

Heuristics Evaluation

We conducted a heuristics evaluation of Community Gearbox's mobile app, focusing on the flows involving the process of borrowing and sharing items. These included screens using the search engine, screens associated with a particular community group¹, adding an item², requesting an item³, exchanging items⁴, and individual items⁵. We also analyzed the navigation (top level navigation tabs and menus) that are used to access the screens of each of the flows mentioned above. To evaluate the app, we used Jakob Nielsen's 10 usability heuristics [1] and severity rating scale [2]. The severity rating scale ranges from 0 to 4 with the following meanings:

- 0: "I don't agree that this is a usability problem at all" [2]
- 1: "Cosmetic problem only: need not be fixed unless extra time is available on project" [4]
- 2: "Minor usability problem: fixing this should be given low priority" [2]
- 3: "Major usability problem: important to fix, so should be given high priority" [2]
- 4: "Usability catastrophe: imperative to fix this before product can be released" [2]

We found that Heuristic 4 (Consistency and standards) had the most violations, which amounted to 23 violations total. Meanwhile, Heuristics 1 (Visibility of System Status), 5 (Error Prevention), and 6 (Recognition Rather Than Recall) had the highest average severity ratings of 3.5.

Our Heuristics Evaluation with corresponding screens can be found [here](#). The following chart is an organized summary of our findings.

¹ Groups are communities of people that users can join to interact with and share/borrow with a specific group of people. Items and collections of items can be shared within group pages. Posts, including requests for items, can be shared in a group's main page or feed.

² Users can upload items that they would like to share with their community groups.

³ Users can request to borrow an item from another user.

⁴ We analyzed the pages used for approving and coordinating the exchange of an item on both the sides of a borrower and lender.

⁵ These are "profiles" for items uploaded by users, specifying details about the item, including durability, whether shipping is possible, the pickup location of the item, photos, and more.

Violation	Recommendation	Severity	Screen
<p>Heuristic 1: Visibility of System Status <i>Always keep users informed about what is going on, through appropriate feedback within reasonable time</i></p> <p>Total # of violations: 12 Severity mode: 4 (7 violations) Average violation severity: 3.5</p>			
<p>Under alerts, the descriptions of borrowers requesting to borrow the user's item don't consistently reflect the status of the request (e.g., see Ronald C. Kinch's alert)--some are missing the call to actions to accept or decline when the request is still pending.</p>	<p>If alerts include requests in all stages (pending, approved, declined), then the descriptors of the request alerts should clarify the state of the request (e.g., pending and requires user action of declining or accepting) or if the user's request has been accepted or declined already.</p>	4	Exchanges Page
<p>No emphasis is given to items overdue despite the terms of the borrowing/lending being violated.</p>	<p>Increase the visibility and prioritization of items that are overdue, such as through the use of alert colors and icons, to emphasize that action may be needed.</p>	4	Lending Page (Lent Out Tab)
<p>It's unclear what the meaning of the "Returned" button is. Does it mark the item as returned? If so, why is this an option under the returned tab because the items under this category should already be returned.</p>	<p>Consider taking it out of the returned item actions or redefining the returned button label based on its intended function.</p>	4	Lending Page (Returned Tab)
<p>Description under lending and borrowing pages are the same, despite being different states of participating (whether the user is the one lending or borrowing)</p> <p>(See "Follow up up with track</p>	<p>Use descriptors that clarify who is the lender vs the borrower in all items shared between users</p>	4	Borrowing & Lending Pages

everything you share with friends" text)			
Inconsistency of the top listing showing in how many days the item is due vs the below listings where are larger and have a bigger dedicated section omit the details of when the item is due for both "Lending" and "Borrowing" pages.	Display the number of days until the item is due in the bigger item containers under the second sub-tab navigation bar.	3	Lending & Borrowing Pages
There is no upfront display of the current status of the item--is it currently available, available in a couple weeks, etc?	Include details of the item availability under item details (e.g., currently available, available in 5 days, etc)	3	Individual Item Page
There is a lack of details specifying the status of the object's location--the only indicator is a map.	Include other indicators that might help the user to understand the current location status of the item to inform their decision to borrow the item (e.g., number of miles between the pickup location specified vs the location of borrower user, the city the item is in, etc).	3	Individual Item Page (Borrower View)
Whether a request is fulfilled or not is unclear. How long a request post is going to be up is also unclear	Have some kind of indication that a request is fulfilled	4	Group screens / feed
Due to small icons, it's easy to overlook that there is an option to upload multiple pictures.	Increase size of the additional pictures and "+" icon.	2	Add Item Page: filled
Missing information on pick-up location, which heavily influences if the borrower is open to picking up item.	Provide context on pick up information.	3	Request the item Page: filled
Agreement section "Dante agrees to" is misleading in imagery and seems to indicate that the user has completed those actions. The checkboxes look clickable to the	Clearer indication of user agreement and its current status (not yet completed). Clearer indication of components that are not	4	Request the Item Success page: borrower view

<p>user, as if they could check off whether they've completed those things or not --> and the default is that the borrower has already completed those items (checked off)</p>	<p>clickable</p>		
<p>There is a 'Add details' button at the bottom of the page but there's also a page slider element at the top of the page. What does the Add details button do? Does it take the user to the next page? Is the 'Add details' button completely separate from the other pages? Does the user still need to go through 4 pages even if they don't click the 'Add details' button? Why is it grayed out?</p>	<p>It is unclear what the 'Add details' button does so one option is to take that away and just add fields that are optional. Either add all fields on the same page and take away the top slider element or change 'submit' button to a 'next button' and separate fields on multiple pages.</p>	<p>4</p>	<p>Add Item Tab</p>
<p>Heuristic 2: Match between system and the real world <i>Follow real-world conventions, making information appear in a natural and logical order</i></p> <p>Total # of violations: 12 Severity mode: 4 (6 violations) Average violation severity: 3.25</p>			
<p>It's unclear what the meaning of the "Add notes" button is.</p> <p>What type of notes does "add notes" create? Are they visible only to the borrower? Are they sent to the lender? Are they shared with other lenders about the borrower and how the lending experience went?</p>	<p>Clarify what the purpose and visibility of notes (what are the notes supposed to entail and/or do, and who can see them) by renaming the button or adding supplementary information to the page.</p>	<p>4</p>	<p>Lending Page (Returned Tab)</p>
<p>The division of items borrowed between "approved" and "items due" is unclear. When are items moved from the approved section to items due? (Are they moved once the item is picked up or a few days before they are due?) Are all the items exchanged accounted</p>	<p>Redefine the categories for how items are subdivided to ensure that their state within the borrowing/lending process is clear and that all items are listed and accounted for.</p>	<p>4</p>	<p>Borrowing Page</p>

<p>for by those two sections or are some items unlisted if they are in a different state than being approved or due?</p> <p>As such, the meaning of “approved” and “items” may not be clear to users.</p>			
<p>It’s unclear what the “remind” button does--likely leaving users wondering what the word means and if they result in the same or different actions.</p> <p>Does the “remind” button for items under “requests” remind the lender that your request is pending? Does the “remind” button under “borrowing” remind you or the borrower of when the item needs to be returned?</p> <p>Does the returned section show all items every used that were returned or do they disappear when use click the “Returned” button?</p>	<p>Reword the “remind” button to clarify what types of reminders will be given, when, and to whom.</p>	4	Borrowing & Lending Pages
<p>The language used within the item page was previously described by users as causing confusion. As such, the meaning of “add to basket” vs “request item” buttons may not match users’ language. How are these two actions different?</p>	<p>Rename the “add to basket” button or remove if it overlaps in the action provided by the request item button.</p>	4	Individual Item Page
<p>It’s unclear what the “Help fix it” button entails. Is the user volunteering to repair it themselves or to contribute a portion of money to cover the cost of repairing?</p> <p>If it’s requesting money for repairing, the system status is not</p>	<p>Provide more specific options for how a user helps to repair the object (e.g., contribute money vs lend expertise to repair the item yourself, etc.)</p> <p>The goal for the amount of</p>	3	Individual Item Page

specified--it is not visible how much more money is needed before the item can be repaired.	need to repair the item + how much money is remaining before the item can be repaired should be visible, such as through a % status bar.		
It's unclear if the number of exchanges under "shared by" section is for Lisha Cook's total exchanges or if the item currently viewed has been exchanged 12 times.	Specify what the number of exchanges is describing (Item exchanged 12 times, vs 12 exchanges for all items)	2	Individual Item Page
Font size and cases don't appear in natural or logical order. Inconsistent (title is sometimes big, content sometimes small, and vice versa)	Standardize heading and body text	2	Search results
Typically drop-down menus would not lead to a new page.	Include multi-select in the dropdown menu on the previous page.	3	Multi-select Drop down for adding groups
Hierarchy of font sizes and text weight is confusing here (location is tiny, buttons are small, description is large)	Standardize heading and body text	2	Individual Item Page: owner view
Since the core function this app is based on is the idea of requesting/lending items, the 'Requests' tab should provide information about that. It should not be a 'requests feed' which feels like a social media page and should be less important to the user.	Change this tab to be items that the user is currently borrowing/lending out and provide information on that. Move this feed to the 'community' tab.	4	Feed Tab
This appears to be the first page of adding an item. Having a 'Submit' button implies that it's the end of the process.	Change 'Submit' to 'Next'	3	Add Item Tab
Since this app is based around items, the 'my stuff' page seems like a pretty important one to add	Change 'notifications' tab to 'my stuff' and populate.	4	Menu

as a tab on the 5-tab menu.			
<p>Heuristic 3: User Control and freedom</p> <p><i>Users should leave the unwanted state without having to go through an extended dialogue. undo and redo</i></p> <p>Total # of violations: 3 Average violation severity: 2.7</p>			
Does not allow users to specify an amount of time.	Provide text input options.	1	Add Item Page, Details: empty
No way to search for groups on this page.	Create search.	3	Social Tab
No ability to create a group.	Should be in a similar position as the '+invite' button in the 'friends' section.	4	Social Tab
<p>Heuristic 4: Consistency and standards</p> <p><i>Users should not have to wonder whether different words, situations, or actions mean the same thing</i></p> <p>Total # of violations: 23 Severity mode: 4 (8 violations) Average violation severity: 2.7</p>			
There's inconsistency in how the submenu tabs are presented. There is less grouping between the second submenu ("approved, lent out, returned") and the corresponding requests below compared to the first sub-menu ("requests, items due"), which may cause confusion. The second submenu with requests, borrowing, returned are floating and do not create as much of a relationship between the sub-tabs and the filtered results below.	Maintain a consistent presentation for how sub-tabs and their results are presented. For instance, create a consistent active state for the submenu tab where the underline hits the bottom of the submenu container consistently, and maintain the same left/right margin for padding of the corresponding filtered content below.	2	Lending Page (Approved Tab)
Note: Similar violation for the "Borrowing" page.			
A different type formatting is applied to the item title (which is	Use consistent font hierarchy and place item	2	Borrowing & Lending Pages

highlighted in black and has white text).	titles in an area that doesn't cover up the picture.		
On the borrower side, the remind button is persistent across "requests", "borrowing" and "returned". However, on the lending side, "Remind" is only available for items "lent out".	Use buttons like the remind button consistently--add them to user flows where they should be but are currently missing to create a more consistent experience across lender and borrower experiences.	4	Lending Pages
Greyed out icon button at the top looks like an inactive button state--the function is unclear.	Use text along with icons and stick with consistent button formatting.	2	Share Item Pages (Borrower and Lender Views)
The last button is not the same width as the first two.	Use consistent lengths for buttons.	1	Share Item (Borrower View)
The language of collection vs group has previously caused confusion for users. Additionally, there is inconsistency in icons used--the settings icon paired with the add to group action may be misleading.	Use different terminology for collection or group, or add more descriptors (e.g., add to an "item" collection, add to a "community" group) Update the icons used for each item for sharing the item	3	Share Item Page (Lender View)
Heart button functionality unclear - cannot locate a "liked" items section in the burger menu or profile	Saving items should be a clear functionality and users should be able to quickly find those saved items under a section that is appropriately named - found it under homepage*	3	Search results
Posts and request modules look identical - they are hard to distinguish and prioritize	Have differing modules for requests and posts	4	Group screens / feed
Keeping content design consistent to match brand and style "ATM" seems out of place	Making sure all copy sounds like it's under the same language	1	Group Items Page: Manager/Moderator View

Posting modules (where the user creates a new post) across requests feed and community groups are not the same	Creating a posting module that is consistent on all pages that it appears	4	Feed Tab
Copy capitalization changes - confusing in hierarchy	Make sure capitalization is standardized	2	Add Item Tab
The spacing between headers and sub headers and text content varies.	Use consistent line height variations.	1	Add Item Page: empty
Has questions/commands for all the example filler content except on the estimated retail price, includes price.	Use \$0.00 for retail price.	1	Add Item Page: empty
All subheadings are phrased as a question except below "Community Item?".	Phrase subheading below "Community Item?" as a question.	1	Add Item Page: empty
The user input appears as gray (which indicates that it's not clickable) and the pre-indicated present day appears blue and draws more attention.	Use blue to indicate that users can select the start date.	3	Calendar day select
Gray text in "when do you want to use it" boxes is the same color as filler information.	Use darker color text to indicate that the user has already inputted info.	2	Request the item Page: filled
Grayed out button "Coordinate the pick up..." does not appear to be a button.	Use consistent button states.	3	Item Request Ticket Approved: Borrower View
The 'categories' section and the 'collections' section appear to have a horizontal scroll while the 'items' section has a vertical scroll. In the app, this is finicky when the user wants to keep vertically scrolling down in the items section. Sometimes it takes a while before the user can continue to scroll.	Make scrolls consistent or put the 'items' section on a different page. Maybe instead of a constant scroll, do pages instead.	3	Home Tab
Some posts have a 'Find Item' button underneath it while others	Change those buttons to have consistent text or take	4	Feed Tab

have a 'Like' button. There seems to be no correlation with the post itself.	it out completely.		
Profile pictures are not aligned.	Create enough space for long names so that the profile picture does not move.	4	Social Tab
We're assuming that the 'Invites' tab under the 'community' section and the 'requests' tab under the 'friends' section have similar purposes but this is not clear at first glance.	Just make those tabs the same with the number + 'Requests'	4	Social Tab
Most notifications say '1h' or '2d' while the last notification is 'Wed, 3:30 pm'	Change last notification to be something like '3w'	4	Alerts Tab
The heart is not filled in under the 'favorites item.	Fill in the hearts.	4	Add Item Page 3: empty
<p>Heuristic 5: Error prevention</p> <p><i>Good error messages are important, but the best designs carefully prevent problems from occurring in the first place. Either eliminate error-prone conditions, or check for them and present users with a confirmation option before they commit to the action</i></p> <p>Total # of violations: 2 Average violation severity: 3.5</p>			
Gives option to edit item but gives no info on previously inputted details (length, shipping info, etc.)	Include some key details and the ability to edit on the confirmation screen.	3	Complete! new item added
When making a request for an unlisted item, the user seems to just arbitrarily write a few sentences. Some users may forget to add valuable information such as when they need the item, where they're located for item pick-up, etc.	The user should have a form where they can fill out details rather than just having to arbitrarily post a few sentences. This ensures that the user is not making any errors on their part and also could make it easier for the system to recommend items.	4	Feed Tab
<p>Heuristic 6: Recognition rather than recall</p>			

Minimize the user's memory load by making objects, actions, and options visible

Total # of violations: 8

Severity mode: 3 and 4

Average violation severity: 3.5

There are minimal mechanisms provided to reduce the amount of remembering users have to do if they have a lot of items a user is borrowing or lending. The list of items displayed can be long, and there is no ability to sift through all of the exchanges taking place.	Include mechanisms, such as a sort by function or pin function to allow users to more easily sift through borrowing/lending exchange details and reduce the amount of details they have to remember and juggle.	3	Borrowing & Lending Pages
Create group and public group buttons are hidden away and deprioritized. Not discoverable	Move "create group" functionality and "public groups" category to a more noticeable/accessible place	3	Community Tab/Create Group
Heart/like button is way too small to click on. Text is quite small too - considering there might be some older people using this app.	Increase sizing on clickable objects. Make it consistent	4	Search Results
Unclear meaning of icon and color of button state.	Use text when icons are unclear and use CTA colors that are not gray (which indicated non-clickable).	3	Individual Item Page: owner view
Buttons are grayed out, indicating that they are not usable.	Use visible and brand-cohesive CTA colors.	4	Individual Item Page: owner view
Pill tabs are a tad too small to be clickable	Increase sizing on clickable objects. Make it consistent	3	Group Screen / Feed
No information about item location, item description, or details about instructions.	Provide information on what borrowers have inputted (such as item replacement cost, location of item, etc.).	4	Request the item Page: empty
The 'Write something...' text within the first search bar of the page is not very helpful for the user when	Make this text more descriptive. Something like 'Write a request for an item'	4	Feed Tab

determining what to write there.	or 'Make a post about an item you've been borrowing to show your community!'		
<p>Heuristic 7: Flexibility and efficiency of use <i>Accelerators. Allow users to tailor frequent actions</i></p> <p>Total # of violations: 10 Severity mode: 4 (5 violations) Average violation severity: 3.4</p>			
While a shortcut to message person is provided on the lending side, on the borrowing screen, the option to message the lender is not presented upfront. Not only does this violate the heuristic above, it also creates inconsistency across the app between lender vs borrower views.	Provide a shortcut for the borrower to message the lender on the borrowing screen.	3	Borrowing Page (Requests Tab) (Compared to Lending Page (Approved Tab))
It's unclear if user can add a category not listed.	Adding a new category/tag option	3	Add Item Tab
Users are not able to look up friends from friends list	Add a search button for friends	4	Community Tab/Create Group
No button for next steps/actions for request notifications	Adding button prompt to navigate to the request page	4	Alerts Tab
Photos are not grouped together cohesively.	Include photos at top of screen	2	Individual Item Page: owner view
There's no clear CTA besides "cancel request".	Create a primary button at the bottom of the screen with the "Coordinate" CTA.	3	Item Request Ticket Approved: Borrower View
Seems as if the 'items' section should be the most important - most users would come onto the app and know exactly what they're trying to borrow so having it at the very bottom of the page doesn't make sense.	Most 'items' section to the top of the page or incorporate all categories/collections/items into one page that isn't so long.	4	Home Tab
The search page looks almost	Incorporate the items and	4	Home Tab

identical to the 'items' section. Is it necessary to have these pages repeat?	search bar into a seamless page and navigation.		
Too many categories in the 'organize it' section. Difficult to look through all of them.	Only show recently used categories. Allow users to search categories.	3	Add Item Tab
All of the user's groups are set in a horizontal scroll at the top of the page. This is okay for users who don't have many communities but what if users start having 5+ communities.	Create an option for users to view all groups in a list view.	4	Social Tab
<p>Heuristic 8: Aesthetic and minimalist design <i>Dialogues should not contain information which is irrelevant or rarely needed</i></p> <p>Total # of violations: 11 Mode: 3 (5 violations) Average violation severity: 2.8</p>			
Several sections under the Borrowing and Lending pages with repeated information heightens competition of where users' attention is and reduces the visibility of information.	Explore ways in which the two sections could be combined to increase the visibility of key borrowing/lending item details with a more minimalist design that reduces repetition. Additional research may be necessary to uncover the users' perceptions of each section and their usefulness.	3	Borrowing & Lending Pages
There are many different sections on this page, containing a lot of information. Much scrolling is required to view all of the information, diminishing the relative visibility of the most important information.	Reorder the sections on the page to prioritize the most important details (based on user research) to increase their visibility. Remove any details that aren't relevant or rarely needed.	3	Individual Item page
Redundant creating new group button → tab looks like a button, but then there's another button to	Minimizing it to one "create group" button to decrease the number of clicks	3	Community Tab/Create Group

click on	required		
Copy about "go ahead and add something" is unnecessary/redundant	Taking out the copy	1	Add Item Tab
Copy about "new people..." is unnecessary/redundant	Taking out the copy	1	Group Screen / Members
Inconsistent use of icons - emojis some places, flat icons in others. Amount of icons/imagery can feel overwhelming	Simplify the diversity of icons. Prioritize readability of text	3	Group Screen / Feed
Button text sizes change based on priority (assuming), but the button sizes remain the same - jarring to look at.	Recommendation: Keeping buttons consistent. De-prioritize "cancel request" without changing too many factors of a button	2	Item Request Ticket Approved: Owner View
Headings are very close together.	Add more white space between headings.	3	Add Item Tab
Should not have two different menus.	Remove one of the menus and incorporate tabs together.	4	Menu
Since this is someone's profile, all items should be theirs - no need to have that profile icon at the bottom left of each item image.	Take out a small profile icon.	4	User Profile: Owner View
The unread dot shifts the time. Does not look the best.	Move the dot to the left of the profile icon or use a different indicator.	4	Messages
Heuristic 9: Help users recognize, diagnose, and recover from errors			
<i>Error messages should be expressed in plain language (no codes), precisely indicate the problem, and constructively suggest a solution</i>			
We did not find any significant violations under this heuristic.			
Heuristic 10: Help and documentation			
<i>Even though it is better if the system can be used without documentation, it may be necessary to provide help and documentation</i>			
We did not find any significant violations under this heuristic.			

References

[1] W. L. in R.-B. U. Experience, "10 Usability Heuristics for User Interface Design," Nielsen Norman Group. [Online]. Available: <https://www.nngroup.com/articles/ten-usability-heuristics/>.

[Accessed: Apr. 12, 2023]

[2] W. L. in R.-B. U. Experience, "Severity Ratings for Usability Problems: Article by Jakob Nielsen," Nielsen Norman Group. [Online]. Available:

<https://www.nngroup.com/articles/how-to-rate-the-severity-of-usability-problems/>.

[Accessed: Apr. 12, 2023]