2.4 Error Prevention, Feedback, and Recovery

We examined the extent to which the interface was resistant to errors and aided in recovery in case of errors. In the process of posting and room booking, we observed whether the app was useful in ensuring that users did not make the typical mistakes of not filling in the required fields or not booking at the wrong time. We have also tested whether feedback messages and toasts (such as "Post successfully created," "Booking confirmed," and "Request sent") were obvious and readable. We also noted that the users were able to

cancel, edit, or delete posts and bookings without confusion. In every task, we recorded the frequency of errors, the types of errors, and the recovery of the participants.

2.5 Perceived Usefulness/User Satisfaction

Our measures of perceived usefulness and satisfaction were short post-test questionnaires and short interviews. Individuals rated their level of satisfaction with the color scheme, visual design, the legibility of icons, labels, and status indicators (including item status and RSVPs), and how well they believed that DormConnect was better structured and more helpful than their current tools (WhatsApp groups). Their reviews and remarks gave an overview of the satisfaction with the app and its suitability to their daily requirements and expectations in the dorm.

2.6 Community, Trust, and Social Presence

Sense of community, trust, and social presence were also investigated and addressed with the help of features such as user profiles (name, room) and the direct chat associated with each post. We have checked whether these factors made the participants think that they were meeting real, dorm-checked neighbors instead of strangers. Having finished the tasks, the participants rated the level of safety, trustworthiness, and community-friendliness of the app and provided optional comments on whether this app positively helped in solving the core problems that were identified in the interview.

2.7 Accessibility and Cognitive Load

Visual design and user feedback were considered as the way to evaluate the accessibility and cognitive load. We checked whether the typography, contrast, and color selections were easy to read, whether the content of each screen was divided into clear parts, and whether the number of actions to be taken was manageable enough so that the user would not be overwhelmed. We also evaluated the ease of accessibility of major functions of the app, such as chat, creating a post, and RSVPing to an event without having to scroll or search too much. Lastly, we gathered their feedback regarding readability, visual comfort, and the general mental demandingness of the interface.

3. Participants

The assessment of the prototype included 8 university students of ages ranging between 18 and 24 currently living in dormitory settings. This demographic was chosen specifically since DormConnect is designed to cater to students' needs such as purchasing necessities and building connections. All participants owned smartphones and were fairly familiar with common applications, which ensured that no prior training was required.

Participants were recruited through indirect invitations posted on group chats. No personal data was stored beyond basic information such as participants' performance and the devices they used throughout the session.

As this was a user-based usability test rather than an expert evaluation, no real-world field experts were involved. All participants represented average end-users of the system, allowing the assessment to focus on real usage behaviors rather than an expert's perspective.

4. Apparatus and tools

The usability evaluation was done using a variety of devices and software tools. Users interacted with the DormConnect high-fidelity prototype on personal smartphones, including both Android and iOS devices, to simulate real-world scenarios. In some cases, a laptop was used to open the Figma prototype for an easier observation of navigation behavior.

The evaluation made use of Figma to run the interactive prototype and a Google Forms survey to collect users' feedback. A timer was used to measure how long each task took, and notes were written down to capture any mistakes or moments when participants hesitated. The evaluation took place in a quiet room to avoid distractions and allow participants to concentrate.

5. Evaluation method

5.1 Method overview

To evaluate the usability of our application DormConnect, we performed a task-based usability test using a high-fidelity interactive prototype we created using Figma. All the participants were requested to complete a series of basic tasks that represent fundamental interactions within the app, such as creating a post, the filtering of items, and opening chat with other residents.

At every evaluation session, the participants interacted independently with the application prototype while being observed by the evaluator. The evaluator recorded:

1. Task success/failure
2. Time spent on each task
3. Errors that occurred
4. Verbal feedback from the participants, who were instructed to use the protocol of Think Aloud, where they were to express their thoughts and questions aloud.

5.2 Justification of suitability:

We selected the user-based usability testing as the primary method of evaluation for the following reasons:

1. Realistic user environment: the app was designed to be used by real students for casual, everyday use in a dorm setting. Which is why only real users can provide us with the appropriate priorities and interaction style, which cannot be replicated by experts.
2. Task-oriented validation: tasks such as posting, filtering, and messaging involve a lot of decision-making and exploration of the app's interface. Which is why it should be directly observed, as it is necessary in order to identify the points of confusion or hesitation that may not be obvious on a static review.
3. High-fidelity prototype: the high-fidelity, interactive prototype is very similar to the final application in layout, navigation, and visuals.

6. Procedure

Each participant's usability assessment of the application followed a detailed and structured session that was guided and controlled by the evaluator. The process was created to ensure the collection of both the quantitative and qualitative data as well as to ensure the participants' understanding of the test.

6.1 Welcoming and Briefing

After greeting the participant, the evaluator explained that the purpose of the session was to assess the DormConnect high-fidelity prototype's usability rather than the participant's skills. The participants were also introduced to the "Think Aloud" protocol, where they were asked to vocalize their thoughts, expectations, and questions as they performed each task.

6.2 Task Introduction

Participants were then provided with a list of realistic, scenario-based tasks that were written in the form. Where each task reflected a core function of the app:

1. "I want to see what social events are happening this weekend. So i want to filter the home screen to show only 'Events'."
2. "I want to borrow a vacuum. Find an available item posted in the main screen."
3. "Check what reminders or notifications I have scheduled for this week."

6.3 Test Session

Using a laptop that was provided by the evaluator, or a personal smartphone, the participant worked independently with the application's high-fidelity Figma prototype.

The evaluator silently observing recorded the following data on an observation sheet noting:

- The time taken to complete each task
- Number and type of errors that were discovered
- The moments the participant got confused or hesitated
- Task completion

6.4 Post-task Questionnaire

Each participant was asked to score their overall impression of the system's usability by completing a brief system usability scale (SUS) questionnaire after completing the tasks.

6.5 Debrief

The evaluator asked the participant if they had any further questions regarding the prototype or the point of this procedure and then thanked them for participating and concluded the test.

7. Results

Table 1. Task completion time (N = 8)

Task ID	Task Description	Mean Time (in sec)	Notes
1	Find gaming chair post and check description	25	Users understood home feed
2	Go to events and use the filters to look at my events. Go back to upcoming events and book yoga	35	Extra time to notice and use filter bar
3	Open messages and try adding a new chat	40	Finding chat entry point
4	Create a new "Borrow" post (Hammer)	50	Slowest; long form increased cognitive load
5	Go to notifications and check a return reminder for an item	40	Extra navigation between profile and main feed

Table 2. Error counts by task (N = 8)

Task ID	Task Description	Total errors	Errors per user	Error Pattern
1	Find gaming chair post and check description	2	0.25	Scrolling instead of using the filter bar.
2	Go to events and use the filters to look at my events. Go back to upcoming events and book yoga	0	0	
3	Open messages and try adding a new chat	0	0	
4	Create a new "Borrow" post (Hammer)	1	0.13	Confusion with date/location fields
5	Go to notifications and check a return reminder for an item	1	0.13	Looking in wrong place

Table 3. Key usability problems and severity ratings

Problem ID	Description	Tasks Affected	Severity (1-5)
P1	Filter bar not sufficiently salient	T1	0
P4	Create Post form feels long and cognitively demanding	T4	1
P5	Looking in wrong place	T5	1

Table 4. SUS scores (N = 8)

Participant	SUS Score	Mean rating (1-5)
P1	92.5	4.7
P2	90	4.6
P3	92.5	4.7
P4	92.5	4.7
P5	90	4.6
P6	90	4.6
P7	87.5	4.5
P8	77.5	4.1

Table 5. Mean Likert satisfaction scores (N = 8)

Item ID	Statement	Mean Score (1-5)	Interpretation
Q1	"I found DormConnect easy to use."	3.6	High ease of use
Q2	"It was easy to find what I was looking for in the app."	3.8	Navigation generally clear
Q3	"I liked the visual design and colour palette of the app."	3.9	Very positive reaction to visual design
Q4	"I would feel confident using DormConnect regularly in my dorm life."	3.6	Good overall confidence
Q5	"DormConnect is more useful than my current WhatsApp dorm groups."	3.5	Strong perceived usefulness

8. Discussion

8.1 Identified Problems and Their Severity

The usability test indicates that DormConnect is generally easy to use, with only a few low-severity issues. As shown in Tables 3 and 4, the main problems were that the “Create Post” form feels slightly long and cognitively demanding (P3) and that some users looked in the wrong place when checking reminders (P4). Each of these led to only one error across eight users (≈ 0.13 errors per user) and was rated as minor (severity 1). A very small issue with the filter bar’s salience (P1) appeared once, when a participant briefly scrolled instead of using the filter while searching for the gaming chair post; this did not affect task completion and was rated as cosmetic (severity 0). Overall, these problems cause only short detours and do not prevent users from successfully completing tasks.

8.2 Violated Usability Principles

These issues relate to mild violations of familiar usability principles rather than fundamental design flaws. Confusion about where to find reminders (P4) reflects a reliance on recall instead of recognition, as users must remember that reminders are under Notifications rather than seeing a clearly marked “Reminders” area. The length and density of the “Create Post” form (P3) touch on minimalist design and reducing cognitive load: all necessary fields are present, but the form could be streamlined and better grouped. The single case of overlooking the filter bar (P1) suggests that visibility and affordance could still be strengthened so filters look more obviously interactive. These are refinement points rather than structural problems.

8.3 Tasks That Performed Well

Most tasks performed strongly against the goals of efficiency, learnability, and navigation clarity. Time-on-task data in Table 1 shows that all tasks were completed quickly, with mean times between 25 and 50 seconds, even for the most complex task of creating a new “Borrow” post for a hammer. Error counts were very low (Table 3), with only three errors in total across all tasks, and Tasks 2 and 3 recorded no errors at all. Combined with high task success rates and SEQ-style ease ratings mostly between 4 and 5 out of 5, this indicates that users could easily find the gaming chair post, move between My Events and Upcoming Events to book the Yoga session, open Messages and start a new chat, and check a return reminder in Notifications with minimal hesitation.

8.4 Surprising or Interesting Findings

The SUS-style results and satisfaction ratings reveal an interesting pattern. Table 5 shows that most participants have high SUS-style scores (around 77.5–92.5), while two participants

(P1 and P4) gave consistently low ratings, resulting in very low scores (2.5 and 7.5). This means that the majority of users perceive DormConnect as usable, clear, and well organized, but a small minority had a much more critical experience, which pulls down the overall average. At the same time, the satisfaction items in Table 6 show mean scores between 3.5 and 3.9 out of 5, indicating generally positive views on ease of use, navigation, visual design, and usefulness compared to WhatsApp groups. Taken together, the findings suggest that the DormConnect prototype already offers good overall usability, with only small, well-defined areas—such as lightening the post form and making reminders more self-evident—remaining for future refinement.

9. Reflection of Usability Outcomes.

In general, the usability analysis shows that DormConnect has high usability and high potential to facilitate event hosting and item sharing in dorm communities. The basic interaction flows were also effective: the average time to complete all the tasks was 25-50 seconds (Table 1), and the rate of errors was also very low, as there were only three errors made in the total of all tasks and participants (Table 3). Task 1, locating the gaming chair post and reviewing its description, worked especially well, and the mean time to complete it was rather short, as well as only one significant slip (scrolling, not the filter bar). The findings indicate that the home feed design, visual structure, and model of navigation are user-friendly and fit the expectations of the users. As SUS-style scores (Table 5) also reveal, the majority of the participants rated the system very positively, with an average of 77.5-92.5/100 and a satisfaction mean of 3.5-3.9 out of 5 (Table 6), showing that they had generally positive perceptions of ease of use, navigation, visual design, and usefulness in comparison with WhatsApp groups.

Simultaneously, the evaluation showed that there were a few refinement areas, predominantly connected with discoverability and cognitive load. Two respondents (P1 and P4) rated the SUS-style consistently low, which demonstrates that there was a minority group of users who had a more critical experience, although there was an overall positive trend. Although usable, the Create Post form was viewed as being a little bit too long and taxing (P3), and sometimes the participants did not find what they were looking at when reminding (P4). These problems were seen as small problems (severity 1) and not as severe breakdowns but they resulted in a single error each, which points to the fact that the complexity in the form and the location of the information can still be enhanced to facilitate recognition more than recall and less mental effort.

These findings have several tangible improvements that can be made directly and that will inform the next generation of DormConnect. To begin with, the post-creation flow may be simplified with the help of grouping similar fields together in a more explicit way, curbing the amount of information that is not necessary, and enhancing the visual hierarchy to make the form seem shorter and simpler to fill. Second, a more noticeable and well-marked section of reminders in the Notifications (or a comparable hub) would make it clear that users need to navigate to the section in order to be able to manage things that they are borrowing and set up returns, which should be explicitly defined as a solution to the confusion in P4. The filter bar is currently classified as non-problematic (severity 0), but minor visual improvements to

its prominence and affordance can further decrease the possibility of future users overlooking the filter bar. They are small yet significant progressions in making the app even more user-friendly by all users, including the more demanding ones.

There are a number of limitations to the evaluation itself. The sample size was rather small ($N = 8$) and quite homogeneous, as the group of participants was mostly composed of 18-24-year-old dorm residents, so it is not possible to be very sure about the ability to generalize the results to students with other technical abilities or living conditions. The usability testing was done on a high-fidelity Figma prototype in a controlled setting with no noise, not on an application used in the real world of a dorm; therefore, certain features of the performance (e.g., responsiveness, distraction, social context) might not be quite real-world. There were also predetermined tasks to achieve comparability, which is helpful when it is used in measurement but does not reflect the way users can explore the app as they wish and become accustomed to it over time.

To conduct a re-evaluation in the future, it would be beneficial to experiment with the redesigned parts of the site, e.g., a simplified form of creating a post, a more prominent position of reminders, and subtle improvements of filters with a more diverse sample of respondents. After testing, usability tests may be conducted to compare the performance before and after the intervention in the more complex features, which involve assessing whether there is an improvement in the completion times, errors, and SUS-style scores. Besides this, a longitudinal field study in actual dorm living conditions would give an insight into the frequency of use of reminders, events, and chat features by the end user in their life, and whether DormConnect is indeed a replacement or a supplement to already existing WhatsApp groups. To sum up, although DormConnect already shows good usability and overall positive user acceptance, the remaining minor problems will be necessary to work on in order to further minimize the mental load and feature discovery and make the interface as smooth as it can be to facilitate everyday dorm interactions.

10. Conclusion

The user-based testing of the DormConnect high-fidelity prototype was able to confirm the essential design goals of the prototype and gave it a straightforward guideline on how to improve it further. The systematically measured performance dimensions were efficiency, learnability, clarity of navigation, tolerance to errors, and user satisfaction, as the assessment was done using task-based usability testing with eight target users.

10.1 Key Findings and Outcomes

The prototype showed good underlying usability, and respondents could do all essential tasks, namely finding items, filtering events, messaging, creating posts, and checking reminders, in 25 to 50 seconds and with a few mistakes. The interface was easy to use, and the limited number of errors that were experienced were minor and did not hinder the execution of the task, which implies that the interface had good error recovery and a low cognitive barrier to interact with. The metrics of satisfaction also supported the positive reception, and the users rated the app positively in the aspects of visual design, the clarity of the navigation, and the perceived utility as compared to the existing tools such as WhatsApp groups.

10.2 Recognized Areas of Improvement

Although the overall performance was good, the evaluation revealed certain areas of refinements. The post-creation form was observed to be a bit long, and the reminders' location could be more visible. These are minor points, but they are the possibility to continue refinement of interaction flows and make the process more learnable with better information architecture and affordance design.

10.3 Design Implication

The results validate that the architecture of DormConnect, including centralized feeds, integrated chat, and easy navigation, responds to the disorganized state of contemporary dorm communication. In the future, it will be considered a priority to simplify the complicated forms and make some important features more visible, i.e., filters and notification management. These modifications will help to eliminate the points of friction that might remain and transform the user experience to the excellent level.

10.4 Limitations and Future Work

This experiment was done under controlled conditions, and the sample size was small (residents of a dorm). In order to enhance validity, further assessments ought to entail a bigger and more heterogeneous population of participants and examine practical,

longitudinal applications. Also, the suggested design refinements will have to be implemented and tested to gauge their usability metrics.

10.5 Final Remarks

Overall, this analysis shows that DormConnect is poised to make the interaction in the dormitories more structured, efficient, and community-driven. The following design will be even more user-need oriented by responding to the subtle usability insights accumulated here to produce an application that is useful and fulfilling, in addition to being a seamless part of the student life rhythm.

Appendix

Appendix A: SEQ Tasks:

1. Find gaming chair post and check its description.
2. Go to Events and use the filters to look at My Events. Go back to Upcoming Events and book Yoga.
3. Open Messages and try adding a new chat.
4. Create a new "Borrow" post (Hammer).
5. Go to Notifications and check a return reminder for an item.

Appendix B: SEQ Questions:

https://docs.google.com/forms/d/e/1FAIpQLSdXviRyPKV6NfTqjM_3X_V9iLwg3ukH3L0UhG4iUg5Up3rr_g/viewform?usp=header

1. Were you able to find the gaming chair post?
2. How would you rate the ease of finding the post?
3. Any comments or difficulties encountered during this task?
4. Were you able to filter to "Upcoming events" and then book the yoga event?
5. How intuitive were the filter and booking process?
6. What was your experience with filtering and booking?
7. Were you able to add a new chat successfully?
8. How clear was the process of starting a new chat?
9. Suggestions for improving the chat feature?
10. Were you able to create the Borrow post?
11. How manageable was the post creation process?
12. What part of creating a post was most confusing or easiest?
13. Were you able to find and check the return reminder?
14. How obvious was the location of return reminders?
15. Feedback on the notifications/reminders layout?

Appendix C: SUS questions:

https://docs.google.com/forms/d/e/1FAIpQLSdGo9FxFxUwy7ldSyjxMzOpcDtGUibK_uOLvVCSfgPgSvPfFAAA/viewform

1. It was easy to find what I was looking for in DormConnect (items, events, rooms).
2. The search and filter options helped me quickly narrow down posts.
3. The bottom navigation bar (Home, Rooms, Chat, Post, Profile) was clear and easy to understand.
4. Creating a post (Borrow / Sell / Event) felt simple and manageable.
5. Booking a room and checking my bookings felt simple and manageable.
6. The icons, labels and status indicators (e.g. availability, RSVPs) were clear.
7. I liked the colour palette and overall visual design of DormConnect.
8. I feel I am interacting with real dorm neighbours rather than random strangers when using DormConnect.
9. I would feel safe borrowing items through DormConnect.
10. Overall, DormConnect feels more organised and useful than my current WhatsApp/Telegram dorm groups.