daha

explore your community's closet

CS 147 Fall 2022

Peter Ling, Drew Silva, Eli Waldman, Olivia Wang

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Project Name & Value Proposition

Project Name

daha

Value Proposition

Explore your community's closet

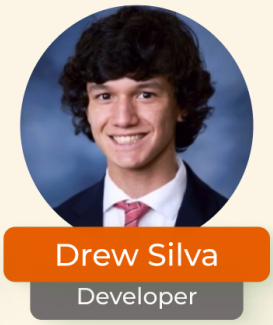
Team Member Names and Roles

Peter Ling

Developer

Eli Waldman

Designer



Drew Silva

Developer

Olivia Wang

Designer

Problem and Solution Overview

College students often want to borrow clothing from others, oftentimes on short notice and for one-time-use occasions.

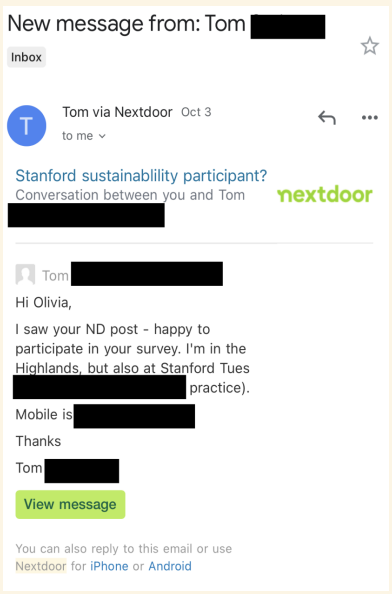
daha is a peer to peer lending platform for college students. We make it easy for students to find what they need from the community around them. By allowing users to notify their entire network with only one post, we simplify the process of borrowing. We hope daha encourages resourcefulness and builds sustainable habits among college students. Ultimately, we want our users to turn away from overconsumption and turn to using what already exists in their community. To further our sustainable mission, we intend on rewarding students who lend through Daha with deals at local and sustainable businesses.

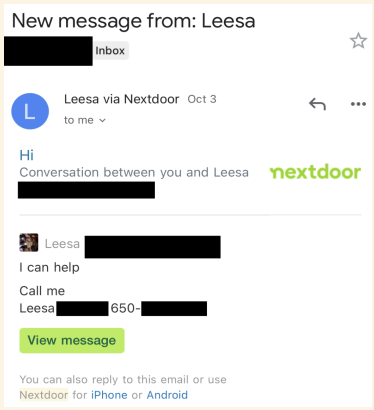
Needfinding

Interviews

Since the field of sustainability is so broad, we knew we needed to narrow down and hone in on a domain within the field of sustainability. We decided to start with the domain of consumerism.

Next, we needed to conduct interviews. We interviewed a total of seven people with a wide variety of backgrounds, opinions, and levels of care for sustainability. Our interviewees ranged from ages 20 to 75, undergraduate students to tenured professors, activists to (in)activists. We sourced interviewees from NextDoor (a community engagement application that allows posting to local neighborhood groups), GroupMe messaging, emailing Stanford professors, and texting our individual friends. Six of our seven interviewees came from NextDoor or emailing Stanford staff.

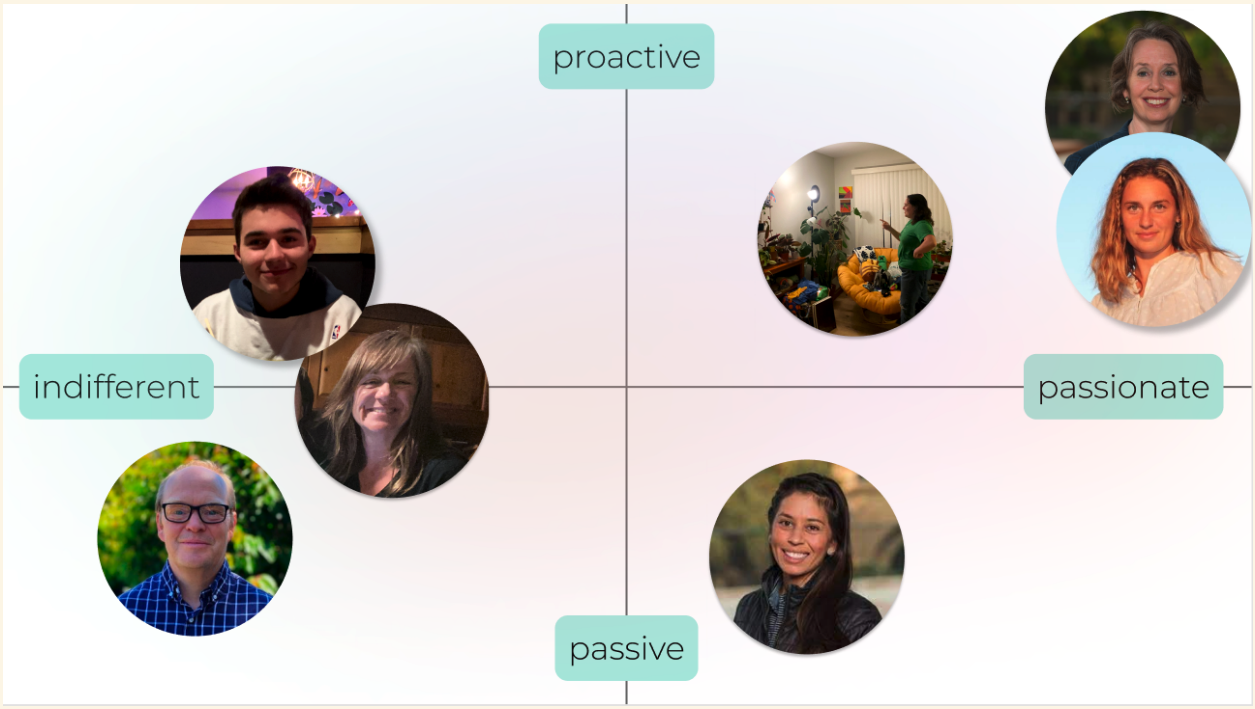




For our first round of needfinding interviews, we interviewed 4 people: Leesa (stay-at-home mom), Jessica (farm programs coordinator, extreme user), Thea (college student), and Sybil (Stanford Earth Systems professor, domain expert). We inquired

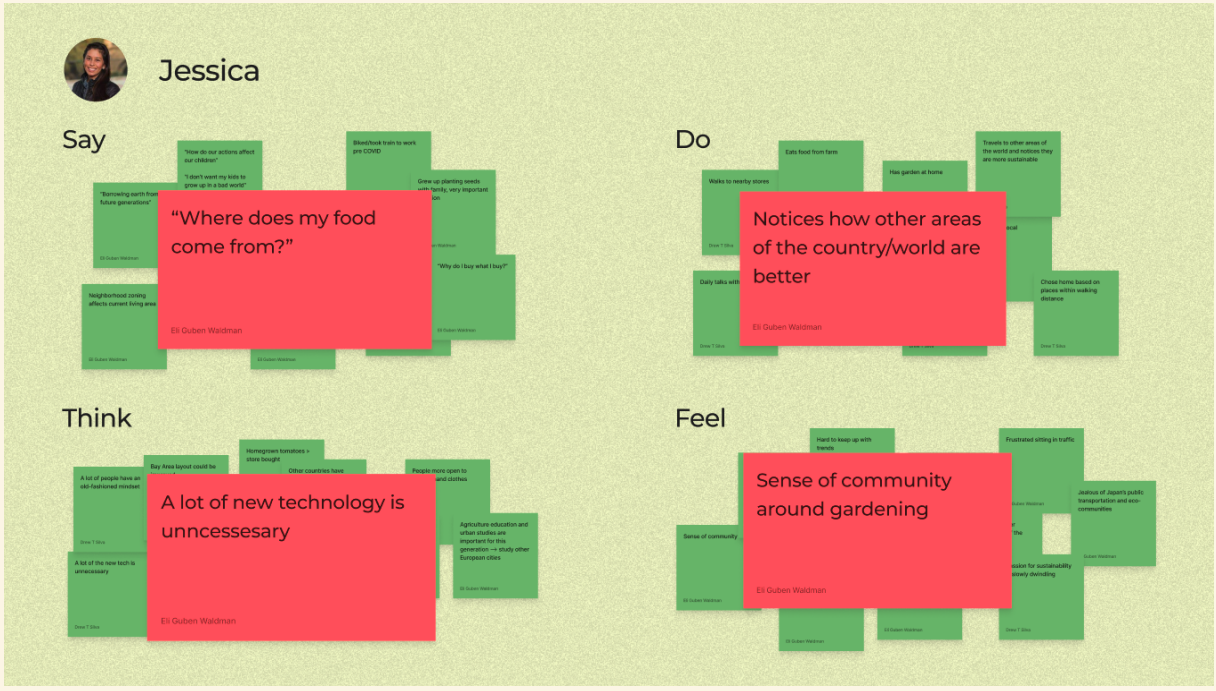
about the interviewee's sustainable and unsustainable habits in their daily life, knowledge of sustainability, and thoughts on their consumption habits. Our interviewees expressed insights such as that business motives don't often align with sustainable goals (Thea) and that it would be beneficial for consumers to learn about their favorite businesses' environmental/sustainable practices in order to make the most educated purchasing decisions (Sybil). In this first round of interviews, we were able to build rapport, be flexible with our interview outline, and guide the interviewee back on to the problem space if they veered off topic. However, we found it challenging at first to guide but not force the interviewee to a certain talking point and to not lead our questions.

After analyzing the first four interviews, we needed to make some changes. We redefined our domain (consumerism was too broad) to e-commerce, refined our questions to focus more on e-commerce and less on business habits, and found three more interviewees: Jess (Stanford junior, outdoors lover, extreme user), Ramez (Northeastern junior and casual shopper) and Tom (dad of four and avid online shopper). When closing out our interview phase, we aimed to interview a very diverse set of participants: in gender, background, and thought.

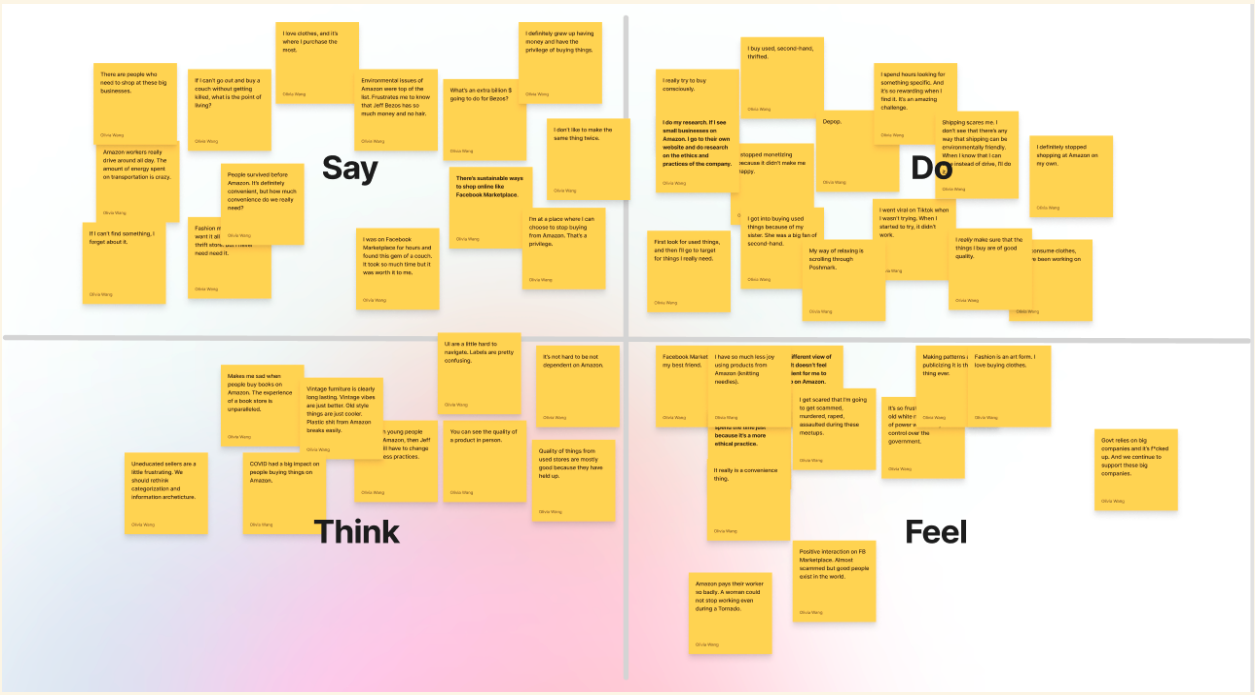


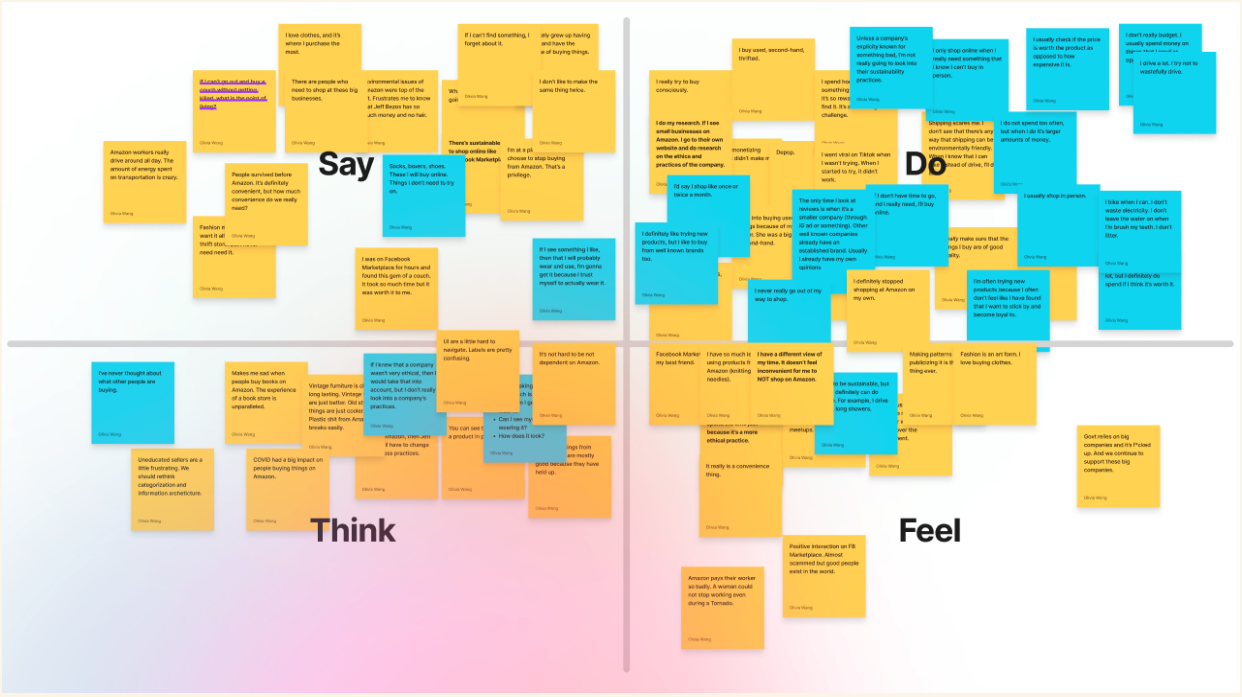
Synthesis

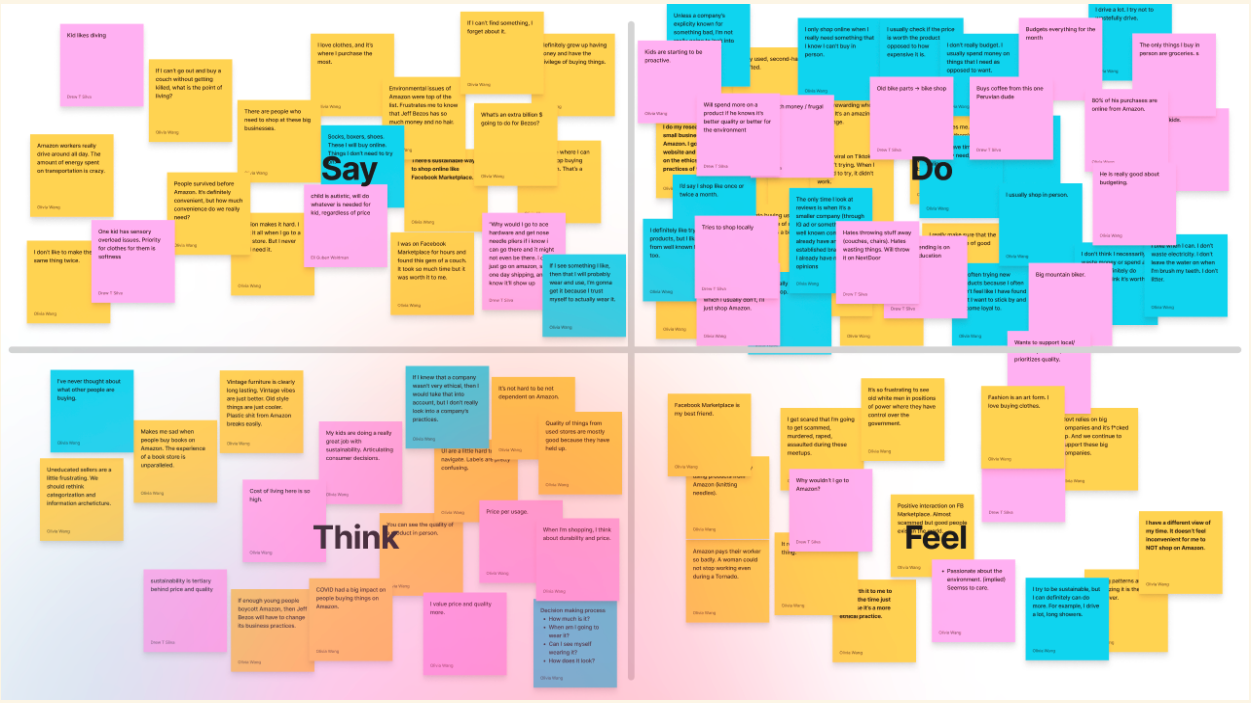
Coming into these three interviews with the confidence of already having conducted four, we gained many new insights. In order to format our analysis, we took to using empathy maps. We created empathy maps for each interview in the first round of interviews (see Jessica's and Leesa's below). For the last three interviews we decided to combine all three of our interviews onto one empathy map to track similarities and contrasts between what the interviewees spoke about.


Jessica
Say
"Where does my food come from?"
Eli Guben Waldman
Do
Notices how other areas of the country/world are better
Eli Guben Waldman
Think
A lot of new technology is unncessesary
Eli Guben Waldman
Feel
Sense of community around gardening
Eli Guben Waldman


Leesa
Say
"I have used my Arizona gallon jug for 10 years now to water my plants."
Olivia Wang
Do
Puts food compost back into the ground.
Olivia Wang
Think
California should do a better job of recycling.
Olivia Wang
Feel
Hopeless when it comes to changing consumption habits.
Olivia Wang


Say
Do
Think
Feel


Say
Do
Think
Feel



Through this process, we found new, helpful insights that pushed us in the right direction. We discovered that the most important needs voiced from our interviewees were the need for cheap, sustainable options that are easily accessible, as well as easier ways to communicate and connect with eco-communities.

POVs & Experience Prototypes

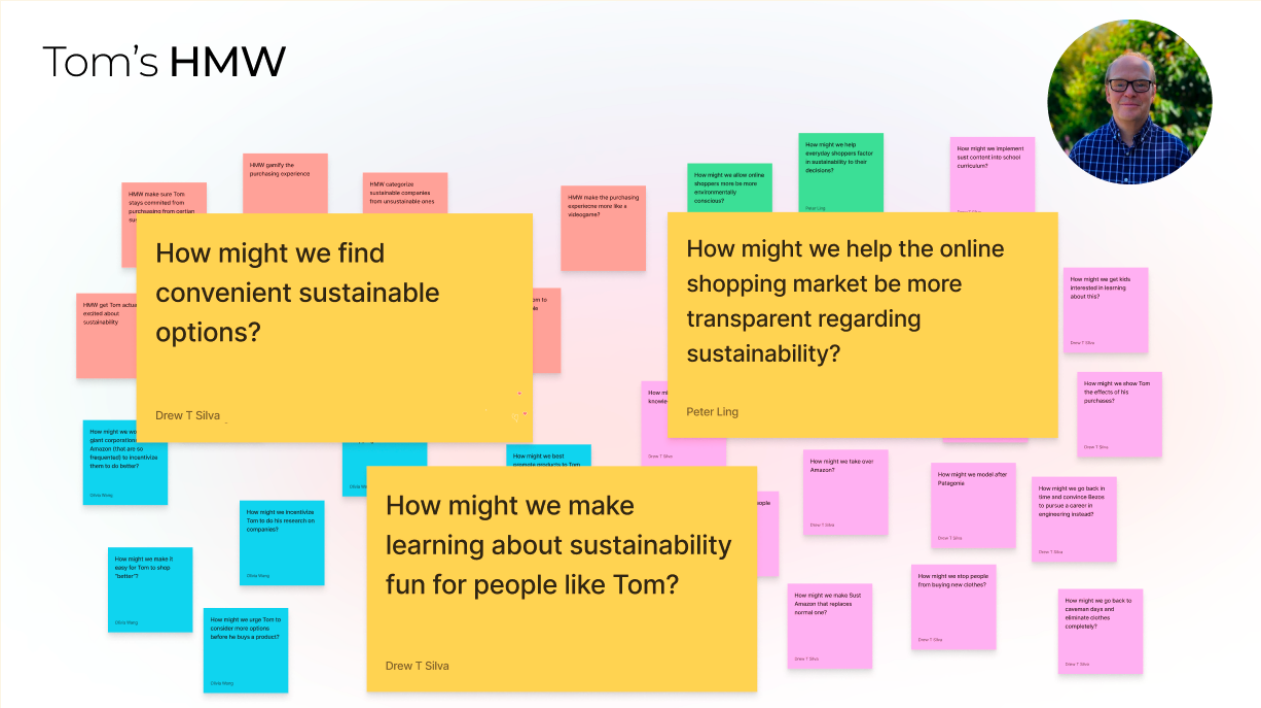
With insights gained from our interviews and some promising pain points/aspirations obtained from our interview analysis, we created POV statements for our most engaging interviews (Tom, Jess, and Jessica), while also keeping in mind diversity of thought and background.

After we created each POV, we rapidly brainstormed 35 HMW statements for Tom, Jess, and Jessica each. This was done in quick fashion to gather as many thoughts/ideas as possible, no matter how ridiculous each one was. We boiled down the 35 HMW per interviewee to the 2-3 most interesting, and from there brainstormed solutions. We came away with three viable solutions.

Tom's POV

- **We met** Tom, a biotech researcher and father of four teenagers living in San Mateo.
- **We were surprised to notice** that even though he cares about sustainability more than the average person, he does the vast majority of his shopping on Amazon.
- **We wonder if this means** that Tom prioritizes convenience and ease over sustainability.
- **It would be game changing to** educate him about the sustainability differences between online vs in person shopping.

Tom's HMW Highlights



Jess' POV

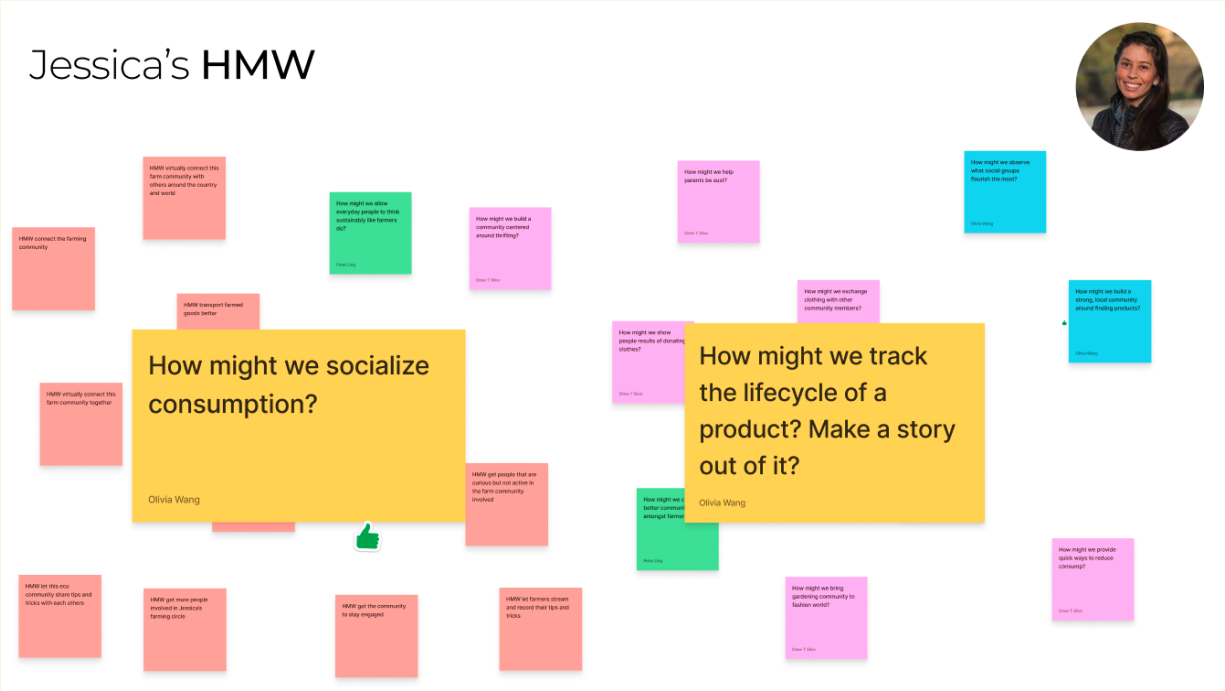
- **We met** Jess, a student at Stanford University who only buys second hand goods (clothes, furniture, yarn, you name it)
- **We were surprised to notice** that she acknowledges the convenience of online shopping for other people, but she herself is "obsessed" with finding used goods
- **We wonder if this means** that Jess views sustainable living as a natural hobby and a lifestyle, rather than a conscious decision
- **It would be game changing to** recreate/bestow her experience of second-hand, in-person shopping for others.

Jess' HMW Highlights

Jessica's POV

- **We met** Jessica, the program coordinator at the Stanford Educational Farm who lives in South Bay and loves to garden
- **We were surprised to notice** that Jessica really cares about where her produce comes from and where her waste goes after.
- **We wonder if this means** that she feels a greater sense of attachment to the products whose story she knows.
- **It would be game changing to** find a way to emulate this attachment for others with their clothes.

Jessica's HMW Highlights



Top 3 HMWs from across all three interviews

- **How might we** show Amazon's effect on the environment every time they make an Amazon purchase?
- **How might we** track and make a story out of the lifecycle of a product?
- **How might we** socialize consumption?

Top 3 Solutions

1. LifeCycle

   Allows students to track the lifecycle of their clothes, to see both where their clothes come from and what happens to them after they are no longer needed

2. Nudge

   Exposes users to more sustainable shopping options by way of a reward system

3. DAHA

   Allows college students to find clothes that they need from others easily

Experience Prototypes

We then went into prototyping/testing each solution to determine which one we should continue with.

1. Lifecycle

   Assumption If people knew where their clothes came from, they would be more emotionally attached & invested

   The key aspects of the Lifecycle experience prototype centered around the classic interview format (one that we were now very well acquainted with). We asked 10+ of our friends about their wardrobe. We asked questions such as "do you care about where your clothes come from?" and "Do you have any emotional ties to any clothes?". We wanted to see if people had a deep care and appreciation for their clothes, and where that care stemmed from. Upon asking these questions and even making adjustments to our questions as we interviewed more participants, we found that almost no one had any attachment to most items in their wardrobe. With a pretty clear answer and evidence mounting up against our assumption that people care about where their clothes come from, we knew Lifecycle was not going to work.

2. Nudge

   Assumption People want to learn more about the products they buy, and if nudged might change their consumption behavior as it relates to sustainability.

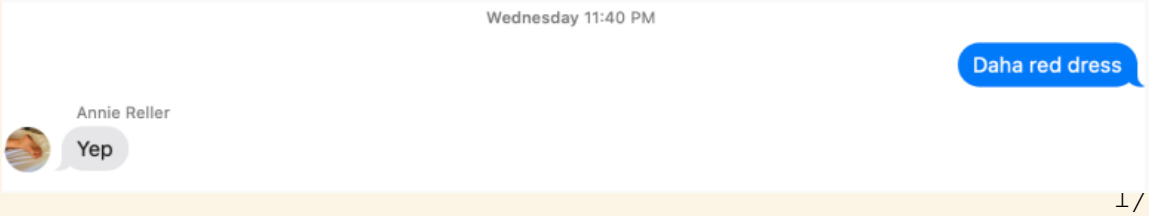
   The key aspects of the Nudge prototype focused on a multi-staged buying test. We showed the participant two brands of laundry detergent: Tide and a made up brand. Attached to Tide was a $15 price tag and attached to the made up brand was a $20 price tag. We then asked the participant to select which one

they would purchase. After making their selection, we then showed the carbon emission information for each brand, with Tide being 10% greater than the made up brand. We asked participants to select which brand they would purchase. For both buying questions, an overwhelming majority of the participants selected the cheaper option (Tide), regardless of how much greater its carbon emission output was over the made up brand. This demonstrated to us that Nudge could be a risky choice when picking our final solution due to the fact that almost all of our participants did not take carbon emissions into account when making a purchase and decided to go with the cheaper option.

3. daha

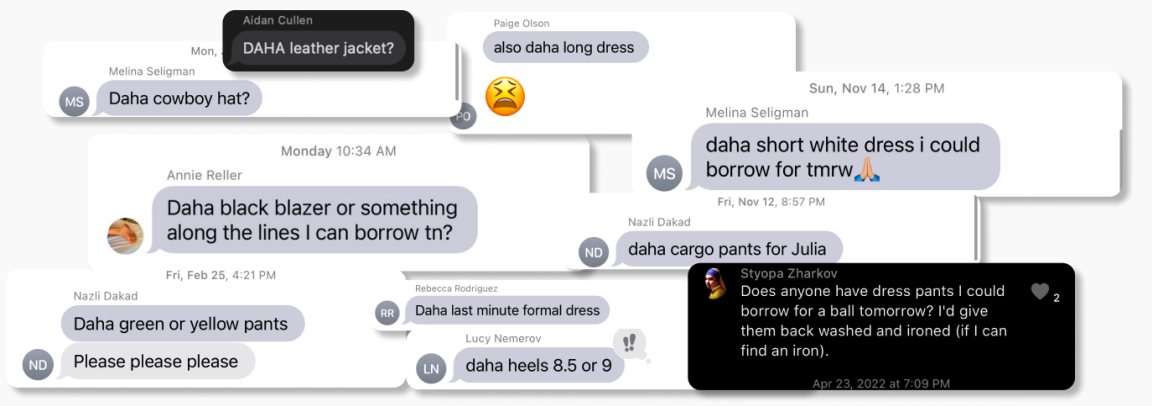
Assumption People need one-time use clothing on a short notice, but response rates are often not fast enough.

The key aspect of the daha prototype was text response action; we wanted to actually send daha (does anyone have a…) texts to our friends and test their response rates to see if people are willing to lend clothes for one-time use occasions. We sent out daha texts to 5+ group chats each. We then tracked response time and if the request was ever fulfilled. What went well was that most people (especially first circle friends) were keen on letting others borrow their clothes for a short period of time. But, response rates were slow to third tier communities, and some daha requests were never even fulfilled.



daha heavily aligned with our key learning of building sustainable habits through community and matched our goal of cutting down on unnecessary consumption. Thus, we decided to continue with daha.

To confirm the experience prototype results leaning towards daha, we searched our old text group chats to determine if dahas were used widely.



The results were overwhelming. We instantly knew we were on the right path and that by trusting our experience prototype results, we could create something we were passionate about. Out of the three prototypes, daha aligned most with the key learnings we found from our needfinding phase (building community, no cost, no time commitment, and immediate impact). daha also best matched our goal of building sustainable habits, as it directly cuts down on total clothing consumption by limiting unnecessary purchases.

Final Solution – daha

Description

A platform that allows college students to easily borrow clothes each other

Target Audience

College students & other tight-knit communities

Who might be left out

Sparsely settled communities where buying is more convenient than borrowing as well as those who aren't as technologically advanced.

Ethical implications

Privacy (user's general location, exchanging clothes via meet-up, user's wardrobe exposed to public)

Tasks

1. Simple task – create a daha post

   Creating a daha post and sending it out to your network is the core functionality of the platform. We believe this task will be the most frequented and as such the easiest-to-use for users. This task requires users to create a post, fill out the required fields, and publish it to their feed.

2. Moderate task – join a daha community

   To encourage community-building on the daha platform, we hope to onboard school clubs and organizations. With groups on daha, we make it easy for users to join these communities. The more communities that a daha user is a part of, the wider their reach is when they post a daha request. Groups also have chat functionalities. This task requires the user to find the communities page, find a community of interest, and request to join said community.

3. Advanced task – write a review of daha experience

   Reviewing others and getting feedback from others is important for building trust within a community. We will encourage users to review each other post-transaction. We made reviewing as easy as possible with clickable traits as icons, and a space to elaborate if necessary. This task requires users to find one of their past transactions, submit a review,

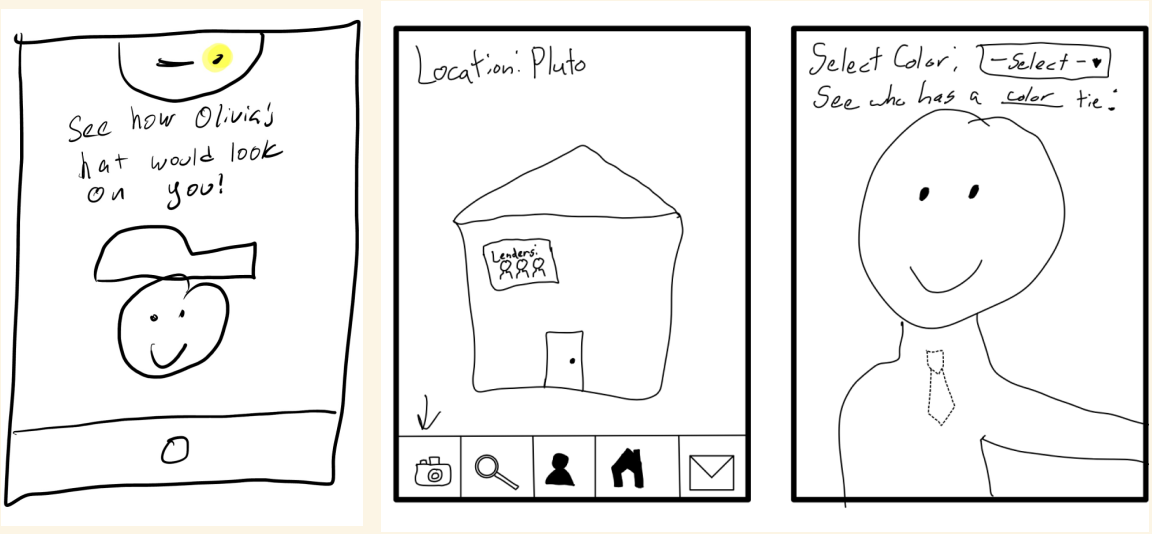
Design Evolution

Low-fi Prototype/Initial Sketches

During the initial sketches stage, we brainstormed various design directions, including physical robots, mobile applications, wearables, and augmented reality. The two realizations that excited us the most were mobile applications and augmented reality:

1. Mobile application

2. Augmented reality



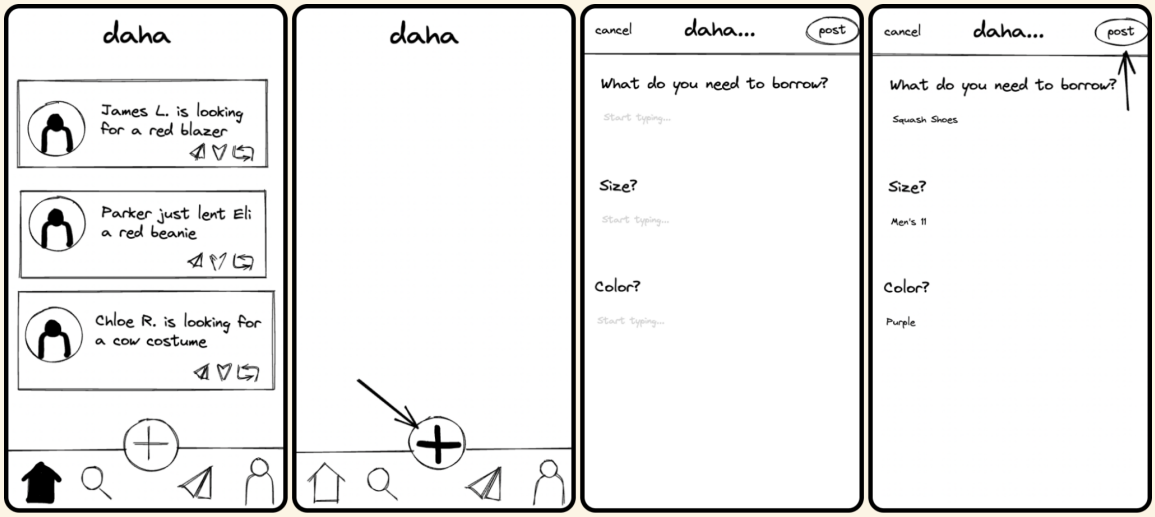
What we liked about AR was how interactive and flexible it was. The user could see themselves in the clothing item, regardless of shape or size. However, we didn't possess the technical skills to implement such a design. With the mobile app, we knew it was possible to create, would reach a wide audience, and have a larger user

base since currently people are more familiar with mobile applications than AR products.

After analyzing the feasibility of each realization and voting on the idea we were most excited to design and build, we decided to proceed with the mobile application concept, addressing all 3 tasks.

We dove right into sketching, leveraging the convenience of low-fidelity prototyping via excalidraw.com:

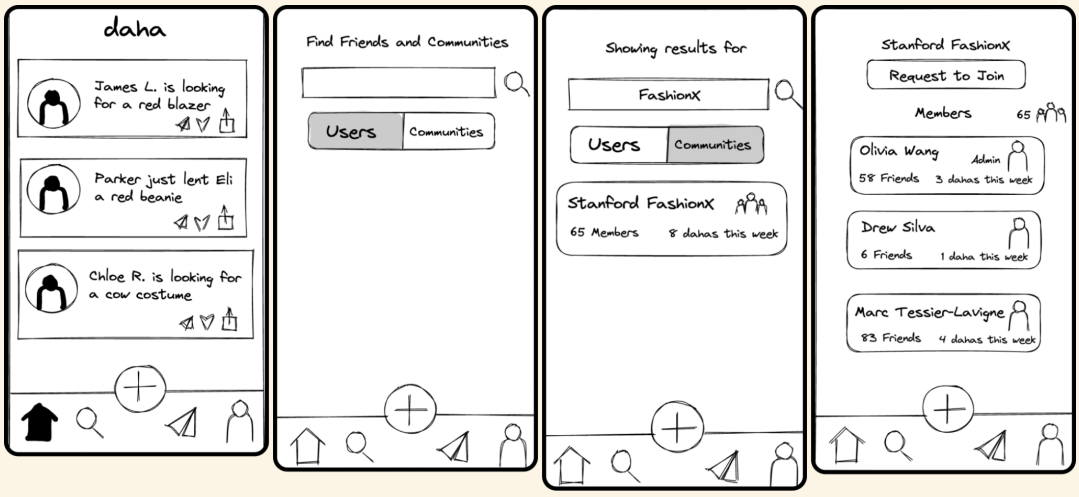
1. Create a daha post



click the plus to make a new post

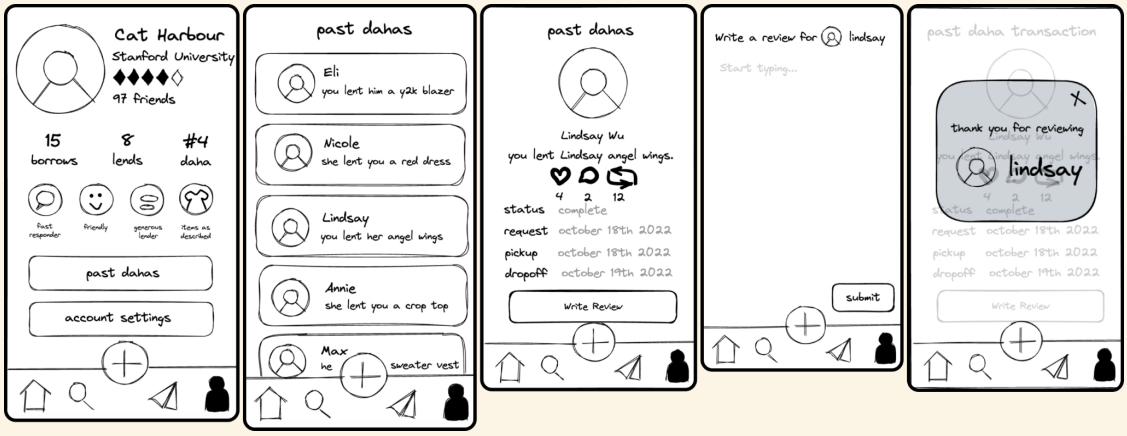
fill out the specs and post

2. Join a daha community



click on the search icon search for communities request to join

3. Write a review of daha experience



navigate to past transactions click review write review

Usability Testing

With these low-fi prototypes, we began usability testing. We interviewed 4 college students, 2 Stanford students and 2 students from Connecticut and Virginia. We were particular about finding students to test our prototypes with since daha is designed for tightly knit communities, mainly college campuses.

Our first interviewees, Ben and Ava, had thoughtful insights and creative suggestions:

- I understood all the icons
- Time is never listed anywhere
- Leaderboard would be great
- Feels like venmo
- I would want convenient meeting locations

We recorded the number of errors they made in completing each task, and within 2 tests were able to notice some common patterns in error. Specifically, they both struggled to complete our complex task of leaving a review. They had no idea where to find this function. What seemed so obvious to us (after hours of discussion) was in fact not so obvious to our users. This low-stakes testing was incredibly helpful before we got caught up in the details of medium and high fidelity.

Once again, we created revised screens with the feedback from Ben and Ava and prototyped our low-fidelity screens in preparation for our next 2 interviews. We made flexibility a new usability goal with the goal of having every screen be easily accessible. After having our final two students test the revised prototype, we came away with some big picture goals and implications.

1. Different people have different perspectives. There need to be multiple pathways to complete each task since sometimes the goal is ambiguous.
2. A notifications feature should be added (past dahas, community interactions, likes, comments, etc)
3. The bottom navigation bar needs to be improved/changed in a big way. This is how users navigate around the app, it needs to be consistent and guiding.

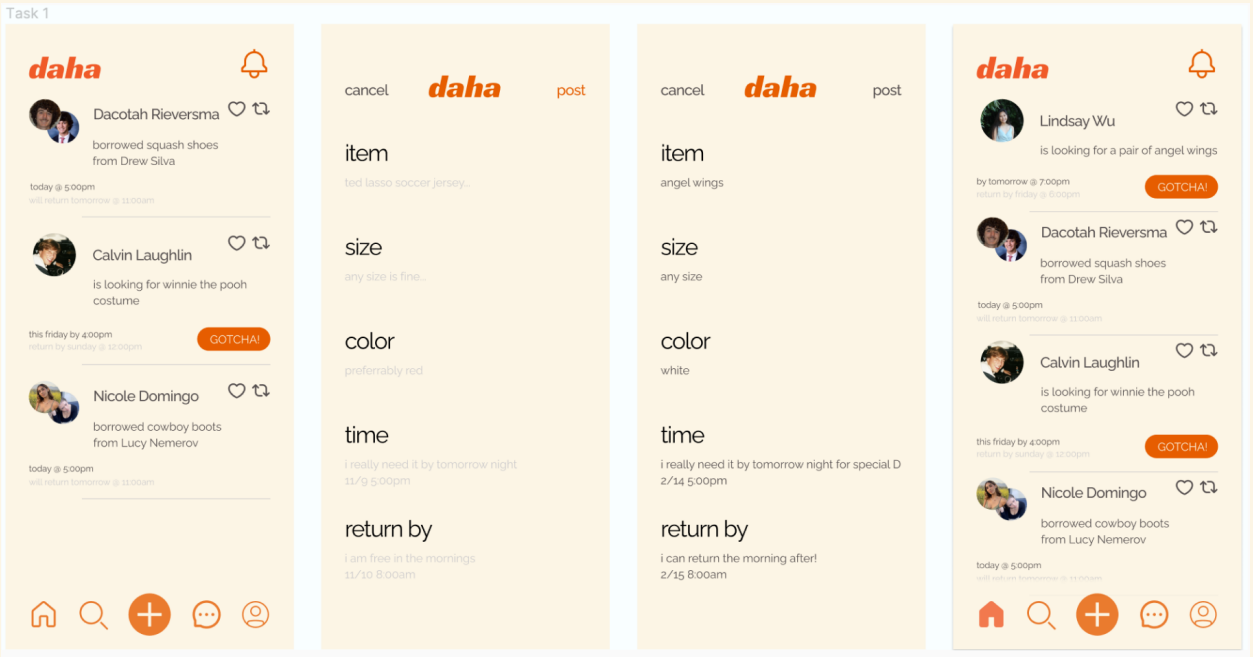
Our big next steps going into the med-fi prototype were

- Add notifications

- More flexibility
- More screens
- Add more usability goals (learnable, fun, etc.)

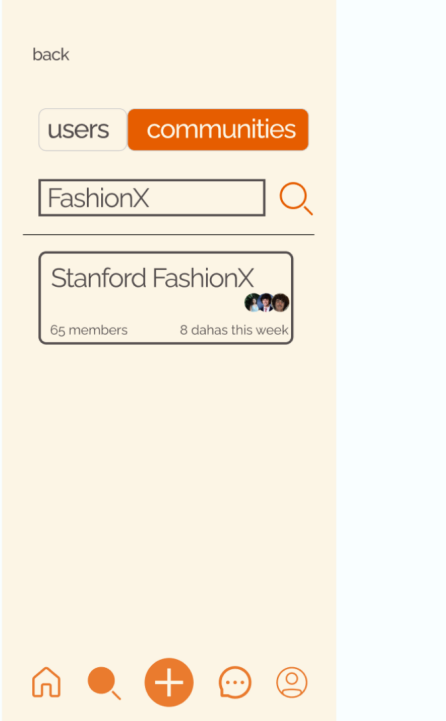
Med-fi Prototype

1. Create a daha post



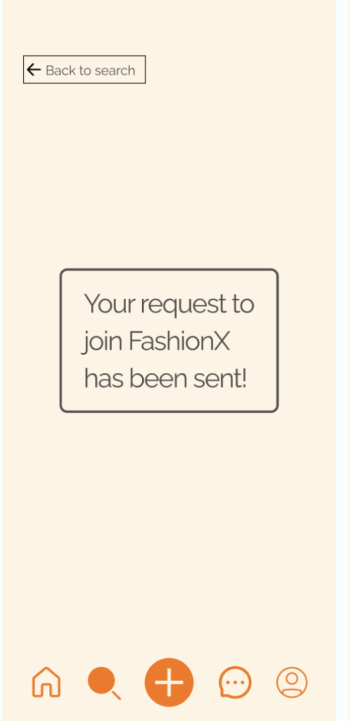
Click the plus | fill out the fields | click post | updated feed

2. Join a daha community

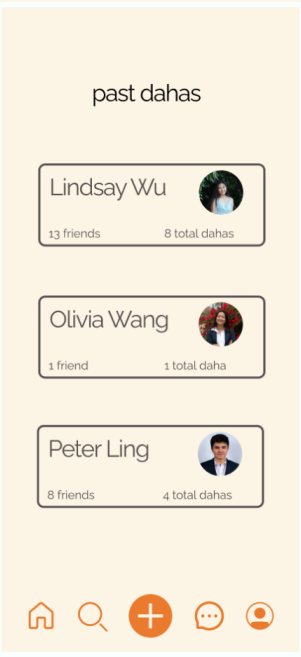


toggle to communities

request to join desired community



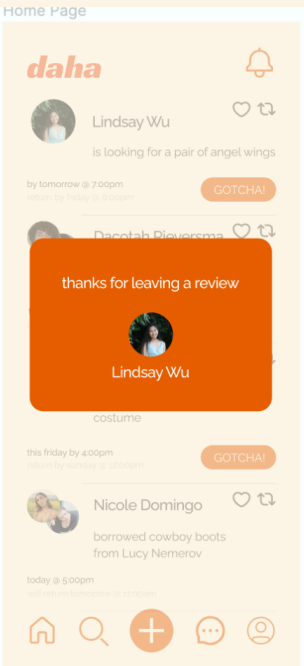
3. Write a review of daha experience



Navigate to past dahas

click submit review

write and submit



We passed the medium fidelity prototype off to another group within our CS 147 studio for heuristic evaluation. Upon receiving their feedback, we decided to focus heavily on fixing the severity 3 and 4 violations. In total we had 48 violations, 6 from severity 3 and 6 from severity 4.

Severity 3

H3: User control & freedom

- unable to edit daha request

H6: Recognition rather than recall

- unclear what a daha is

H10: Help and documentation

- what fields are required when making a daha post?

H11: Accessible design

- unable to read return time on daha post
- unable to read text descritption when posting a daha

H12: Value alignment and inclusion

- community member privacy

Severity 4

H2: Match system and world

- better signposting between screens
- easier navigation

H3: User control & freedom

- scarce use of "escape" or "back" buttons

H5: Error prevention

- buttons need to be more clear

H10: Help and documentation

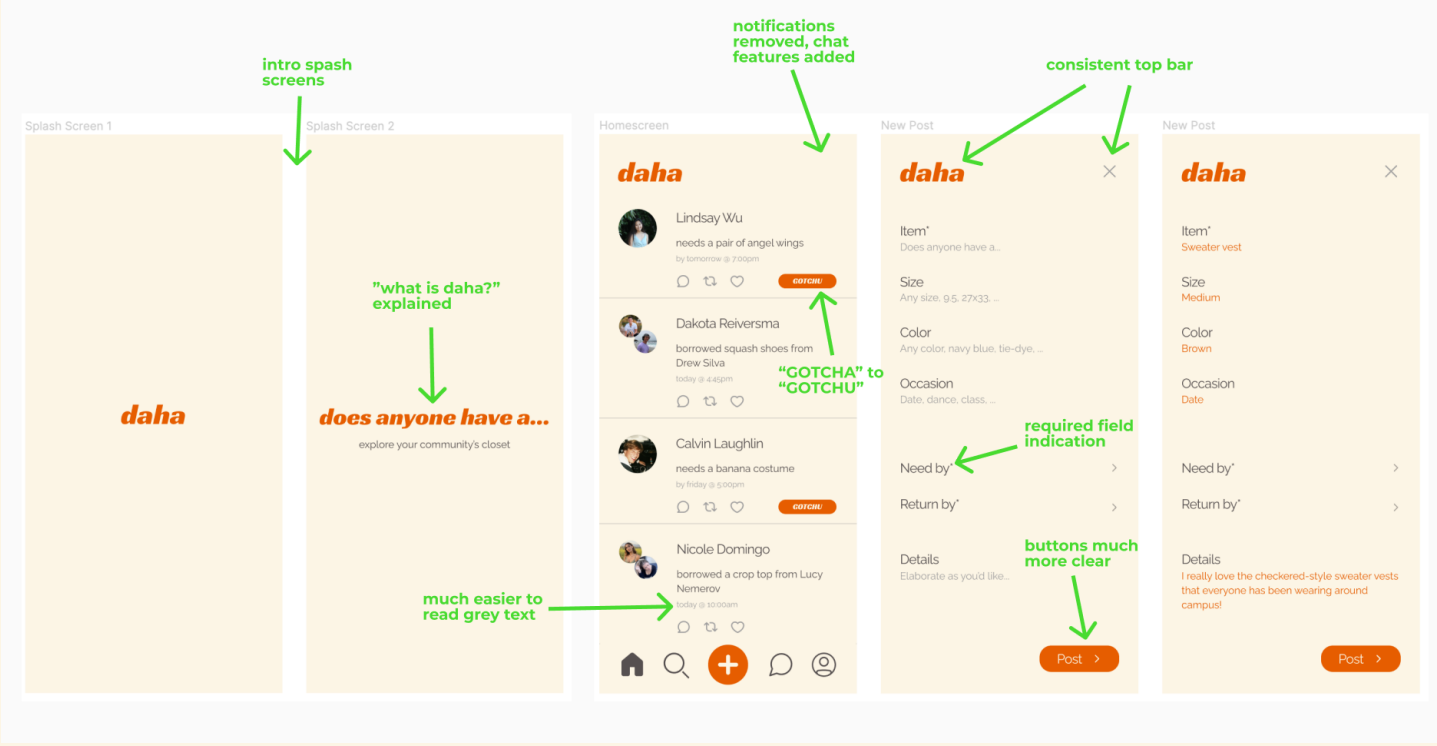
- how are daha's quantified?

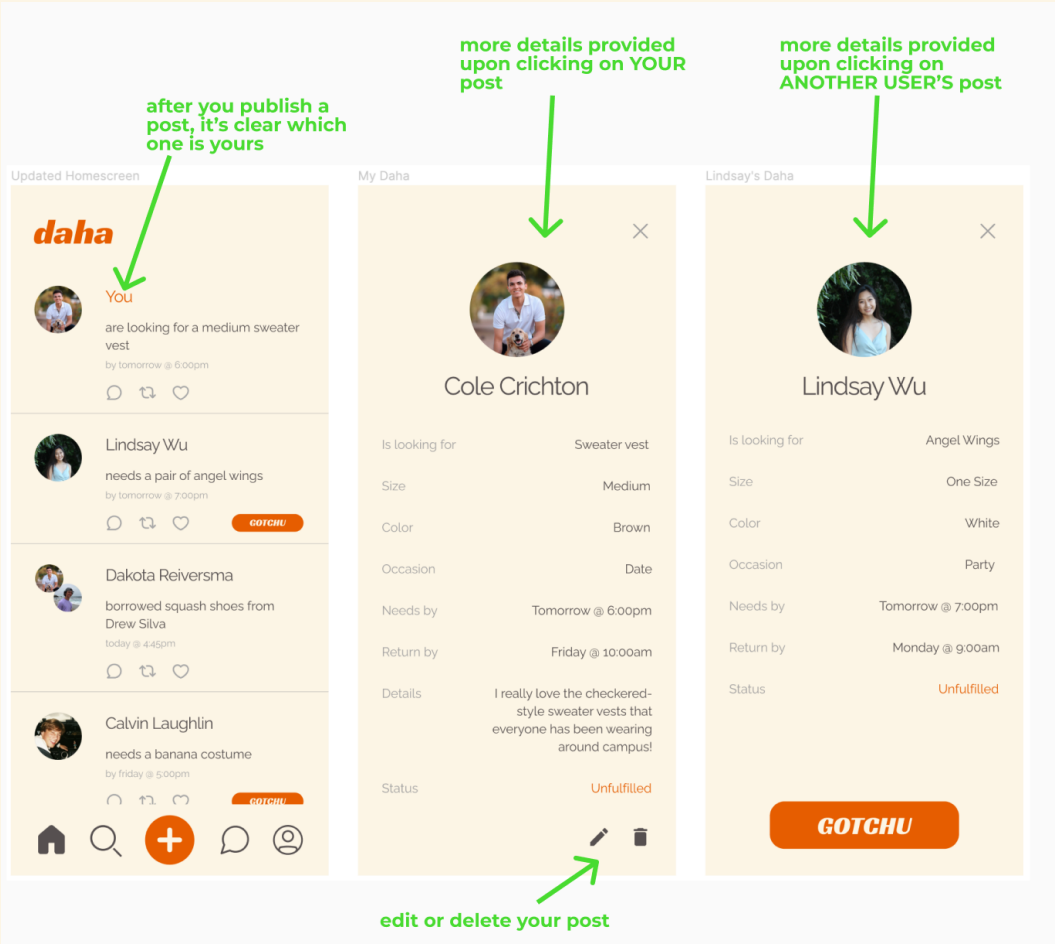
We took to the hi-fi prototype in order to fix these errors

Hi-fi Prototype

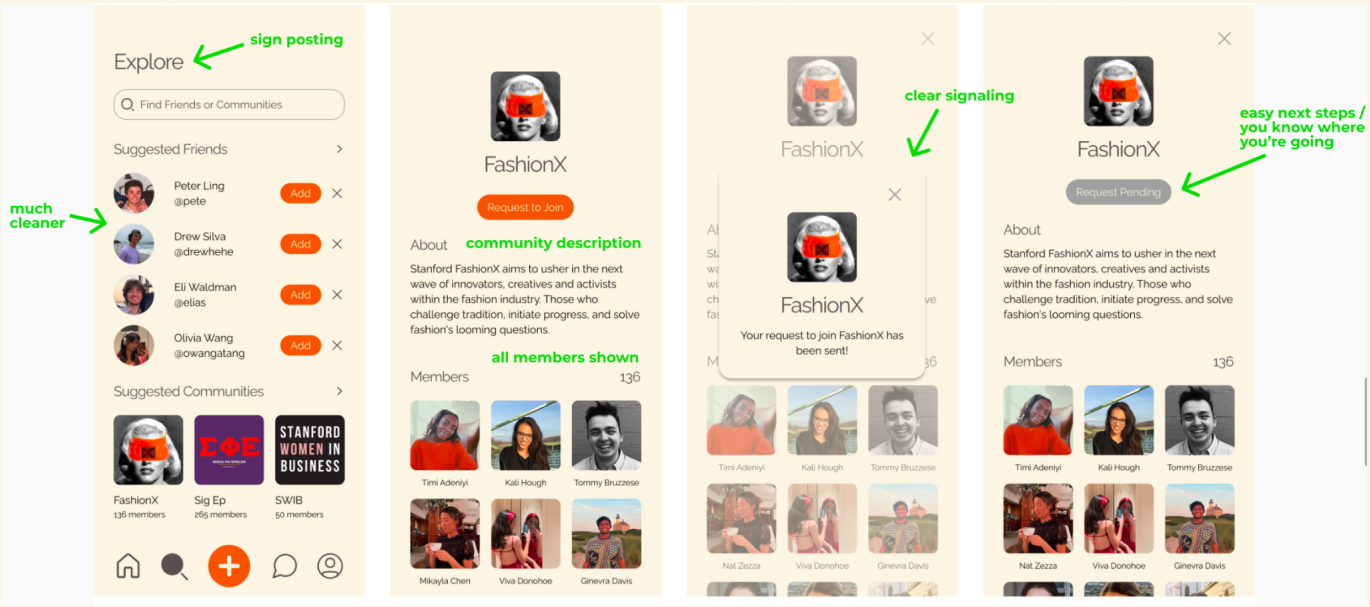
We built our hi-fi prototype by incorporating design changes from our heuristic evaluation. Below are the task flows reflected in our high fidelity prototype along with annotations (in green) listing the heuristic violation corrections and overall improvements

1. Create a daha post

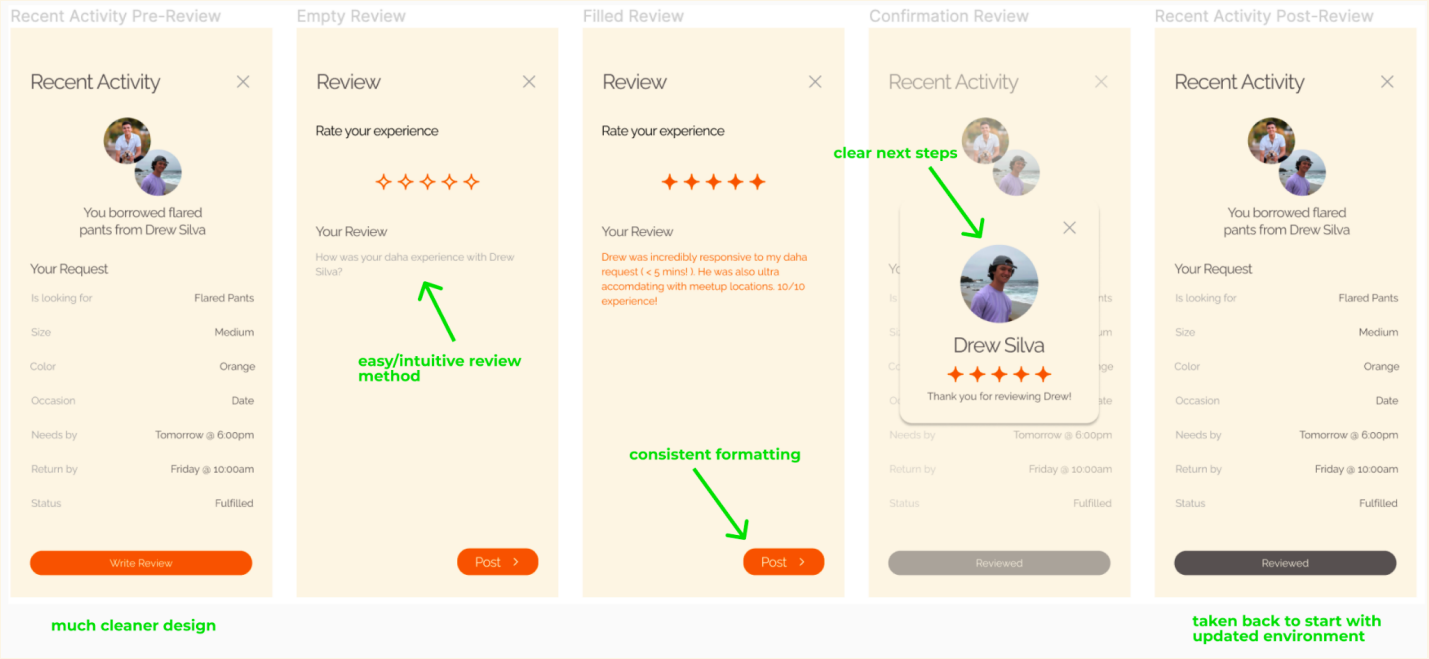




2. Join a daha community



3. Write a review of daha experience



Values in Design

Throughout the process of designing daha, from the initial sketches to the final high-fi prototype, we wanted to be intentional about the values that we were encoding into our design. Design decisions are indicative of the social values of the designers, and we used the values in the design framework in order to shape our app design to resonate with a wide range of users and their use cases in context. We identified four main values to embed into our product features listed below.

1. Community
2. Safety
3. Privacy
4. Kindness

Community

Not only do we hope to strengthen preexisting campus communities through the act of borrowing, but we also want Daha to empower users with the opportunity to make new friends through clothing and sustainability. This value is encoded by our social feed, explore users & communities page, as well as our reviews.

Safety

Safety is an inherently tricky problem for daha. Since the app is designed for close communities, all its users live in close proximity to each other. Making sure that all users feel safe during clothing exchanges is vital.

What makes daha special is that an individual can reach their entire network with a single post, and if their friends so choose, they can re-daha a post to their network. This is a lot of potential exposure for a single user. We want this process to be as safe as possible for both the borrower and the lender. Our app will prioritize the safety of both the borrower and the lender to ensure that these transactions can happen without any trouble. By auto-suggesting a diverse range of meetup locations within

the chat feature, we actively encourage people to meet in person in public and popular locations.

Privacy

Being mindful of user data that is stored in the app and shared with others is also important. To encode this value, our platform will default to not publicizing personal information about either party and ask for consent otherwise.

Respect

We want daha to be a place where everyone feels welcome, represented and able to use our platform. We want our users to respect and embrace each other's differences, and speak to each other the way that we as founders want to be spoken to. To encode this value, we scan for inappropriate content when users post dahas and send messages to their peers. We will warn and remove (if necessary) users who do not follow our guidelines.

Final Prototype Implementation

We utilized a variety of applications and techniques to build our hi-fi prototype: a functioning mobile application. Details of this technical implementation process are below.

Hard-Coded Data & Limitations

We were able to implement all 3 primary tasks of our application. Since all of these tasks occur in the context that a user already exists and has friends on the platform, our prototype operates under the assumption that a user has already created an account and added several of their friends. Because of this, we decided to hard-code several of these initial components of a user's profile. This includes:

- The recent activity feed, populated with various daha activity in the user's network
- The user profile page, including their image, name, activities and other profile information
- The user's friends, their images, names, and favorite activities
- The messages page where there are several messages about upcoming, future, and past daha transactions that the user has engaged in

"Wizard of Oz" Techniques

There are several aspects of our prototype that follow the Wizard of Oz prototyping methodology.

1. Suggested friends and Suggested communities should be customized based on user's network
2. Our home page feed is automatically loaded in with several daha requests and recent activity. In our actual implementation, this feed would be tailored to a specific user, only showing the content from their friends and communities

Summary & Next Steps

Key Learnings on the Design Thinking Process

This quarter, we learned a great deal through the design thinking process . Three core learnings detailed below stand out to us.

1. Empathize with Real Users

   Firstly, we learned how crucial it is to listen and empathize with real users at every step of the design process, from needfinding to usability testing and more. Interfacing directly with people was immensely valuable in understanding their needs and desires, and so many key features of our app were designed and implemented as a direct result of people's expressed needs. For example, _____

2. Utilize Robust Testing and Evaluation Techniques

   Our second key learning from the design thinking process is the importance of using different types of user testing and evaluation for getting truly robust and diverse design feedback. User feedback from usability testing of our low-fi prototype, for example, yielded different types of insight compared to the results of heuristic evaluations of our medium-fi prototype. Our usability tests helped us streamline the flow of each task, while the heuristic evaluations helped us workshop the effectiveness of important screen elements like button size, in-app text, and error handling. For example ____

3. Iterate Intentionally and Consistently

   Finally, we learned about the power of iterative design and consistent testing at every stage of the design process. Looking back at the first few sketches of our

tasks and mapping our journey from that to the final high-fi prototype, we can clearly see the connection between our design choices and our insights from iterative user testing.

Key Learnings on Sustainable Habits

Future Work

Final Remarks

Thank you for coming along on daha's design journey. Creating this project was an incredible experience–from conducting needfinding interviews, to brainstorming solutions, to developing and iterating on our final product. To see additional details on our design process and try our final prototype, check out our website here.

Finally, thank you Professor Landay and our TA Maya Srikanth for an excellent quarter of learning

Appendix

Lo-Fi

Med-Fi

Hi-Fi Additional Screens

Thirteen Usability Heuristics