CEE 176G/276G • SUMMER QUARTER 2024

SUSTAINABILITY DESIGN THINKING

DEPARTMENT OF CIVIL & ENVIRONMENTAL ENGINEERING
STANFORD UNIVERSITY



Stanford

DEZIGNBLÄST
SUSTAINABLE
FUTURES
INITIATIVE

Student Design Project Portfolio

Human-Centered Ideation & Design

Foreword

In this course, we prescribe Design Thinking to Sustainability for much-needed clarity, rejuvenation & vitality. The human-centered focus of design thinking even promises to energize the ideation, research & development, practices & implementations to elevate sustainability human behaviors & mindsets. The course pushes students to shape the path & future of sustainability, & to become the solution leaders, purveyors & proprietors of the journey that we refer to as life, and the sustainability inherent to it. A part of each of our journeys that we have shared & partnered for the past 8 weeks.

Let this collection of Spec Sheets & personal reflections be a tribute to the early part of your design thinking journey. And remember how we used the sustainability universe to learn, test & assess ourselves as design thinkers. From personal products to the built environment to a high-efficiency community, we strived to discover possibilities through empathy & observation, brainstorm fresh ideas by managing our tendencies for self-editing & self-doubt, & develop these mindful flashes into communicable forms that emphasize ownership & human-centeredness. Perhaps you'll periodically look through this collection to renew your design thinking superpowers. Or perhaps you will inspire others to start their own design thinking journey. And maybe…just maybe…you'll reflect more than 30 years from now on how this course provided you with life lessons that fueled your passion & sense of purpose for the journey, for life.

Did your sustainability senses tingle when it was dosed with the creativity & growth of design thinking? We further hope that your personal reflections captured these emotions. We also hope that you appreciate how the design thinking process provides an emotional intelligence framework for discovering & moving forward. These same emotions & appreciation through skillful design thinking can be applied to other projects & challenges that we will inevitably come across. Look...then See. And think like a Design Thinker. Think in a human-centered way.

Colin & Glenn



DESIGN PROJECT 1

Observation, Empathy & Designing for Individual Sustainability Human-Behavior Change

In this project, students proposed a design idea that supports or promotes sustainable behaviors and practices for **INDIVIDUALS**.

The project started with: “Wander. Select a location (must have at least one human in addition to yourself)” and “Observe (30 minutes or longer). Sketch the scene in Notion Design Journal. Use Look & See method.”

CEE 176G/276G SUSTAINABILITY DESIGN THINKING SPEC SHEET

StayCool: Portable Insulin Cooler

Amna Alabdali

Monday July 22, 2024

CONCEPT STATEMENT

StayCool is a portable insulin cooler designed to provide diabetics with a reliable, convenient, and stylish solution for keeping their insulin at the optimal temperature offering peace of mind and freedom to users.

MVP FEATURES

- Advanced Cooling Technology
- Compact and Portable
- User-Friendly Interface

MVP+ FEATURES

- Side compartment for storing needles and alcohol swipes.
- Bluetooth connectivity for monitoring the temperature and alerts via a smartphone app.
- Different designs and sizes.

PROBLEM STATEMENT

Insulin must be stored at a temperature range of 2°C to 8°C to maintain its effectiveness. When insulin is at risk of exposure to inappropriate temperatures, which can lead to a loss of potency, resulting in uncontrolled blood sugar levels and potential health complications.

COMPOSITE CHARACTER PROFILE

- Fatima 21-year-old ambitious and driven university student passionate about biomedical engineering.
- Sara is an energetic and cheerful 10-year-old girl who loves playing with her friends, participating in school activities, and exploring the outdoors
- Mariam balances her time between taking care of her children, managing household chores, and working on her freelance graphic design projects

POV STATEMENT

1. Emergency Preparedness: A portable insulin cooler ensures that Fatima's insulin remains protected and accessible during emergencies such as power outage.
2. Sports and Activities: For Sara, who has practices and games after school, a portable insulin cooler allows her to keep her insulin with her during these activities.
3. Mariam’s commitment to staying active,a portable insulin cooler allows her to carry her insulin discreetly and conveniently, supporting her active lifestyle.

Justification: StayCool ensures insulin remains at optimal temperatures, providing peace of mind and allowing users to maintain an active lifestyle without worrying about their medication.

Prototyping Insights:

1. Cooling Efficiency: Achieving consistent temperature control with high quality thermoelectric coolers.
2. Battery Performance: Optimizing for up to 12 hours of continuous use.
3. User Feedback: Feedback led to several improvements, including offering the product in different sizes, adding compartments for used needles, and incorporating a handle or strap for easier portability.

Testing Insights:

1. User Satisfaction: High satisfaction of the product idea, giving peace of mind to diabetics
2. Portability: Praised for its compact, lightweight design and convenient compartments.
3. Durability and Reliability: Proven to withstand daily use while maintaining performance.

Conclusion: StayCool effectively meets the needs of diabetics, ensuring their insulin remains safe and accessible. Prototyping and testing confirm its potential to significantly improve the quality of life for its user**s.**

Prototype & Logo:







DESIGN THINKING SELF-REFLECTION

Participating in the sustainability project was a valuable learning experience that improved my awareness of responsibility for the environment and developed my creative thinking skills. The goal was to address a crucial sustainability issue, and the process gave me invaluable insights into the efficacy of smart, creative approaches.

A key lesson from this project was the vital role of empathy in design thinking. By seeing the issue from the perspective of those directly affected, we were able to plan solutions that were not only more relevant but also more impactful. This human-centered approach deepened our connection to the project’s mission and ensured our solutions were both meaningful and effective.

An additional important aspect of what I learned was the iterative nature of design thinking. Adopting an experimental and continuous improvement approach enabled us to constantly modify our ideas and adapt to new findings. This process emphasized the need of adaptability and resilience, illustrating that setbacks and failures are necessary steps toward inventive and effective solutions.

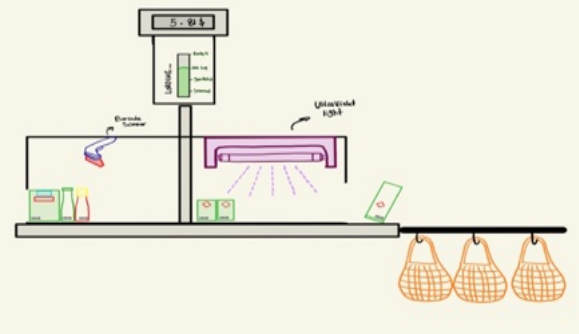
Collaboration with my peers was one of the project's most satisfying aspects. The different viewpoints and skills in our groups stimulated creativity and inventive thinking. We improved our ideas and built more solid and complete solutions by providing constructive comments and engaging in common brainstorming.

Overall, this sustainability action was a valuable learning experience. It broadened my understanding of environmental issues and reaffirmed the importance of empathy, collaboration, and adaptation when dealing with complicated challenges. Moving forward, I am dedicated to incorporating these concepts into my future initiatives, confident in their ability to effect positive change.

CEE 176G/276G SUSTAINABILITY DESIGN THINKING SPEC SHEET

UV Cashier

Designer Name: Alyazia Albreiki
Design Date: Sunday July 21, 2024



CONCEPT STATEMENT

The UV Cashier sanitizes products instantly and automatically bags them, eliminating harmful bacteria and viruses. This advanced system combines safety, efficiency, and convenience, ensuring each item is clean and neatly packed, transforming the shopping experience and providing peace of mind.

MVP FEATURES

- UV Light
- Automatically barcode scanner
- Screen that explains the stages your products are in

MVP+ FEATURES

- Incorporate features that show human interaction or engagement
- Enhance Bag Section by automatic spinning or organization mechanism
- Implement safety features to prevent UV exposure for everyone.

PROBLEM STATEMENT

Bacteria on products handled by cashiers during shopping transactions pose a significant public health risk.

COMPOSITE CHARACTER PROFILE

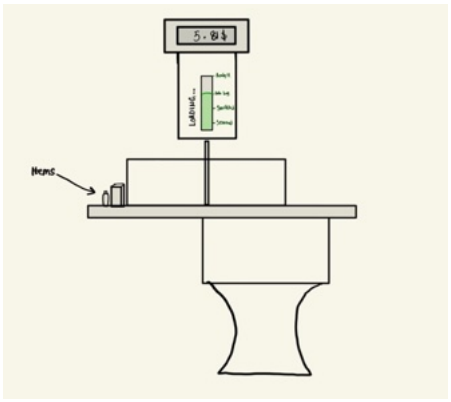
Ali, a student with OCD, is very concerned about germs. His focus on sanitizing products highlights the importance of cleanliness and reducing health risks in public places.

POV STATEMENT

Ali agreed that sanitising products before they are delivered can greatly lessen his anxiety associated with coming into contact with germs.

Other illustrations:





Testing Results:

I showed some of my colleagues my digital prototype and some of the recommendations were:

1. Add Human Work Element: Incorporate features that show human interaction or engagement, making the interface feel more relatable and intuitive.
2. Enhance Bag Section: Develop a specific storage feature within the bag section that allows users to add items easily, followed by an automatic spinning or organization mechanism to optimize space and improve user experience.

These enhancements can make the prototype more functional and user-friendly.

COMPOSITE CHARACTER PROFILE

From other perspective My friend, who studied cell and molecular biology, is passionate about bacteria and microbial science. Her extensive lab work and analysis with animals and plants have deepened her understanding of bacteria.

POV STATEMENT

Sanitizing products helps cashiers prevent the spread of germs, crucial for public health. My friend, a cell and molecular biology graduate, understands the importance of stopping pathogens. This practice aligns with her expertise and commitment to maintaining sanitized public environments, ensuring cleanliness and safety.

DESIGN THINKING SELF-REFLECTION

Unlocking Creativity!

Reflecting on my experience with the sustainability project and design thinking, I am struck by how deeply it has transformed my understanding of sustainability and environmental issues. This journey was not just educational but deeply eye-opening, demonstrating the complex relationships between observation, creative and thinking about solutions.

I freely allowed my creativity to flow as I sketched different concepts during the ideation phase. The most promising ideas from this brainstorming session were chosen through an extensive evaluation. Then, after outlining our MVP and upgrading it to MVP+, we added features in order to improve the functionality of our products. Brainstorming solutions and sketching ideas pushed me to think creatively and realistically.

It was easier for me to remain committed to the demands of the users and to my clear vision throughout the project when I wrote the (CCP) and Point of View (POV) statements. These documents helped me in making decisions and ensured that my actions were in line with my objectives.

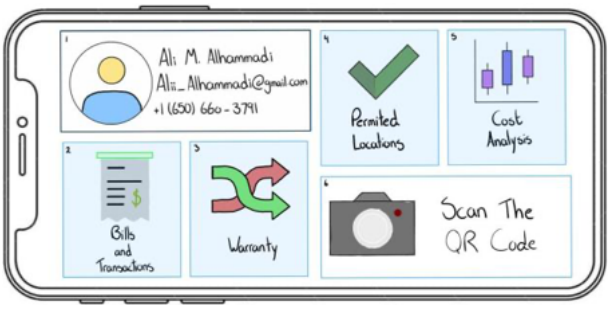
Through a practical step called prototyping, we created our selected solution. Testing the prototype was a crucial step we got feedback from colleagues, who offered insightful analyses and suggestions. This cycle of feedback played a crucial role in helping us refine our prototype and make sure it successfully met the demands that were indicated.

Overall, this project improved my understanding of sustainability and equipped me with useful design thinking abilities. It emphasised how crucial observation, creativity, and testing are important to producin a workable solutions. This journey has inspired me to use these principles in future projects, confident they will promote positive change.

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Unified APP

Designer Name: Ali Alhammadi
Design Date: Sunday July 21, 2024



CONCEPT STATEMENT
The Unified App offers real-time expense analysis, budget management, and individualized financial guidance by combining every bill, receipt, and warranty onto a single digital platform. Unified can help you simplify your finances and get rid of waste. It is ideal for people of all ages who want to manage their money in an organized, stress-free way.

MVP FEATURES (<10 words each)
- Unified Bill and Receipt Storage
- All receipts and warranties are digitalized
- Warranty Management and tracking

MVP+ FEATURES (<10 words each)
- Personalized Financial Advice and Alerts
- Advanced Spending Insights with Predictive Analytics
- Instant Bill Splitting

PROBLEM STATEMENT
Regardless of the payment method, printed bills are currently used for most transactions, which causes enormous paper waste and personal annoyance.

COMPOSITE CHARACTER PROFILE
Tim is a master's student at Stanford in Civil & Environmental Engineering. Passionate about environmental challenges, he is dedicated to finding solutions to help the planet.

POV STATEMENT
Tim enjoys stopping at Starbucks on his way to class, but he dislikes getting paper bills every day. He would rather view the bills digitally, which saves paper waste and helps the environment.



It has six taps to it:

1: Profile page, it has your information that will be linked to you. Your Bank cards and loyalty cards/programs that you are subscribed too.

2: Bills and Transactions, it has all the bills of your purchased things paid in card or cash. It also has the recent transactions that was made.

3: Warranty, it has three categories, Active warranties, near to expire, your expired warranty.

4: Permitted locations, As I said before for this to be efficient, A permit will be released for all stores to use it, and it will also show you the stores near you with the reviews of real customer.

5: cost analysis, this page will gather all your information on how and what you spent your money into so you can see and visualize your current financial situation.

DESIGN THINKING SELF-REFLECTION

A Successful attempt?

As I reflect on my experience with the first sustainability design project, I see how much it influenced how I view environmental issues. The project gave me a real chance to turn my enthusiasm for sustainability into workable solutions.

Using design thinking was key. I was awakened to the potential of human-centred design through the iterative process of communicating, identifying problems, generating ideas for solutions, prototyping, testing, and defining problems.

Through surveys and community comments, I started by gaining a knowledge of the needs and pain points of those impacted by environmental challenges. I identified the main issues using this data, making sure that the solutions were focused and successful.

I brainstormed various solutions using post-it notes stimulating creativity and identifying the most practical ones. I then worked on a mobile app prototype, building models that could be tested and improved upon to find any bugs early on. To make sure that the prototype was well-liked, it was tested in class, and feedback was gathered from classmates.

Good communication was essential to the project's success. I kept the lines of communication open with friends, instructors, and peers to guarantee a cooperative approach.

To sum up, the design thinking application and the sustainability initiative have had a revolutionary impact. My resolve to work towards a greener future was strengthened by their reinforcement of my commitment to environmental sustainability and their provision of useful skills to facilitate good change. They enhanced my understanding of sustainable practices.

Word count: 244 words

SUBOT

Sumaiyya Ali
Sunday July 22,2024



CONCEPT STATEMENT

Subot revolutionizes the banking experience by offering a user-friendly AI assistant that empowers customers. Subot tackles navigation challenges, streamlines document verification, and provides wait time insights, fostering a time-saving and stress-free banking journey.

MVP FEATURES

- Effortless Navigation
- Wait Time Estimation
- Scanning and Verification of documents

MVP+ FEATURES

- Going paperless by streamlining things online
- Senior friendly interface, priority booking for seniors (65+)
- Smart Scheduling allows reduce footprint and smaller branches

PROBLEM STATEMENT

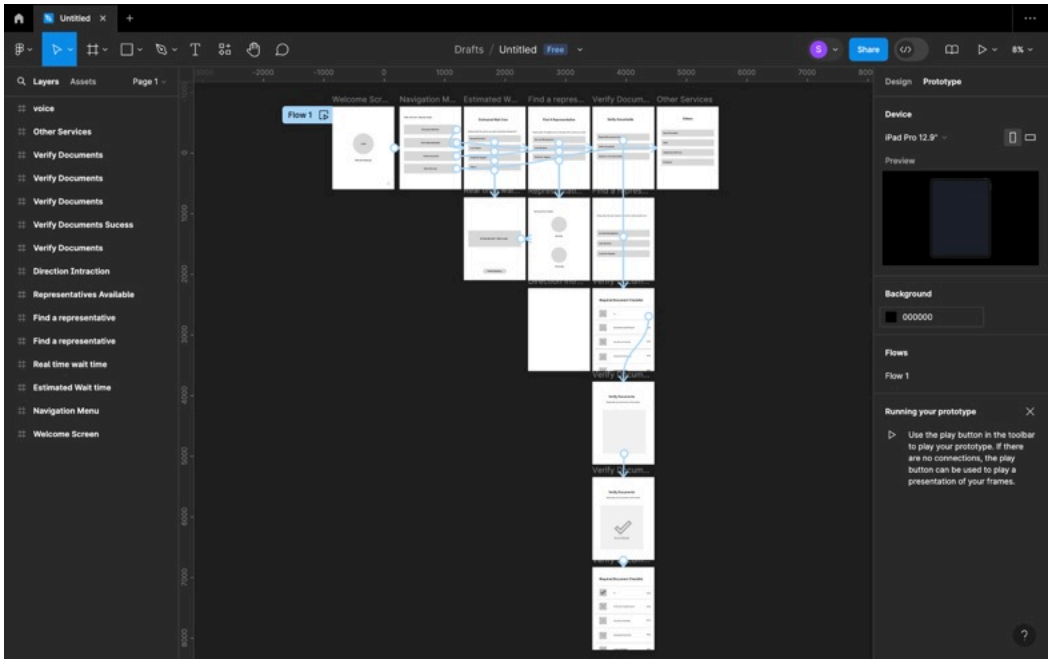
Traditional bank visits are time-consuming and frustrating. Customers face long wait times, struggle to navigate tasks, and manual document checking creates unnecessary delays.

COMPOSITE CHARACTER PROFILE

Ms. Jones (Working Mom): Tech-savvy with limitations, prefers human interaction and clear explanations for complex financial matters.
Ms. Ramirez (Teller): Overwhelmed by high customer volume.
David Chen (Student): Comfortable with digital tools. Limited time necessitates readily available support from knowledgeable staff.

POV STATEMENT

Ms. Jones: I crave easy banking. Tech is great, but I also need an advisor who understands my unique financial situation.
Ms. Ramirez: I wish there was someone to help me, it’s overwhelming..
David Chen: Figuring out student loans, budgeting, and saving for the future is a whole other level of stress. A bank with intuitive tools and easy-to-understand resources would be a lifesaver.



Low fidelity Prototype on Figma


Prototype

A low-fidelity prototype robot was created from styrofoam to test basic design concepts. Figma was used to design the application that will be used to interact with the final robot.
The final robot will be three times the size of the prototype and will have a screen positioned at eye level for easy interaction. The user interface will use simple language that is easy for everyone to

understand. Users will be presented with options such as estimated wait time, finding a representative, and verifying documents.

Development Learnings
The prototyping process helped to identify challenges and refine the design to better meet user needs. While the initial idea seemed simple, it became clear that creating an application with universally clear and concise language was the most difficult aspect.

User Testing
User testing of the prototype yielded positive feedback. Users felt that the design addressed their needs. One suggestion for improvement was the use of color, which will be incorporated into the final design.

Design thinking Self Reflection
Reflecting on this project, I've gained a deeper appreciation for the complexities of design. Initially, I was focused on solving the immediate problem of long bank wait times. However, as I delved deeper, I realized the importance of understanding the user's experience on a human level. Seeing the frustration firsthand ignited a desire to create a solution that genuinely improved people's lives.

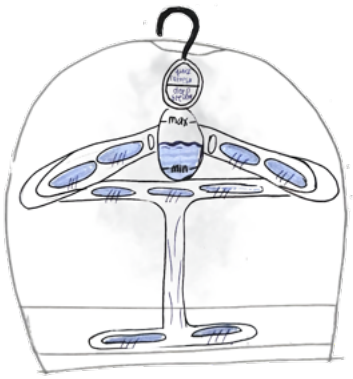
The design process was an eye-opening experience. Brainstorming wild ideas was liberating by the post it method taught in class but transforming those ideas into a practical solution required careful consideration. I discovered the significance of prototyping as a tool to visualize and refine concepts.

Perhaps most importantly, I've come to understand the multifaceted nature of sustainability. It's more than just environmental impact; it encompasses human well-being, social equity, and economic viability. Designing with sustainability in mind requires a holistic approach, considering the product's entire lifecycle. This project has instilled in me a commitment to creating designs that not only meet immediate needs but also contribute to a better future.

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pristeam

Designer Name: Rawda Aljneibi
Design Date (Monday July 22, 2024)



CONCEPT STATEMENT: Pristeam is a smart hanger that simplifies garment care. Using advanced steaming technology, it refreshes and de-wrinkles shirts effortlessly. Compact, eco-friendly, and easy to use, Pristeam fits seamlessly into any closet. Each purchase donates $1 to a sustainability charity. Seeking $100,000, Pristeam aims to revolutionize shirt care with convenience and efficiency.

MVP FEATURES

- Advanced steaming technology
- Compact and eco-friendly design
- Easy-to-use controls

MVP+ FEATURES (<10 words each)

- Clear plastic steaming attachment
- Foldable bottom attachment for even steaming
- LED indicators for readiness

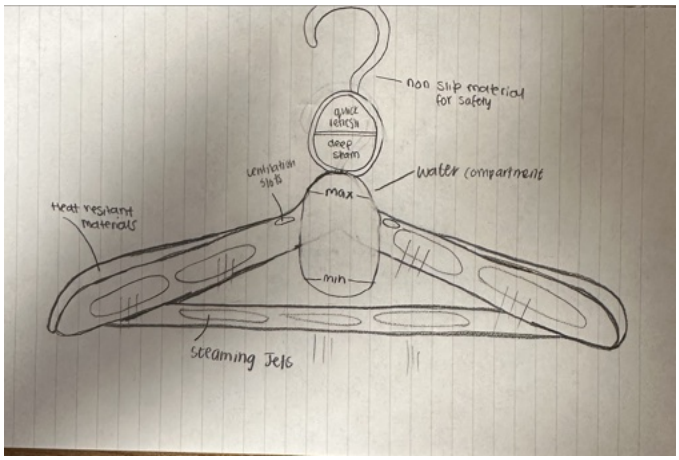
PROBLEM STATEMENT: Busy individuals, especially college students, struggle with maintaining wrinkle-free clothes due to a lack of time and efficient solutions, leading to frustration and wasted time.

COMPOSITE CHARACTER PROFILE: Emma is a college student who juggles classes, assignments, and a part-time job. She often finds her clothes wrinkled and damp after washing, with no time to iron. She needs a quick, effective solution to keep her shirts presentable without extra effort.

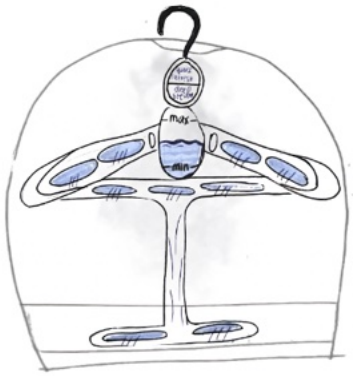
POV STATEMENT: Emma, a busy college student, needs an easy and quick way to refresh her clothes because she doesn't have time to iron, and wrinkled clothes affect her confidence and appearance.



1st design: Realized it's too expensive and needed something easier, lighter, and that does the same thing.



2nd design: Created a hanger that does all the same things as the cabinet but is compact and easier for my target audience.



3rd design: Based on user feedback, added an attachment at the bottom for even steaming and included a clear plastic cover for thorough steaming.

DESIGN THINKING SELF-REFLECTION

I initially started the project with a cabinet in mind because, as a summer college student, I found laundry to be the most challenging and time-consuming task. Doing laundry, waiting for it to dry, making several trips to ensure the clothes were evenly dry, and then steaming them afterward was very time-intensive. I thought the cabinet would solve these issues. However, after discussing the idea with Professor Glenn, he pointed out that it might be too expensive for most people. This feedback made me realize the need for a more compact and accessible solution.

This led me to the idea of a hanger that steams clothes—easy, compact, and eco-friendly. After an in-class exercise where we sought advice from other students, I refined my second idea. One student asked, "Will my clothes be evenly steamed even from the bottom?" This feedback inspired me to add an attachment for even steaming.

When I discussed the idea with my dad, he asked, "Will the steam escape and be less efficient?" This led me to the idea of adding a clear plastic attachment to trap the steam. Despite developing multiple prototypes, advice from others and exchanging ideas with peers significantly improved my design. Their feedback helped refine the concept, leading to a more effective and user-friendly solution.

These iterations and user feedback shaped the final design: a steaming hanger with steaming jets on the bottom and upper half, a clear plastic cover, and different steaming options.

CEE 176G/276G SUSTAINABILITY DESIGN THINKING SPEC SHEET

CampusShare

Lateifa Alsamahi

Sunday July 21, 2024



CONCEPT STATEMENT

CampusShare is a food-saving superhero app that connects surplus food from individuals, dining halls, and businesses with those in need, reducing food waste, promoting sustainability, and offering options to donate to charities.

MVP FEATURES (<10 words each)

- Mobile-friendly interface.
- High food safety verification.
- Privacy and security measures.

MVP+ FEATURES (<10 words each)

- Feedback and rating system.
- Donation to charity options.
- Accessibility and special features for people of determination.

PROBLEM STATEMENT

Surplus food ends up in landfills, causing environmental issues. CampusShare is a secure, and user-friendly app to connect surplus food to those in need, promoting sustainability and reducing food waste.

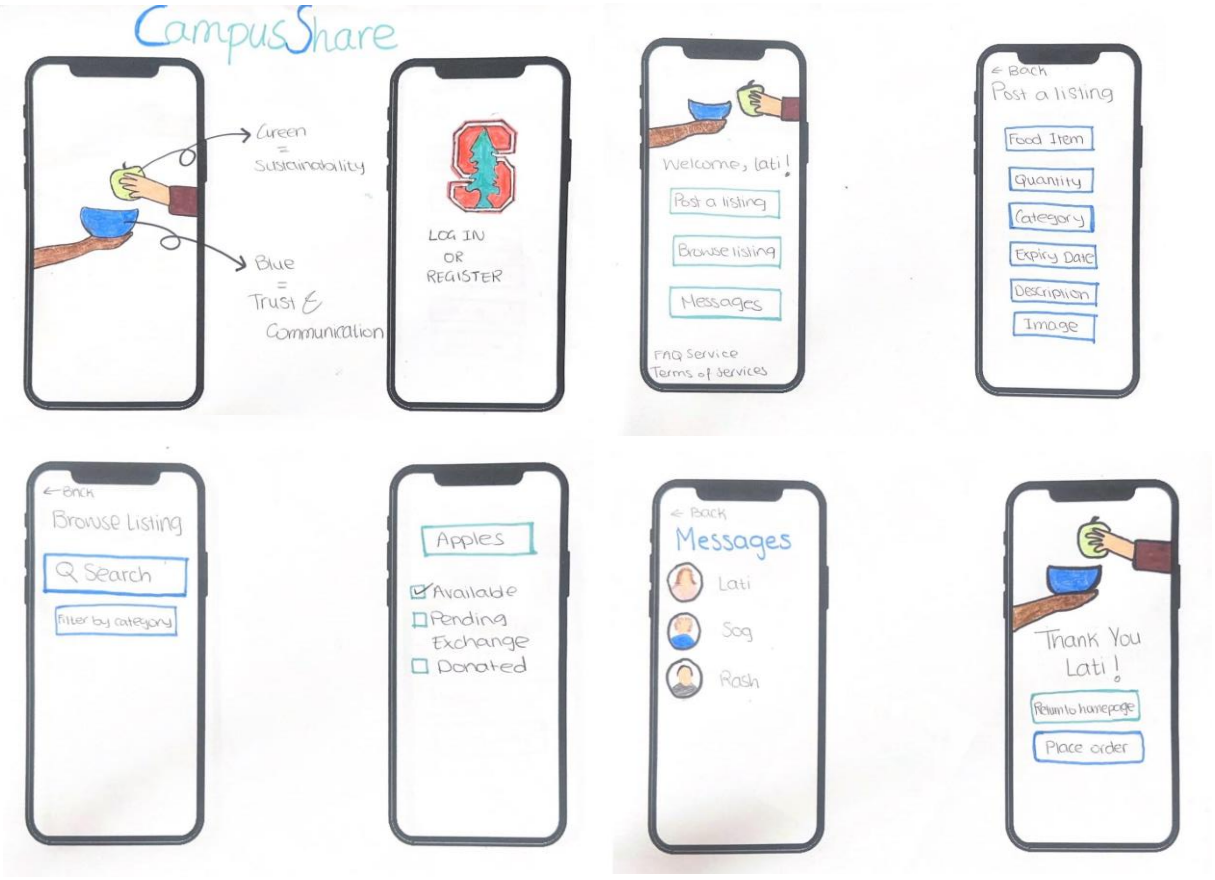
COMPOSITE CHARACTER PROFILE

1. Adelya is a 30-year-old master's student studying Energy Engineering. She enjoys morning runs for an active lifestyle.
2. Amna is an adventurous summer visitor. Despite being diabetic, shas a sweet tooth but tries to not put excess food on her plate.
3. Chef John is a dining hall chef who values quality and efficiency. He always tries to manage surplus food.

POV STATEMENT

1. As a student, I am trying to find and share surplus food within community to contribute to reducing food waste.
2. As a summer student visitor with diabetes, I want to always have access to food options so that I can maintain my balanced diet.
3. As a dining hall chef, I am willing to help in an effective way to manage and distribute surplus food.

PROTOTYPE:



SOME APP DETAILS:

- One time app fee of $5 dollars; secure transactions.
- Notifications for nearby surplus food.
- User-friendly interface.
- Donation options.
- Sustainability metrics.
- Mobile-friendly.
- Privacy and security.

DESIGN THINKING SELF-REFLECTION

Working with empathy

Working on the idea of CampusShare has been an enlightening experience as it deepened my understanding of sustainability and innovation. Also, it heightened my awareness of food waste and how to create a good impact on the environment and community. The project began with observations, identifying problem statement, CCPS, POVs, conducting surveys up to making a prototype and finalizing all MVP features which all went through iterative processes to enhance app's functionality. All those steps taught me the importance of empathy in design; it was a journey of growth, learning and trying to leave a good impact on the environment.

All class and after class work have improved my way in design thinking. My experience with design thinking has been fulfilling as it enhanced my skills and insights that I can carry with me in future careers. The ideation phase was my favorite as I brainstormed many ideas and had to chose one out of them all which allowed me to look at many different perspectives and read more about the problem. Also, at the beginning I had a plate divider idea which did not work as surveys showed it will not reduce food waste and it is not effective, hence implementing what I have learnt from class, such as iteration, have helped me shift fast to a new idea and work successfully on it.

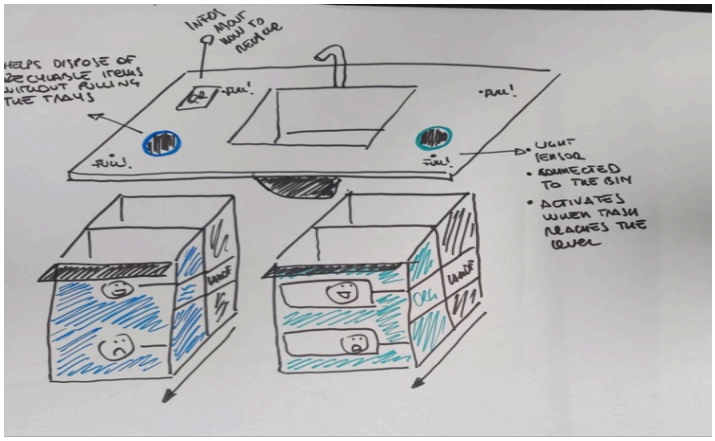
Overall, it was a very fun and impactful journey in design thinking from empathy in choosing a topic to implementation of idea.

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REPS - Recycling Everyday Program @Stanford

Enrico Bertoni

Wednesday July 17, 2024



CONCEPT STATEMENT

REPS redesigns the recycling experience in the Graduate Residences on campus. Through improved bins and new useful features on the countertop it creates an environment where recycling it's convenient, straightforward, and even funny!

MVP FEATURES

- Larger bins, colour-matching with the recycle-room containers
- Insert to prevent the bag from slipping inside
- QR code for easy access to recycling informations

MVP+ FEATURES

- Lids on the countertop for recycle and compost
- Lights that turn on when the bag is almost full
- Smiling / Sad faces on the bins: positive reinforcement

PROBLEM STATEMENT

Graduate residential students face challenges with recycling in their apartments: there's a bottleneck in the process due to size and unclear destination of the bins.

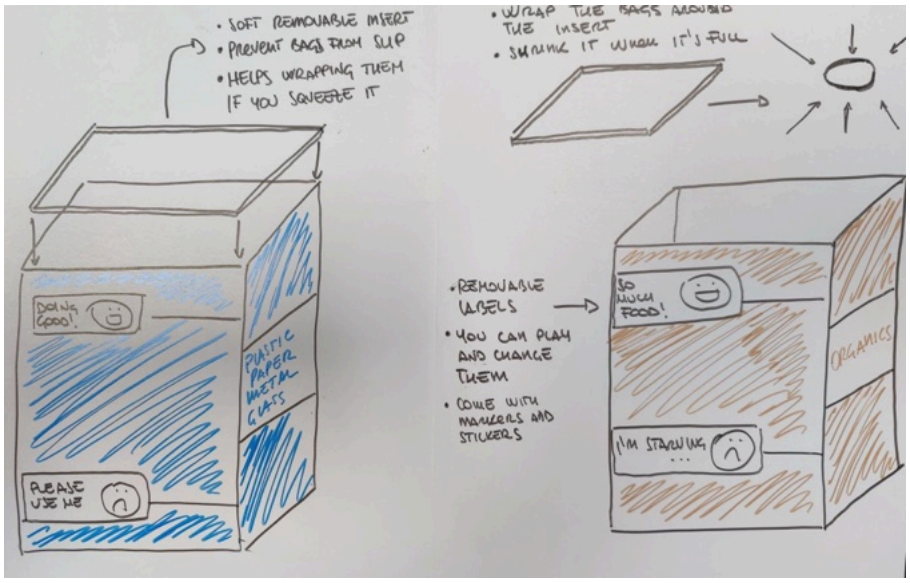
COMPOSITE CHARACTER PROFILE

Smart Shoji: 24 years old, non-US citizen, lives on campus. He cooks for himself, quite educated in sustainability, desires to recycle but wants it to be natural and don't put too much effort on it.

POV STATEMENT

Shoji needs to be able to recycle inside his apartment in a way that feels convenient in his day to day life, because he wants to feel part of a community driven by a consistent effort towards sustainability.

BINS DETAIL + INSERTS



OTHER CCPs/POVs

DADDY DAVID: 30 years old, Lives on Campus with his partner and his little baby. He's alway rushing between academic work and family duties. He likes to consume meals in the apartment.
POV: David needs to balance his everyday routine between work and family. Also, he needs to keep his place clean and tidy, because he wants his son to be safe.

FOREIGNER FRANCO: 22 years old, just arrived from Italy.Not very educated on sustainability, has a strong desire to integrate in the US culture.
POV: Franco needs to quickly understand the new culture and get familiar with the everyday routine of life on campus, because the feeling of being left aside really upsets him.

TEST DESIGN
I designed a set of questions that mainly revolved around some features I wanted to add to the bins, as they were my only focus at the beginning.
The results confirmed the hypothesis: even the people that didn't notice the tiny size of the bins confirmed that they put most of their trash in the landfill, and after my interview started to notice the unusual size of the bins! At the same time, the testing process provided me with the insight that some features were just inconvenient on the bins. After a few iterations, the product evolved into a small "ecosystem" including the countertop.

DESIGN THINKING: AN (EVER)CHANGING JOURNEY

Coming from a very different professional background, I started this journey with expectations, curiosity and some uncertainties.

After completing the Design Project 1, the most challenging and powerful insight that I have observed is that I'm starting to see what surrounds me - objects, ecosystems or even situations in life - as something that can be changed way more often than I used to think.
It's challenging, because it gives you a new level of responsibility in surrounding yourself with things, environments and situations that are aligned with your goals and values. Also, iterations and testing implies "to fall in love with the problem, not the solution" which means having an open mind and challenging your assumptions: simple, but not easy!
It's powerful, because it provides you with a set of skills and tools that you can use in a wide range in different situations. Not only in your professional career, but ultimately in your life itself.

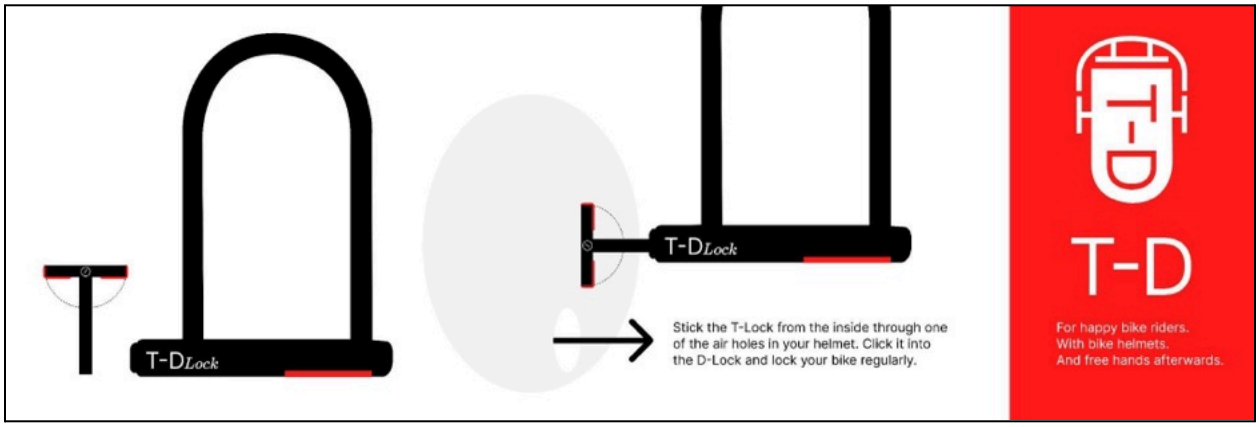
As a design thinker, at first I struggled knowing that I don't have specific talents in drawing or modeling. After a few iterations and an insightful conversation during office hours, I understood that part of the design thinking process it's also overcoming such obstacles and finding ways to work around them to reach your goal.

I also understood that keeping a focused attention when observing and listening is a great tool to see opportunities. I still have to improve, as I often rush to the shortest way to find a solution rather than taking my time to really master the problem and what's behind it.

CEE 176G/276G SUSTAINABILITY DESIGN THINKING SPEC SHEET

T-D

Therese Bohn
Wednesday July 10, 2024



CONCEPT STATEMENT

The T-D Lock is a 2 in 1 lock for cyclists to efficiently lock their helmet, together with their bike.

MVP FEATURES

- The smaller T-Lock for the helmet
- The bigger D-Lock for the bike
- A key that locks T & D together.

MVP+ FEATURES

- Unfoldable “wings” of the T, for seamless integration
- Slot in D-Lock to transport the folded T in
- Cushioning around the T, to not scratch the helmet

PROBLEM STATEMENT

Cyclists find it burdensome to carry their helmets after cycling. That’s why some of them don’t wear one in the first place.

COMPOSITE CHARACTER PROFILE

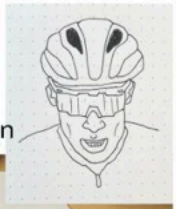
15 y/o student. His mom wants him to wear a helmet to school. He is embarrassed about the looks of it, so either sneaks away without it, or - as soon as he enters school - just gets rid of it somewhere. He also thinks that carrying the helmet is annoying, but forgot to take it with him again multiple times already.

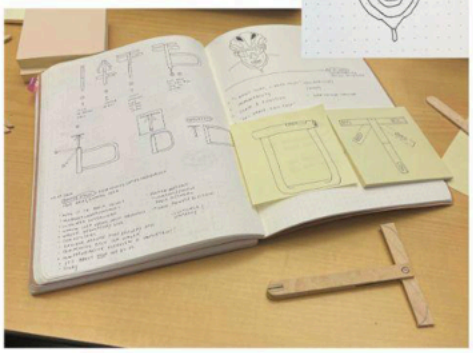
POV STATEMENT

[STUDENT] needs to [STORE HIS HELMET IMMEDIATELY AFTER CYCLING] because [HE DOES NOT WANT TO BE SEEN WITH IT or CARRY IT].

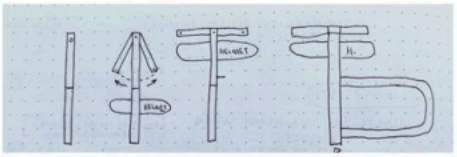
T-Dock

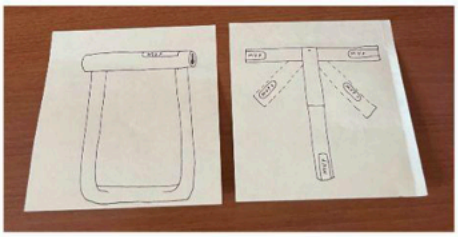
Iterating the design





Potential MVP+ feature:
Unfolding arms to store it better

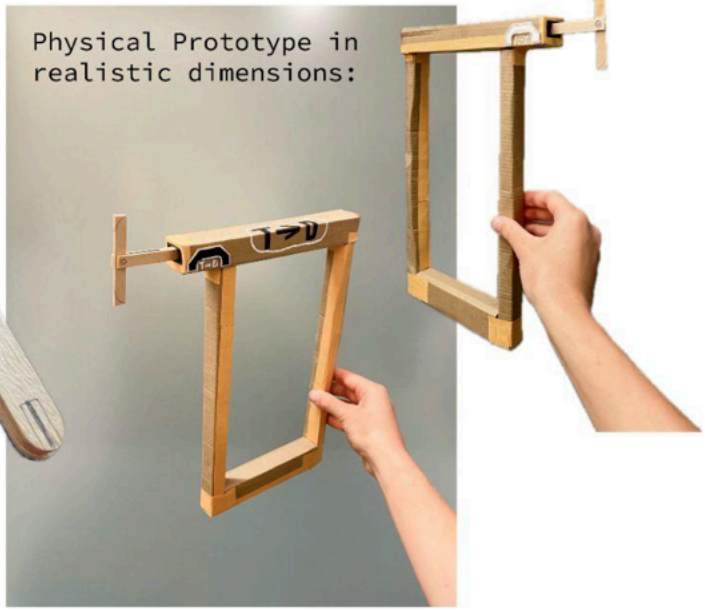




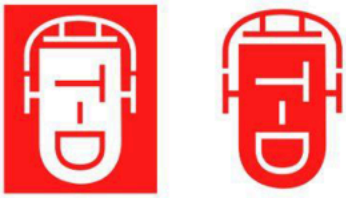


T-Lock with unfolding arms.

The real product (complete T-D Lock) would be out of titanium which is both lightweight and durable.



T-Dock



This is the Logo for the hypothetical brand that produces the T-D Lock. It resembles a happy cyclist with a helmet that consists of the actual product name.

DESIGN THINKING SELF-REFLECTION

Reducing complexity with empathy

Our environments are gaining complexity. However, for humans to keep orientation, this complexity needs to be reduced in a meaningful way; in a sustainable way. Therefore, insufficient design needs to be replaced and advanced by efficient design - with actual human needs at center. This is where Design Thinking enters the picture, springing from empathy for the problems and motivations of individuals. Down the sustainable path, form follows function and in design thinking, this path evolves from empathy, to defining, ideating, prototyping, to testing and communicating. After observing the behavior of Stanford cyclists for a while, the need for a solution that encouraged helmet wearing was clearly defined.

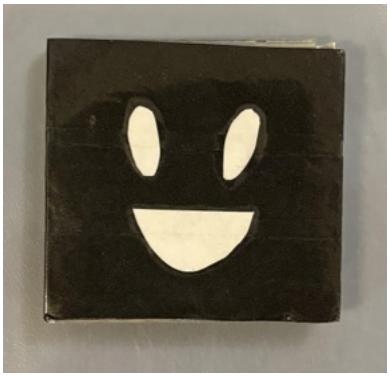
While talking to cyclists, I tried to deliberately empathize with different pain points surrounding helmet wearing, while the problem of helmet transportation captured my special interest. It seems that a helmet can be perfectly comfortable; as long as it is perceived as annoying the rest of the day, this argument might not be convincing enough for cyclists to actually use a helmet.

For me it was highly important to design a solution to change this human behavior in a progressive, sustainable way, as simple but most effective a possible, saving valuable material overall. Gall’s law states that all functioning complex systems evolve from simpler systems that work. So as I wanted to build a slightly more complex system - a lock that both secured the helmet and the bike, it was intuitive to iterate the simpler working system (like a D-lock), prototyping, testing and convincingly communicating the advanced version: The T-D Lock.

CEE 176G/276G SUSTAINABILITY DESIGN THINKING SPEC SHEET

Bike Buddy

David Dunn
Monday July 22, 2024



CONCEPT STATEMENT

A solar-powered bike light with Air Tag capabilities. Bike Buddy is supposed to be your “buddy” and keeps you safe at night and keeps your bike safe. The customisable face drives home the buddy aspect.

MVP FEATURES

- One time application and two year warranty
- Sustainably rechargeable and no extra batteries
- Discreet

MVP+ FEATURES

- Customizable faces for the Buddy
- Unique magnetic fob to lock the light on the bike
- Air Tag capabilities

PROBLEM STATEMENT

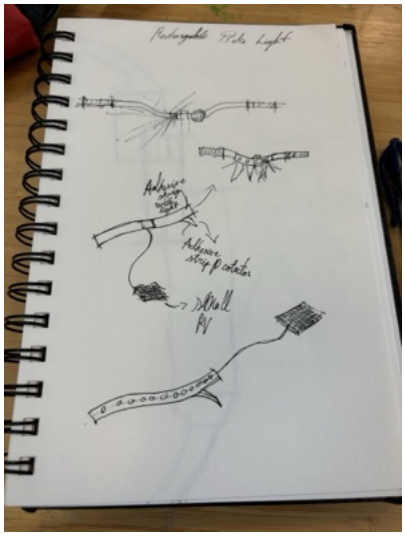
College students have to be visible at night and deter bike and bike light theft.

COMPOSITE CHARACTER PROFILE

Twida: Observant, efficient, and punctual.

POV STATEMENT

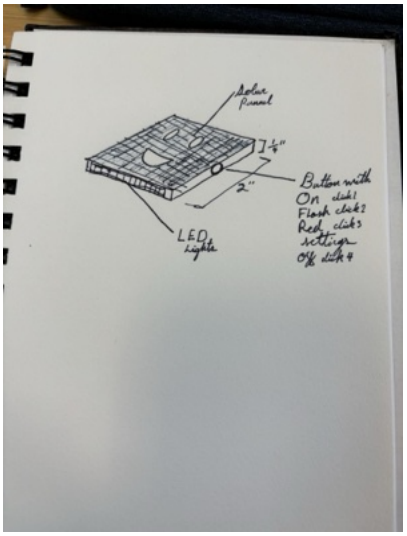
Twida wants a well-defined and pleasant path for bikers and walkers around campus with safety measures besides a painted path for bikes. She cares about shade, the delightfulness of the path, wants a safe and efficient route around campus, and a well-lit walking/biking path at night



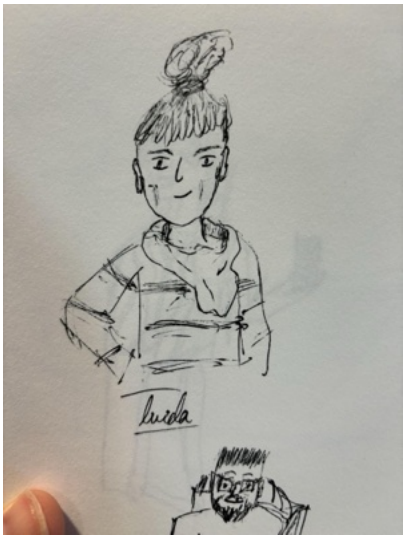
Original BB Design



Secondary Design



Final Design Sketch



Twida

The CCPs and POVs are very disconnected from what Bike Buddy became. I used Twida's CCP because she was the simplest to design for.

BIKE BUDDY

Bike Buddy Company Logo

From Strangers to Buddies

Product design is not very inspiring to me. I don't think it is after this project either. I find that funny because I'm training to be an architect. I'll be designing spatial and form driven products for the rest of my life, and that excites me. I guess I'm so intrigued by buildings because they inspire me.

However, friends don't need to inspire. Hopefully, friends bring you joy, make you laugh, and improve your quality of life. Creating Bike Buddy was like making a new friend. I'd never really given deep thought about making a product and Bike Buddy was really fun. I created something useful, practical, and whimsical.

Originally, my concept for Bike Buddy was just a solar powered bike light, serious, dull, and done before. It wasn't until the minutes before our first round of testing that I gained inspiration for Bike Buddy after talking to Enrico. His trash cans had silly faces on them and after contemplating my dull product, I had a stroke of inspiration and glued a smiley face on the product and christened the product, Bike Buddy. A friendship was born, and I was excited to explore how this bike light could become a buddy to us all. While product design is still not my passion, I can now call it my Buddy;)

CEE 176G/276G SUSTAINABILITY DESIGN THINKING SPEC SHEET

Cool shirt for construction workers

Yuto Fujiwara
Monday July 22, 2024)

CONCEPT STATEMENT

For construction workers in India who have to work 8 hours a day under 40℃, this cool shirt mitigates the heating. This helps them work more comfortably and eventually save lives.

MVP FEATURES (<10 words each)

- Long lasting cool
- Light

MVP+ FEATURES (<10 words each)

- Not noticeable while moving your body
- Easy to wash

PROBLEM STATEMENT

… For construction workers in India, it is fatally hot While working.

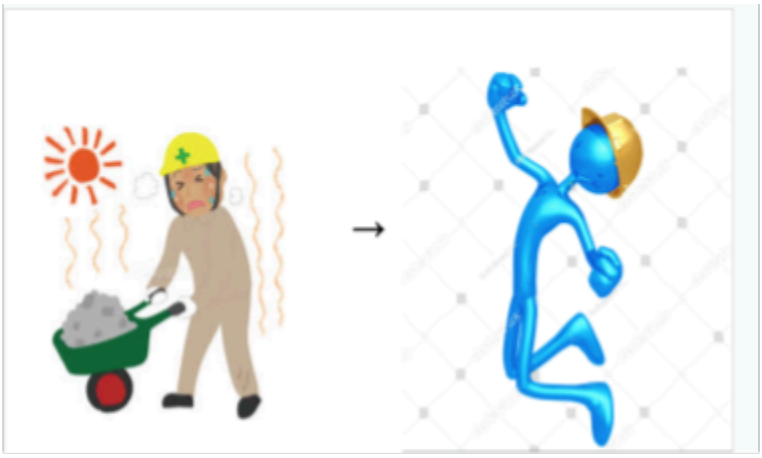
COMPOSITE CHARACTER PROFILE

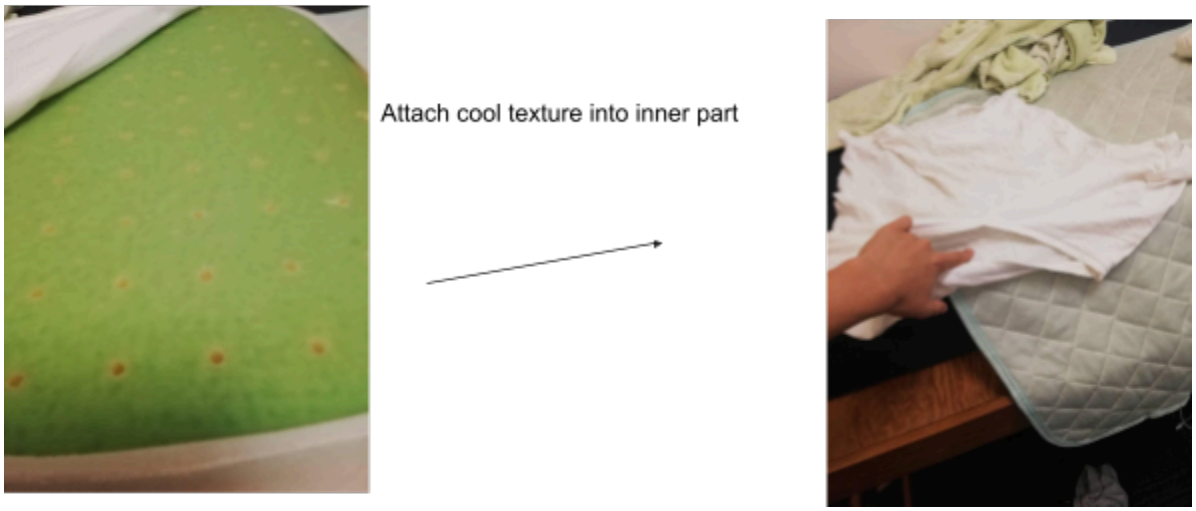
Raj Patel.35 years old Male.The extreme heat exceeding 40°C and long working hours increase the risk of heatstroke and dehydration
Working in high temperatures is physically and mentally exhausting
Effective heat mitigation is necessary to avoid medical expenses and support household spending

Motivation:
- Safety: Protecting his health and ensuring he returns home safely to his family
- Livelihood: Working efficiently to secure a stable income
- Future: Ensuring a better education and life for his children by maintaining a steady income

POV STATEMENT

lightweight, breathable, and durable. The shirt uses cooling technology such as moisture-wicking fabric, ventilation panels, and cooling gel inserts. It features light colors like white or light blue to reflect heat. Additionally, it includes reinforced shoulders for carrying tools, reflective strips for safety, and multiple pockets for convenience.



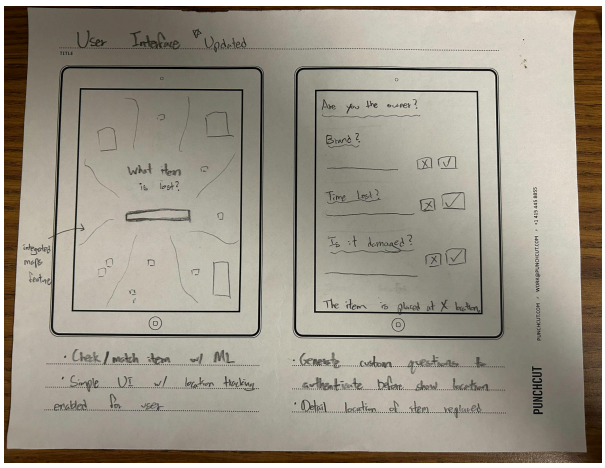


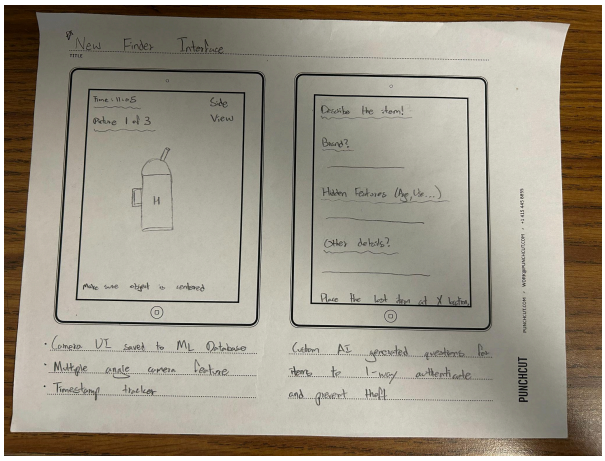
DESIGN THINKING SELF-REFLECTION -Starting from empathy

In the design thinking class, I found it fascinating to discover challenges through empathy for both the user and the planet. The process of designing solutions with this dual empathy was incredibly engaging. Moreover, learning that design thinking can be applied in various scenarios, including pitching to meet specific needs, was particularly intriguing. This approach not only fosters creativity but

also ensures that solutions are both user-centric and environmentally conscious.

Lost & FOUND by Warren Huang
Monday 7/22/2024





Problem Statement
People often feel frustrated due to losing items with no hope of retrieving them.

Concept Statement
Lost and FOUND is an app that utilizes machine learning to create an algorithm to identify through computer vision the color, texture, brand, size, shape, and type of the object captured in a photo. By creating tags, we can upload this data into the cloud where it is used in authentication. On the user's side, they input their lost item into the app and get quizzed upon specific details in order to ensure one-way authentication before unlocking the lost item's location.

MVP Features

- Feature 1 - The ability to one-way authenticate to make sure the person who lost the item is actually the owner and not a thief trying to exploit the system.
- Feature 2 - Machine Learning and computer vision to recognize traits of the item so that the user does not need to manually input everything.
- Feature 3 - The ability to generate questions using AI to reflect characteristics of the item so that authentication can occur.

Survey/Interview/Research Findings

- 30% of individuals have lost items on campus within the past semester
- Out of that 30%, 50% of items are never returned to their rightful owners
- 90% of individuals think that once an item is lost, they will never get it back

Testing/Takeaways
Feedback - Feedback was pretty consistent throughout the 5 interviews I conducted. There seems to be a need though the problem is not extreme enough to the point where everyone decidedly wants the product. Because the lost and found application does not solve the problem of theft, it is useful only to an extent which means that the app probably would not warrant a download from the average joe.

There were 3 main things I learned from conducting interviews:

1. There needs to be a timestamp function on the backend so that the AI can distinguish between identical objects that were lost at different times.
2. The map/location tracking feature within the app should make it so that the AI only pulls up items that were lost around the location of the user (and not pull up items lost from across the world).
3. The main problem with this app is driving initial user adoption which is why I should aim to partner with educational institutions like Stanford or Baylor first so that they can help convince their students to adopt the app.

MVP+ Features

- Feature 1 - The ability to track the location of the person using the app to create zoning recommendations.
- Feature 2 - Adding a customer service help line that individuals can call if something goes wrong in the item return process.
- Feature 3 - The ability to track the time in which the item was found to further better the algorithm in case of identical items being found.

Composite Character Profiles
Awesome Alex is a 19-year-old student who is passionate about fitness and spends a considerable amount of time at the gym. He follows a strict workout regime and is very health-conscious, ensuring that he consumes organic and sustainably sourced foods. He often carries his gym bag with essential items like his water bottle, towel, and fitness tracker. Alex is friendly and enjoys helping others, but he can be quite forgetful, occasionally leaving his belongings behind in public places like the gym or cafes.

POV Statements
Alex, a busy student at Stanford needs to quickly and easily locate his lost items because he often misplaces his belongings in the hustle of campus/gym life and doesn't have time to search for them manually.

Reflection:

All in all, I thought that engaging in the design process for this project helped concretely inform and change my way of thinking for the better. Having understood the importance of empathy from Collin's first few lectures, I decided to embark on a journey of trying to solve a common pain point that everyone in the class had. During the process of validation, I surveyed and talked to every single one of my classmates and discovered that a significant portion of individuals on campus had experienced lost items. Not only that, but many of them believed that they would never retrieve them again. This insight underscored the necessity for a reliable solution, which was what made me come up with the app Lost and FOUND.

The emphasis of this process on empathy and engagement with potential users to refine the product helped reinforce within me the importance of validation when building a prototype. Instead of fitting a preconceived solution to a problem, I was shown first-hand the importance of first diagnosing a problem then coming up with a solution so that people would actually use the product. The design process allowed me to create a solution that not only meets user needs but also has the potential for broad adoption and real-world impact. With 2 more projects and many more companies that I hope to build in the future, I can not wait to apply this thinking to those tasks so that I can build them successfully with consumer opinions proactively (instead of reactively) considered in the design process. (Words: 261)

CEE 176G/276G SUSTAINABILITY DESIGN THINKING SPEC SHEET

Smart Soil Meter

Nadia Kuczynski
Monday July 22, 2024



CONCEPT STATEMENT

The Smart Soil Meter features a small, sleek design that is not distracting, and it includes an easy to read light indicator. The device also connects to an app, allowing users easy access to catered information on their plants and notifications reminding them to water.

MVP FEATURES

- Insertable into soil to accurately measure moisture content
- Light indicator that changes colors based on soil moisture
- Connects to an app that stores information on plant

MVP+ FEATURES

- Constantly tracks soil moisture content and updates app
- Sends reminders when plant needs to be watered
- Individualized plant care suggestions

PROBLEM STATEMENT

Many plant owners are not good at consistently watering their plants, or they just forget to. This leads to plants withering up and being unable to sustain themselves.

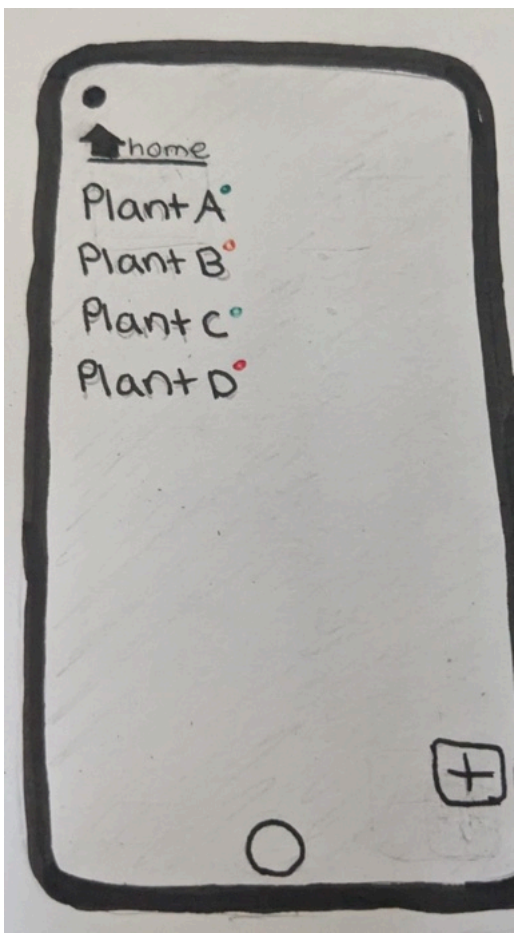
COMPOSITE CHARACTER PROFILE

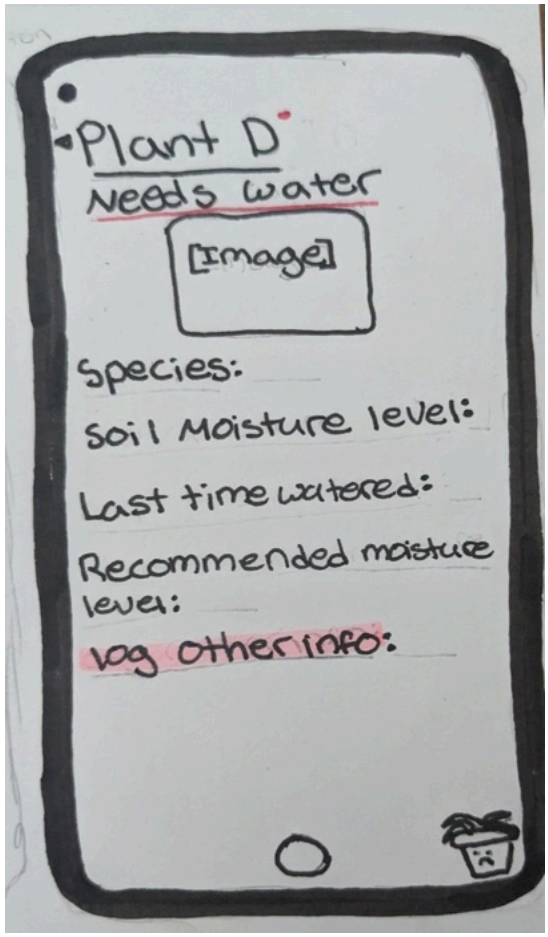
Gabriella the gardener is a busy mom who has a small backyard garden and a few houseplants that she struggles to care for.

POV STATEMENT

A busy mom needs reminders to water her plants so they do not wither away when she gets caught up with everything else going on in her life.

App Specifications
Multiple Smart Soil Meters can be connected to the app offering a convenient way to organize information on several plants. For each plant the user can pair the Smart Soil Meter with their phone and add information on the plant such as the species, and size. This information would allow for individualized care and watering recommendations. For example, the app would send less notifications to water for a succulent, even if the soil moisture content was low.





Insights from testing
One concern brought up was the concept of having a different Smart Soil Meter for each plant. I made the ultimate decision to keep this model, after discussion with several people, as this model specifically addresses the problem of forgetting to water plants. Having only one Smart Soil Meter that is used to test the soil of multiple plants would add a step to the plant care routine, which was the opposite of my stated goal. However, there is a reset button if a plant sadly dies or the growing season is over so that the meter can be used for another plant.

DESIGN THINKING SELF-REFLECTION

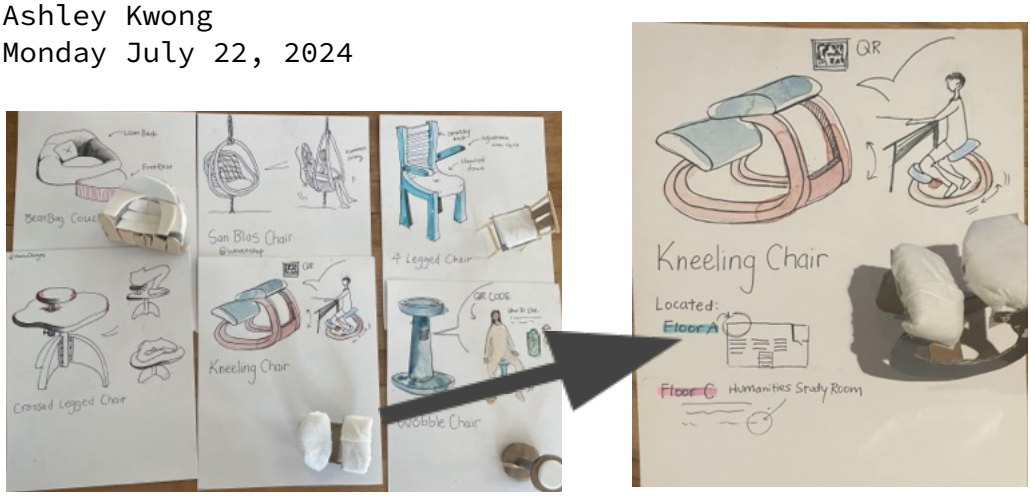
Design Thinking and the Development of the Smart Soil Meter

Learning and applying the design thinking process allowed me to think in different ways and challenge myself. While I was proceeding through each step my product and ideas changed drastically. Several steps during the process were challenging and forced me to grapple with uncertainty. Nonetheless, breaking down the process into more manageable steps prevented me from being overwhelmed and allowed me to develop my ideas. In the early stages of the project, I would not have expected to have come up with the Smart Soil Meter, but I can track how the idea slowly developed. In the observation stage, I first noticed the need for an improvement in watering by noticing an employee and Tresidder Union watering plants for a long time. Then in the interview stage, I found inconsistency and forgetfulness in watering plants to be a common theme. This caused me to narrow in on this issue. The next transformational step in the process for me was sticky-note brainstorming. It was difficult for me to come up with as many solutions as quickly as possible, but this was the first time that a water meter popped into my head as a possible solution. At first, it was not my top choice, but slowly I began to realize the potential. So, in the prototyping stage, I decided to proceed with the soil meter and designed an app to pair with it. I started to feel like “I want that, I need that,” and I knew this was the right direction for me to go with my project. In the end, I am satisfied with my final design and I feel that I learned a lot through the design thinking process.

CEE 176G/276G SUSTAINABILITY DESIGN THINKING SPEC SHEET

Chair Options Directory

Ashley Kwong
Monday July 22, 2024



CONCEPT STATEMENT

The Chair Directory, an array of chair options displayed at the library entrance's screen, helps users navigate the best chair to suit them. It indicates the chair's location, noting the area's noise level and brightness.

MVP FEATURES

- Options help the user best suit their preferences
- Accessible to everyone once you walk into the building
- Saves time

MVP+ FEATURES

- Sustains users' energy finding personalized chair in large space
- Gives variety of options to users to feel comfortable working
- Suits all different spaces

PROBLEM STATEMENT

Visitors of the Cecil Green library seek a comfortable chair and open space to do their work in, though finding one to suit everyone in the large building is challenging.

COMPOSITE CHARACTER PROFILE

Diligent Dimitri: 20 year old Stanford student in political science, tends to focus in quiet places, and enjoys time to himself biking.

POV STATEMENT

He enters the library seeking a quiet spot to finish his political science thesis. Using the Chair Directory at the entrance, he finds the most optimal chair: a 4-legged chair in the quietest area with plenty of natural light. He finds this board helpful and time saving.

At first, I wanted to fix the problem of the uncomfortable squeaky wooden chair at the library. My top solution was to introduce a variety of options to the rooms to maintain comfort.



Figure 1. Prototype sketches
I determined which chairs would most accommodate certain tasks in the library while focusing on posture and releasing energy.



Figure 2. Prototyping models
After determining the chairs I wanted to use, I thought having the physical item would be helpful for users to find a chair they liked.

Materials: Cardboard, toothpicks, paper, tissue, tape, and glue.



Figure 3. Additional Designing
After testing session one, I discovered that users didn't know how to use some chairs by just looking at the prototype. I decided to include visual demonstrations on cards, along with a QR code on each chair showing how it benefits the user.

From here, I thought it would be convenient for people to see what chair options and where they are located at the entrance of the library. I decided to put those cards on a big screen there that includes the noise levels, and brightness of all locations of the chair options to be more individualized.

Struggles, Suggestions, Conclusions

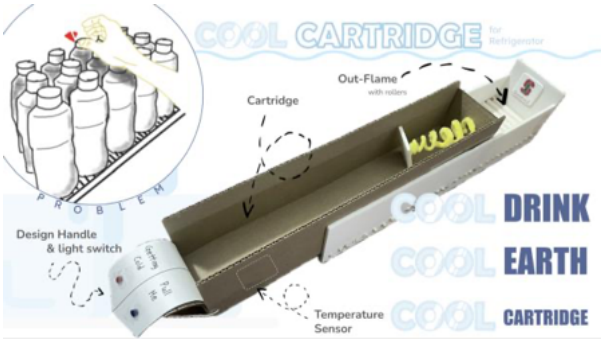
At first I struggled with the concept of design thinking, finding it difficult to locate a problem in the space I chose to observe. In Slack, Mr.Colin recommended observing the details of the people's gestures and their postures, looking at the space while considering the user's interaction with it. The CCP's helped me understand a big part of the design was empathizing, putting myself in a different character. I believe I have since been more eager to change my perspective with my project. I thought of my project in the POVs of a curious younger student, someone with poor posture, etc. Brainstorming and prototyping was fun as not self editing without over thinking was quite liberating. Additionally, a big part of how my design thinking grew had to do with the constant feedback I received through the test sessions. Suggestions such as, "some people's seating preference are also based on the lighting and noise level" or unfamiliarity in some choices helped me look at my project in a different light. It was the "what ifs" that helped me adapt my project and really made me appreciate the social aspect of design thinking. I learned from my classmates that sustainability can be applied in a multitude of ways. Being inspired by other projects in Notion, I decided to focus on sustaining one's comfortability and effort. I only grasped design thinking near the end when I could combine all the different components we talked about in class with the pitch. It made me realize, there are many aspects in the process of design thinking, where early struggles are inevitable and adaptation of the model happens along the way.

CEE 176G/276G SUSTAINABILITY DESIGN THINKING SPEC SHEET

Cool Cartridge

Huwon LEE

Monday July 22, 2024



CONCEPT STATEMENT

Cartridges that make it easier for people to take cooler drinks out of the refrigerator.

MVP FEATURES

- Intuitive handle design
- Function of the cartridge to move smoothly
- Visually display the temperature of the cartridge

MVP+ FEATURES

- Make it easier to know how to use it
- Reduce the time the refrigerator door remains open
- Make it easy to get cooler drink from the back

PROBLEM STATEMENT

A lot of unnecessary behaviors in the store makes the refrigerator door remain open for a long time. And it results in a heavy waste of power and energy.

COMPOSITE CHARACTER PROFILE

- Max : Student who loves physical education. He always wants to drink cold drinks in the refrigerator.
- Sally : Employee of a cafe. One of her tasks is to organize drinks in the refrigerator.
- Jordan : Owner of the cafe. He is such a miser that he worries the unnecessary consumption in store.

POV STATEMENT

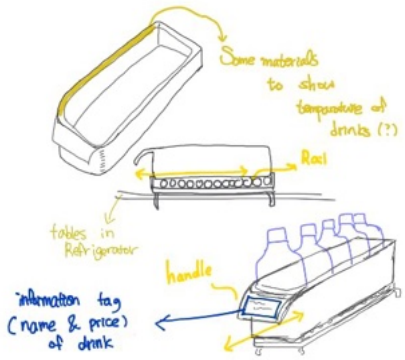
- Max : Whenever he tries to get a cool drink out of the refrigerator, he has the inconvenience of having to put his hand in the refrigerator.
- Sally : There is only one door in the refrigerator, so she always gets in trouble when she puts new drinks in refrigerator.
- Jordan : He worries about the waste of power as customers open the refrigerator for a cool drink for a long time

Proposal Solution Sketch

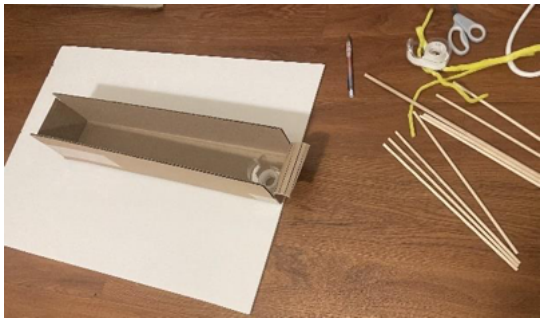
- It consists of a cartridge for organizing drinks and an out-flame that can be fixed in the refrigerator.

- Rollers were placed between the cartridge and the out-flame to allow the cartridge to move more smoothly.

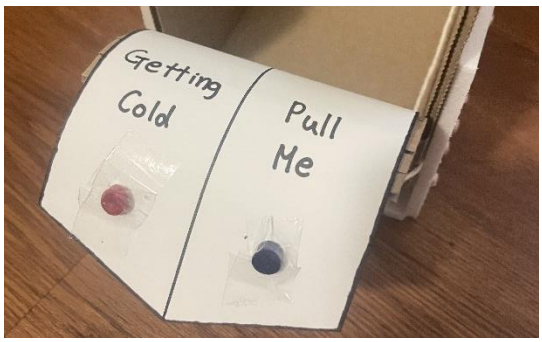
- A spring was attached at the back to automatically align the drinks.

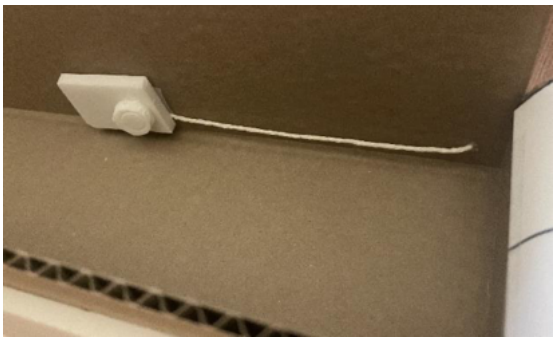


Prototype









1)Making cartridge and out-flame

2)Rollers between out-flame and cartridge

3)Arrow-designed handle with light switch

(Not cool enough : Red switch / Cool enough : Blue switch)

4)Temperature sensor inside of cartridge

DESIGN SPECIFICATIONS

- Size of product (Based on Popular Commercial Refrigerator)

(W: 10cm / L: 60cm / H: 13cm)

- Materials

Cartridge, Out-flame : Plastic

Rollers : Steel

- POWER REQUIREMENTS

Using battery for temperature sensor

Between Design and Invention

I am a sustainable inventor.

Not only does detailed observation help to shape problem-solving ideas, but it also gives me confidence in my ideas.

In line with the theme of 'sustainability', I found that the best sustainable design is using items those are used already.

The whole process of the project could not have been good. I was also very worried that the problem I wanted to solve might be narrow topic. However, I thought that all changes started with small things, and that if small energy savings were collected, it could be a big energy saving.

I am a sustainable designer.

I realized the importance of many designs in our daily lives again. I knew that design could be a 'message' between designers and users. In the first prototype, the shape of the handle was designed in a simple square, and in the feedback class, the classmates gave the opinion that 'I don't know how to use it without explanation.' Therefore, I designed the handle in the shape of an arrow to convey the message 'pull the cartridge', and in the second feedback session, I was evaluated as 'I know how to use it at a glance'.

I also felt that there are many inspirations of design in our daily lives. The idea of using Rollers to move the cartridge smoothly was conceived when looking at the conveyor belt at the supermarket counter. It could be a passage to find answers around us when we can’t find solution.

CEE 176G/276G SUSTAINABILITY DESIGN THINKING SPEC SHEET

The Starbucks BOOSTWHEEL

Matthew Lee
Friday July 22, 2024



CONCEPT STATEMENT

As Starbucks is known for selling sugary beverages and food, the Boostwheel is a better second appeal. This gamified interaction sparks motivation in customers. Customers can help by donating to Starbucks' energy-efficient scheme to reduce electric bills and carbon footprint.

MVP FEATURES (<10 words each)

- Spinning Mechanism
- Motivational Phrases and Tailored-to-Customer Rewards
- The rewards are easily financeable for Starbucks.

MVP+ FEATURES (<10 words each)

- To create an experience that embraces personalized emotions.
- The gamified wheel is a fun and gratifying interaction.
- Final bonus award of water bottle at ten spins.

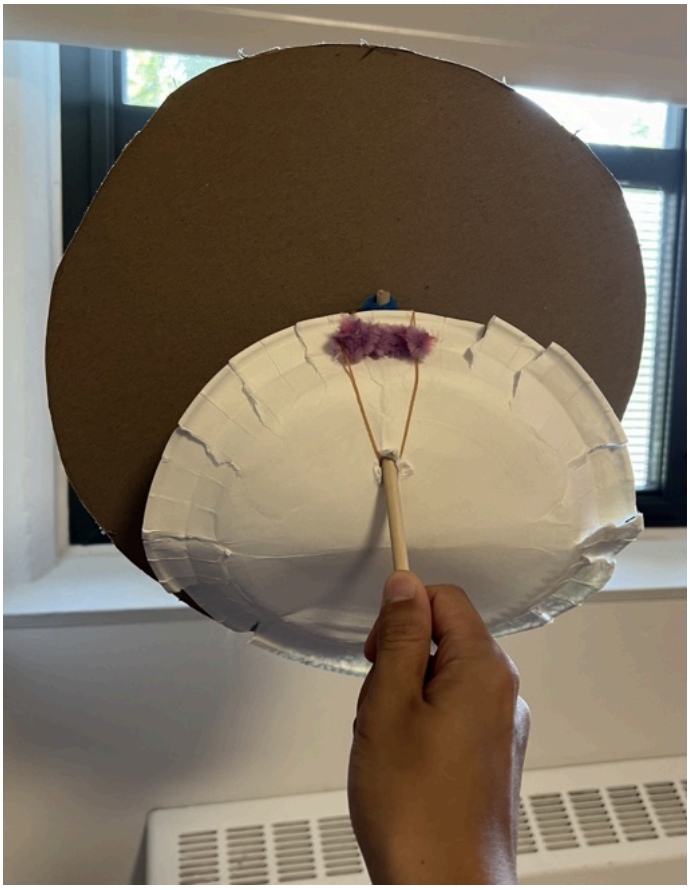
PROBLEM STATEMENT: The lack of customizability for people of different generations is apparent at Starbucks.

COMPOSITE CHARACTER PROFILE: Athlete; Pet owner; Stanford Student.

POV STATEMENT: A student having a bad day treats themself to Starbucks.

Handheld Mechanism

added following the boostwheel being unstable on a table



Chosen Materials: Cardboard, 2 wooden sticks, rubber band, 3 fuzzy metal pipe cleaners, paper plate, 1 popsicle sticks, tape, 4 colored markers, and a sharpie.

Survey + Interview (Surveyed people between ages 15-18; Interviewed people between ages 20-50s):

- A majority of people thought food and mainly drinks are too sugary
- 90% of people thinks healthier food choices is a must for change
- 85% of people thinks that Starbucks is popular in their generations
- Mixed emotions whether Starbucks meets people's daily needs; "Sometimes" is the most popular answer.
- Everyone thinks that Starbucks doesn't add great nutritional value

Community Insight, summarized: It is almost unanimous that Starbucks customers are either unsatisfied with their purchases or think that Starbucks' food choices are not as healthy as they wish it could be.

DESIGN THINKING SELF-REFLECTION

Title - Being mindful about emotional design is a key to unlocking human satisfaction.

Design Project 1 was filled with iterations that were subtle and intuitive. Throughout the process, I used divergent-convergent thinking and an openness to learn how customers think about products and services.

At Starbucks, I empathized with customers on how they feel about the drinks and the imbalance of trash between the “landfill” bin (overwhelmingly full) and the “compost” & “recycle” bins (less than half full). In illustrating the scene, I drew and annotated hypothetical feelings.

From what I gathered first-hand, I began by defining my problem statement. I set specific parameters that might coincide with my ideas to improve the customer experience. I wanted customers to experience a unique coffee shop exchange unlike any other. I discerned that people did not like Starbucks because their food options were unhealthy or felt that the workaholic atmosphere was uneventful. More importantly, not many people felt that going to Starbucks positively contributed to their day.

Soon after, I surveyed and interviewed people in different age groups. I kept questions brief so that I could test the overall opinion of customer profiles. Then, the “Satisfaction Wheel” was born. It later found a cooler name: “The Boost-wheel,” a spin wheel intended to motivate people. In everyday life, the aspect of sustainability relates to everything. Energy, as the biggest contributor to climate change, is what Starbucks needs to act upon. However, greenwashing must be avoided. When design thinking is used effectively, it is a promising and receptive tool that engages perspective and solves human problems.

Word Count: 248 words

CEE 176G/276G SUSTAINABILITY DESIGN THINKING SPEC SHEET

Mail Junkies

Nick Machicao

Monday July 22, 2024



CONCEPT STATEMENT

To combat consumer dissatisfaction, inefficient advertising, and environmental issues, Mail Junkies, a service run by the United States Postal Service, seeks to help people get mail they want. When people register their preferences, mail junkies will help companies construct targeted mailing lists and ensure any unwanted mail is recycled properly.

MVP FEATURES

- Opt-out through USPS daily emails of expected mail
- USPS shares user preference data to get better mailing list
- USPS maintains their practice of shredding and recycling mail

MVP+ FEATURES

- Recipients are emailed the mail they can expect to receive
- Easy way to select the mail on the email and opt-out
- Users register which companies want to receive from

PROBLEM STATEMENT

Contributing to consumer dissatisfaction, paper waste, and environmental degradation, junk mail fails to advertise effectively, leading to unwanted mail and increased waste management costs.

COMPOSITE CHARACTER PROFILE

John Patrick - 40 years old businessman
. Always on business trips and when he is at home he works long hours.
. In free time likes to hang out with his friends on the weekend either golfing, going out to dinner or hiking.

POV STATEMENT

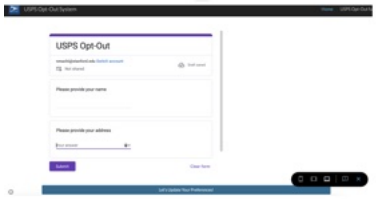
John Patrick, with his busy work schedule, often goes on many long business trips. With his schedule he usually forgets to put holds on his mail being delivered. When he does receive his mail, he gets annoyed by the junk mail because he has limited time and usually just disposes of it unopened. He needs an easier way to deal with junk mail.

Initial Prototype Design

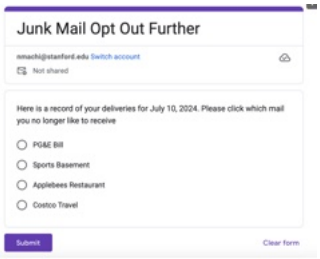


Recipients receive this QR code in their mailbox giving them the option to opt-out of the mail they receive. The QR code takes them to this form below where they are asked to input some information.





By inputting name and home address USPS knows which mail was delivered to you that day. From there the recipient can choose what they would no longer like to receive.



Flaws With This Design After Initial Testing:

- Not super efficient if people always have to put in their info and then select which mail they don't want
- Not clear what the benefit is for USPS by providing this service
- People still deal with the mail that day at their door

Improvement:

- Through discussion with others, I discovered that USPS already sends people what they can expect to receive in an email at around 7 am.
    - Perfect! Just put the opt-out there. If people are already checking that email it is much more efficient to opt out there.
    - Also people won't receive that piece of mail at their door unlike in the other design
    - Just charge $2 a month with this service. Too hard to charge with the QR code. Benefit for people and USPS!

DESIGN THINKING SELF-REFLECTION

Empathy, Practicality, Creativity, and the Power of Design Thinking

I previously considered sustainability solely environmentally focused, but this project showed me that there are a variety of solutions unrelated to the environment that promote sustainability. I initially wanted to make junk mail more sustainable through creating solutions that reduce paper waste and ensure better recycling practices. However, after reflection, I came to question why we call some mail, junk mail. I realized that junk mail embodies consumer dissatisfaction, time consumption, and waste. By positioning my issue in the eyes of the recipient, I saw how valuable time is and discovered that certain solutions can save us time and with that more sustainable livelihoods. The prototyping process showed me that a solution is not plausible if it fails to be economically and socially viable. My first prototype failed both these factors. My prototype did not save people time due to its inefficient user interface and there was no clear economic incentive for USPS, my supplier of the service. In crafting my second prototype, I put these factors at the forefront of my design thinking to create a more sustainable product. Finally, I realize that design thinking requires a collective effort beyond an individual or team setting. Through interviewing people about their experiences with junk mail to hearing prototype feedback from peers I would not have constructed a plausible, strong solution without this help. Acknowledging that my own individual problems are not the lived experience of others is a fundamental realization in design thinking. Certain solutions may benefit me, but if solutions fail to benefit others there is no solution.

CEE 176G/276G SUSTAINABILITY DESIGN THINKING SPEC SHEET

Cardinal Pay

Designer Name: Vishal Mahto
Design Date: Monday July 22, 2024



CONCEPT STATEMENT

Cardinal Pay Revolutionizes digital transactions by offering secure, instant bank transfers via UPI, easy bill payments, and seamless merchant transactions. With robust security and rewards, it reduces cash dependency and provides budgeting tools, making financial management convenient and accessible.

MVP FEATURES

- Real time QR code payments across campus & shopping centers.
- Cashless payment system, autopay and reminders for bills.
- Seamless payments: Mobile recharge, student and utility bills.

MVP+ FEATURES

- Instant credit transfer amongst peers & faculty.
- Chance to win rewards with each transaction: Cash back, coupons,
- Transaction & credit history, budgeting tool.

PROBLEM STATEMENT

Users need a convenient way to manage finances and make instant payments without standing in long queues and facing huge wait periods.

COMPOSITE CHARACTER PROFILE

Eric, a shop owner, struggles with managing cash and tracking his finances. He misses bill payments and finds bank transfers cumbersome.

POV STATEMENT

We offer seamless merchant payments, instant bank transfers, reminders for bill payments, and a budgeting tool, reducing cash dependency.

Core Functionalities

PAYMENTS

- Send Money:
  - To Contacts via Phone Number, UPI ID, or Bank Account
  - Using QR Code
- Receive Money:
  - Generate and share QR Code
  - Request money from contacts

BILL PAYMENTS

- Utility Payments: Integration with major utility providers
- Recharge Services: Mobile and Data Card recharge options
- Student Bill Payments: Easy integration with university accounts

OFFERS AND REWARDS

- Personalized Offers:Based on user transaction history
- Merchant Offers:Discounts and cash back at partnered merchants

SEAMLESS ONBOARDING

- Easy Registration: Simplified sign-up process with minimal steps
- Bank Account Linking: Guide users through linking their bank account and setting up UPI

USER EDUCATION

- Tutorials:In-app tutorials for new users to understand how to use key features
- FAQs:Comprehensive FAQ section for common queries

ADDITIONAL FEATURES

- Split Bills: Allow users to split bills with friends and family easily
- Nearby Merchants Feature to find nearby merchants who accept Cardinal Pay
- Multi-language Support: Support for multiple languages to cater to a diverse user base

DESIGN THINKING SELF-REFLECTION

Journey to Design Project II

As I wrap up my first design project in a study room on the ground floor of Building 200, a lot of thoughts are spiraling across my head. Seeing my peers pitch in their ideas, I realized that given the remaining time left for my pitch, I could've easily added more features that would help people better understand my approach and analyze it (eg: rewards, split bills, multiple languages - human centered.

Throughout the first half of the quarter, everyday when I woke up, I found myself struggling to find the motivation to attend class. However, I forced myself to step out each day and ended up learning or experiencing something new giving me an endless endorphin boost.

Practice does not necessarily make someone perfect. However it does make you better at a task.In the future, I really need to work on practicing my pitches more and not having to look at a reference all the time(saves me from embarrassing comments haha and make use of Office Hours!

CEE 176G/276G SUSTAINABILITY DESIGN THINKING SPEC SHEET

Grow & Glow

Adelya Makhankova
Monday, July 22, 2024



CONCEPT STATEMENT

The Community Vegetable Garden at Oak Creek Residence enhances student well-being by promoting physical activity, mental health, and community bonding.

MVP FEATURES

- Different types of pods with soil and innovative watering system
- Layout based on the apartment number with tags: owner/plant
- All the equipment provided: seed packs, gardening tools

MVP+ FEATURES

- Weekly activities such as Introduction to Gardening and Cooking with Garden Produce
- Friendly competitions for residents
- Vegetable Exchange for Italian Pizza

PROBLEM STATEMENT

Maximizing Sustainable Use of Residential Spaces for Student Well-being

COMPOSITE CHARACTER PROFILE

Jasmyn, a 27-year-old single PhD student in Epidemiology, leads a very active lifestyle. She enjoys listening to podcasts and watching Netflix. She explores new recipes in Native American cuisine.

POV STATEMENT

Jasmyn needs different outdoor activity areas to compliment her active lifestyle and enhance her mental health.

Updated MVP based on the testing comments:



GROWING AND GLOWING TOGETHER

I could not imagine that learning about Design Thinking principles would be such a transformative experience for me.

Initially, I learned how to be more observant and pay attention to details. I had never spent so much time thinking about that lawn (or any other place), and when I was present [!], I started noticing so many details—it was truly magical. This increased awareness was pivotal as it helped me empathize with the residents and understand their diverse needs and preferences.

Interviews and surveys revealed that while residents appreciated the natural beauty of the area, they felt the lack of engaging outdoor spaces. This insight was crucial in shaping our problem statement and brainstorming sessions. I discovered that there are different categories of people with different lifestyles. I was brainstorming about a solution that would resonate with everyone.

During the ideation phase, I explored various concepts, but the idea of a multifunctional community garden stood out. It combined physical activity with sustainable living and community engagement, addressing multiple needs. Prototyping this idea involved sketching a poster and planning activities like gardening competitions and vegetable exchanges.

Testing the concept through feedback from potential users refined my design. My classmates helped us improve some features. This iterative process shows the importance of user-centered design and continuous improvement. It also taught me not to fall in love with a solution as an engineer but to focus on building something that people need and want.

Overall, this project has taught me design thinking skills, especially empathy, creativity, and collaboration in solving complex problems.

CEE 176G/276G SUSTAINABILITY DESIGN THINKING SPEC SHEET

Compact Crush Master

Wui Shuen, Ong
Saturday July 20, 2024

CONCEPT STATEMENT

The trash compressor with a built-in sensor optimizes bin efficiency by compacting waste, reducing disposal runs, and allowing more trash to fit into a single bag. After three compression cycles, the sensor alerts staff when trash is ready for disposal, ensuring timely waste management, preventing overflow, and optimizing bag usage.

MVP FEATURES (<10 words each)

- Able to compress trash
- Strong enough to compress trash to make more space
- Sensor to initiate compression cycle

MVP+ FEATURES (<10 words each)

- Adaptable to most bins
- Sensor has alert system to alert trash should be disposed
- Waterproof and washable without damaging operation

PROBLEM STATEMENT

Overfilled trash bins cause waste overflow, affecting cleanliness, hygiene, and customer experience. They attract pests, emit odors, litter, disrupt staff, and increase labor costs. Addressing this issue is crucial for maintaining a clean environment, customer satisfaction, and efficiency.

COMPOSITE CHARACTER PROFILE

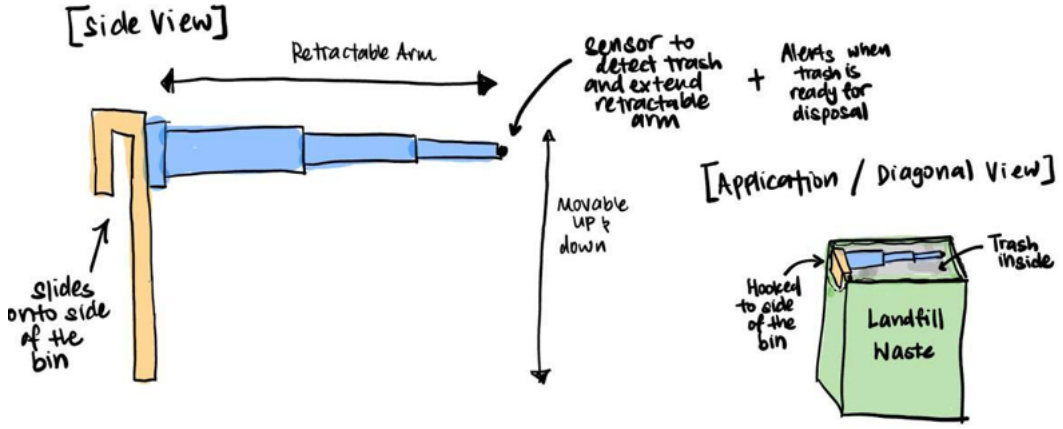
Alexis Thompson, a 17-year-old with a unique blend of talents, excels in basketball and ballet, writing and reading. Standing 5'6", she balances sports training with ballet. She volunteers at the library and coaches a youth basketball team. Alexis dreams of leading her team to a state championship, performing ballet solo, and pursuing a double major in creative writing and dance.

POV STATEMENT

She would care a lot about a clean environment to read or complete her writing. To complete the activities she cares about, she requires a peaceful and quiet environment to relax from her daily activities and hustles. If the bin is full, she Will be disgusted by the sight of the messy trash left on the countertop and this leaves a bad taste as a customer when leaving the shop.

SUPPLEMENTAL INFORMATION PAGE

Design Sketch



Notes on Manufacturing

When manufacturing the trash compressor, several key considerations must be addressed to ensure efficiency, durability, and sustainability. First, selecting robust and lightweight materials, such as high-grade aluminum or reinforced plastics, will provide structural integrity while maintaining ease of use. Integrating an energy-efficient motor will reduce operational costs and environmental impact. The sensor system should be precise and reliable, capable of accurately detecting fill levels and alerting staff promptly. Additionally, the design should prioritize user-friendliness, ensuring that the compressor is easy to operate and maintain. Finally, incorporating modular components will facilitate repairs and upgrades, extending the product's lifespan and enhancing its sustainability. By focusing on these aspects, the manufacturing process can yield a high-quality, eco-friendly trash compressor that meets the demands of modern waste management.

Other CCP

Jamie Lee, a 20-year-old fencing enthusiast, thrives on both physical and mental agility. With a keen interest in reading, Jamie spends hours delving into various genres, finding inspiration and relaxation in books. Known for enjoying long walks, Jamie often uses this time to reflect and unwind, blending physical activity with a love for nature. Balancing the demands of an athletic lifestyle with intellectual pursuits, Jamie embodies a harmonious mix of brains and brawn.

Other POV

Jamie cares about being in a clean environment to read, sit and relax. She would not mind sitting beside the overfilled bins but would provide feedback to the workers and help to clear the overfilled trash into another bin if possible.

DESIGN THINKING SELF-REFLECTION

Reflections on Trash Compression Innovation: Crushing Our Problems Away

Start by Observing

Embarking on this sustainability project has been enriching. In the beginning, the problem-defining phase was particularly personal to me. I spend a lot much time in cafes, finding their ambiance calming and enjoyable. However, I often noticed overfilled trash bins, which detracted from the otherwise pleasant environment. This observation thus inspired me to improve cafe experiences for customers, dawning upon me that problems are everywhere too. One just needs to know where to look.

Diverging to Converge

During ideation, I encountered a flood of creative solutions. Some concepts were wildly ambitious, featuring washing, sorting, and compacting mechanisms, while others were simple, like sweeping trash off countertops. Initially, this divergent thinking seemed useful since it provided various solutions. However, I soon realized that it becomes counterproductive without proper focus. By refocusing on the core problem, I eventually selected the most suitable idea. One must know when to use divergent or convergent thinking.

Personal Lessons and Progress

Aside the designing process, I also picked up several lessons over the weeks. I learned that designing is far from a static process; change is the only constant, requiring continuous iteration and adaptation. Additionally, the elevator pitches taught me that product alone is not everything – advertising and publicity play significant roles in shaping judgment, attracting, and convincing audiences. This experience has underscored the importance of design and the power of persuasive communication. While I have made significant strides, there is still much room for improvement in my pitching, design and problem-solving skills.

CEE 176G/276G SUSTAINABILITY DESIGN THINKING SPEC SHEET

Toned Up

Jolene Ong
Monday July 22, 2024

CONCEPT STATEMENT

This product uses magnets for digital weight. Safety mechanisms detect struggle by adjusting weight, eliminating the need for spotters and ensuring uninterrupted workouts. Paired with durable construction, customisable precise weight intervals and user-friendly interfaces, our design supports sustainability by reducing the need for multiple weights. (Short paragraph <50 words)

MVP FEATURES (<10 words each)

- Magnet technology for digital weight
- Customisable precise weight intervals
- Safety features that detect struggle

MVP+ FEATURES (<10 words each)

- Individualized bluetooth-synced fitness tracking program - past progress, diet, suggested workouts
- Ergonomic shaped weights for greater accessibility
- Digital personal trainer for different workouts - physiotherapy, arthritis-prevention etc.

PROBLEM STATEMENT

First, gyms are resource intensive with the need for different weights and multiple quantities of each set of weights. Second, short supply of each set of weights limits efficiency especially during peak hours with long waiting times. Third, help is needed to re-rack overly heavy weights when people do not re-rack their weights, or in stacking and removing overly heavy plates. Fourth, gyms are manually intensive with the need for human spotters. Notably, there is a lack of digitalisation in gyms. Aligned with sustainability, how can we utilize digitalisation to resolve the above?

COMPOSITE CHARACTER PROFILE

Active Alynna has a business niche by combining pilates and home workouts. She makes YouTube home workouts and specializes in teaching people how to achieve a lean body aligned to Korean beauty standards.

POV STATEMENT

Per her pilates-at-home business, Alynna is looking for convenient equipment and recommendations for new exercises with a tailored tracking program to monitor progress in a do-it-yourself fashion.

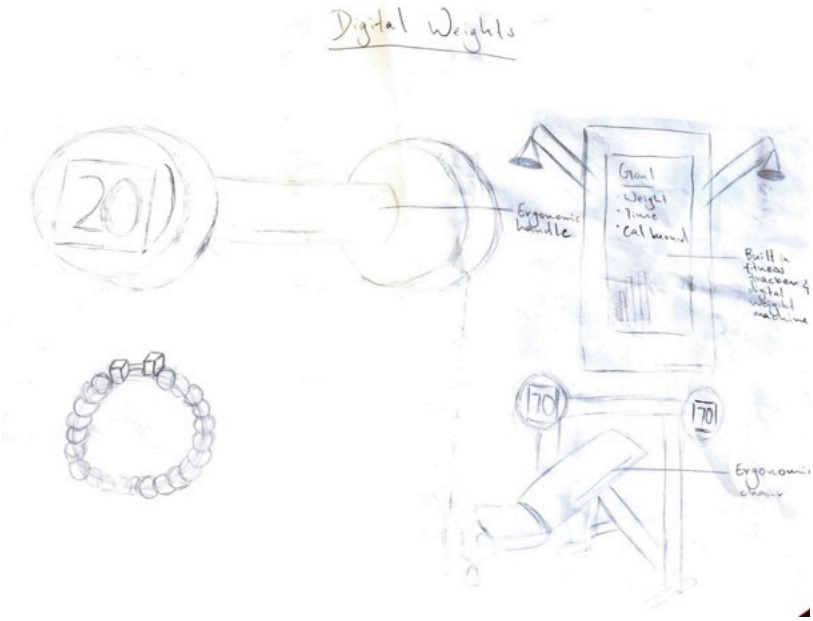
OTHER CHARACTER PROFILES
Mighty Mike is a long-time fitness guru committed to staying in shape per his man-in-finance image while hoping to rizz girls up.

Academic Albert requires group pressure to get things done and recently tried gyming to gain a better physique.

OTHER POV STATEMENTS
As a man-in-finance who is well informed about the latest products on the market, Mike loves to try out new tech products. He believes in keeping up to date, being flashy with his awareness on new products, while spicing up his workouts with new equipment.

As a novice gym goer, Albert is shy and intimidated by the fit men around him. A personalized workout will help kickstart his fitness journey while a tracker helps in keeping him disciplined by monitoring his progress. Albert hopes to be left alone in the gym and minimize interaction with the bulky men around him.

RESULTS / INSIGHTS FROM PROTOTYPING & TESTING
I noticed that my interviewees were concerned about the understandability of the product and how intuitive it would be to use. To mitigate any confusion, it was important for my design to have a clear and straightforward user interface. Instead of having just a minimalist screen, having more buttons (up/down arrows for weights adjustment) was actually more intuitive. Some suggested having an explanatory poster, though there was a general consensus that product exposure in gyms would help with uptake rate and acceptability. My interviewees also emphasized having greater safety features especially with health products like gym equipment and for emergency scenarios where the product fails in adjusting weight even when the user is struggling. I improved the design to include an emergency button.



APPEND A ~250 WORD PERSONAL SELF-REFLECTION/SELF-ASSESSMENT MINI-ESSAY ON THE SUSTAINABILITY PROJECT & YOUR EXPERIENCE WITH DESIGN THINKING. GIVE YOUR MINI-ESSAY A TITLE.

STYLISH MARKETING AND PRODUCT MANAGEMENT

Embarking on this project has been so creatively cathartic.

Design thinking showed me that it was all about problem solving. Yet it was challenging to generate ideas that could improve designs that were already functional, convenient and understood. Design thinking has been the most exciting portion - I especially love the 30 circles ideating exercise that showed me I have much room for improvement in fast creative thinking. Yet, I'm also surprised by my own creativity - I love my product name "Toned Up" and "Yuzu Summer" ice cream!

This project was born out of my love for gymming. I noticed there was a notable lack of digitalisation in gyms and thought of ways to incorporate it. I had reservations then, and still do on the technical feasibility and marketability of it. My product is further limited in appealing only to a narrow class of persons ie, those that already gym. Interviews in class were also difficult where I perceived a lack of general interest especially since most interviewees were not usual gym goers.

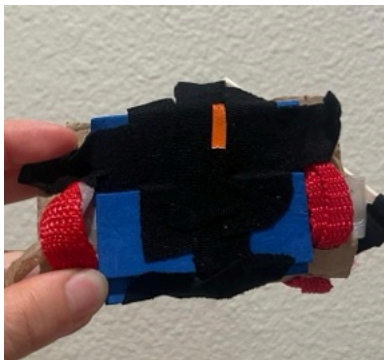
But perhaps it's all about marketing and optometrics. Viewing others' elevator pitches (especially C4SR Cup and Bike Buddy) showed me that marketing alone could generate that "I need this!" element. Their pitches were smooth and sexy, and made the product seem *cool*. I noticed different styles of pitching too - the style with loud and big actions, and the slow-burn sexy style. Both are interesting but I'd like to emulate the second style. I'm glad to have some direction for further growth!

CEE 176G/276G SUSTAINABILITY DESIGN THINKING SPEC SHEET

Chill Air

Martina Paz Menendez
Sunday July 21, 2024





CONCEPT STATEMENT

Work can also be relaxing. A small-scale ergonometric chair for sitting comfortably, anywhere. It enhances good posture and comfort when sitting outside, reducing back pain. Light-weight, transportable and sustainable. Comfort in a backpack, made just for you.

MVP FEATURES

- Improves posture and reduces back pain: ergonometric support.
- Transportable: Light-weight, transforms into a backpack via adjustable straps.
- Hygienic: plastic support and velcro cushions (washer friendly).

MVP+ FEATURES

- Sustainable materials: recycled plastic, fibers and wool.
- Customizable Design: Choose unique cushions and plastic build.
- Custom Gadgets: Add-ons like foldable table for phone support.

PROBLEM STATEMENT

People who work outside tend to crouch, straining the back and producing pain which limits their wellbeing and work potential.

COMPOSITE CHARACTER PROFILE

Bart is a private banker who works in a 9-5 job sitting on a chair. He likes to take his calls and answer his emails outside in the park. When he does it, his neck and back hurt because he never finds the perfect chair. His work is the most important aspect of his life and he is constantly stressed about it.

POV STATEMENT

Bart needs to be hiper-focused on his team and clients because he puts his worth on his performance at work. He loves working outside but is hindered by back pains produced by not sitting correctly. He would love to have a moment to be able to relax while working outside.

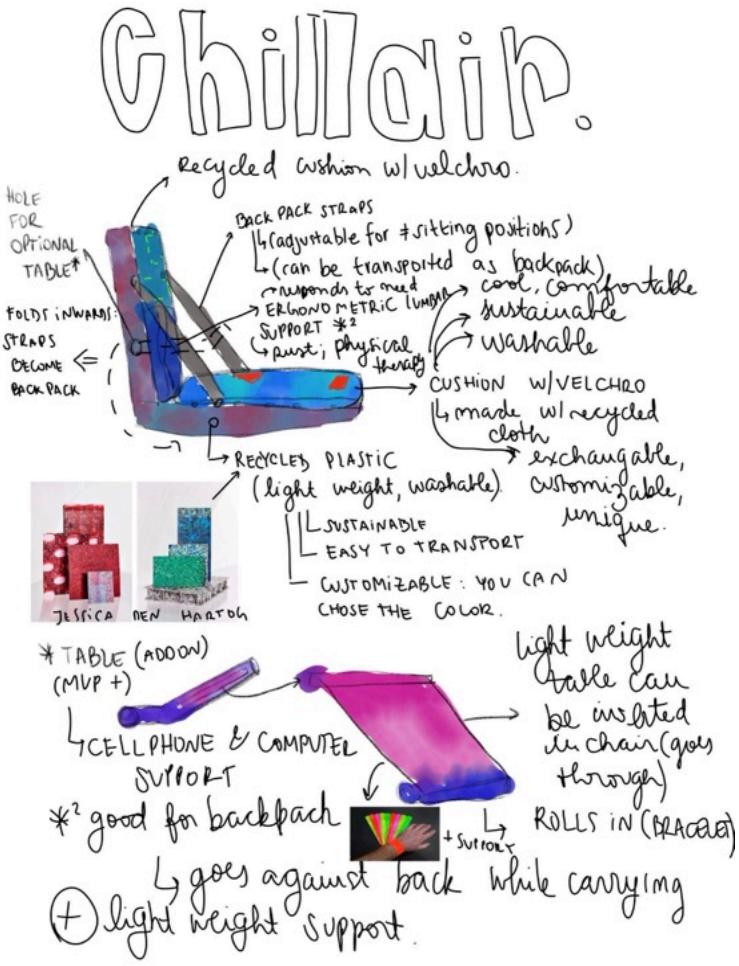


In wandering Rodin's Garden, I discovered how many people work outside. No one was sitting correctly. When I asked them if their back hurt, they said yes, and then immediately sat straight.

I called my physical therapist and asked her what was the main cause for back pain. She said it was because of sitting incorrectly while using phones or computers. Survey results confirmed these insights: had back-pain. Most people worked outside. I now had to develop a way in which working outside became a comfortable possibility.



The need for mind-body balance made me think of a comfortable transportable chair which made it possible to combine work and leisure, without polarizing any of the two options.



This chair had to pivot on the concept of relaxation and outdoors. The name was clear: ***Chill-air.***

Iterations made the chair more transportable and sustainable. I found it was better to use backpack straps as the chairs holder instead of wooden rods. I also decided to use recycled plastic and fabric to make the chair, which made it more sustainable and customizable. Each recycled chair would necessarily be different, therefore the customer can choose between the options and have their unique chillair. Iterations added practicality, sustainability and customization to the chillair.

DESIGN THINKING SELF-REFLECTION

I Observe, Therefore I Am

My design thinking process helped me change my perspective. In designing my chair, I shifted from a self-centered to a human-centered creativity process.

The most valuable indication of this assignment was changing existing human behavior. I had to observe reality before proposing a solution. By identifying and analyzing specific behaviors, I began ideating, anchoring my creation in others' needs. This experience of mindfulness and outward focus helped me understand behaviors, which are crucial to help people improve. Solutions, like the chair, must be human centered.

Observing that back pain is common (and often caused by crouching while working outside) was key to developing Chillair. This observation allowed me to empathize and create points of view. The process helped me think beyond my own experience and pivot on the problem before thinking about a solution.

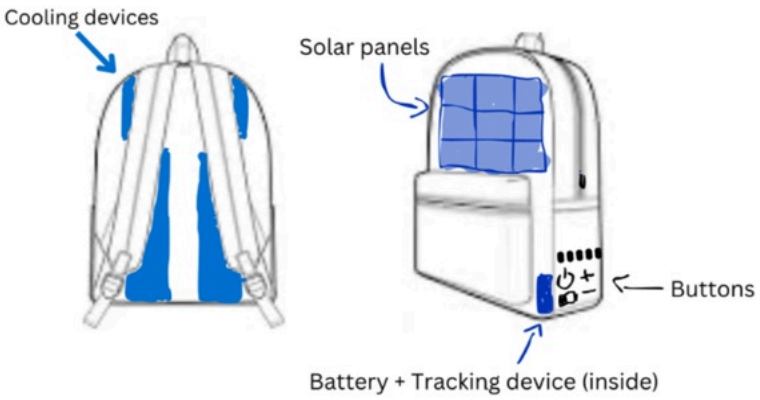
I also enjoyed iterating. I learned the importance of flexibility and not falling in love with specific solutions. I enjoyed reinventing and improving. The advice from my peers on my prototypes led to a significantly improved chair. I had to change my perspective and get out of my own head in order to listen and create solutions.

In conclusion, my experience with this project and design thinking helped shift my perspective on solutions. Empathy, observation and active listening allowed me to reinvent my creativity by focusing on real people's behaviors. Iteration made me understand the importance of flexibility in creation. Design thinking approach improved my chair designs and enhanced my understanding of effective solution building.

CEE 176G/276G SUSTAINABILITY DESIGN THINKING SPEC SHEET

The Thermopack

Alexander Pezzei
Thursday July 18, 2024



CONCEPT STATEMENT

The Thermopack is just like a normal backpack, but it cools down your back. It is powered by solar panels. It has a battery which can store energy and charge your devices, and a tracking device for the case you lose your backpack.

MVP FEATURES

- Cooling
- Durable material
- Solar panels

MVP+ FEATURES

- Tracking device
- Buttons that are easy to use
- Battery to charge phone

PROBLEM STATEMENT

People walking around with backpacks during a hot day often sweat on their backs. People's devices also frequently run out of power when they are not at home, and they sometimes lose their backpack or it gets stolen.

COMPOSITE CHARACTER PROFILE

Active Andrew is 17 years old and is from Texas. In his free time, he likes to do weightlifting and running. He also likes to go camping.

POV STATEMENT

Andrew would like the cooling mechanism since it is very hot in Texas. He would also like to have a small battery inside the backpack, with which he could charge his devices when he goes camping.

How I came up with the product
During the observation assignment, I was sitting in Starbucks, because I thought that that would be a good place to look for problems. I noticed some problems with Starbucks, for example their order system, but I didn't really know how I would turn that into a product. This assignment was during the heatwave, and it was very hot outside. After 20 minutes of observation, a middle-aged man came in with a backpack on his back. When he took it off, you could see that he had a lot of sweat underneath. That's when I came up with my product idea.

Prototyping
In my first prototype, I included all kinds of features. The backpack had solar panels, cooling plates which could also heat your back, a battery, a tracking device, a lock, cut-resistant material, and an alarm if your backpack was stolen. Pretty soon I realized that more features are not always better, so I tried to cut out some of them. I eliminated the alarm and the cut-resistant material, because I thought that it was unnecessary. I kept the other features but knew that I would eventually cut out some of them, and I thought that the survey, the interviews, and testing would be the perfect opportunity to decide on which features to cut out.

Survey
The survey gave me some insights, but it mostly just confirmed my opinions about what features people would like to have. The results were the following: Most people's devices run out of power when they are not at home, which means that the battery would help most people. Furthermore, every surveyed person sweats more on the back when wearing a backpack compared to other body parts. Therefore, the cooling system is needed by people. Although most of the people said that nobody ever stole anything out of their backpack or stole their backpack, I still wanted to include some basic safety features since the backpack is probably going to be expensive.

Testing
During testing, I found out that most people would be willing to pay for the cooling system, since it would help them a lot in the summer. However, there was some resistance regarding the heating feature, since most people said that it wouldn't work through a jacket. That's why I decided to remove that feature. People also recommended that I should include different stages for the cooling (low, medium, high, …), so I included that since it was not a major change. When asking about the security features, most people like the tracking device, but they thought that the lock would be very uncomfortable and would also disturb the design of the backpack. I agreed with that, and removed the lock too.

My first encounter with design thinking

Before I came to Stanford, I had never even heard of the term “Design Thinking”. I took this class because, after reading the syllabus, the class sounded very interesting to me. Now that I finished my first project, I must say that it was the right choice to enroll in this class. In the beginning, it was a bit difficult for me to understand what design thinking really was, but as soon as I understood that the project was not that difficult. Design project number one taught me a lot of new stuff that will probably be helpful for my future career path, from creating a prototype to conducting surveys and interviews. My favorite part of the project was the observation exercise in the beginning. As an entrepreneur, your goal is to solve people’s problems, and sitting down for thirty minutes and just focusing on the problems around me showed me how many unnoticed problems people really have. I think doing projects like these teach you a lot more than just learning the theory behind it. I believe that I did well on project number one. What I could probably have done better would be the physical prototype. I tried to use my backpack and attach the different components with duct tape, but it didn’t really work out as good as I wanted it to be.
Concluding, design project one taught me a lot about the whole process of creating a product, and I am looking forward to design project two and three.

CEE 176G/276G SUSTAINABILITY DESIGN THINKING SPEC SHEET

RepAIrable

Milo Pitera

Monday July 22, 2024

RepAIrable

Find Fixes Faster

CONCEPT STATEMENT

RepAIrable is a digital tool designed to make bike repair easier. It provides an AI tool to identify issues with your bike from just a picture and then provides you with instructions on how to fix them. It also can connect you to professional bike mechanics for more personal guidance.

MVP FEATURES

- Professional Repair Guides
- AI powered Diagnostic Tool
- Human Hotline

MVP+ FEATURES

- Associated App
- Videocall Hotline With Professional Mechanic
- Network of Trusted Local Bike Shops

PROBLEM STATEMENT

Many students lack the knowledge of how to properly repair and maintain bicycles

COMPOSITE CHARACTER PROFILE

Dr. J is a professor at Stanford, focused on the environmental impacts of consumerism. He has a shop in his garage where he repairs broken machines. He drives an EV to campus since it's too far to bike

POV STATEMENT

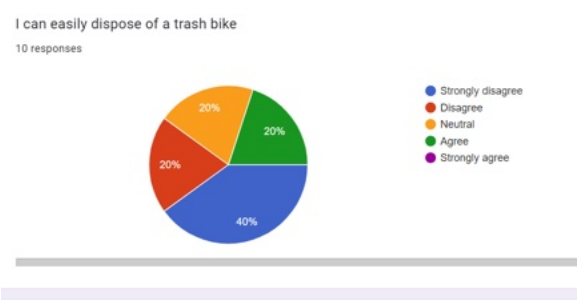
It's a shame that students these days don't know how to fix a bike. I know there are plenty of places they could find the tools, I just wish they could get the opportunity to learn to use them. I personally would be happy to offer my shop and expertice.

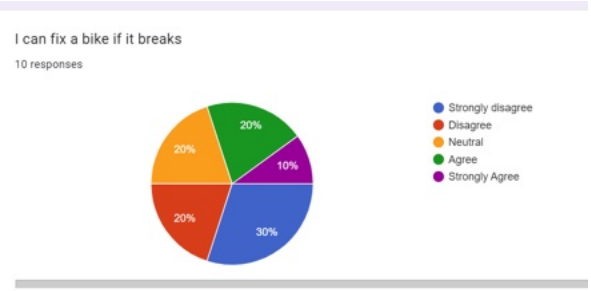
Early prototypes for homemade bike tools illustrated the limitations of household materials:



Note the crack propagating down the length of the wrench

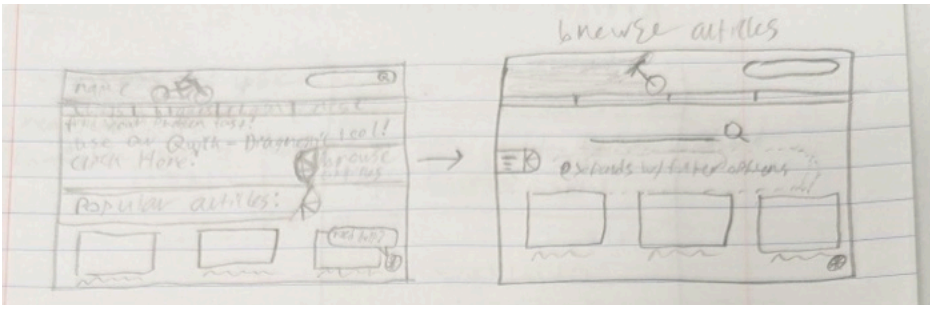
Survey reports showed that a majority of surveyees were not comfortable fixing a bike





Problem considerations were thusly reevaluated towards improving individuals' bike repair capacity

Some layout sketches of RepAIrable Webpage:



Testing of the webpage revealed a greater interest in the AI diagnostic feature, leading to the product identity being restructured around its inclusion

DESIGN THINKING SELF-REFLECTION

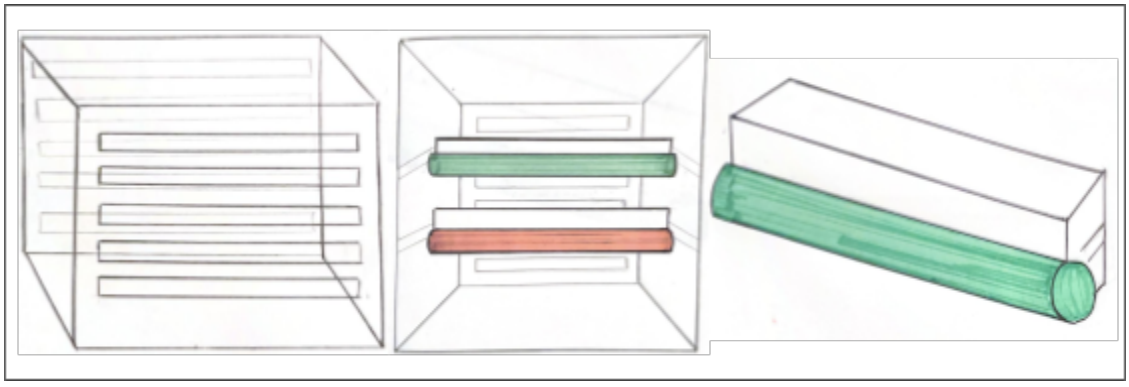
Coming into this project, my design thinking really focused on the mechanical problem-solving aspect. With my work with my robotics team, we look for practical, implementable solutions, really drilling into the technical side of how a given design would work. This really informed my early prototyping. I noticed, that while my peers were putting together cardboard mockups and simple sketches, I had been trying to get my idea to physically work. I was too focused on the exact mechanics. I had been so focused that I had even dismissed some of my ideas because I deemed them to be outside of my skillset or ability to implement them. I had too heavily attached myself to the idea of the engineer, the technical lead, and in doing so, I had lost some of the imaginative vision of design thinking. This is partially what prompted the rapid change in my project direction.

The other aspect of my switch in direction was a similar engineering-related oversight. My personal cohort is all very mechanical, and a lot of my friends would be incredibly comfortable building a tool themselves with scrap wood they had lying around. This led to an oversight that was revealed in the testing of the homemade tools, which is that if someone doesn't have the mechanical tools necessary to fix a bike, they probably don't have the tools necessary to make their own tools. I was working from the perspective of someone who had spare wood and a saw easily available, so I had overlooked the potential that others might not have such easy access to those resources. The realization of this fact was one of the major driving factors of the project pivot, as I wanted to design a product to help improve the repairability of bikes for the everyday person.

CEE 176G/276G SUSTAINABILITY DESIGN THINKING SPEC SHEET

The E.C

Laura Santos
Friday July 19, 2024



CONCEPT STATEMENT
Made of 100% recycled materials, the E.C. (Endothermic Cooler) features a sleek, compact design that elevates room aesthetics. Long-lasting and recyclable endothermic cartridges absorb heat and lower room temperature to promote sustainable, eco-friendly practices and comfort.

MVP FEATURES (<10 words each)
- Cube with rounded edges
- Air circulation slots on the front and back of compartment
- Slide in-and-out endothermic cartridges

MVP+ FEATURES (<10 words each)
- Nonelectric
- Low maintenance
- Color-changing cartridges to display chemical levels

PROBLEM STATEMENT
High temperatures in classrooms and dormitories cause Stanford students to be stressed and uncomfortable.

COMPOSITE CHARACTER PROFILE
Sweaty Scott: a Stanford professor who carries an umbrella to shield himself from the sun and wears a full wool suit daily.

POV STATEMENT
Scott needs a cool classroom because his suit is made of wool, which makes him sweat a lot and causes his wife to get upset over the high dry cleaning bill.

Design Specifications

- Cube
- 9x9x9 inches
- Rounded corners for a more organic shape
- The front side flaps open and closed with the press of a button

Materials

- Recycled plastics
- Glass
- $MgCO_3$ (endothermic chemical)

Power Requirements

- Endothermic cartridges
    - Easily replaceable
    - Change colors, from green to red once spent
    - Recyclable
    - Activated with a shake to release chemicals
    - Withstand up to three months of continuous use

Other Features

- Customizable colors and finishes
- Silent
- Compact
- Portable
- Lightweight
- Mountable & stackable

DESIGN THINKING SELF-REFLECTION

A Four-Week Evolution

In the first week of being given this project, I thought I had it all figured out. The vision appeared to me after I left class sweating through my t-shirt and with hair sticking to my face, all I could think about was how much I missed AC, and upon further inspection, it appeared the other inhabitants of the Main Quad did too because all of their windows were blacked out with cardboard to try and escape the sun. Thus, the problem of heat in Standford classrooms was born, and I immediately jumped to conclusions with a solution.

Initially, I was obsessed with the thought of creating windows that could take in heat and light energy and convert it into a usable form of electricity to power air conditioning. ‘Electricity Producing Windows’ suck around for a long time, until the ‘post-it method’, and I brought in the idea of endothermic materials. At first, the concept was to create endothermic articles that people could wear and would suck up body heat. Then, referring back to my interview from that weekend, I recalled that most students preferred a general cooling system as opposed to a personal one. With that restriction put into place, the design of a tower that held endothermic cartridges materialized. The E.C. beat out the rest of my solutions and became the one I wanted to pursue, had it not been for the ‘post-it method’ I would have remained a victim of tunnel vision.

CEE 176G/276G SUSTAINABILITY DESIGN THINKING SPEC SHEET

Hell-Mate

Ishwar Sarda
Monday July 22, 2024



CONCEPT STATEMENT

A bicycle helmet that transforms your helmet-wearing and carrying experience. Avoid the hassle of carrying it around in your hand or bag, with your very own memory foam enabled head massager. Bike around in style, with a dedicated long hair slot. Say hell yeah! Here's Hell- Mate.

MVP FEATURES

- Breathable material, less bulky
- Less restrictive to natural head & hair movements
- Eliminates helmet-carrying in hands/bag enroute destination

MVP+ FEATURES

- Cable lock built within helmet frame, reduces cost
- Dri-fit strips are made of recycled polyester hence eco-friendly
- Comfort encourages safe behaviour and thereby changes habits

PROBLEM STATEMENT

Bicycle helmet comfort and storage

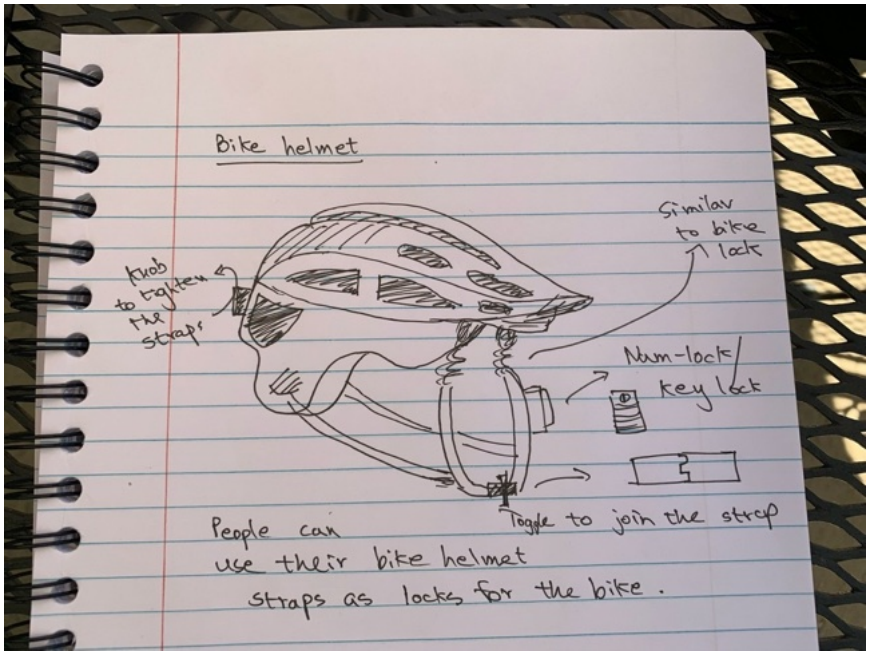
COMPOSITE CHARACTER PROFILE

Paul is a 19-year-old college student who values practicality and simplicity. He bikes to campus for efficiency and avoids the hassle of parking or public transportation. Prioritizing safety, he always wears a helmet but finds traditional designs bulky and uncomfortable. As a minimalist, Paul dislikes carrying unnecessary items and struggles with managing his helmet between classes. He seeks streamlined, efficient solutions that fit his minimalist lifestyle.

POV STATEMENT

Paul needs a breathable bicycle helmet which he does not have to carry everywhere he stops on his way to work because of his practical and minimalist behaviour and his demanding on-the-go schedule.

Initial prototype:



Notes & takeaways from interviewing, prototyping, iterating and testing:

- Users were more keen on experiencing the “feel” of the helmet more than exploring different functionalities at first.
- Most of them didn’t care about there being too many straps or no straps. Although when given a choice they would prefer to use the knob at the back to tighten/loosen the fit.
- The padding on existing helmets is enough, but the material can be improved and dri-fit material can be used to quickly absorb and dry off sweat.
- The long hair problem is genuine. They appreciated acknowledgment of the problem. They liked the idea of a more “open” backward part of the helmet and were VERY open to the idea of a flap to accommodate pony tails and buns
- Mixed reactions to the location to the lock and the type. Some didn’t really care of the type of the lock. They liked the idea of an auto-retractable cable as a lock integrated with the tightening knob. Although, some preferred the lock being integrated in the chassis of the helmet itself.

MINI-ESSAY

Heavenly heart-to-hearts through Hell-Mate

I will be honest. I did not expect a design thinking class to have such a profound impact on the way I observe things and people around me. Is it the Stanford magic? Or is it the different perspectives design thinking has opened for me? I don't know. But looking back at my first design project ever I feel rejuvenated.

To be more specific, I think the "empathy" aspect of the design thinking process was something I could really resonate with. I came to this class to step out of my comfort zone, as an introvert and having this self-made perception of myself that I'm not that creative. While observing the people at Tresidder for half an hour, thinking about every trivial action so deeply, helped me break some barriers.

Another instance of this "Eureka I can actually do this" moment came when I was designing a survey to validate my design for Hell-Mate. I've probably filled in more Google Forms in my life than days I have been an undergraduate student. But when I recollected my experience in the class of observing, making CCPs and PoVs; I began to ask questions without pre-emptively judging my idea in a negative sense.

I always had this mental block of being perfect in everything from the first go. But the whole process of iterating and testing again and iterating once more enabled me to be more open, inspired and ready to do more.

This project helped me shed some inhibitions about the way I thought I think and work in a creative domain. Can't wait for more!

CEE 176G/276G SUSTAINABILITY
DESIGN THINKING SPEC SHEET

SPACE MAPS

Tom Shahar
Sunday July 22, 2024



CONCEPT STATEMENT
Space Maps is a navigator, like Google Maps, Apple Maps, and Waze, that is designed to navigate users directly to an open parking space in addition to other navigator features.

MVP FEATURES
- Search an address to be navigated to that location.
- Select between different transportation options.
- Navigate to the nearest open parking spot if car chosen.

MVP+ FEATURES
- Switch between open parking spaces.
- Improved map features (recommendations, details, etc)

PROBLEM STATEMENT
Public spaces, such as shopping centers and busy downtown streets, are caught between designs for pedestrians and designs for cars. The difficulty of finding parking causes increased traffic, which hampers experiences for drivers and pedestrians alike.

COMPOSITE CHARACTER PROFILE
Alado | 40 yrs old | Male | Electrician
Visits University avenue twice a week with his daughter. Alado very strongly preferred when the street was closed to cars, as it created a more pleasant, enjoyable, and safe environment.

POV STATEMENT
How can we reduce vehicle traffic caused by parking difficulties in public spaces, both so that Alado's experience with his daughter is improved, and so that these public spaces are more socially, economically, and environmentally sustainable.

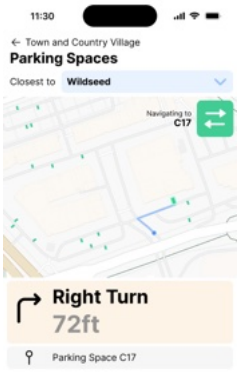
Sustainability Statement
This product's impacts on sustainability are multifaceted. Adoption of the app by a single user will decrease that users total time spent in the car, by allowing them to drive directly to a parking spot instead of circling looking for parking.

Adoption by some statistically significant proportion of the population will eventually decrease traffic by removing random circling and people blocking traffic to unload pedestrians. This will have the double effects of reducing total vehicle hours and improving the pedestrian experience around busy areas.

From a sustainability perspective, each of these factors will improve environmental sustainability, both by encouraging people to walk more to places with improved pedestrian experiences, and by reducing total emissions due to reduced vehicle hours. It will also improve economic sustainability, by saving time and improving all kinds of experiences in shopping districts.

Design Thinking Process
After my initial ideating following the observation process, the idea for the product was specific to town and country village and was not a navigator, just a map of available parking spaces. After creating POVs, CCPs, interviewing and defining, it became clear that one of the priorities as I moved forward ideating was to make the product adoptable. That's why I moved more towards creating an extension of google maps or a navigator with the same functionality, so it wouldn't be annoying to use on top of other stuff and could be more seamlessly integrated into users routines. Testing the initial prototype and the newer prototype confirmed this.

Initial Product Design (Before Round 1 of Testing)



After testing this initial design, it became clear that while useful, I needed to increase the adoptability of the product. Getting to a parking space in town and country would still require first opening a navigator, and then opening this app, in the driver's seat, when you got to the parking lot. That is why my second prototype, in addition to general improvements and a number of new features, is built to demonstrate more general navigation functionality in addition to the same parking space functionality.

DESIGN THINKING SELF-REFLECTION

My experience with reconnecting with the importance of empathizing in design thinking

I have worked with design thinking techniques since I was in 9th grade. I attended a high school whose curriculum was designed in collaboration with and based on principles from the Stanford D.school. Due to the fast paced nature of many of the design classes I have taken at Stanford, I have found that my design projects often skip over important steps in the design process. Empathizing (specifically interviewing and immersing), and defining are often rushed through or skipped over altogether in favor of more ideating, prototyping, and testing. What interviews I have done in these classes almost feel like token efforts. In this project, I feel like I have reconnected with the specific processes that go into empathizing, and I appreciate that we had the opportunity to do multiple rounds of both surveys and interviews. I also appreciate that I got to do these processes with plenty of time left before needing to solidify my idea, so that my final idea ended up becoming far more human-centered than had I not been able to iterate through the needfinding process. I also appreciated how the prototyping and testing phases additionally incorporated empathizing. One of the things I have learned about design thinking, and design in general, is that this process is inherently cyclical. While some parts of it need to be done earlier, we never move beyond the need for continuing to consider our empathizing and defining, and these aspects of our project can change as we learn new information, and as we continue ideating and iterating. I was able to return to some of the people I interviewed to get them to test my prototype, and this helped immensely in shaping the final version of the project. I think it is important to remember that no matter where in a project you are, whether you are just beginning or as far through as building out a backend database and working on the business model, returning to the empathizing process is always necessary to make sure the final product remains focused on the user and what is best for them.

CEE 176G/276G SUSTAINABILITY DESIGN THINKING SPEC SHEET

Stanford SideQuest Sound-Pin

Vivian Snitker

Design Date: Friday July 19, 2024





CONCEPT STATEMENT

Small audio buttons scattered around campus that tell the audience about some history of the location, fun facts and hints for where the next button is, also gives a letter that is used to unscramble a word to win a free ice cream.

MVP FEATURES

- Small hidden audio buttons.
- Discusses location, fascinating facts & hints for next location.
- When completed you can win an ice cream.

MVP+ FEATURES

- Participants receive letters they use to unscramble secret words.
- Made with recycled materials
- Made with colors that do not distract from the nature around.

PROBLEM STATEMENT

People who walk around campus are inconvenienced by children that are bored and disrupt walking paths, creating traffic.

COMPOSITE CHARACTER PROFILE

Mischievous Mike, the Italian 10 year old who has two little sisters and loves to play sports. He likes traveling and science.

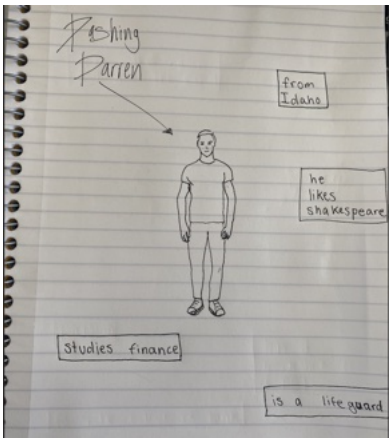
POV STATEMENT

I love Stanford's campus. It's fun to walk around, jump into fountains when it's hot, and be at camp. We learn cool things about the trees and animals here. Sometimes, I get bored waiting for other kids or when my parents sit at the cafe, and I get into trouble. Last week, I climbed a tree, and my parents got mad, but it was the most fun I've had here!

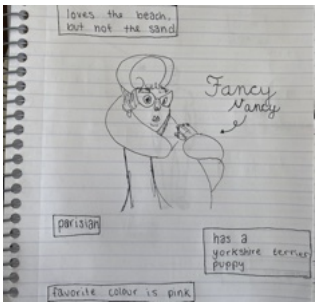
ADDITIONAL INFORMATION
PROTOTYPE ----------->







CCP´s





QUESTIONS:
Would you go to the next spot? What would you want to hear about? How could one make this activity more fun? How visible should this be hidden?

TESTING:
Main things I realized people wanted: History behind the locations and traditions, culture, architectural place references, same designs. not super hard to find. play with other kids, bigger buttons, light reflector that shimmers for kids. make sure the button does not distract from the nature on campus or the pretty architecture.

DESIGN SPECS: The diameter of the button is 1.8 inches and the length is 1.2 inches. The audio is battery operated and the buttons are made from recycled metals & the button part is a cushy plush material with a spring. The buttons are waterproof.

EXAMPLE FOR WHAT A PIN WOULD SAY: “Congratulations you have found one of our stanford sidequest sound-pins at spot 412 Hoover tower! Did you know that the tower was hit by lightning once in December 1970, destroying the 300-pound concrete top and sending pieces flying up to 50 feet in the air. Embark on this great adventure with us to find the next sound-pin. Your letter is F, unscramble to win a free ice cream and hear more interesting facts about secret spots on campus. Here is your next hint: I am hiding near the water, on something big and red I see a GREEN building. For more information visit StanfordSidequests.edu”

WHAT I HAVE LEARNT FROM DESIGN THINKING AND THIS FIRST PROJECT

When I first started the design project I was set on an idea to accommodate the fountain areas better for kids as they were causing most chaos on campus this summer. Although after considering the social sustainability of this project through the other CCP characters, Stanford is not made for children and is not supposed to be catered to their needs. Here I empathize with the other characters I made and if we turned campus into a waterpark (which would be fun) it would not suit the students going here or older people like parents, grandparents and teachers. This led me to change my perspective and make a solution that would cater to the needs of all people on campus i.e. people's boredom. I found that scavenger hunts and regular campus tours are so boring and I wanted to create a way to make them more fun and intellectually difficult, not just walking from place to place. And to do so I needed for there to be a prize, which I think I personally nailed, who doesn't want a free icecream on a hot summer day? By making small buttons from recycled metals and using natural colors like green, the activity wouldn’t disrupt the environment, addressing the sustainability aspect of the project.I think that overall my project was good and pretty original, and this project DEFINITELY altered my perspective on design thinking and will help me in the future with the next projects I will be working on.

CEE 176G/276G SUSTAINABILITY DESIGN THINKING SPEC SHEET

Build-n-Order!!!!!!!!

Adam Tang
Sunday July 21, 2024



CONCEPT STATEMENT

The Build-n-Order is a lightning-fast, rotating kiosk accessible from everywhere, which completely eliminates the line. Without having to wait for others, customers can collect the tiles they want, representing food items, and slot them into plates like a fun board game. Drop off and payment is also instant and hassle-free.

MVP FEATURES (<10 words each)

- Rotating kiosk
- Physical tiles + menu template
- Instant drop-off of order

MVP+ FEATURES (<10 words each)

- Fun assembly of order/plate
- Line-eliminating central rotating kiosk
- Instant payment + food delivery

PROBLEM STATEMENT

Ordering at Panda Express can often be slow and inefficient due to long, twisting lines (causing them tardiness) and the loud music making communication with food workers difficult, bringing down the customers' overall ordering experience.

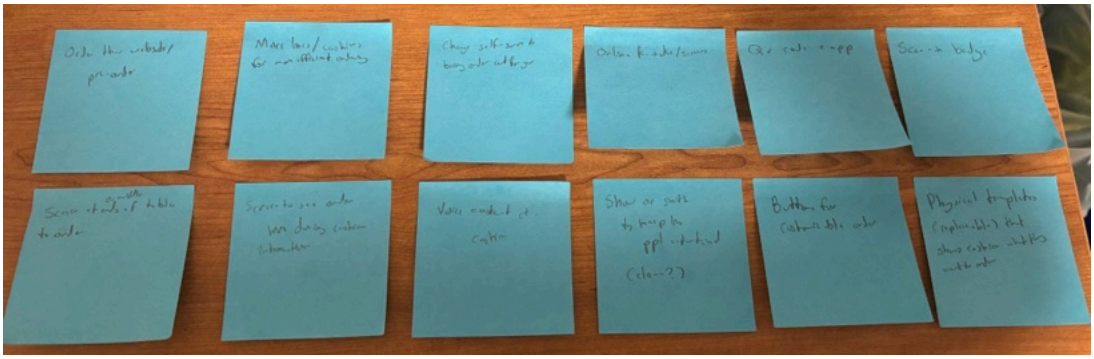
COMPOSITE CHARACTER PROFILE (COMBINED)

Routinely Rachel, from Romania, is a very routine-oriented person. Being on schedule is always in priority otherwise she will fall behind, hampering all future events she plans on going to. She also gets bored easily during times of inactivity.

POV STATEMENT

Routinely Rachel finds the long lines and hard communication with staff very frustrating and time-consuming, causing chaos amongst her future plans; she even had to reschedule her reunion with an old friend. Because of this constant unknown time commitment required whenever she goes to Panda Express, she often does not return and resorts to other restaurants which are more timely but also expensive. Her wallet is running thin, and her funds are unable to sustain her timely food requirements.

Note: My first idea was a qr code/app integration that did instant delivery to tables, but that had several problems with accessibility. Sticky note exercise helped me choose a better (and crazier) solution:



Craziest idea documented was physical ordering using tiles, I ended up choosing it.

Fig. 1: First Prototype





Components: One (of multiple racks) used for storing tiles, physical plate w entree and side labels
Observed from testing + comments:

- People put sides into entree slots and entrees into side slots
    - **Learned: Labels may be too small, need more clear differentiation**
- Assembly process very positively accepted
- People had to take all the tiles out to see everything
    - **Learned: Need a method to display everything at once**
- Wall-mounted area might still cause crowding/lines

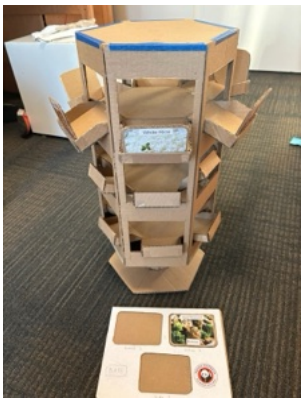


Fig 2: Second prototype
Components: Rotating kiosk design
Benefits: Displays all items at once, centralized location means no crowding in a single area (no line)
Comments from testing:

- Still can't see everything at once
- **Learned: Need a large menu on top to display all items, need to improve rotating axis**

DESIGN THINKING SELF-REFLECTION

Reflections on Building the Build-n-Order

Designing this product was a series of ups and downs. I first went into the problem intending to create a qr-code + app design that allowed for instant delivery to tables, but after discussing my idea with several classmates, I realized it was being exclusive to people with access to phones. For several days, I felt what it meant to be stuck, to have a solution that would likely not work. However, I'm really glad this occurred early in my brainstorming process, as it allowed me to quickly develop a better idea without wasting time, which was in tune with the "fail fast" principle we learned in class.

The sticky note exercise we did was particularly useful, as it allowed me to transition my solution into a different direction early on. Interestingly, I ended up choosing my craziest idea---physical tiles---out of 11 other sticky notes. From this I learned the value of documenting every single idea no matter how foolish they may seem, as they could have unseen potential to evolve into a completely new, innovative idea.

I found it especially important to also maintain a balance between sticking to my own ideas and listening to the feedback of others, as focusing too much on either would either cause me to make no progress at all or waste effort by going the wrong direction. For example, upgrading to the rotating kiosk was a significant change that still allowed me to stick to the problem of long lines, while respecting people's criticism of not seeing all the tiles at once.

CEE 176G/276G SUSTAINABILITY DESIGN THINKING SPEC SHEET

Dying to Dine

Albert Tan

Monday July 22, 2024



CONCEPT STATEMENT

- **Dying to Dine** redefines Casper's swipe-in experience. Unlike the current simple podium, our design flawlessly considers immersion, efficiency, and sustainability through a thoughtful mobility logic and smart new tech, making swipe-in convenient & enjoyable.

MVP FEATURES

- Centralized hub for identification control and tray distribution
- Gentle low-power ventilation and lighting in all directions
- Customizable screens with theme, menu, and interactive features

MVP+ FEATURES

- Swipe-and-take-tray flow guarantees efficiency and security
- Sustainable control system means pleasant & immersive atmosphere
- Modern screens provide exciting interaction and key information

PROBLEM STATEMENT

- Casper Dining, especially its swipe-in desk, is a monotonous makeshift mess, lacking creativity, coherence, and competence.

COMPOSITE CHARACTER PROFILE

- **Best Ben:** male, 18, high school senior, Stanford summer student
- Bored of weekly schedules and impatient in queue
- Views dining as a valuable chance to relax and chill with friends

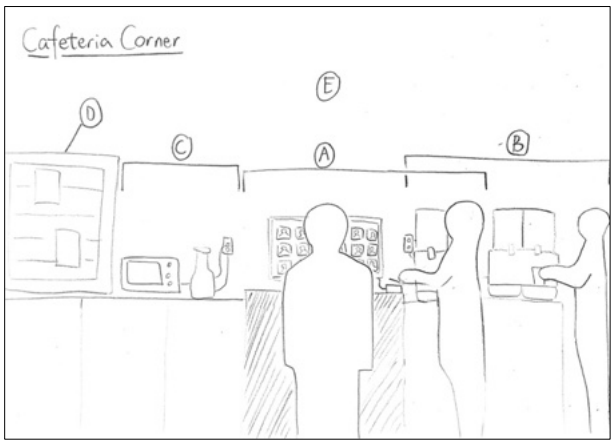
POV STATEMENT

- Best Ben <u>needs</u> a smooth and fun experience near the swipe-in desk <u>because</u> dining to him should be more relaxing than irritating.

The product has undergone several iterations from new inspirations.

OBSERVATION SKETCH

- Overview of an entire corner and human interactions in the context of the environment
- Problems identified:
  - Staff has no seat
  - Occasional queues
  - Computer useless
  - Uniform lighting
  - Loud music
  - Bulletin boards ignored
  - Menu not clearly shown



INTERVIEW QUESTIONS

- Collect needs and insights from users for realistic CCP & POV
- Problems identified:
  - Lack of communication between staff and diners
  - Hot stuffy atmosphere due to lack of air con
  - Weird smell due to poor ventilation
  - High-power unidirectional fans annoying when blown to diners

FIRST PROTOTYPE & TEST

- First trial of the new cardboard swipe-in counter
- Problems identified:
  - Box too small for staff
  - Screen means extra work
  - Limited mobility & ability to stop intruding diners
  - Diners feel unconfident to try the screen
  - People need multiple plates for different food





Diners are not the only ones in the cafeteria: we listen to staff too.

STAFF COMPOSITE CHARACTER PROFILE

- **Crazy Chris**: female, 24, Stanford R&DE staff for 3 years
- Happy to greet everyone at work, which makes her exhausted
- Loves to chat with colleagues and play loud hip-hop music at work

STAFF POV STATEMENT

- Crazy Chris needs a comfortable place to sit and play music while working because she brings her enthusiasm, and chill vibe to job.

DESIGN THINKING SELF-REFLECTION

Creativity: Combat or Collaboration

Self doubt. Brain drain. These were the most common moments of despair I encountered during this project. From observation to presentation, I doubted if the location I chose was special enough or if the grab in my pitch was impressive enough; from defining all the way to the spec sheet today, I found it exhausting to think of a unique representative character or to come up with an insightful summary of what I have learned so far. I used to consider design as a process relying on miraculous bursts of individual creativity; the failure to find such a key moment filled me with anxiety. It seemed as if I was in an endless battle with my own creativity.

Fortunately, design thinking guided my way. In ideating I learned instead that every eureka moment comes from a random wild thought scribbled onto one of a million post-it notes. Design is not a myth; it is solid logical work, a scientific process to seek the optimum practical solutions with creativity to address human experiences and needs. This assurance allowed my thoughts to fly step by step.

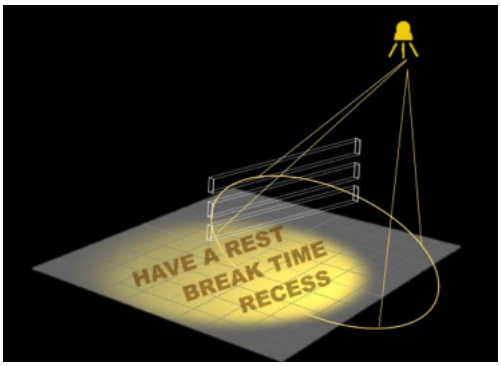
In the end, I realized that self doubt was exactly what lead to my brain drain. The project should never be a battle with creativity in the first place: the key lies in reconciliating with my creativity, removing self-imposed barriers and shackles imposed by myself like abandoning wild ideas too early during brainstorming. Design thinking gives me the confidence and order I need to unleash creativity.

CEE 176G/276G SUSTAINABILITY DESIGN THINKING SPEC SHEET

Light Reminder

Cindy Wang

Sunday July 21, 2024



CONCEPT STATEMENT

"Light Reminder"—your customized break-reminding device. Using light, and casting shadows, Light Reminder is sustainable, quiet, and mild when it comes to gently reminding people about break time.

MVP FEATURES

- Fun: Users can customize break time, shadow color & reminding words.
- Flexible: It does not require external electronic devices.
- Obvious: It contrasts light and shadow to remind people.

MVP+ FEATURES

- Sustainable: it uses excess heat from the environment.
- Quite: It produces absolutely no sound.
- Mild: It reminds people without interrupting people's work flow.

PROBLEM STATEMENT

People have been sitting in library for too long without taking any breaks.

COMPOSITE CHARACTER PROFILE

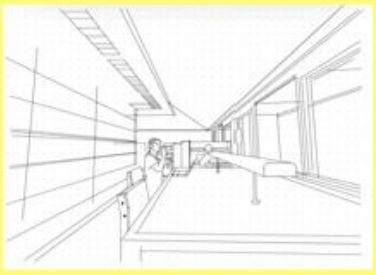
Bookworm Bell is addictive to books. She basically lives in the library 8 hours a day, 365 days a year without leaving her seat. She is concern of her health condition after sitting for so long.

POV STATEMENT

Bell needs a product that remind her to take a break because she always forgets. She needs it to be quiet because the library forbids loud sounds. She needs it to be mild so it does not interrupt her reading flow. She needs it to be independent of any electronic devices because she is a fan of paper books.

OBSERVATION







PROTOTYPE









SURVEY

WOULD YOU MIND FILLING A SURVEY?



Thank you for taking the time to answer these questions!

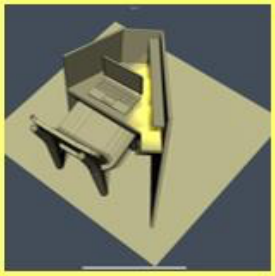
RESULTS

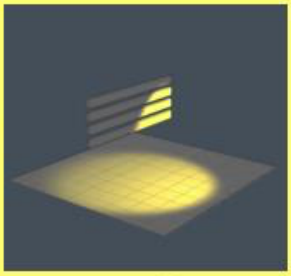






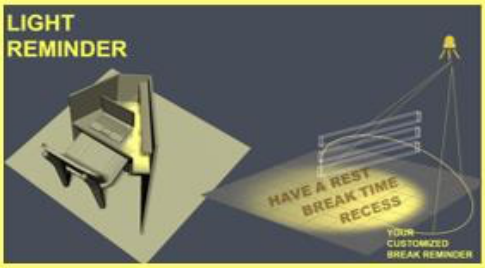
ELEVATED PITCH

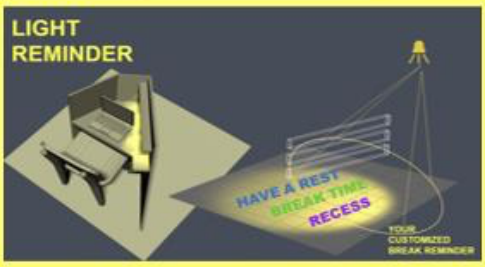












DESIGN THINKING SELF-REFLECTION

The Enlightenment

I entered the class of sustainable design thinking as a pure STEM student. When forming a window with my hands to have a look at my surroundings, what I saw was only one question: “Sustainable or not”. As a result, when my journey started in the Green library, I focused solely to the energy use of the library, specifically, light usage. I conducted a throughout observation and concluded that there is too much light in the library, causing a waste of energy.

Then I attended my first office hour. Professor Ong pointed out that lights serve more than illumination. It resonates with people's feelings of temperature and controls people's level of arousal. This leaded me to view the word in a more human-central perspective.

After my first office hour, I return to the library for re-observation. I observed others, but it didn’t go successful as people were frightened by my presence; I observed myself, finding that I stayed in my seat for too long. Then I thought others may have the same problem, so I surveyed to seek confirmation.

The results confirmed my assumption. So I move on to solving this problem. Instantly, I thought of making an app that could lock people’s computers when the break is needed. But then I question myself: do I want my laptop locked when I am in the middle of something? No. After comparing how people’s different sensations receive information, I eventually went back into using light, a humanitarian way to gently remind people about the time.

This is a story, started with light, ended in light.

CEE 176G/276G SUSTAINABILITY DESIGN THINKING SPEC SHEET

Carl the Column

Tim Warzawa
Monday July 22, 2024



Figure 1: Illustration of Carl the Column

CONCEPT STATEMENT

Carl the column solves the problem of advertisement columns that do not grab student's attention. The issue was observed on Stanford Campus and validated with interviews. A prototype with features to grab students attention was developed, tested and communicated.

MVP FEATURES

- **Rotation:** function so Carl can move towards people
- **Sensor:** To identify humans
- **Solar panels:** Providing energy for sensors and rotation

MVP+ FEATURES (<10 words each)

- **Face expressions** makes people's day
- **Colorfulness** makes Carl easier to recognize and humans happy

PROBLEM STATEMENT

Drab advertisement columns on Stanford campus do not grab student's attention.

COMPOSITE CHARACTER PROFILE

Stressed Susan is characterized by being intelligent, high performing and active. She is a female Stanford Student, 21 years old, studying Computer Science. Her friends value her open-minded manner. She has the fear of missing something out causing stress.

POV STATEMENT

I want to be informed about every event but also need to study hard. Consequently, I face a lot of stress and I am in bad moon sometimes. Advertisement columns would be a great source of information but does the campus have them?

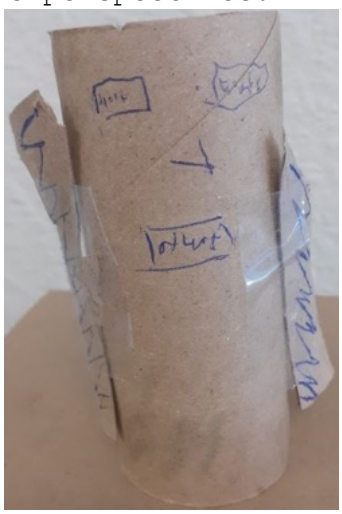
ADDITIONAL RELEVANT INFORMATION
In the following further aspects should be illustrated.

ADDITIONAL ILLUSTRATIONS
A better understanding should be provided by more perspectives.



Figure 1: Side View of Carl showing one solar panel.


Figure 2: Back-View of Carl showing his colourfulness.


Figure 3: Steven, the Stanford tree, an example for a branding column.

TEST DESIGN
In consideration of the test design, the initial step involved determining a specific aspect to be tested. The objective was to ascertain the finality of the prototype or identify areas requiring enhancement. The focus was narrowed down to the primary feature of Carl, namely his facial aspect. A success criterion was established based on the respondents' preference for the facial concept. This approach facilitated a binary assessment (pass/fail) of the test outcomes, maintaining a streamlined and uncomplicated process.

OTHER CHARACTER PROFILES OR POVS
Mobile Mark is characterized as inattentive, sleepy and relaxed. He is a 23 year old Stanford student, originally from Wyoming and has a lot of friends. When he walks over the campus, he is calling them all the time. However, when he is not talking to them on the phone, he spents time on social Media or meeting up with people in person.

DESIGN SPECIFICATIONS
Dimension: Steven, the Stanford tree, should be four meters tall. Carl the column is only two meters tall. They both have enough surface for information, have hollow bodies and the main part remind of a cylinder.
Materials: Carl and Steven are made out of wood. The colors are environmentally friendly and durable.
Power Requirements: Two solar panels supply Carl and Steven with energy

A JUSTIFICATION STATEMENT
The development of Carl the Column is necessary to maintain the relevance of Advertisement Columns. It makes Advertisement Columns not only more efficient, but also human-centered.

RESULTS/INSIGHTS FROM PROTOTYPING & TESTING
Carl should not rotate too quickly so as not to frighten anyone. The sensor for rotation has gained the most acceptance at four meters. It became clear that testers thought Carl the column is a great idea.

APPEND A DESIGN THINKING SELF-REFLECTION: My design journey

Never before have I really thought about how objects were made and what kind of process was behind it. I simply accepted the status quo.

Due to the classes and creativity methods I learned it now. I not only got to know the methods themselves but more importantly that they really help to be creative. For me the sustainability project was a journey in which I discovered the power of design thinking. I reflect that design thinking is a great step-by-step strategy to approach complexity and to create new products. From my point of view, it was important for me to try the best I can and I found out that I really can design something meaningful then.

Further, I learned that products are more sustainable when they are human-centered as they are more likely to grab people's attention and stay relevant in the long-term. Empathy and being a good observer are essential to find unmet needs. The creation of a Composite Character profile helps to be empathetic and to better understand how potential user could look like. A prototype does not only help to communicate the product idea but also to identify shortcomings.

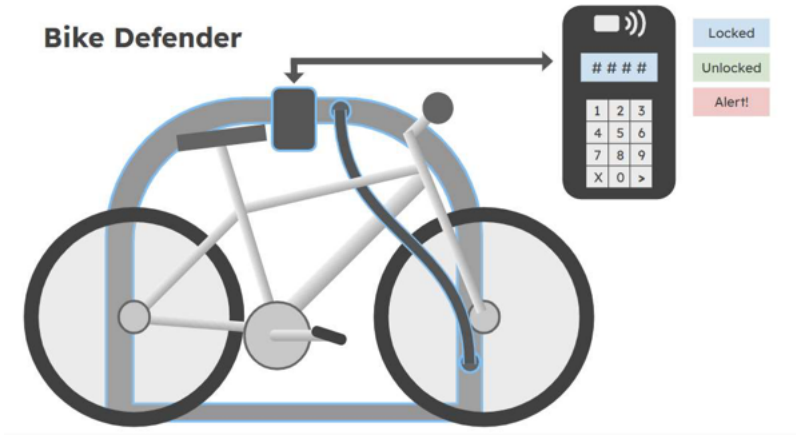
Lastly, I reflect that testing is important to get feedback in the real world. This is true as it enables to optimize the product and make it more human-centered. The testing ensures to create something relevant and, if not already, enables to adopt aspects to become relevant.

CEE 176G/276G SUSTAINABILITY DESIGN THINKING SPEC SHEET

Bike Defender

Rowan Winchell

Thursday July 18, 2024



CONCEPT STATEMENT

The Bike Defender is an ID-activated self-locking bike rack. Bikes are locked in place by tapping the Stanford ID card. If the system is compromised, it will alert everyone nearby with an alarm.

MVP FEATURES

- Passcode/ID protected
- Integrated locking cable
- Crime alert

MVP+ FEATURES

- Space efficient rack
- Alert notification system, for you and for authorities
- Management system, for abandoned and stuck bikes

PROBLEM STATEMENT

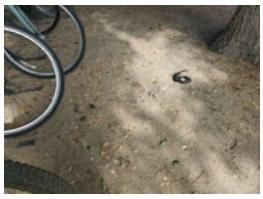
Bike theft results in stress for students as well as waste.

COMPOSITE CHARACTER PROFILE

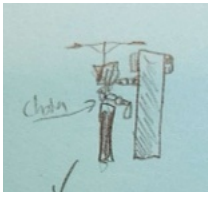
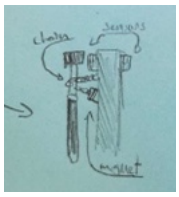
Musical Max: Plays piano, loves listening to music, constantly busy

POV STATEMENT

I was running a bit late to leave for class, but that was fine, I had a bike. Until I noticed it was stolen. Now I’m late and I have to report a theft.

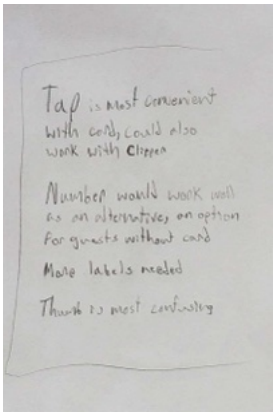



I noticed abandoned bikes and cut locks at the dorms and at the AOERC.

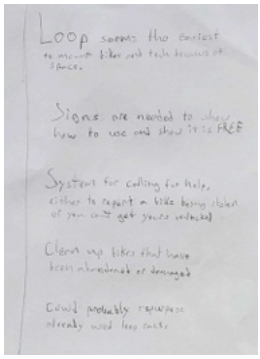


I came up with this idea of a bike rack that locks to itself with a stronger cable, with an ID reader to lock/unlock it.

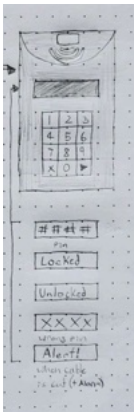



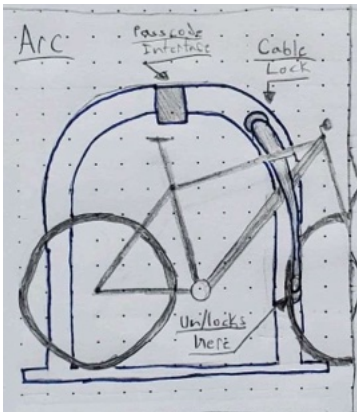


I made a prototype that was the size of the card readers.
It had four interface options: Swipe, Number, Thumb, and Tap
I got feedback on which option was intuitive and convenient.
Most agreed that Tap was the most convenient and intuitive, though Number would be a good alternative.

I then wanted to get feedback on what shape of bike rack was most convenient, as well as if there were any suggestions/ideas for the MVP or MVP+.
Out of Post, Arc, or Slanted, the Arc/Loop seemed to be the best option, allowing for more space for mounting the bike and hiding electronics.
Good suggestions were also given for making the Bike Defender easier to understand as well as how it could work within a larger management and security system. Though these ideas were not implemented in the MVP, they were intended for the MVP+.





DESIGN THINKING SELF-REFLECTION

Good, But Needs Improvement

Overall, I believe that I successfully designed a creative and useful product. I have also improved in brainstorming and in avoiding self-correction. Additionally, I have done better at listening to myself. Near the beginning I reflected on the domain for my design, and realizing that I no longer liked it, I shifted to another domain before I got too invested. However, I could improve more at listening to myself. For example, I understood that smaller parts of a bike were targets for theft, and I had included this fact in both my POVs and my argument for bike abandonment. However, all that I did to connect back to this in my design, was to make the cable go through the front wheel. Had I reflected on this aspect of the problem, I would have been able to create a better more sustainable design.

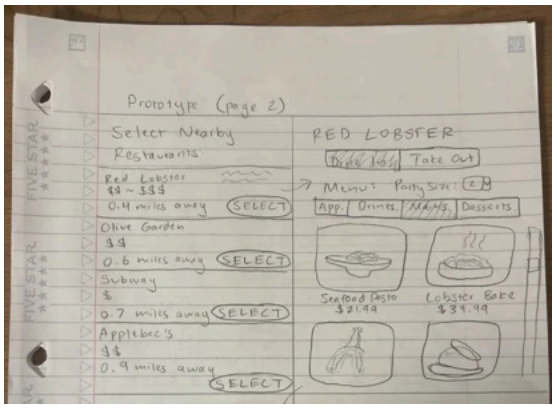
Another issue in my approach was that I focused almost entirely on the product itself. I did not do well at exploring what the model would be for my product or how it would affect my target audience. These are factors that I would like to improve upon. Additionally, I would like to practice more for the pitch so that I can be more confident in my delivery. However, I am confident in my documentation of my project, which has helped me immensely throughout the class. With all that said, I now feel that I am familiar with the steps of design thinking

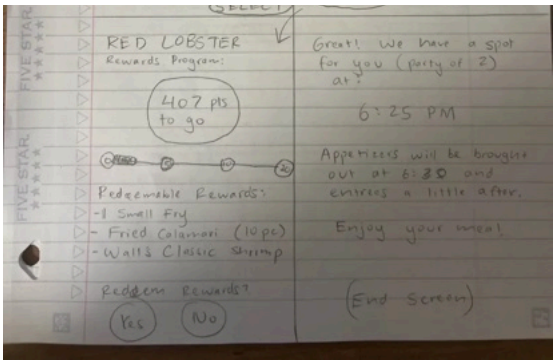
CEE 176G/276G SUSTAINABILITY DESIGN THINKING SPEC SHEET

Convenieats

Eric Zhang

July 20, 2024





CONCEPT STATEMENT

Convenieats is an app where users can place orders and make reservations at any restaurant. With a detailed restaurant selection screen, text/image view of menus, automatic rewards programs enrollment and AI-based recommendations, Convenieats make ordering online easier than ever before.

MVP FEATURES (<10 words each)

- Can place reservations, order food ahead of time
- When arriving at restaurants, sends notifications
- Characteristics-based restaurant select screen with restaurant descriptions

MVP+ FEATURES (<10 words each)

- Text and Image View options for menu
- Automatic participation in restaurant rewards programs, with no notifications
- Restaurant match score based on AI-analyzed feedback

PROBLEM STATEMENT

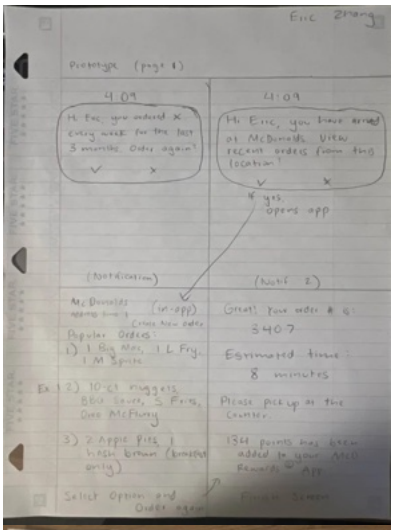
I am tired of the lines at fast food restaurants, like Panda Express, at mealtimes. It makes me frustrated to wait, and sometimes even deters me from even entering the line. This is a lose-lose situation for both the business and I, as I don't get the food I want and the business doesn't sell the food to me, losing out on profit.

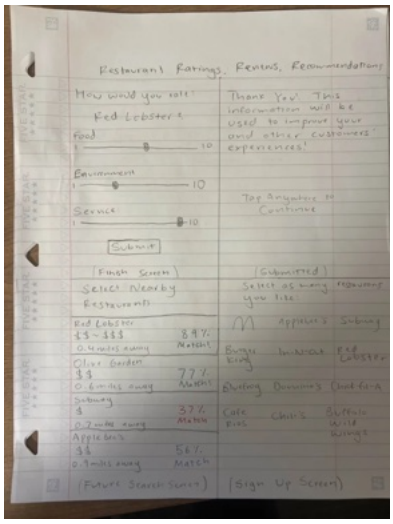
COMPOSITE CHARACTER PROFILE

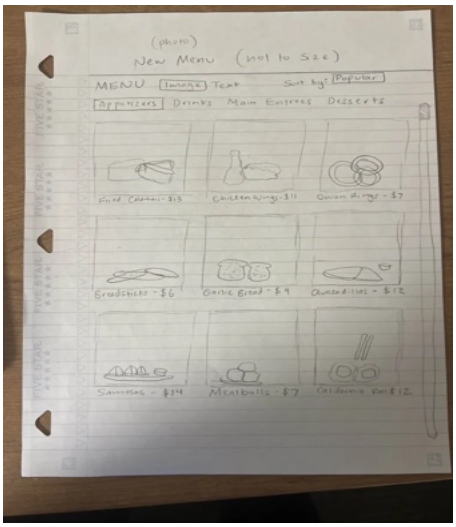
Yusuf, a high school student, values the importance of efficiency and productivity in his life. He wishes to be a communications major.

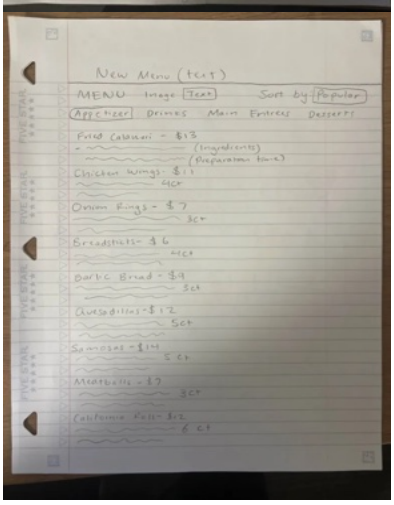
POV STATEMENT

Yusuf needs a convenient way to get his meals because of his tight schedule. He balances school homework, extracurriculars, a part-time job, and applications at the same time. Waiting in line for just 10-15 extra minutes cuts time he can spend elsewhere.









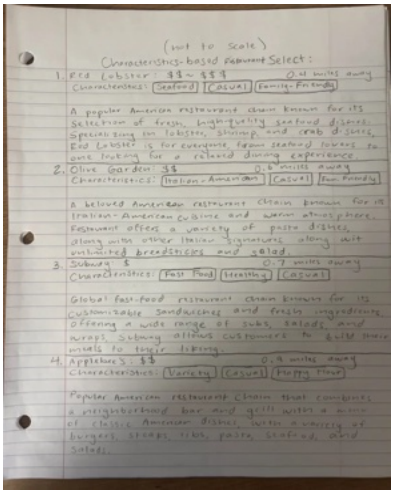


Image 1 is a notification screen and order process, Image 2 is a demonstration of the match function, Image 3 is the Image view of the menu, Image 4 is the text view of the menu, Image 5 is the characteristics-based restaurant selection screen with restaurant descriptions.

We plan on charging a monthly subscription of $9.99 for our services. Our product is sustainable as it reduces food waste by allowing restaurants to better predict demand, and it saves customers' time everyday.

In testing 1 and testing 2, we received criticism for our app mainly due to a better view of the menu in person, and not being able to get a good "feel" of a restaurant's "vibe" online. In response, we created a characteristics-based restaurant selection screen. Each restaurant now has three tags (e.g., "Casual," "Seafood," "Healthy") and a short description highlighting their brand, specialties, etc.

There is now a Match function where users rate restaurants on a scale of 1-10 based on Food, Environment, and Service. These ratings, combined with open-ended feedback processed by AI, help generate a match percentage for future restaurant suggestions. The Image view displays a photo of the dish with its name and price, the Text view provides information such as the entree name, price, ingredients, calories, preparation time, and quantity (e.g., "6-count wings").

MAKING IN-PERSON DINING MORE CONVENIEAT THAN EVER BEFORE

Making Convenieats was a great experience for me. It really showed me the whole process of design thinking, as I observed my surroundings to search for a problem, brainstormed possible solutions to the problem, worked on one, made a prototype, received feedback, took out and added in new components for my prototype, and repeated that, until I was at my final product, Convenieats.

When I first started designing the product, I was skeptical of my own abilities, because I had the mindset of “if this is actually a good idea, someone else has probably done it” and that “if no one has done it, then it is probably a bad idea.” However, the post-it exercise helped me break free from this mindset, as even though many of my ideas were far-fetched, some, like this one, seemed plausible that it could work.

The product also taught me about different perspectives. When I was finished with my first prototype, I was extremely satisfied with it, believing that everyone I asked would love to use this product. However, most of the answers I got for my first round of testing were “sometimes,” all due to reasons I hadn’t thought of before. This stressed the importance of asking for others’ opinions in design thinking, as you might not catch all the issues and caveats with your product.

Though I believe I tried hard on this product, there were definitely things I could have improved upon. Creating a digital interface, instead of drawing one, would’ve made prototype testing a lot more interactive. I didn’t do this as I had no experience with making any sort of digital interface before, and was afraid that it would not be worth my time. Also, looking back, the hardest part of actually implementing this is getting all restaurants, big and small, to be a part of the app. Many restaurants may not want to because they want to preserve “exclusivity,”. I will keep an eye out for not so “technical” problems in the future.

This product was very fulfilling to design, as if the product was actually implemented, I believe that it truly has the capability to make a big difference with in-person dining. I found it annoying how eating-at-home has changed throughout the years, with new apps like DoorDash, but the dining in-person experience has stayed stagnant for tens of years.

DESIGN PROJECT 2

Built Environment & Spaces for Sustainable Communities

In this project, students designed a **SPACE**, **PLACE**, **BUILDING FEATURE**, or **PHYSICAL INTERVENTION** that enables, supports or promotes sustainable behaviors, lifestyles and (usage) practices for a **COMMUNITY**.

This was a team project. Groups of 3 or 4. This group dynamic setting enabled students to learn from each other as well as share their perspectives to foster a healthy collaborative atmosphere.

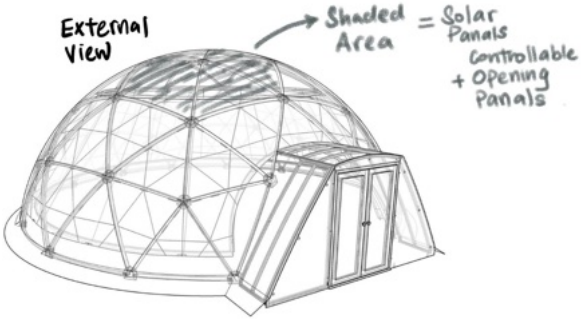
CEE 176G/276G SUSTAINABILITY DESIGN THINKING SPEC SHEET

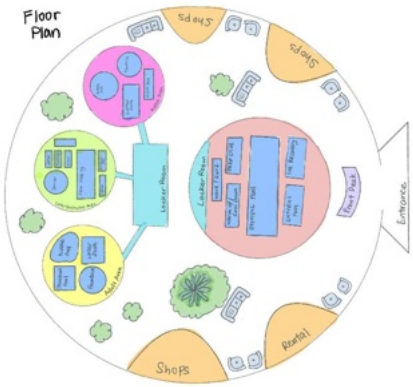
Built Environment * AquaDome

JAWS

Team Member Names: Jolene Ong, Alejandra Santos, One Wui Shuen

Design Date: Tuesday, August 6, 2024





CONCEPT STATEMENT (Short paragraph <50 words)

Using innovative design practices, AquaDome is a multifunctional aquatic center. It features Olympic-sized pools, entertainment activities- such as surfing and movie screenings- and all-inclusive services. AquaDome creates a clean, inclusive, and sustainable setting while fostering cultural and social community connections.

MVP FEATURES (<10 words each)

- Cleanliness: All facilities are sanitized and the water is clean
- Sustainable: solar panels, natural lighting, and trees
- All-inclusive aquatic activities

MVP+ FEATURES (<10 words each)

- Adaptable venue for sport meets, entertainment, and recreation
- Double-walled design for natural insulation and ventilation
- 24/7 customer service provided

PROBLEM STATEMENT

Unsanitized and warm waters in public swimming facilities disincentivize individuals from engaging in aquatic activities.

COMPOSITE CHARACTER PROFILE

Multi-tasking Mike: Works a 9-5 job on the weekday, loves to play with his kids, and spends time on the weekend to care for his kids.

POV STATEMENT

Mike needs new facilities to entertain his energetic children during the weekend, allowing them a conducive environment to learn through playing while tiring themselves out.

Design Specification

- Outer Dome Design:
  - Circular with consistent radius
  - Upper-half: Solar panels
  - Lower half: Motorized windows that open for natural ventilation
  - Inner surface: LED screens
- 4 Inner Domes:
  - Smaller Dome 1: Housing Athletes' pools
    - Olympic Pool
    - Warm up / Cool Down pool
    - Diving pool
    - Ice recovery pool
  - Smaller Dome 2: Houses Adult pools
    - Water massage
    - Jacuzzi
  - Smaller Dome 3: Housing Kids' pools
    - Water slides
  - Smaller Dome 4: Houses Recreational pools
    - Wave/surf pools
    - Screen pools

Resources Used

- Dome: Recycled Fiberglass
- Beautification / Natural shade: Air plants, Trees, Flower bushes

Power Requirements

- Solar panels
  - Motorized windows
  - LED Screens
  - Heating in pools
  - Central air conditioning
  - Wave pools

Other Features

- Shops and restaurants
- Customer service counter
- Massage chairs
- Detachable floating stage platform to host concerts and events on water
- Rental equipment: kayaks, paddle boats, floats
- 360 screens for movie screening
- Lounges
- Child care center
- AquaDome Website

DESIGN THINKING SELF-REFLECTION

Personal Self-Reflection: Sink or Swim
Laura Alejandra Santos

When first given this project, the notion of creating an entire space seemed daunting. As I listened to the brief lecture, I found myself ideating an addition to an already existing facility, since it seemed like the most manageable option. However that thought changed once I joined my group, we bonded quickly and had an amazing conversation about our project ideas. AquaDome was born from our fascination with the Las Vegas Sphere and our love for getting a good workout in. We wanted to form a facility that could be used by athletes and families alike.

After establishing a solid idea, I went to work imagining a layout of the AquaDome in my head and transferring it onto paper for the rest of my team to read. At that moment, I realized the importance of communication. All of us had amazing but different ideas, and we each thought that our idea was the universal one shared between our group. The Post-it method was the best at converging all three designs. Using Post-its also allowed me to become more creative and consider all of the features a person might want to engage with in a recreation center. I took into account the feedback from in-class prototype testing and interviews and worked them into the design during the finalization stages.

Overall, the project was fast-paced but not difficult, I felt I had gained all of the foundational skills necessary to complete the task in the previous design project.

DESIGN THINKING SELF-REFLECTION

PERSONAL SELF REFLECTION: BIG IDEAS
JOLENE

This project began with a loose focus on the theme of water and we embarked on it with grand ambitions - we went big both in the number of activities brainstormed via post-its and the scale of our envisioned stadium. It was perfect coincidence that our group name, JAWS and our shared love for water, matched with this water theme. It was a joy working with my teammates who created such a lovely conducive environment with much laughter!

I'm grateful to David for introducing me to architectural design programs like Twinmotion and Revit, and to Glen for patiently teaching me how to utilize them. These programs made it so easy to bring my ideas to life in 3D, providing a creative outlet in spite of my struggles with sketching. I love the collaborative spirit in our class, and I hope I played my part by inspiring David to 3D print his model.

During our project meeting, Colin offered a particularly insightful comment. Reflecting on Project 1 which focused on gyms, I had struggled with its limited relatability and interest due to the small number of regular gym-goers. Yet, Colin explained that this was precisely the central idea of sustainable design thinking: to change behaviors.

For our team's elevator pitch, I created a video in classic Netflix-style. The positive feedback was so encouraging, showing that perhaps a compelling "grab" can be achieved in various ways, such as through a dramatic video opening, rather than relying solely on words in a typical pitch.

DESIGN THINKING SELF-REFLECTION

Personal Self-Reflection: Reflections Beneath the Surface of the AquaDome

Ong Wui Shuen

When Design Project 2 was released, I was amused. Unlike Project 1, the boundaries greatly differed. We were not limited to making a miniscule product but were tasked to expand our creativity to design a space or building that promotes sustainable behaviors and lifestyles for a community. This excited me as I could now explore, expand and amplify my ideas in trying to create a space. This was where I utilized a lot more divergent than convergent thinking.

When my group decided on what to work on, all of us had different ideas on how our water complex would look. I remember clearly a lesson where all three of us had different idealizations and we each had to utilize drawings to convey our own idea of the AquaDome. This dawned upon me that the true beauty of design lies in its fluidity; it is a canvas where every mind paints its unique vision of a single word or concept. It took the entire lesson to ground ourselves back onto the same page…

Finally, aside from the designing process, the elevator pitch opened my eyes to the other groups' concepts. The elevator pitch spurred me to think about how other groups' ideas could be applied to our own ideas. For instance, sleeping pods, water yoga classes and a waterfall in the AquaDome could also be value-added enhancements. Ideas are never one-dimensional; they are like clay, malleable and adaptable, capable of being shaped to fit into a multitude of concepts and perspectives.

CEE 176G/276G SUSTAINABILITY DESIGN THINKING SPEC SHEET

Synergy

OFFICERS

Team Member Names: Rawda Aljneibi, Lateifa Alsamahi, & Yuto Fujiwara

Design Date (Monday, august 5, 2024)





CONCEPT STATEMENT (Short paragraph <50 words)

Our office concept merges cutting-edge technology with sustainable design to create a dynamic, eco-friendly environment that boosts productivity and inspires creativity. With features like natural light, interactive scenery, and paper-free digital workstations, we offer a future-ready workspace that adapts to modern needs and enhances professional well-being.

MVP FEATURES (<10 words each)

- Integrated digital screens for a paper-free workspace.
- Solar panel system for eco-friendly energy use.
- Adjustable desks that transform into private cubicles.

MVP+ FEATURES (<10 words each)

- Interactive exterior screens with dynamic scenery changes.
- Green, plant-filled common areas for relaxation.
- Writable glass walls for real-time brainstorming.

PROBLEM STATEMENT - Traditional offices lack flexibility and technology integration, stifling creativity and productivity.

COMPOSITE CHARACTER PROFILE - Ethan Roberts, 32, is a tech startup CEO with expertise in computer science and business. He values adaptable, sustainable workspaces that enhance productivity and creativity, avoiding static, uninspiring environments.

POV STATEMENT - Ethan needs an office that combines advanced technology with sustainability to boost creativity and productivity, supporting diverse work styles and enhancing well-being.

OFFICE ELEMENTS:

Space/layout design:

- Material: Use sustainable materials like recycled wood and bamboo.
- Open Space: Implement modular furniture and flexible workstations.

· ***Light:***

- Natural Light: Maximize natural light with large windows and skylights.
- Adjustable Lighting: Implement adjustable LED lighting with options for changing intensity and color temperature. Include task lighting at individual workstations.

· ***Equipment/Furniture***: Nature, personalization, exercise)

- Nature: Add indoor plants and natural materials.
- Personalization: Allow customization of workspaces.
- Exercise: Include ergonomic furniture and spaces for physical activities.

· ***Color*** :

- Light Yellow: Use to create a warm, energizing environment
- Blue promotes calmness, focus, creativity, and trust, making it ideal for a balanced office design.

【Requirements for office】

- **Inspiration**: Incorporate design elements that stimulate creativity and provide a dynamic, engaging environment.
- **Social Spaces**: Create areas that encourage social interaction and networking, such as lounges, cafes, or game rooms.
- **Interactive Tools**: Provide tools such as interactive whiteboards, projectors, and video conferencing equipment to facilitate seamless communication and collaboration.
- **Collaborative Spaces**: Create environments that encourage teamwork, such as brainstorming rooms, innovation labs, and open meeting areas.
- **Unique Furniture**: Use unconventional and eye-catching furniture pieces that double as conversation starters and creative stimuli.
- **Creative Labs**: Set up dedicated areas for experimenting with new ideas, prototypes, or creative projects.
- **Creative Lighting**: Implement dynamic lighting that changes color or intensity based on the time of day or the type of work being done.

DESIGN THINKING SELF-REFLECTION

RAWDAS'S PERSONAL SELF-REFLECTION:

Reflecting on the development of our project, I find the experience both challenging and rewarding. Crafting a vision for an innovative office environment required me to strike a balance between creativity and practicality. I aimed to ensure that our solutions were not only groundbreaking but also feasible and effective.

We began with the concept of a futuristic workspace, focusing on integrating advanced technology and sustainable practices. This approach allowed me to view the office not just as a physical space but as a catalyst for productivity and well-being. Each element, from the eco-friendly desk to the interactive scenery, was meticulously designed to address specific pain points in traditional work environments.

Breaking down our pitch into distinct segments—vision, features, and execution—provided much-needed clarity and direction. It enabled me to refine our message, ensuring that each part communicated the value and uniqueness of our project effectively. Presenting the MVP and MVP+ features was instrumental in prioritizing essential elements and understanding their impact on our target audience.

Working on the composite character profile and POV statement offered a deeper understanding of our target user. It underscored the importance of aligning our solutions with real user needs and preferences, reinforcing the relevance of our project.

Overall, this journey has been a valuable learning experience. It has highlighted the significance of thoughtful design and clear communication in developing a successful project, showing how blending creativity with practical considerations can lead to impactful and innovative outcomes.

DESIGN THINKING SELF-REFLECTION

YUTO’S PERSONAL SELF-REFLECTION:

In the design thinking class, We explored how office design can boost productivity by addressing employee needs. Using design thinking principles, We empathize with office workers, identifying pain points around office environments, while referring to scientific studies. We then brainstormed innovative solutions, focusing on elements like color arrangement, scenery projection, and built-in-desk computer. By prototyping and testing these ideas, we refined our approach to create a more effective workspace. This team process underscored the power of design thinking in crafting environments that enhance both productivity and well-being. I will apply this learning into the office I am working in immediately after coming back to Japan, so as to turn a prison for work into an office for productivity.

DESIGN THINKING SELF-REFLECTION

LATEIFA’S PERSONAL SELF-REFLECTION:

Reflecting on our project “Synergy”, I am extremely proud of what we have achieved as a group. Our primary goal was to change boring offices to innovative and sustainable office environments, which led us to design an adaptable, flexible and paper-free desk that promotes eco-friendly practices and enhances workplace productivity. This solution led us to our MVP which is a sustainable, paper-free desk equipped with built-in digital screens integrated with solar power. By taking our project a step further, we have added our MVP+ which is an advanced feature that includes interactive screens that provides dynamic scenery options. This enhancement creates a holistic and adaptable workspace that boosts productivity.

While working on the project, we considered many factors such as the use of eco-friendly materials, energy efficiency, and overall user experience. After conducting a survey, we have altered many factors that satisfy all workers. Working with my teammates, Rawda and Yuto, was a significant addition to the success of our idea as we combined our diverse perspectives to develop and refine our ideas effectively. Also, it enhanced the quality of our project and strengthened our ability to work as a group.

This project was a valuable learning experience, highlighting the potential of innovative and sustainable design thinking in creating sustainable solutions which showed us how impactful having a sustainable and innovative environment is in contributing to a greener and more productive future.

CEE 176G/276G SUSTAINABILITY DESIGN THINKING SPEC SHEET

Common Kitchen

Team SWT
Sumaiyya Ali, Tom Shahar, and Warren Huang
Monday, August 5, 2024



CONCEPT STATEMENT
Integrating social, environmental, and personal sustainability in common spaces and kitchen areas within undergraduate student dorms.
“A new take on shared residence common area.”

MVP FEATURES

- Integration of interior and patio with sliding doors
- Planters to grow produce for kitchen
- Compost to fertilize planters
- Open design provides comfortable space to cook, eat, work or socialize

MVP+ FEATURES

- Two-way serving station (window opens to exterior)
- Greywater system to water plants and trees

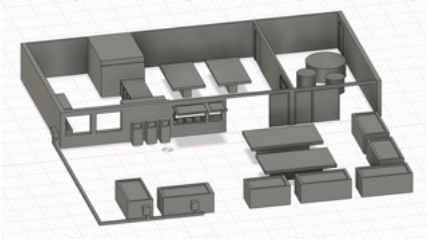
PROBLEM STATEMENT
Communal kitchens are often dirty and cramped, resulting in food and water waste. Dining areas are depressing, unwelcoming, and commonly indoors.

COMPOSITE CHARACTER PROFILE
Challen (Rowhouse Chef, 36) prepares two daily meals with a hasher and prioritizes kitchen design for efficient food service.
Warren (CS student, 19) He is disturbed by the smell and noise of food wafting out of the communal kitchen as he tries to study.

POV STATEMENT
Challen (Rowhouse Chef, 36) An efficient kitchen design not only improves service, but also enhances the dining experience.
Warren (CS student, 19) The smell and the noise from the communal kitchen make it hard to concentrate. A more welcoming and environmentally friendly design will create a better living and learning community for all residents.

Sustainability
Our design centers sustainability in a number of ways. Beginning with environmental sustainability, our design cuts down on waste by incorporating planters to grow produce, which food waste can fertilize and for which water can be recycled. In terms of social sustainability, Common Kitchen helps create a sustainable community by providing a comfortable, inviting space where people can work, socialize, and eat together. Additionally, it creates a number of fun and rewarding community tasks to do together, such as gardening, cleaning and cooking. Finally, in terms of personal sustainability and health, the design invites residents to spend more time outdoors (which is beneficial to both mental and physical health) and add more fresh, healthy produce to their diets.

Digital Prototype
In addition to our physical prototype (shown above), we created a digital prototype using Autodesk Fusion 360. This prototype demonstrates each of our MVP and MVP+ features, and initial versions of the prototype were used to gather feedback from potential users.



Additional Observations During Research
1. Though the purpose of lounges is to provide shared space, more often than not, they become zones of conflict as some individuals prefer to study while others prefer to socialize.
2. The lack of A.C. means that the lounges are often super hot.
3. Outdoor spaces, though cooler, are often limited in nature.

Initial Prototype
We began as a focused effort to minimize food waste at Xanadu House by introducing outdoor seating. However, through extensive research involving interviews with students from various dorms, the project evolved into the Common Kitchen Project. By identifying shared pain points and incorporating diverse perspectives, the team developed a comprehensive solution that addresses food waste, promotes sustainability, and enhances communal living across multiple dorms. Iterative feedback from peers and professors further refined the concept, resulting in a robust and impactful initiative.



Personal Self Reflection:

Learning physical 3D prototyping and working within external constraints
Warren Huang

I was especially excited for this project as I wanted to work in a group since the beginning of class in June. Not only did we work together as a great team (even though Tom was remote for a week), but I was super proud of how our final results came about (both the final presentation and 3D prototype).

However, it wasn’t always a smooth journey. Because Tom was away, Sumaiyya and I initially thought to wait on Tom before creating the 3D prototype once he was back on Saturday. That plan had to change once we spoke to Collin who mentioned that Y2E2 was closed on the weekends. That meant that we had to start prototyping on Friday and take the materials that we needed back to our dorms so that we could continue over the weekend. Though it all worked out at the end, this experience taught me to be more proactive and never to rely on guesswork when external constraints are at play.

The process of developing a 3D prototype was quite tedious. Although I had previous experience creating 3D models, this was my first time building one with cardboard. The regular glue didn't hold the pieces together, so we had to use wood glue, which required us to return on Monday to complete the project. Fortunately, the final project turned out great!

Personal Self Reflection:
Teamwork and Empathy
Sumaiyya Ali

Effective collaboration was essential to the project's success, learning from and with my teammates while applying the design thinking process together. Combining diverse perspectives as all three of us came from different backgrounds we converged on the kitchenette concept through extensive discussion and idea exploration. This collaborative approach mirrored real-world design challenges and I realized the importance of teamwork, communication, and empathy. Mastering the 3D modeling tool was both enjoyable as I was learning with the process and instructive, enabling iterative design refinements.

Developing the journey map was a pivotal moment in my opinion. It forced me to step outside my own experience and truly understand the challenges faced by students in different living situations. By mapping out their daily routines and pain points, I gained invaluable insights into their needs and desires. This empathy-building exercise was crucial in shaping the direction of our project and ensuring that our solution was truly user-centered.

Personal Self Reflection:

Learning how to empathize while remote and as part of the target audience

Tom Shahar

I was unfortunately out of town during the most important week of the project, and had to find ways to contribute remotely. Due to the compressed nature of the project, both because of the shorter time span and my missing class time, I felt like I had to be more creative in terms of the ways I was able to personally incorporate the design thinking process and help ensure our design remained as user-centered as possible.

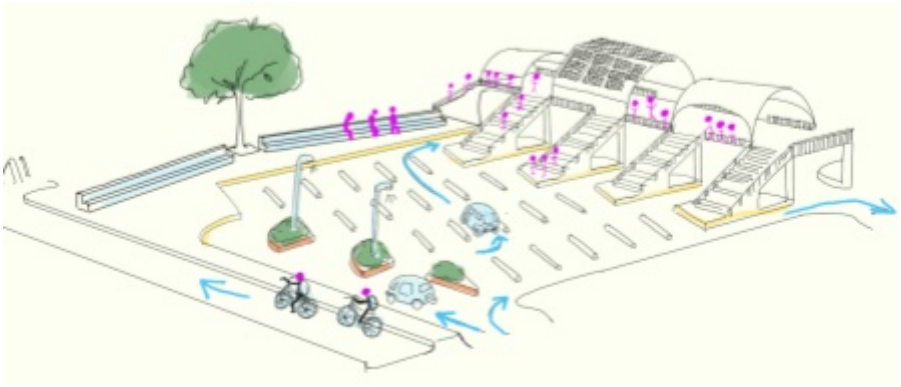
The most interesting design-thinking aspect of this particular project for me was empathizing. At first glance, it would be reasonable to say that it was particularly easy for us, given that we were all part of the target demographic of our product. However, this can bias our defining and ideating, and I realized quickly during the defining stage that I had been thinking too narrowly about the project and the potential solutions. This made the creation of the CCPs and POVs, and the interviews especially important. This stage of the process helped me realize that I had been ideating for myself and for my specific living situation, instead of creating the more universally applicable solution that we ended up with.

On another topic, I felt like the testing phase of this project was more difficult than the first project. I would show the initial phases of my 3D model to people for feedback, and I mostly got things like ‘that looks nice’ or ‘I would live that’ instead of more constructive notes, probably because people couldn’t actually use it. This was one of the first physical prototypes I have ever built, and I hope I get a chance to do it again with a longer project where there is more time to iterate on it, as I think it is a very powerful tool and is also very fun!

CEE 176G/276G SUSTAINABILITY DESIGN THINKING SPEC SHEET

Roundabout Revolution

2AM Deep Thoughts
Albert Tan, Ashley Kwong, Milo Pitera
August 5, 2024



CONCEPT STATEMENT

Roundabout Revolution is a concept model redesigning traffic direction and roadways, incentivizing the use of public transportation to effectively save the parents' and students' energy and time.

MVP FEATURES

- Separates vehicles from pedestrians and bikes
- Optimizes traffic flow to save time spent and fuel burned
- Encourages sustainable options of bikes and buses

MVP+ FEATURES

- Guarantees student safety to keep parents assured
- Eliminates frustration caused by waiting for traffic or students
- Calls for a greener future by addressing sustainability concerns

PROBLEM STATEMENT

Pickup areas are frequently clogged with traffic from idling parents waiting for their kids and low speed limit for safety of pedestrian crossings. This increases carbon emissions and wastes time and energy for parents and students.

COMPOSITE CHARACTER PROFILE

A mom, Klassic Karen is strong headed when driving her Tesla to pick up her son, adamant on parking close to the school gates.

POV STATEMENT

Klassic Karen needs to pull in and out as close to the school gate as possible and as smoothly as possible because she always wants things to work for her and is tired of cars honking at her for blocking traffic.

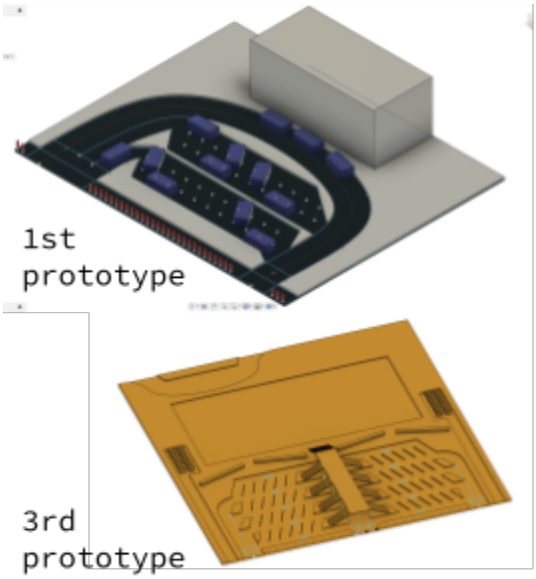
ALTERNATIVE COMPOSITE CHARACTER PROFILE

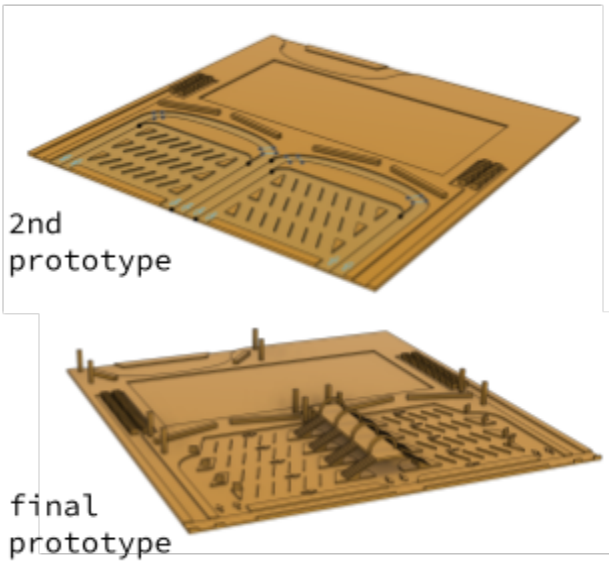
Green Grace, a high school student begins to become more aware of the environment but finds the bus station too far away from school campus, so she often bikes to school but finds it dangerous biking near cars and is forced to take Uber when the weather's unpleasant.

ALTERNATIVE POV STATEMENT

Green Grace needs public transport options to be as convenient as possible because she does not want to take unsustainable Ubers anymore.

PROTOTYPE SCREENSHOTS







SKETCHES AND IMPROVEMENTS

After receiving suggestions during our testing sessions, we iterated our prototype to add a second parking area, a shaded overhang, and a digital timer.



Realizing we needed to incorporate a more human centered perspective, we created more sketches in the view of a person looking down at the parking area.

DESIGN THINKING SELF-REFLECTION

Collaboration and Complexity
Albert Tan

The design thinking process I followed in Project 1 really helped me here. Brainstorming in a team, a brand new experience, reminded me of the frisbee ideation we did in class; this time, instead of simply laughing away some wild ideas from our classmates, we threw in serious consideration on combining and implementing our thoughts. The previous design thinking steps of constructing CCPs and POVs helped us keep the post-ideation discussions efficient and productive, forcing us to focus on human-centeredness instead of less related aspects like limiting costs. Finally, collaborating enabled us to experience “fail early and fail fast” during prototyping and testing, completing 4 iterations in total, improving our designs all the time.

Designing a space is a completely new experience for me. It involves considering multiple intertwined aspects, including what objects we should place, what elements we should include in each object, how we should connect each object in the space, and how we should shape the space as a whole. Attempting to alter a small detail in one aspect might mean reconsidering all. For example, we came up with an idea to include a footbridge after testing our second prototype so that students can cross into the parking lot safely without blocking the traffic. We soon discovered that this "simple" idea involves adding solar panels and benches on the footbridge to maximize comfort, conjuring the smoothest way to connect the footbridge with the school building nearby and the parking lot below, and making the physical model three-dimensional.

Collaboration, Compromises, Conclusions

PERSONAL SELF-REFLECTION
Ashley Kwong

Working on this project with a team opened my eyes to a whole new aspect of design thinking: collaboration. Redesigning an entire pickup area required considering various aspects such as roadways, markings, traffic flow, and safety. It would have been impossible for me to address all these aspects alone, so it was refreshing to rely on others and tackle the challenges together.

The project ran smoothly, with role distribution feeling natural as we had a universal problem and were different in our perspectives. Milo's driving experience provided insights into roadways, Albert's familiarity with public transit sparked creative ideas, and I contributed by visually sketching our concepts. Splitting up the workload also was super successful, compared to my previous tragic group project experiences. We each took time to communicate and get work done in our spare time which I found made this project all the more great. The Journey Map broadened my understanding of the problem, allowing me to consider a wider scope than I had previously imagined.

A key aspect of this project was bouncing ideas off others with diverse school pickup experiences during interviews, testing sessions, and discussions with teammates and teachers. We explored a large range of topics, such as pedestrian safety and traffic direction, continuously refining our design with each of our 4 iterations. Coming from different school districts also meant conflicting opinions which challenged me to empathize not only with our CCPs but also with my teammates' viewpoints, unlike Project 1, where I considered only my own perspective.

Personal SELF-REFLECTION: Divergent and Convergent Teamwork
Milo Pitera

I feel like this project was really characterized by the design thinking process of divergent and convergent thinking. We were initially pretty stuck on what problem we exactly wanted to solve, but we knew that we all should be invested in it. Our ideation step involved divergent thinking, as we started by just going through and listing all the different possible communities that any of us found ourselves under. We then converged our various thoughts by finding the throughline that we all shared, which just happened to be students. Having established that, we branched out again, thinking of various aspects of student life that could be best improved by the application of sustainable design. I ended up suggesting the improvement of the traffic during pick-up, and I discussed with my teammates the viability of the problem. We finally converged on said problem, but we continued to apply divergent and convergent thinking in how we approached the problem and blended our perspectives.

The way we collaborated on the project could be effectively described with divergent and convergent thinking, to the extent that it could describe dividing and conquering. We each split off to work on a specific aspect of the project, adding our own thoughts and perspectives, before coming back together to share as a group and modify our project accordingly. I focused on the physical design of the prototype, but after I would go off and update the design, I would always come back to the group, where they would then add their own ideas they had gathered from their separate work, thinking about our journey map or ccp's for example. This process of splitting and then reconnecting to share ideas and modifications behaves similarly to convergent and divergent thinking and well characterizes our teamwork over the course of the project

CEE 176G/276G SUSTAINABILITY DESIGN THINKING SPEC SHEET

st.air

Huwon Lee, Ishwar Sarda, Therese Bohn, Martina Paz Menendez
Monday July 29, 2024






CONCEPT STATEMENT

Gym as a holistic experience. A training space that enhances mind-body balance. The perfect blend of outdoors and indoors: connect with nature and train with top equipment. Fresh, sustainable and zen-like, this gym is ideal for private workouts and community connection.

MVP FEATURES

- Pacman shape and slidable doors: outdoors yet indoors.
- Sustainable: Natural ventilation and optimal natural lighting , hybrid energy production.
- Private and customizable: flexible panels and pull-down doors.

MVP + FEATURES

- Scalable and adaptable for different environments and needs.
- Community-focused design with a zen-like, calming atmosphere (community spaces).
- Option for closing and electric ventilation in extreme weather.

PROBLEM STATEMENT

People who go to gyms need a refreshing and private space that keeps them connected with themselves and nature, while inspired by a holistic community.

COMPOSITE CHARACTER PROFILE

Vivian is a 54-year-old mother, who enjoys going to the gym to be mindful and improve her health. She practices pilates, yoga, and occasionally lifts lighter weights. She does not like to be seen by weight lifters while she is exercising.

POV STATEMENT

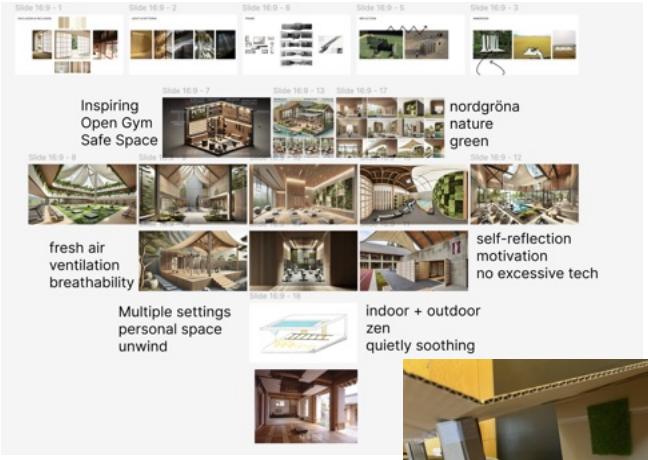
Vivian likes to unwind by practicing pilates, yoga or weightlifting. Her time exercising is sacred, it is what keeps her sane. She often feels bothered by noisy and smelly people in the gym. Vivian would love a gym that offers a peaceful, private space where she can practice her workouts without distractions, ensuring a calm and mindful exercise experience.

We are a team of gym lovers. We like how working out makes us feel, how it helps us connect with ourselves to be more present. However, we all felt that gyms are not a calming and mindful experience. Our ***passion***, therefore, was unfulfilling - so we decided to search for a solution.

To do this, we first wanted to make sure other people felt the same way (**empathy**). The interviews we conducted had the following results:

1. The perfect gym is: functional, spacious, private, well-equipped, fresh, naturally illuminated, motivating, nature inspired
2. The bad thing about gyms is: smell, noise, crowds, *feeling observed*, not having necessary equipment, poor lighting, being distracted by technology
3. *People prefer to work indoors because*: there is more possibilities of equipment, it is cooler, protects from bad weather. *People prefer to work outdoors because*: recharged in nature, like breathing fresh air, feel more connected with myself, less noise contamination and crowds, better smell.

Therefore, the **defined** problem statement: people who go to gyms need a refreshing space that keeps them connected with themselves and nature.



We started **ideating** on the possible solution, and created a figma as our brainstorm. We tried to convey the feelings our gym would produce, the materials it would use, the space in which it would be. We would merge the best of indoors and outdoors gym preferences found in interviews.





We then started **prototyping** through Chat GPT image generation, generating over 26 different gyms. We **tested** it in class and added electrical ventilation systems as well as the sealing method for the gym.



We finally created a board and a more developed prototype, which we **communicated** as a gym like no other, a space to rediscover oneself.

Personal Self Reflection: Martina Paz Menéndez

What is a space? An opportunity to redefine horizons and let the imagination fly. A physical place in which so much can happen, it could be functional, it could be beautiful, it could foster community. A space could be so much, because a space could also be a feeling.

It was truly a wonderful experience to have the opportunity to design feelings through space. Designing a holistic gym that creates peaceful and wholesome feelings gave me purpose. In some way, it took the creativity boundaries further: everything was possible in this gym -and we were the authors of this experience.

The design thinking process in teams was very rich. I think that the fact that we were all passionate about gym as a nurturer of the mind was key. We applied design thinking to passion- we empathize with the users because we would also be the users. We all liked and prioritized different things, so we were in a constant debate, which made the gym so much better, sustainable and user friendly. Empathizing, ideating and testing were so much more powerful working as a team because our ideas were more creative, they were identifying and solving more problems.It was our teamwork that inspired our gym to be a space that fosters community, even though its most important feature is connecting with oneself. I think that designing the gym was a bit like going to the gym: we understood our processes and improved them with a community who shared the same interests.

Personal Self-Reflection: Therese Bohn

Most people have probably heard the expression “teamwork makes the dream work” at least once in their life. I will not disagree, but rather add to this phrasing. What the Sustainability Design Thinking process within Project 2 has shown me is that there doesn’t need to be “the dream”, as in a static goal, to begin with. By **empathizing** as a diverse team, **defining** a problem from multiple perspectives and **ideating** based on that, a dream or vision will rather be co-created, in a much more flexible way. Meanwhile, it is more difficult to “fall in love with the solution” and easier to “fall in love with the problem” - as there is no singular ownership of an idea, making the solution more problem oriented and less ego-driven. **More form follows function, leading to more well-roundedness and sustainability**.

This is especially important for designing a long-lasting space that shall feel welcoming for many different people - like a gym. In this sense, it was incredibly refreshing to hear Ishwar’s, Martina’s and Lee’s interpretations of what “welcoming” means to them, and what it could mean to our CCP Vivian. These ideas then only enriched the **Prototyping** stage and thanks to our complementary strengths and shared efforts, the **Testing** and **Communication** process of st.air felt very efficient. Altogether, this experience showed me how rewarding it can be to apply the Design Thinking process as a team, setting me off well for future projects, where “Design Thinking brings a shared dream to life”.

Personal Self-Reflection: Huwon LEE

Architecture is one of the most important factors for humans, as the three essential elements for humans are called 'food, clothing and shelter'. In fact, I am a student majoring in design, but this was my first time designing an architecture, so it was interesting.

From the 'observing' stage for architectural design, it was new for me. My team designed gyms, so I focused on the people in the gym and the important elements in the gym. I started to fall into the charm of architecture which leads how people moved in the gym and where the gym equipment was arranged. And I tried to consider energy conservation and pursue nature-friendly design to make the sustainability. I also learned from my prior research that there are many wise architectural techniques and numerous eco-architectural restraints. We also used Korean traditional doors when we made the doors separating spaces in st.air. At the same time, seeing traditional architectural techniques being used in modern architecture, I also felt the timeless charm of architecture.

The group design project was so much fun. I was proud to produce good results by utilizing strengths of each team member. Different experiences enriched the design and we were able to come up with various solutions. Also, it was easy to make prototypes for st.air that seems to be hard to make, and the quality was also increased. This collaboration with team members from different countries was a great experience for me to do global projects in the future.

Personal Self-Reflection: Ishwar Anand Sarda

My experience in this project revolves around how certain aspects of the design thinking process integrated seamlessly in the project. Design project 1 taught me the importance of human centered design, and looking back I feel that making a conscious effort to empathize and observe with greater brevity for design project 2 helped me a lot! I was able to use some of the brainstorming techniques we learnt previously into this project. Another important lesson for me was team dynamics in a group you haven't met or interacted with too long ago. Testing and iteration were extremely rewarding phases of the project. To me, it felt like a melting pot of cultures and ideas coming together to work on one topic. The use of AI in generating initial sketches was a fun experience too! Although not perfect, it gave us multiple nodes to brainstorm further and focus on details we didn't think were necessary. Personally, I felt that working in a team helped me appreciate other's opinions which eventually made the "empathy" phase of design thinking almost natural for me. An added emphasis on sustainability forced me to use the "look and see" method in the actual gyms while observing. The patterns I observed with respect to using machines Pre and post-workout sessions, for example, how people navigated between different spaces in the gym, helped me think about the floor plan of st.air. Looking forward to the last project!

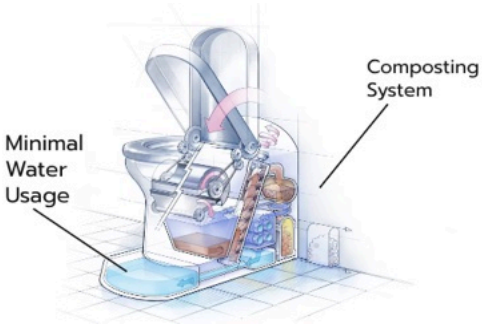
CEE 176G/276G SUSTAINABILITY DESIGN THINKING SPEC SHEET

Hygiene Haven

Adam Tang, Eric Zhang and Matthew Lee

Design Date: Monday, August 6, 2024





CONCEPT STATEMENT

Hygiene Haven is a composting, AI-powered toilet and stall system which gives the user a clean and convenient experience with self-cleaning, noise cancellation, and ventilation features, while converting your waste into reusable energy.

MVP FEATURES (<10 words each)

- Spaciousness for luggage storage
- Ultra sustainable composting system
- Minimal-water flushing system & Foot pedal

MVP+ FEATURES (<10 words each)

- Lighting: convenient indicator lights (vacant/occupied)
- AI air freshening scent cleanser/integration
- Self-cleaning brushes for toilet seat (no poop, piss or hair)

PROBLEM STATEMENT

We hate going to airport restrooms, as they often have piss and leftover hairs on the toilet seat, along with remnants of previous users' waste. They also smell bad and have dim lighting, giving users a disappointing/disgusting experience. Not to mention, there is also little-to-no privacy between stalls.

COMPOSITE CHARACTER PROFILE

Mia is 29 years old, and the owner of a shopping mall in Los Angeles. She values sustainability and saving the environment, and also modernizing and implementing more technology in the world.

POV STATEMENT

Mia wants to modernize her shopping center and make it more sustainable. She believes that public bathrooms can definitely be improved upon, and is looking into newer models of bathrooms, toilets, and stalls, that are both more sustainable and modern. However, she isn't sure of the effectiveness of these models.

Prototype 1:



Prototype 3:



Prototype 1 consisted of only the toilet.

Features:

- Just the toilet. A strong, cardboard base.

Disadvantages:

- Not anything special about the toilet.
- No AI integration
- Still contains all the issues as seen in regular airport restroom stalls (smell, pooping sounds, uncleanliness, etc.)

Prototype 2 (not imaged unfortunately) also featured the stall and AI integration.

Features:

- AI regulation of the following:
  - Mood lights
  - Air freshener (artificial however)
- Composting toilet (rotating wheel design)
- Automatic sensor + manual flush

Disadvantages:

- Stall is too small for airport baggage
- Automatic flushing wastes water if activated randomly
- Artificial air freshener uses resources and is unsustainable in the long run
- Stalls are not gender-inclusive
- Hand manual flush is gross to touch

Prototype 3 consisted of all final features up to this point.

Features:

- AI regulation of natural air freshening (fan + lavender garden in the back for fragrant air)
- Extra stall space for luggage
- Pads/tampon box for female users
- Self-cleaning seat

DESIGN THINKING SELF-REFLECTION

Matthew: The Communication Piece of the Design Thinking Puzzle

Through Design Project 2, I learnt that to collaborate effectively across a few separate brains and different opinions of "how-to-do-certain-things," we must all be on the same page. It strengthened my understanding of the design thinking process as well because we used divergent-convergent thinking <u>together</u> as opposed to individual brainstorming (ie. Design Project 1). The sequence of processes was also important. Specifically, I felt that a problem statement was essential to be established in the early stage so that we could compare our final product to the problem statement and see if we succeeded in solving our original problem.

At first when I was envisioning what environment we should work on, I was thinking about more mainstream topics (ie. Shopping malls, Athletic Centers…). While public restrooms are somewhat broad in concept, the idea of improving airport toilets in the US is something that I didn't think of right away. We came to this conclusion through empathizing with personal experiences of how using the restrooms at different public areas felt like. Afterwards, the airport theme continued to stick as one of our peers suggested how American toilets' privacy levels are almost nonexistent. Then, we chose airport over airplane toilets because airports would lead us to easier needfinding.

With finding ways to improve the toilet, we connected the dots from personal experiences and factored-in questions (ie. Should the toilet be gender-specific?). I wouldn't have expected that our product would turn out to be an AI-powered toilet, but it was through subtle specific add-ons and iterative testing to succumb to.

Eric: The Benefits and Drawbacks of Working with a Team

Design Project 2, surprisingly, didn't help me learn much more about design thinking all that much; instead, it taught me the experience of working as a team.

Throughout my life, I've worked solo the most. I enjoyed the freedom that working solo allowed me. However, this project was different. We were all expected to contribute to the making of the project.

At first, we were not a cohesive unit; in fact, we had disagreements on just about everything you could think about. So, I took on a new approach. By compromising, and adding in parts of ideas that each of us liked, we were able to build a product and give a pitch that we were all proud of. After this experience, I will definitely consider working as a team much more. Though my freedom will be compromised, the increase in efficiency, new ideas, perspectives, and innovation is something I will greatly value.

Now onto the Design Thinking part: This project was much more in efficient than the previous one. We generated more ideas, which caused the amount of features our toilet and stall provided. By working in a team, we meshed together different elements to design something we believed to be the most efficient and most effective. I did good in taking part in discussions, assigning certain roles, generating ideas, and innovating from them. One thing I could've spent more time on is building the prototype; some of the prototypes I saw were very high quality, and I will strive to make my next prototype like that.

Adam: Compromising Through The Ups and Downs of Teamwork

Design Project 2 directly contrasted to design project 1 in the way we conducted progress. While our first project was individual and all the decisions were largely made myself, this project made us all work together towards a common product. While it was easy to choose public restrooms as our space, Eric, Matthew and I all had different visions for the final product, and we almost never reached a point of agreement. Compromise was a key part of our progress, especially concerning our team name and our MVP features. While we started out bickering about calling ourselves “Elon Musketeers” or “the Cool Kids,” we quickly increased in efficiency as we sacrificed what others couldn’t agree with.

As a team, we generated much more ideas to improve the Hygiene Haven, as shown from our sticky note exercise module. One of the ways we capitalized on working in a team was in assigning roles based on what each of us were best at. I did the prototyping since I love hands-on work, while Eric and Matthew did the CCPs, POVs, and the journey map. The script was also an aspect where our talents combined to make it the best possible, but it was also where we saw lots of disagreement. Eric and I had very dissimilar senses of humor, where he specializes more in subtle, relatable lines while I enjoy absurd, wild statements. We ended up having to find a middle ground that balanced both sides, which I think was best for our project.

This experience overall reinforced that teamwork makes the best work (even if shaky at first), and I will continue striving to maximize our potential as a group in future projects.

CEE 176G/276G SUSTAINABILITY DESIGN THINKING SPEC SHEET

Burn Bright Project

Gentlemen's Club - Enrico Bertoni, David Dunn, Tim Warzawa
Monday, August 5, 2024



CONCEPT STATEMENT

The Burn Bright Project solves the problem of increasing student numbers facing the issue of burning out and not willing to visit professional help centers. The issue was observed on campus and validated with interviews. A model illustrating the key features was developed, tested and communicated.

MVP FEATURES

- Pre-Fabricated: Modularity promotes sustainability
- Natural Light and Materials: Creating a relaxing atmosphere
- Public-Private Space: Meeting everyone's needs

MVP+ FEATURES

- Affirmation Wall: Making students feel good, positive reinforcement
- Vending Machine W/Suid Card: making students feel better
- Sound Design: having control over their surroundings
- Welcoming and Tutors Guideline: Having access professional help

PROBLEM STATEMENT

Increasing numbers of mentally unstable students do not feel comfortable using professional help-offers.

COMPOSITE CHARACTER PROFILE

Struggling Steph is an undergraduate student at Stanford, 21 years old, empathic and ambitious but suffers from stress and anxiety in the competitive academic environment.

POV STATEMENT

Steph needs easy access to convenient places to improve her wellness, because the competitive academic environment is setting her back and putting a risk on her mental health and future endeavors.

ADDITIONAL ILLUSTRATIONS

A better understanding should be provided by more perspectives:



Figure 1: Plants and natural lightning create a relaxing atmosphere.



Figure 2: Outside perspective on the Burn Bright Project.

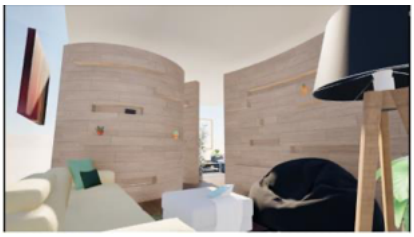


Figure 1: Students can use couches or beanbags to relax.

Test Design

For us it was important to get a better impression of what testers might enjoy. That is why we decided to offer them certain images and ask them to evaluate on a scale how much they liked it. We also wanted to find out how stressed students feel and therefore how relevant our offer for help is. Further, we were curious to know what makes people relax and what they would like to see in the Burn Bright Project. All in all, the testing design was a success as we got the confirmation that the Burn Bright Project is needed.

Design Specifications (Dimensions, Materials, Power Requirements)

The materials used are made out of wood to create a warm and welcoming atmosphere. Further, there should be a small water fountain to be able to relax better and glass in order to be able to see outside. The dimensions are the following: Tables are small so people cannot work there but rather focus on relaxation. Power Requirements are a battery to make the fountain running as well as heating and cooling in winter/summer.

Justification Statement

The Burn Bright project is a plug-in room offering the increasing number of students with mental health issues a room to relax and calm down and consequently a low entrance offer in comparison to professional help centers.

Results/ Insights from Prototyping & Testing

The testing showed that people enjoyed the idea. We got the affirmation that low tables are appreciated to relax. One recommendation was to use Japanese low tables in specific. Further, beanbags and board games were requested. The prototyping showed that the walls separating the private and public space need to have the right high: If they are too high, they might create an oppressive atmosphere. If they are too low, they might not separate both parts clearly enough.

Personal Self-Reflection: Tim Warzawa
Title: Efficient and productive team work leads to success

It was a great experience to work together. I feel like we already know each other's strengths well and this enabled us to create a productive and efficient atmosphere. When it comes to the design thinking, I feel like we all felt much more comfortable in the process than in the first project.

The empathy stage was also easy for us as we are students ourselves. The definition and ideation phase also went fast as it came somehow naturally to create ideas and possible solutions. In the first Design Project I needed to figure things out. Now, I was able to build up on this knowledge, for example when it came to testing or prototype building. This reflection makes me happy as I see how much I learned in this course.

A further insight is that I could see the difference between working for myself and the positive effectives of teamwork clearly: It was not only more fun to work in a team, we also were able to work out a complex project efficiently.

When it comes to the self-assessment I would say that I contributed with critically thinking about what works or what might not fit into the project, did the observation part successfully and thus identified important features for our project and supported the pitch creation.

However, I should work on my time management, especially when it comes to teamwork.

In general, I am content and proud of my work but most importantly, happy to see a huge progress from the first to the second Design Project.

PERSONAL SELF REFLECTION: “DESIGN-THINK YOUR TEAM TO DESIGN-THINK YOUR SUCCESS”

Enrico Bertoni

If I had to choose some adjectives for Design Project 1, they would have been challenging, satisfying and mind opening.

For Design Project 2, I would pick inspiring, rewarding and self-reflective.

About the idea, I’m very grateful I’ve had the chance to work on something I care a lot about. Compared to the first project I had the feeling of working on something more compelling and more related to my personal experience.

About the design thinking process: I think the best part - and the major difference compared to the first project - was to start with a rough idea of the steps we had to follow, but at the same time to have the freedom to pick tools and techniques we felt were most appropriate for reaching our goal.

Working as a team is a big difference and I personally enjoyed that quite a lot. I like to think about myself as a good team mate: I’m usually good at mitigating frictions, keeping people together and set tasks and deadlines.
Also, working within a team allowed me to focus on what I do best - search for inspiration, design the journey, keeping track of tasks, pushing the pitch practice - leaving all the modeling work to David’s magic touch and the observation part to Tim.

In the past few days, I tried to put these reflections in a work-environment perspective and I took an extremely valuable insight. Creating well-functioning teams and working on personal self-awareness (what I am good at? How can I contribute to a team? What I enjoy doing?) are both vital parts of building an inspiring and successful workplace, and both can be effectively targeted using design thinking!

Reflection Essay David Dunn:
Title: Let’s Change the Future

BurnBright Spaces are the culmination of a series of traumatic years at Stanford. During my time at Stanford, I experienced debilitating depression and anxiety and developed OCD that has overturned my life. While I have become medicated and started receiving counseling help, the road that Stanford has drug me across has often been a lonely and terrible experience.

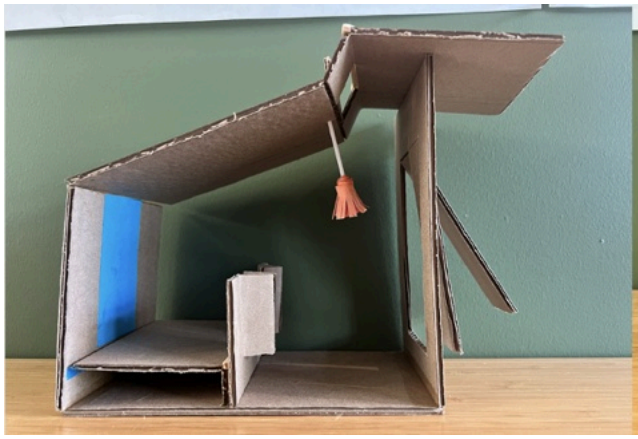
When we started talking about what kind of project to do, I immediately thought of sustainable mental health spaces. Too many students suffer from mental health in silence at University and don’t receive adequate healthcare when they speak up. BurnBright Spaces seeks to prevent disastrous burnout and stress, and provide breathing room for students.

I looked around in Y2E2 where I’ve spent 60-70% of my time at Stanford, and noticed there are no spaces for students to relax and take a break from stress. I used the spaces I’ve lived in as a template for what I wanted BurnBright to NOT be. Inviting natural materials like wood and fabrics into student spaces. Creating a human centered experience in contrast to the work centered spaces of Y2E2. Being able to have wellness come to me instead of me having to go to Vaden could have been a game changer in my life here at Stanford. With BurnBright, my team can bring those spaces to students and give them a place to change their lives and prevent lifelong mental struggles. We will positively change many student’s futures.

CEE 176G/276G SUSTAINABILITY DESIGN THINKING SPEC SHEET

Aerocool

Design Team: 2 Cool 4 School
Alexander Pezzei, Vivian Snitker, Nick Machicao, Vishal Mahto
Design Date: Monday, August 5, 2024




CONCEPT STATEMENT
Aerocool is a redesigned dormitory that combats thermo-comfort issues faced by college students. The design provides numerous cooling solutions to make lifestyles comfortable while being mindful about natural resources.

MVP FEATURES
- Canopy windows that block direct sunlight into dorm rooms.
- Vents for evaporative cooling in each room.
- Low-High windows to enhance cross ventilation of air.

MVP+ FEATURES
- Solar panels to run ECs and provide Direct Current.
- Additional storage and reading space.
- Recycled water waterfall in the lounge.

PROBLEM STATEMENT
Due to unbearable temperatures during the day, students find extreme discomfort staying in their dorm rooms or to socialize in the lounges.

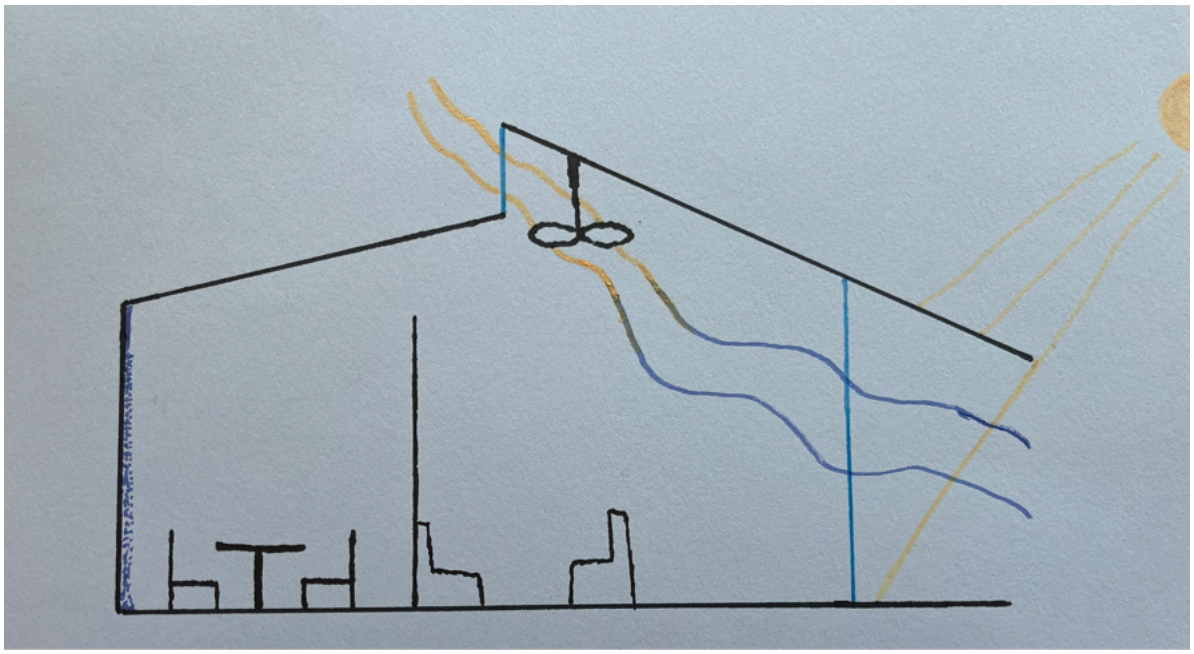
COMPOSITE CHARACTER PROFILE
Hot Herbert, a Stanford student, comes from Nebraska and is not accustomed to the heat in his dorm.

POV STATEMENT
Herbert does not like the noise of fans while he is studying, so he would love to have our cooling system, which is not noisy at all and would also like to have a quiet place to study in the dorm.

The common area in our dorm is more than just a relaxing space. We designed it with user needs in mind, ensuring it accommodates everyone. For those who enjoy socializing, our conversation pit provides a dedicated area. Meanwhile, a separate quiet space features a fountain, not only for its aesthetic appeal but also to block out noise and create a soothing environment for studying.

We aimed for a modern and raw feel, using materials like finely cut wood and earthy colors such as green and brown, complemented by warm, inviting lighting. The canopy windows enhance this ambiance, seamlessly connecting the indoors with nature. The lounge roof is slanted and extended on one side to prevent direct sunlight from overheating the room through the canopy windows.

Additionally, we've installed a reversible fan that can either cool or heat the space. On hot days, opening the lower window allows cool air to flow in, while the higher window expels hot air, a process aided by the ceiling fan. In colder weather, the fan reverses direction to circulate warm air throughout the lounge, maintaining a comfortable temperature.



DESIGN THINKING SELF REFLECTION, VIVIAN:

Working on the sustainable air conditioning solution for a dorm in a hot climate was a transformative experience for me. Initially I had a very technical view of the project, how we would make the rooms colder and how it could be most sustainable. However, as I experimented with the personal aspects and incorporated design thinking, I began to resonate more with the "I want that, I need that" perspective. This shift allowed me to pitch, and ideate more creatively, turning the dorm into something fun and unique for students.

One of the most enjoyable aspects of this project was working with my team. We could all relate to the CCP and the needs of the people we were designing the space for, which allowed us to incorporate more fun aspects that we wished we had in our current dorm. These insights helped the entire team come together and agree on ideas we all dreamt of having. And by creating a form that was successful in giving us relevant information about how people felt that lounge spaces on campus feels like we could better create a dorm catering to everyone's needs.

Using design thinking as a tool allowed us to enhance the space in ways that appealed to students. This approach made the dorm not only more sustainable but also more engaging and appealing to the students. Overall, this project has been fun and enlightening, and it has definitely shaped how I will approach future design projects.

Personal Self-Reflection - Challenge Existing Behaviors

Nick Machicao:

This project showed me that design thinking should be used to benefit a community of people and encourage people to undertake more sustainable behaviors. Establishing a specific community to help is fundamental in design thinking because if a product tries to help too many different people it will fail to serve any specific community. Our project centered on both helping overheated students and facilitating an environment for connection and learning. Through focusing on one community we achieved a design where students can enjoy the company of each other in the comfort of their own dorm ensuring better academic and social excellence.

Our project helps a community with the most power to change the world making it all the more important to instill sustainable practices into the livelihoods of our students. Through evaporative cooling, cross ventilation, and solar energy we hope to raise awareness about renewable energy and designing buildings to efficiently use natural resources. Ideally, students will recognize that fans are unsustainable and use them if only absolutely necessary given that our design maximizes energy efficient cooling. Additionally, our lounge intends to facilitate greater student interaction, something greatly lacking in our digital age. We want our conversation pit to spark the deepest conservations to push past the superficiality that pervades social media platforms. Thus, by encouraging better environmental practices and encouraging students to make face-to-face encounters we hope students will assume more sustainable livelihoods.

Personal Self-Reflection: Innovative Spaces

Alexander Pezzei

For me, design project 2 was a lot different than design project 1. The first reason for this is that you had to design a whole space instead of just a single product. With a space, especially with the space we designed, you have to consider many more factors compared to just a single product. Our space, for example, had not just one cooling feature, but many different ones such as cross ventilation, canopy windows, evaporative cooling, and a reversible fan. Furthermore, we had to make sure that people feel good being in this space and added features such as the study area and the calming waterfall to achieve that. Although it was more extensive than project 1, it was manageable since we had four people working on this project. Working in a group has the advantage of being able to divide the work, but you also have to be able to coordinate with the other team members, which I think we managed to do well. Working in a team has given me more insights into design thinking because I was able to see it from different perspectives. What we could have done better would be designing the slides for the pitch, especially the second slide. I feel like having five different pictures on one slide in addition to the physical prototype we had on the table made our explanation a bit confusing, especially because we had so many features. During the 3D-model activity after the pitches, I got the feedback that this part of our pitch was difficult to follow, so I think that reducing the number of pictures would help to make it a bit simpler and more understandable.

CEE 176G/276G SUSTAINABILITY DESIGN THINKING SPEC SHEET

Clevernette

Kitchenette Krew
Nadia Kuczynski, Rowan Winchell, Cindy Wang
Wednesday, August 7, 2024



CONCEPT STATEMENT

The Clevernette is a redesign of the dorm kitchenettes. The open concept design makes it more welcoming. While the cleaning features, such as the convertible sink-dishwasher, dish drying racks, disinfecting UV light, and food tracker aid in its daily use. Together, encouraging residents to maintain the space.

MVP FEATURES

- Transparent Sliding Door
- Convertible Sink-Dishwasher
- Dish Drying Rack Shelves

MVP+ FEATURES

- Food Condition Tracker
- Disinfecting UV Light System
- Inset Open Shelves

PROBLEM STATEMENT

Dorm kitchenettes are not properly maintained. There is rotten food, dirty dishes, and generally unsanitary conditions. This can make the small space feel cramped and unwelcoming. These factors compound to make the kitchenettes unusable and frustrating for the students who enjoy cooking.

COMPOSITE CHARACTER PROFILE

Dancing Dan is a Stanford residential student who loves to jam out while cooking with his friends.

POV STATEMENT

The constant mess in the kitchenette cramps my style, and cleaning dirty dishes makes a horrible end to a fun night of cooking.



Transparent Sliding Door
We found a problem with the kitchenette being shut off from the rest of the lounge space, allowing it to be ignored, and messes to pile up. The transparent sliding doors ensure more accountability for messes, as they can't just be ignored. Additionally, by opening up the space, we encourage community building and allow for more movement while cooking.



Convertible Sink-Dishwasher
To prevent dishes from piling up, we made the dishwashing process faster, water efficient, and enjoyable. With a press of a button located next to the sink, racks pop up to load dishes in. Then, a clear screen slides over the sink, protecting you while the sink uses hot, high pressure water to clean your dishes in just a few minutes.



Dish Drying Rack Shelves
The dish storage shelves double as a drying rack. Air vents assist in the drying process, while the excess water is collected below the shelves and drained in the sink.



Food Condition Tracker
A panel located on the fridge displays a list of expired or nearly expired food. When food is placed in the fridge, students can quickly input the food item, expiration date, and ownership. This allows for notifications to be sent to their phone reminding them to eat or throw out the food, preventing excess food waste.



Disinfecting UV Light System
UV lights located on the ceiling automatically turn on every night to disinfect the countertops and other surfaces.



Inset Open Shelves
A wall of shelves offers more storage room without compromising space in the kitchenette. While the open face design allows for ease of access and makes it feel more spacious

Personal Self-Reflection: Clever Thinking
Nadia Kuczynski

Design project two helped me to feel more comfortable with the design thinking process. The group's dynamic and fast-paced nature helped me to commit to my ideas more and try some of the crazy ones. The brainstorming process was fun with a group as our ideas could bounce off each other and build off of one another. Our group found a good system for delegating work, which also helped. The Clevernette overall feels more cohesive than my first project.

Cindy, Rowan, and I quickly realized that we all had common frustrations with the dorm kitchenettes, so we chose to focus on it. At first, we had a bit of trouble coming up with solutions. I think we were still set in the mindset of creating a product like the first project. We thought of a couple of products to add to the space like the food tracker, but it was not cohesive. Then after our first testing session, we collectively had a moment of realization and came up with the sliding door. This allowed us to shift our thinking and focus more on space as a whole. The Celvernette felt very human-centered, and we tried to incorporate our CCP in almost every aspect of the design process. Overall, I enjoyed the process of making the Clevernette and wish it could be implemented in my dorm.

Personal Self-Reflection: A Project Served Well-Done
Rowan Winchell

The issue with the dorm kitchenettes is rather personal for me, as my friends and I enjoy making food and eating together while in the lounge. Yet, the cramped space and unsanitary conditions are a constant frustration for us. My teammates have both had similar experiences. Taking on this design challenge allowed us to explore possible solutions to our shared problem.

Nadia, Cindy, and I each live in different residential houses: Trancos, Arroyo, and Soto respectively. Due to this, when we came together to share our observations of our dorm kitchenettes, we found that they varied in which problems were present and which were most significant. However, after some discussion, we agreed on sanitation being the most pressing issue, with dishes and food waste being particularly troublesome.

When we started brainstorming solutions, we were originally focusing on specific elements of the kitchenette and trying to solve these individual issues with product ideas. However, when discussing feedback for the in-class testing, we realized that we were approaching the problems in the mindset of *product* solutions, rather than in the mindset of *space* solutions. Afterwards, we came up with the idea of the transparent sliding doors and shifted our focus toward how we could change the *behavior* of the students who use the space. This was particularly important for me, since in my previous project I felt that I was similarly stuck in the mindset of the product, rather than the people. This realization with my team helped me shift my thinking on how to approach design.

Now at the end of the project, I can say that I really enjoyed working with this team. We were able to work off each other very well and I felt that each of us contributed an ample amount towards the project.

Personal Self-Reflection: Kooperating as a Krew
Cindy Wang

The greatest difference between the two projects is the cooperation with others needed to solve our problems.

In the past, I preferred individual work because teamwork often eventually ends up with a few responsible teammates, like me, bearing all the burden to get a satisfactory result.

I am grateful to have Rowan and Nadia as my teammates. They are very responsible and dedicated. We made a brief plan of when and who should do what on our first meeting and created a group chat to keep track of everybody's progress. We proceeded slowly but steadily; Everyone was on the same page, and we worked together one footprint at a time. On owner way, I recall us thinking of wild ideas such as Dancing Dan Vs Dirty Dish Monster or breaking the fourth wall for elevated pitch, and having a headache when scrolling through C-started vocabulary to find a catchy name for our kitchenette

In conclusion, This is a rare experience in that I have fun and enjoy cooperating with others. I have overcome my bad habit of procrastination by following the plans we have made together. I got to unleash my passion for drama when preparing for our elevated pitch. Overall it is my honor to work with my excellent teammates, Rowan and Nadia, on improving the dorm kitchenette design to make it a more welcoming and sustainable place. I am looking forward to "kooperate" with "Kitchenette Krew" in the future.

CEE 176G/276G SUSTAINABILITY DESIGN THINKING SPEC SHEET

Al khoshuf

A-Team

Team Member Names: Alyazia Albreiki, Ali Alhammad, Adelya Makhankova, Amna Alabdali

Wednesday, Aug 7, 2024



CONCEPT STATEMENT

Designing Sustainable Mall in the Emirates focusing on eco-friendly features and wellness experience by providing opportunities for the entire community to learn about sustainability. Ultimately the primary purpose of the mall is to promote and educate about sustainability.

MVP FEATURES

- Organic and sustainable business/shops
- Educational sustainable center
- Donate to Plant Tree or Install a Solar Panel Named

MVP+ FEATURES

- Energy efficient LED lightning
- Electric Shuttle service
- Green Roofs and Walls

PROBLEM STATEMENT

Traditional malls are uncomfortable and unsustainable, with harsh lighting, excessive AC, and overwhelming colors.

COMPOSITE CHARACTER PROFILE

Young Professional Group:late 20s to early 30s share a passion for innovation and sustainability, enjoying tech, eco-friendly fashion, plant-based diets, and attending sustainability events.

POV STATEMENT

This group often attend the sustainability center's seminars and speeches to remain current on green technologies and connect with like-minded people and they value living a sustainable lifestyle.

LOCATION:



LOGO:



DESIGN THINKING SELF-REFLECTION

GRENEER TOGETHER

Ali Alhammadi

Working on the sustainable mall project was a transformative experience that expanded my knowledge of sustainability and design thinking. Our objective was to design a mall that will not only suit the community's economic demands, but also include sustainable measures to reduce environmental effects. The project was both demanding and gratifying, forcing us to strike a balance between practical issues and imaginative solutions.

Our achievement was largely due to our collective efforts. The variety of viewpoints among our team members improved the caliber of our work since they each brought special knowledge and insights to the table. Together, people from many backgrounds helped us create survey questions that covered a wide variety of issues, from user experience to environmental effect. This cooperation was especially clear during the survey design process. We were able to obtain important insights that shaped our prototype

Our project's use of the design thinking approach was essential. We were able to visualize the user experience and pinpoint possible pain areas by making a journey map along with telling stories, which resulted in better developed concepts. Our idea was realized through the development of the prototype and the drawing of the mall design. Prioritizing essential features and thinking through future upgrades were aided by the investigation of (MVP) and MVP+.

Overall, this project reinforced the importance of sustainability in design and highlighted the value of iterative, user-centered approaches. The experience equipped me with a deeper understanding of how to tackle complex design challenges and the importance of collaboration in achieving sustainable solutions.

SHAPING FUTURES

Alyazia Albreiki

Our design project focused on creating a sustainable mall that combines environmental responsibility with meeting community needs. We used design thinking to balance practicality, aesthetics, and sustainability in our approach. The project included gathering user insights through surveys, developing prototypes, sketching designs, and mapping the customer journey. This process helped us refine our ideas and create a design that meets market demands while promoting sustainability.

The sustainable mall design project was a valuable learning experience that underscored the importance of sustainability and collaboration in design. Through our collective efforts, we were able to integrate innovative solutions that balanced environmental responsibility with community needs. The diverse perspectives within our team led to more comprehensive and effective outcomes, proving that teamwork is essential in tackling complex design challenges. This project has equipped us with the skills and insights necessary to approach future design endeavors with a strong emphasis on sustainability and user-centered thinking.

Design thinking was central to my approach, helping us visualize the user experience through tools like journey maps and storytelling. These methods allowed me to anticipate potential challenges and refine our ideas iteratively. The process of prototyping and sketching the mall design was particularly satisfying, as it enabled my group and I to bring our concepts to life in a concrete form.

In summary, this project emphasized the crucial role of sustainability in design while demonstrating the significance of teamwork and user-centered thinking. The experience provided me with valuable skills and insights that will be essential for tackling future design challenges.

NATURE-INFUSED SHOPPING EXPERIENCE

Adelya Makhankova

Working on the Al-Khoshuf project has been an amazing journey for our team. As students committed to sustainability, we often feel uncomfortable in traditional malls—harsh lighting, overpowering AC, and an unwelcoming atmosphere. This personal connection fueled our desire to design a mall that truly reflects our eco-friendly values.

"Al-Khoshuf" aims to transform shopping by integrating sustainable practices into every aspect of the mall's design and operation. We envision building this mall in the Emirates. Our design includes rooftop solar panels, energy-efficient LED lighting, and smart energy management systems. Water conservation is a big part of our plan, with rainwater harvesting and sewer recycling for irrigation.

We didn't just focus on the technical side. We also considered the psychological aspects of shopping. Our mall will offer a variety of shopping experiences, from thrifting and recycling to auctions and organic produce groceries. This diverse approach ensures we cater to different preferences while staying true to our sustainability goals.

Our research involved detailed observations and surveys to shape our vision. Our MVP features organic and sustainable businesses, an educational center on sustainability, and lounges with eco-friendly designs. Feedback from experts like Coin, Glenn, and students helped us refine our concept, leading to additional features like green roofs and walls, but more importantly bringing a whole experience rather than just shopping.

Through this project, I learned the importance of blending sustainability with user experience. It taught me the importance of empathy, creativity, and collaboration in design thinking. By understanding user needs and continuously refining our ideas, we aimed to create a mall that not only meets high sustainability standards but also offers a comfortable and welcoming shopping experience for families. Al-Khoshuf is our step towards a greener, more enjoyable future for shopping.

A BEACON OF ENVIRONMENTAL AWARENESS

Amna Alabdali

Designing the sustainable mall and education center “ Al-Khoshuf” was not just a project, but a transformative experience. It blended innovative design with sustainability education, aiming to create a commercial space that serves as a beacon of environmental awareness. Incorporating eco-friendly materials, energy-efficient systems, and waste reduction strategies, this approach can reach a broader audience and create a ripple effect, where informed individuals spread the knowledge and practices within their circles, amplifying the impact.

Al-Khoshuf has been a journey of growth and learning. It has deepened my understanding of sustainable design and its practical implications. The applications of converge-diverge thinking, listing MVPs, filtering MVP+, and building journey maps have been particularly enlightening. This experience has broadened my understanding of environmental issues and equipped me with the skills to promote sustainability in various settings. The collaborative planning and implementation with my peers have sharpened my communication and organizational skills, highlighting the importance of community engagement in driving sustainability change.

Combining sustainable design with educational initiatives creates a powerful synergy. The sustainable mall and education center are prototypes for future developments, showcasing how commercial spaces can be pivotal in promoting sustainability. The educational features have been central to this mission, proving that knowledge and awareness are key drivers of sustainable change.

DESIGN PROJECT 3

Where will YOU be 30 years from now? Future Designing. The Year is 2054.

DEZIGNBLÄST SUSTAINABLE FUTURES INITIATIVE

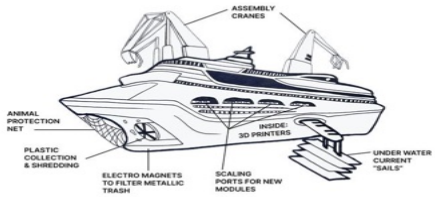
Design a “High-Efficiency” community space of the future where design thinking heightens sustainability, usability & appeal with a human-focused purpose, form & function.

Purpose: Showcase Sustainability Innovations.

CEE 176G/276G SUSTAINABILITY DESIGN THINKING SPEC SHEET

Vac-Marine

Team 5
Team Member Names: Alyazia Albreiki, Ashley Kwong, Therese Bohn, Tim Warzawa, Ishwar Sarda
Saturday, August 17, 2024



CONCEPT STATEMENT
Vac Marine is an innovative, sustainable cruise ship that cleans aquatic ecosystems while traveling to combat increasing plastic pollution in our oceans by 2054. It moves with natural currents without the primary need for external energy sources.

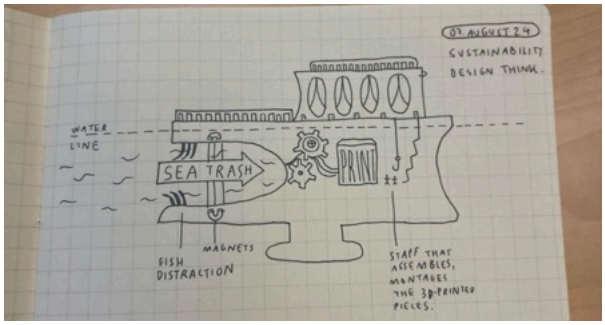
MVP FEATURES
- 3D prints collected plastic waste for expanding ship
- Grows phytoplankton around to absorb CO2
- Cruise shows new technologies on ship to passengers

MVP+ FEATURES
- Powered by green energy with new technologies
- Offers a unique experience on a self sustaining ship
- Transports seniors with limited mobility to new places

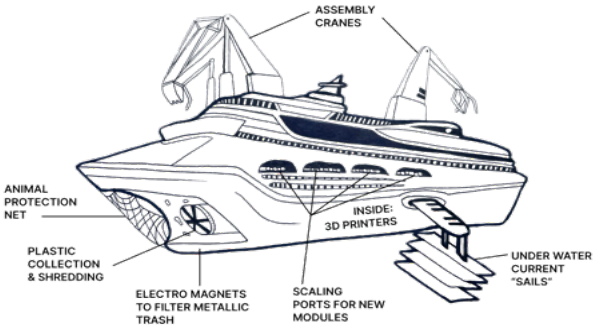
PROBLEM STATEMENT
Rising sea levels and plastic waste are endangering our oceans, requiring urgent, innovative solutions to protect marine ecosystems for future generations. Simultaneously, we live in an aging society in need of more convenient space for senior citizens.

COMPOSITE CHARACTER PROFILE
Wendy Wallace, 65 years old, served as a health wellness nurse in the UK for over 40 years. After retiring, she became a yoga instructor and nutritional consultant, helping other seniors find healthy lifestyles.

POV STATEMENT:
Wendy loves Vac Marine’s focus on environmental cleanup and its wellness-friendly spaces, allowing her to stay healthy while exploring new destinations.



Beginning with a brief sketch of our idea, we had incorporated our initial idea for collecting sea trash into the mechanics of the ship.



After more frisbee brainstorming, we revised the sketch adding scaling ports, underwater current sails.

Other CCP & POVs

Eco-friendly Emma, raised in Sweden, dedicated her career to environmental science, working with various NGOs on projects that focused on sustainable agriculture and renewable energy. In retirement, she continues to advocate for environmental causes. She loves to stay updated on the latest eco-friendly technologies. The Vac Marine's commitment to cleaning the oceans and its use of renewable energy sources like osmotic power makes her intrigued. She sees her journey on the Vac Marine not just as a travel experience but as an extension of her environmental advocacy, allowing her to witness and share innovative ecological practices with her peers and community.

Cruising In A Sustainable Future

Ashley Kwong

A key factor of this project was sustainability in a future that could be imagined in many ways which really broadened our scope for our designs. We had explored so many different possibilities such as recycling collected plastic waste, reducing carbon emissions with phytoplankton, and powering engines with osmotic energy. Each idea contributed to a very intriguing and innovative product. Sometimes I'd be cutting cardboard in the quiet studio at 10 am or catch myself staring at the Slack channel in a trance and realize it's really hard to design for a community when you're not surrounded by people. So I went outside and looked around. Design I realized is human-centric, many times we forget. Being able to focus the direction of who this design is for, allowed us to make the ship more realistic, not just an idea.

Having the Slack channel, our only form of communication for brainstorming meant I could go back in our conversations and reference ideas. This last project had passed by in a blur, with so many different components having to be coordinated and finished in the span of a week. With our time limit we couldn't fully expand and familiarize ourselves with our ideas. However, I was glad that while designing for a community in 30 years, I had this experience in class to be surrounded by so many innovative future forward design thinkers that pushed me outside of what I would have envisioned.

Riding the wave of the design thinking process towards a sustainable future

Therese Bohn

This project was all about the bold vision of how our future could be **designed** and shaped in a more sustainable way. Within the design thinking process, especially towards the early stages of defining, ideating and prototyping, it is crucial to not constrain any ideas prematurely. Therefore the 30 year time projection helped a lot to keep the bold imagination in the team alive - as no one could really tell what would be realistic and what not. As this project was a final sprint, we had to ideate quickly which I thought would be a challenge in such a big group but turned out to be a very fruitful experience. The shared past and experiences of being a student of this course brought us together and strengthened our desire to do this final project well - with contributions from everyone. Organizing ourselves on Slack increased our productivity, however, the effectiveness of in-person-meetings can’t be topped in my opinion. I’m confident that with more time, lively discussions and more diverse prototypes, we could have refined Vac Marine even better. Regardless, I am still proud of what we have accomplished in just one week: I credit the team for this, but also the design thinking process that streamlined our thoughts in a wide ocean of options and led us to a visionary, prototyped project that could able to trigger and ride an impactful wave towards a more sustainable future.

Designing a Greener Tomorrow

Alyazia Albreiki

Our sustainability project, guided by design thinking, was a deeply collaborative and forward-looking endeavor. A key aspect of this project was envisioning sustainability 30 years into the future, which significantly broadened our scope and challenged us to think beyond the immediate impact. This future-focused approach encouraged us to develop ideas that would not only be relevant today but also resilient and adaptable to the evolving challenges of the next three decades.

Working together as a team was crucial to our success. Each member brought unique perspectives, which allowed us to explore a wide range of ideas and solutions. The diversity in our group led to richer discussions and more innovative outcomes, particularly as we considered long-term sustainability goals. The process of creating our MVP and MVP+ was particularly enlightening, as it required us to prioritize features that would be most valuable over the long term. This iterative approach, integral to design thinking, helped us refine our ideas and ensure they were robust enough to stand the test of time.

Our final poster was more than just a summary; it was a visual narrative of our journey, capturing the essence of our project and its potential impact on the future. Through this experience, I learned the importance of collaboration, diversity of thought, and forward-thinking in tackling sustainability challenges. This project reinforced the need to look ahead and design solutions that are not only effective now but also sustainable for generations to come.

Sprint to Sustainability

Ishwar Sarda

Oh boy! Culmination of CEE 176G! What a ride this has been, and what a crazy final project to work on! The Vac-Marine has got to be my favorite design project that I did in the entire class. The format of the design-sprint made me think on my feet and really brought out many different shades in me as a design thinker, on express mode!

Thinking 30 years ahead, I was fascinated by the endless possibilities for high-efficiency spaces and products. Choosing a marine theme was random, and I initially brainstormed wild ideas that seemed far-fetched. However, as I delved deeper, I refocused on the core principle: "high-efficiency." It was easy to stray from the main goal with a futuristic prompt, but this project taught me to stay aligned with the bigger picture. Even within these constraints, the possibilities were endless.

Although our project did face some challenges with respect to the right target audience, the brainstorming and pitching I felt kind of diverted people's attention away from that. Our core ideas around sustainability and high-efficiency were strong, which made our project address the goal of DP3 to quite a large extent. The best part was, that in spite of not realizing the problem with the target audience soon enough, I was able to modify the pitch at the moment and accommodate feedback, which was a big jump in confidence for me from DP1.

This project with its format, and having an amazing team made it worth every penny. Grateful!

Fast-learning course

Tim Warzawa

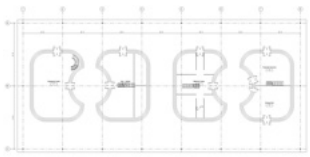
I am very thankful for this Teamwork experience. When comparing it to the First and second design thinking project, I reflect that it is much more difficult to coordinate so many people in an effective way than I expected. I understand now better why many huge projects take longer than planned. Coordinating people is harder than I thought. Further, I think we did a great job in creating a human-centered sustainable community. By doing so, the biggest challenge for me was the time-restriction. At the beginning I thought "this is not possible, its too tough, there is not enough time". However, when the days moved on, I got more and more confident we can do it. It was deceisive to communicate clearly with each other in order to get such a project done and I think we did a great job. I really was able to build up on the First and second Design thinking project as the previous experience gave me the confidence to do so. For example, I had enough courage to build on the model, something I could not have imagined to do before. I realized that the time constraint was intented as it can show us how much we learned in such a small period of time. Everyone was very fast-thinking in the Design thinking process in this project. For example the ideating and defining was done after a first discussion and the prototyping and testing was also much less difficult than in Design thinkng Projekt 1 and 2. Another example is the following: It was the third pitch I build and I really was effective with it too, it came quite natural to come up with something creative. Thank you for helping me reflecting that and making me confident in using the Design thinking process. The class was fun.

CEE 176G/276G SUSTAINABILITY DESIGN THINKING SPEC SHEET

Phoenix

David Dunn, Huwon Lee, Amna Alabdali, Nadia Kuczynski, Vishal Mahto, Martina Paz Menéndez

Thursday, August 15, 2024


CONCEPT STATEMENT

Fire relief capsules that serve as shelters and essential hubs in at-risk communities—functioning as community centers before fires, safe zones during, and housing afterward. Equipped with smart drones for fire control, rescue, and house printing, Phoenix prioritizes safety, dignity, and sustainability, using AI to empower community rebuilding.

MVP FEATURES

- 3d-printed plugins modules to fulfill basic needs and provide shelter.
- Preparedness: burn-proof materials, AI-powered firewall, fire-exit schemes.
- Human-centered: professional presence to accompany people and mitigate chaos.

MVP + FEATURES

- Sustainable: Renewable energy power grid, printed with recycled ash, water recycled.
- Preparedness technology: AI-powered drones, sprinklers, air filters in windows.
- AI community design: urban planning adapts (center choice, housing structure).

PROBLEM STATEMENT

Wildfires in California bring chaos and devastation to communities, resulting in displacement, loss of life, and mental health challenges.

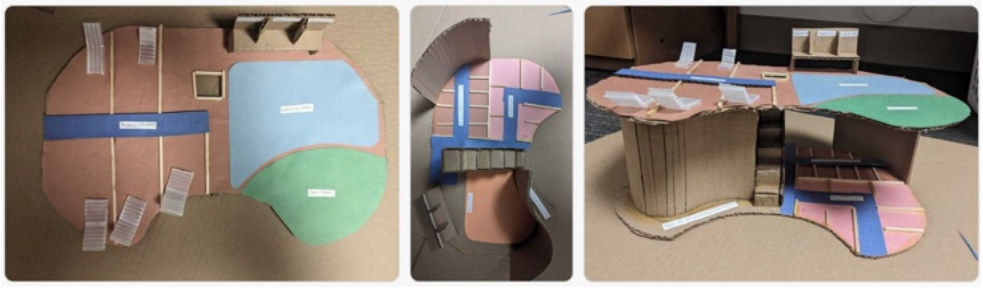
COMPOSITE CHARACTER PROFILE

Clara, an architect, used her savings and a loan to buy a house in Sacramento, where she lives with her husband and three-year-old son. Four months after moving in, a wildfire destroyed their home.

POV STATEMENT

Clara saw her house burn and her son cry himself to sleep. Her whole family had to evacuate and travel far to get treatment for ash inhalation. All of her work and memories burnt in the wildfire. She is now displaced and has to pay interest on loans she can’t afford.

3d models of Medical and Psychological Centers (right)

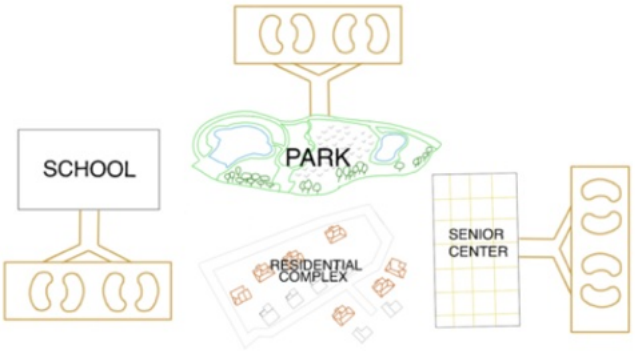




3D printed model phoenix input into Paradise High School, Palo Alto USA (left).



Community plan(right).

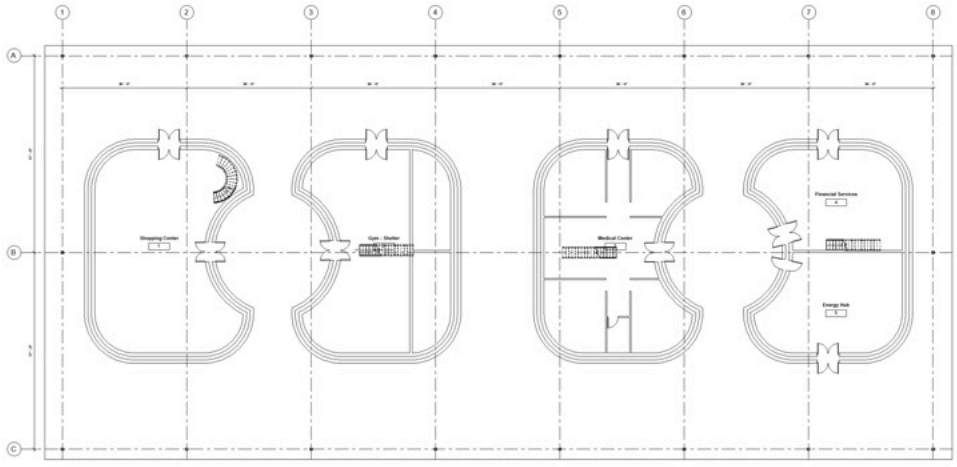


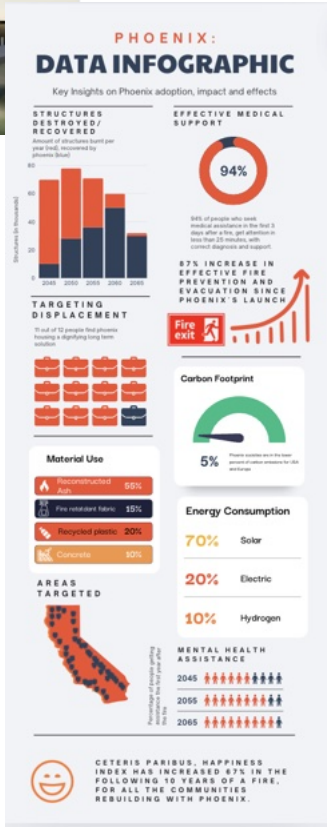
Digital Models below (interior of second floor for temporary housing, exterior views; images on first page show solar panel roof).





Floor plan (below) (provides basic needs, energy production, and community centers, protected by fire-wall). Regional context map and general data (right)





DESIGN THINKING SELF-REFLECTION: Martina Paz Menéndez
Creative teams

It’s amazing how speed and teamwork can really boost the creative process. Working with this team of talented individuals, each with unique interests and capabilities, was incredibly interesting. I believe this team truly challenged each other, applying design thinking strategies and boosting creativity with tools like rendering, 3D printing, and sketching.

Our initial brainstorming evolved over the week. As the process accelerated, we were pushed to think more deeply and intensely about concrete problems. Having a clear definition from the start and maintaining communication, both in person and through Slack, were key. It was fascinating to see how our different viewpoints and backgrounds converged, leading to an efficient work dynamic where we could empathize and analyze the real problem. Our design thinking and collaborative work really improved our sustainability features.

Design thinking with this group was special because everyone contributed something unique. Each person was passionate about their ideas, and no idea was the same. There was a strong sense of trust, and no one felt judged— we allowed ourselves to be creative. We empathized through research and surveys, defined our goals in detailed yet quick iterations, ideated through passionate brainstorms, prototyped using various tools and mediums, tested quickly and effectively, and then communicated our final concept, Phoenix. I’m very happy to have finished this class with such an interesting team that challenged me to be flexible, creative, and fast in my work.

DESIGN THINKING SELF-REFLECTION: Nadia Kuczynski
Rising to the Challenge

Design Project Three is my best project so far in this class. Although this project was incredibly fast-paced, the group dynamic we created fostered a sense of creativity. We all came up with unique ideas that we could build upon together. The fast-paced nature of the project meant that we were often not able to meet a group. This posed some challenges, but our group was great at communicating and delegating tasks. Everyone was willing to help out wherever they could, and we built a sense of trust. I never worried about the project not getting done on time, since I knew everyone on the team was dedicated. I enjoyed working on this team and it proved to me the importance of teamwork in the design thinking process.

The prompt to build for 30 years in the future helped my creativity and helped me to explore more crazy ideas. At the beginning of the process, we kept forgetting that we were designing for 30 years in the future. We focused on practicality and implementation as if it were the present day. We then had a creative turning point where we decided to commit to more crazy ideas as anything could happen in 30 years. Throughout this class, I have found that often the beginning of the design project is the hardest, but there tends to be a turning point where your mindset shifts and creativity pours out. Design thinking projects always come together once you embrace the uncertainty and let ideas bounce off each other. Overall, I am proud of PHOENIX and I could not have asked for a better team.

DESIGN THINKING SELF-REFLECTION: HuwonLEE
Imagination of Design and Technology

Imagining the future is always fun. It promotes the development of future technologies by opening up infinite possibilities to designers. At the same time, it allows us to observe the current technologies that will serve as a springboard in the future more closely. For example, in this DP3, my team member introduced me to the current technology of building a house with a 3D printer, and I was inspired by it to think about the idea of combining drones which has 3D printer ability.

In this DP, it was interesting to design a community beyond one building. We thought about where to place the Phoenix Building, and we were able to get answers through human-centered storytelling. All buildings are for people, and they have their own purpose. It was very complicated and fun at the same time to think about how harmoniously you can conceive a new building with an existing building.

As long as humans live on Earth, natural disasters are a natural task to deal with. Our team has created buildings and communities that protect people from natural disasters, especially wild fire. In the process, it was especially interesting to design while classifying natural and normal situations. The idea of 'rescuing people with drones' will be very common. But to effectively rescue more people, adding some design elements to drones and buildings was a very different experience for me.

DESIGN THINKING SELF-REFLECTION: Amna Alabdali
Engaging in Innovation and Team Synergy

Participating in the “Phoenix” project during this Sustainability Design Thinking course was an eye-opening experience. Phoenix expanded my awareness of sustainable methods and demonstrated the importance of inventive and empathic approaches to real-world issues such as wildfire management and community safety.

Our project aimed to create fire relief capsules that could act as community hubs before, during, and after disasters. We highlighted integrated community planning and sustainability efforts. We developed solutions that improve community resilience by leveraging sophisticated technologies such as AI and intelligent drones, focusing on using sustainable materials and energy creatively.

The team aspect was very revolutionary. Working with a broad group helped me see the project from various perspectives, which enhanced the design process and final output. Our team's synergy was powered by a shared dedication to innovation and a rigorous design-thinking approach that included constant brainstorming, prototyping, and testing.

The “Phoenix” project was not just a professional endeavor, but a personal journey of growth. It instilled in me the value of collaboration, the importance of thorough research, and the power of diverse perspectives in problem-solving. These insights have not only enhanced my professional skills but also shaped my personal outlook.

Reflecting on the “Phoenix” project, I am more determined than ever to carve a career path in sustainable development. This experience has reignited my passion for applying design thinking to complex environmental and societal issues, and I am eager to continue contributing to impactful solutions.

DESIGN THINKING SELF-REFLECTION: Vishal Mahto
Forging the Future: A Collaborative Odyssey in Sustainable Design

Participating in the third design project was a profoundly transformative experience. The project's swift pace demanded not only agility and quick thinking but also an elevation of our creative processes to unprecedented heights. Collaborating with a diverse array of brilliant minds, each contributing distinctive perspectives and expertise, was both invigorating and humbling. The synergy we cultivated as a team was rooted in mutual respect, seamless communication, and a collective zeal for innovation.

What made this project particularly exhilarating was the expansive creative latitude we were afforded. Initially, we grappled with the challenge of designing for a world 30 years in the future. However, once we embraced this forward-thinking approach, our creativity was unleashed. The prompt liberated us from the confines of conventionality, allowing us to explore visionary solutions that transcended the limits of present-day feasibility.

Our endeavor focused on conceptualizing fire relief capsules that would function as community sanctuaries before, during, and after disasters. We seamlessly integrated advanced technologies such as AI and intelligent drones, all while ensuring that sustainability and community resilience remained at the forefront of our design. The iterative process of brainstorming, prototyping, and rigorous testing was as challenging as it was rewarding, refining our ideas into a cohesive and impactful solution.

Reflecting on this journey, I am filled with pride in what we achieved together. The project not only deepened my grasp of design thinking but also solidified my commitment to crafting sustainable, transformative solutions that address pressing global challenges.

DESIGN THINKING SELF-REFLECTION: David Dunn
By Design

Designing the Phoenix shelters was an experience. It felt like a design charrette in a lot of ways. With a quick turnaround from the last project, I was reeling from the switch of wellness to disaster relief. I must say, I was much more interested in my Burn Bright project and I wish I could flesh it out more. I had more passion for the topic, but I'm sure if I was building tornado proof housing or communities for areas like my home state, Tennessee, I would have been much more energized.

Often during this project, I found myself taking on the role of asking "why" we would make a certain design choice and "how" the choice would be implemented. Often I heard the response "the project is for 30 years in the future," and that didn't sit well with me. I believe every aspect of the project should be explainable in some way. Sure we used futuristic drones in the project, but thinking about drone taxis is not so distant. If there was simply something that couldn't be explained except through the magical timing of 30 years I would challenge the group to think of a more plausible solution.

Consequently, Phoenix shelters are a plausible solution to combat wildfires in the future. They are designed to protect and steward the areas where they are built. I feel proud of the concept we derived together. Phoenix is not an arbitrary design, rather a carefully designed response to the constraints of its problem.

The group all relied on their strengths and contributed to the creation of a cohesive community plan. I believe we were able to flesh-out our project because we carried what we learned in the first two projects into this final push.

CEE 176G/276G SUSTAINABILITY DESIGN THINKING SPEC SHEET

Neo-Venice

Team THE NATURE SHIFTERS
Team Member Names: Warren Huang, Cindy Wang, Ali Alhammadi, Vivian Snitker, Mathew Lee
Design Date: Saturday, August 17, 2024

CONCEPT STATEMENT (Short paragraph <50 words)
We will create a floating city off the coast of Venice codenamed “New Venice”. The goal is to create a fully self-sustaining city that Venetians can move to once Venice gets submerged. The city will have sustainability design at its core, functioning as a positive addition to its surrounding environment.



MVP FEATURES (<10 words each)

- Accommodates a growing population of 26.2k & tourists
- Capable of splitting apart(pass through the Strait)& wave blocker
- Ocean turbines underneath which acts as motors and steering

MVP+ FEATURES (<10 words each)

- Fish farm anchor that collects fish and crabs
- Coral reefs under the bottom of the island
- Underwater museum that can be visited (of old Venice)

PROBLEM STATEMENT
Ocean level rise, rapid population growth, and unsustainable human practices are implicating Earth’s ecosystems. Rapid advancement needs to occur by 2054 or else the world will run out of space & resources.

COMPOSITE CHARACTER PROFILE
Elderly Ellen: Retired, likes kids/sense of community, loves nature

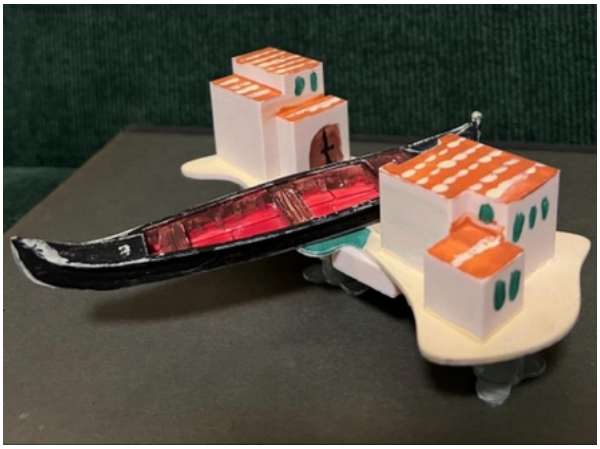
POV STATEMENT
Ellen is a retired grandma who is enjoying her retirement in the city she grew up in. She is a huge nature fanatic and loves Venice because of its close proximity with the ocean and nature. She hopes that she can live to see Venice become even more integrated with the environment and advance in a way that leaves only positive impacts to the animals that exist around the city.

SUPPLEMENTAL INFORMATION:
We kept the traditional Venetian architecture when building neo-venice to keep the culture alive. Here the buildings on the outside would look identical to the old buildings but on the inside would be able to benefit from the new technology, for example the updated green energy that the island provides. Another feature is the transportation on the island as there are two options, 1. Self driving gondolas powered by hydroelectric power or 2. Our underwater metro systems. Taking the gondola around the islands takes about 45 minutes and just 15 in the metro. The metro is in a glass tube so island goers are able to peek out into the ocean. We will start building piece by piece slowly introducing neo-venice to traditional venice as it is sinking, this not only allows for venetians to find places to stay as conditions on venice get worse and worse, but it also allows for the tourist industry to not get affected by sinking venice. One of the five islands can range from 15-17 square kilometers. The main materials that Neo-Venice uses are some biomaterials (ie. mushroom mycelium) colored solar panels and recycled stone and wood. We want the island to feel like traditional Venice so the buildings will be more colorful using the traditional color pallets. While inside the building will be more futuristic with more modern furnishings.Some more cool features are: underwater rooms and tunnels used to observe the underwater ecosystems with underwater restaurants and exclusive rooms. We will also include bioluminescent pathways that are glowing at night and use kinetic energy to do so. 1.5 million kWh is required for the grid.

To make the island more stable we have the metro line as a counterweight for center of gravity to make sure that the island does not get too heavy and tip to either side, or sink like Old-Venice.

Matthew's Physical Model from Fusion 360 *(illustrated on pg.1)*:
The archipelago's design keeps Venice's cultural aesthetic and conserves energy every time electricity and other resources are used.





DESIGN THINKING SELF-REFLECTION

PERSONAL SELF-REFLECTION:
Staying Calm in Stressful Moments
Warren Huang

I was the most excited for this project as it was my final one in this class. Not only was it the grand finale, but we had the pleasure of working with such a large team (6 vs the previous 3). The ideation process went smoothly as we each provided valuable input and perspectives during class which contributed to our final idea which was to build a floating island off the coast of Venice.

Interestingly enough, this was also my first project in this class where we decided to divide and conquer the work. I was charged with coming up with the concept/problem statements and the CCP while others were in charge of the presentation/3D model. Though this strategy meant that we could work fast and independently, it also meant that we wouldn't have the opportunity to work together as a group outside of class. Though Collin was initially apprehensive about our submitted poster, I was able to quickly edit the final display before class with the support of my team to come out with a much better final product.

All in all, this experience served as a lesson to me to not only stay calm before an impending deadline, but also to highlight the strengths and weaknesses of different strategies of teamwork in a group setting. At the end of the day, our presentations went well and I am quite proud of the team for everything that they have done.

PERSONAL SELF-REFLECTION:
Going bigger
Vivian Snitker

Throughout the design class each project has gotten bigger and bigger, first i started with creating a small sound button, to a dorm room and then now a full island. I think that the progression to a bigger project has been smooth as throughout each project I have learned new skills that better prepare me for the next. In this project I have been able to use all of the skills I have learned along the way in order to complete this project. Creating a pitch was something that was new to me in the beginning but after having done two pitches I felt prepared to write the one for this design project. I used the 9 post-it method to help me craft the pitch. The skill of being able to make and execute a pitch is definitely something I will use in the future.

Brainstorming bigger and better ideas has been tough for me in the past but for this project I kept the “i want that i need that” in mind to come up with the COOLEST ideas i could come up with. This really helped spark my imagination and make me think about what would make me and my family and friends and other people want to visit/ live on an island and what would Venetians want to see on the island in order to make them move to the new island and continue their lives. I used this skill in creating the MVP+ list.

PERSONAL SELF-REFLECTION:
Floating Legacy
Ali Alhammadi

As I think back on our "Neo-Venice" project, I'm impressed by how grounded and ambitious our strategy is in addressing some of the most important global issues. Our idea to build a self-sufficient floating metropolis off the coast of Venice is a daring rethinking of how we can prepare for the inevitable effects of climate change. The design is centered on sustainability, not only as a catchphrase but as a fundamental idea that informs all choices, from producing energy to residing in a community.

Our city's features are carefully designed to guarantee that it provides refuge to people displaced by sea level rise and serves as an example for other urban developments in the future. Our dedication to flexibility and resilience is demonstrated by the city's ability to divide and cross the Strait. In addition, the incorporation of ocean turbines, which function as both steering and motor mechanisms, exemplifies our creative utilization of natural resources to power and advance the metropolis.

The idea gains additional levels of ecological and cultural relevance with the addition of elements like an underwater museum, coral reefs, and an anchor for a fish farm. These components act as living reminders of Venice's rich history and relationship to the sea in addition to enhancing biodiversity.

Our composite figure, the elderly Ellen, personifies the human element of our design. Her passion for the outdoors and the local community makes "Neo-Venice" more than just a place to live, it's a place where people may flourish in balance with the environment. This initiative reflects our conviction that real sustainability ensures a future in which people and nature coexist peacefully by integrating ecological, cultural, and human dimensions.

PERSONAL SELF-REFLECTION:

Venice - a call for urgent action

Matthew Lee

In the final design project, time was of the essence. As a bigger team under intense time crunch, our challenge is getting everyone to be on Slack and communicate when needed. When we chose the theme of nature conservation, we spoke of climate change at first, but we also started to discuss the causes of climate change - buildings, infrastructure and humans. Why are we so disruptive to the environment?

When we chose to explore the depths of this question, it led us to think about a self-sustaining habitat for humans, animals, and the implicated environment. As sea level rises, Venice is sinking. As we turn to a formidable future, one of the defining issues of our century will be how our environment can get back up and recover from the rapid change humans have forced upon for the past few centuries. We envisioned that in 2054, the Venetian island had suffered immensely from climate change and had drowned to the bottom of the Adriatic Sea. It is apparent that before 2054, people were not doing well with managing Venice's sinking issue. In replacement of the Old Venice that sank, Neo-Venice is the idea of a floating island that serves the people of Old Venice, new residents and tourists as it self-sustains forever. In addition, if Old Venice meets its catastrophic demise in an indefinite future, it will not be caused by climate change, that is for sure.

For DP3, I paid special attention to our true problem as a society, which is to focus on acknowledging our otherwise unnoticed or neglected flaws and do something about it. We sought to have Neo-Venice be one of the most energy-efficient places on Earth in 2054. Every archipelago in the world will follow in Neo-Venice's footsteps to counter the climate issues affecting each of their local areas.

PERSONAL SELF-REFLECTION:
Raging Flood, Raging Stress
Cindy Boxin Wang

I have to admit, when I saw Dave's last project, "Burn Bright, what rose deep in my heart was a sense of sneer. "People won't burn out, at least under Stanford's pressure." was what I had in mind. But in my final week at Stanford, I truly experienced what burning out is like: like a single flickering match of fire trying to light up the entire ocean. Deadlines came as tides, submerging every inch of my personal time, like what they have done to make Venice a submerged city.

To provide context, I believe it is necessary to list out my schedule between the start of Project 3 and the final submission of our spec sheet. Within this time interval, I need to complete two essays, 1500 words each, and two finals, each taking up a significant proportion of the final score. Meanwhile, I need to finish my jobs for project 3. It was still bearable when everything went according to plan, but it didn't. I was first assigned to conduct surveys and interviews about people's idea of Neo Venice, then more work came haunting me: MPV and MVP+, journey map, physical models, and posters…… Each and every one of them pushes me a step further to "burning out." I believe my teammates are working in unknown corners since we never had the chance to meet after class, and indeed saw progress later on the journey map and posters. But, the feeling of working alone through all those silent afternoons and chilly mid-nights makes me feel so helpless. I felt like I was facing raging waves and tides brought by incessant due dates and finals, burning myself to await dawn.

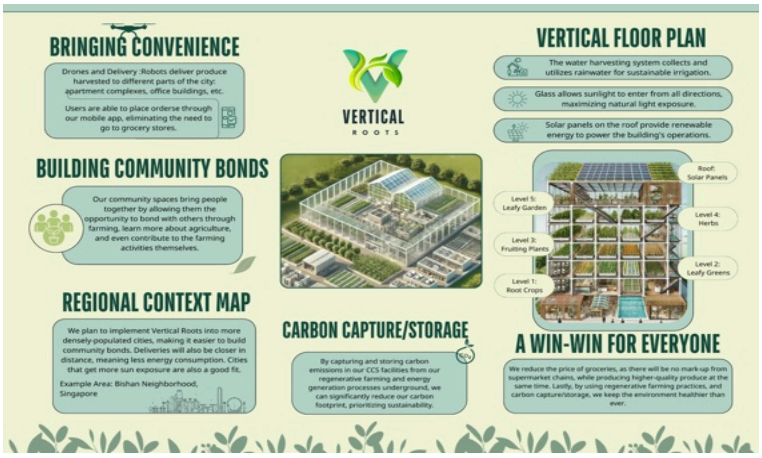
I hope I can have better management on my time and be stronger under stress.

sCEE 176G/276G SUSTAINABILITY DESIGN THINKING SPEC SHEET

Vertical Roots

Eric Zhang, Wui Shuen Ong, Sumaiyya Ali, Nick Machicao, Enrico Bertoni

Wednesday August 14, 2024



CONCEPT STATEMENT

We envision a community-based, space-efficient and AI-powered green space that produces food in a sustainable and efficient way, providing educational opportunities at the same time.

MVP FEATURES

- AI powered Sustainable Food production / Precision Agriculture
- Regenerative Farming and Economically Self-sufficient
- Vertical farming (space efficient)

MVP+ FEATURES

- App to place orders, trade food, and get food recommendations
- Delivery of food by drones or robots
- Educational facility for learning and Community Bonding

PROBLEM STATEMENT

30 years from now, cities will become population-dense, green spaces are more scarce, and mass-farming practices harm the environment even more, producing low-quality produce and destroying the soil.

COMPOSITE CHARACTER PROFILE

Cathy is a 32-year-old single mother, with two children. She loves nature and would like her kids to appreciate it too, but they live in a big city and are constrained by Cathy's busy work schedule.

POV STATEMENT

Cathy needs to find a community that provides an experience close to nature and it's close to her job, because she feels it's important for her family to live in direct contact with nature and have convenient access to healthy food but she can't move to the countryside.

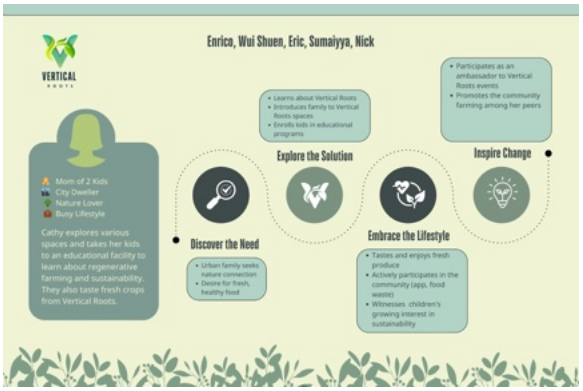
Additional Information

TESTING AND ITERATING

We asked for feedback from our classmates through Slack and integrated suggestions into our prototype. We met with Jessica from Stanford Educational Farm that provided us with valuable insights on the educational aspect of our idea.

PHYSICAL MODEL AND CATHY'S JOURNEY MAP





SIZE

Vertical Roots is designed to be approximately 4 football fields in size, and to serve around 1,000 people. It is made to be a modular space that can be replicated in several areas of the same city.

AUDIENCE FEEDBACK

The addition of a carbon capture facility may not be as viable as there is no significant carbon dioxide emission within the vicinity. Additionally, feedback was given with regards to needing a significant amount of land and solar panels required to provide enough power to the machines and AI needed to run the project.

WEBSITE/APP: https://sites.google.com/stanford.edu/vertical-roots/home

EXAMPLE IMPLEMENTATION PLACE:

One possible place to implement this would be in the Bishan Neighborhood, Singapore, as it checks all the boxes: it is population dense (with many apartment buildings), mix of rainy and sunny weather, and there is a very large field in the middle of the neighborhood.



TIMELINE:

We first started this idea as one big greenhouse-like building, but we further developed the idea by adding buildings and envisioning a community center: not only a greenhouse, but an experience that everyone can enjoy and learn from.

Personal Self Reflection | Importance of Communication

Eric Zhang

When I heard that we were going to work in randomly assigned groups of 5 or 6, I was skeptical if we were going to do well on this project. However, it turned out much better than I envisioned.

With five people in my group, our productivity and efficiency was higher than the two projects we did before, as compared to one person, we could theoretically do tasks in one-fifth of the time, and I think what we did was really close to that.

We first started by brainstorming ideas together as a group, which I thought was important, as this is the foundation for our project. Everyone should agree on our idea, as it's important both for efficiency and morale that everyone believes in the idea. Although we spent quite a bit of time at first, we got our project idea down by taking in suggestions from everyone and compromising a little bit, and it was all smooth from here.

Coordination was really important. We all divided the labor equally: for example, I worked mainly on the design, writing, and posters, while someone like Wui Shuen did the most on our physical prototype. It was important that we had regular check-ins, to make sure everyone knew who was doing what, and that we were all on track to finishing. I think I did a great job in coordinating team efforts as I regularly checked-in how everyone was doing and suggested ideas and plans for dividing up our work. As a result, by combining all our design thinking powers together, we were able to create an idea I thought was sustainable, efficient, creative, and much more. I'm proud of my team's and my efforts on this project.

Personal Self Reflection | Designing for the Best Future
Nick Machicao

Never before have I been a part of a team project with this short amount of time. Still, I liked the urgency that this project evoked because our team brainstormed a multitude of ideas without deciphering and perfecting each idea. In other team projects, I feel my team becomes mired in different ideas and struggle to gain the traction to continue. Thus, a design sprint showed me that effective ideas can be developed and that a team project can be fluid when the whole team feeds off the urgency of each other.

I was most impressed by how quickly my team chose and communicated their roles and the accountability they took for their responsibilities. With little class time and in-person meetings, it could be easy to produce sub-par work. I felt each team member produced their very best work. I also appreciated that we all worked together to perfect and build upon each other's initial product.

With this project being placed 30 years in the future I think it was initially easy for me to imagine luxury for the human individual given the vast development in technology. I at first completely ignored the community aspect of design thinking, shorting myself of many ideas for our project. For example, I solely thought about making our character's life easier as a working mother by providing her fast delivery and easy dinner meals. Thankfully, my team showed me the educational and community side that Vertical Roots should foster. Design Thinking should always be a collaborative process, or at the very least, the individual should consult others for feedback.

Personal Self Reflection | “The future is now, and you can design it”
Enrico Bertoni

The last mile is always a big thing for me. After challenging myself with the DP1 and finding myself in a sweet spot with a great team and a great idea for DP2, I was at the same time excited and worried about DP3.
The short amount of time and the process of integrating and forming an efficient team in a few days was a huge and fascinating challenge.
A huge difference with DP2 was that in that project I worked with people I chose and that were more or less close to me in terms of age and experiences. This time I got the chance of working with people of very different ages and backgrounds, and I think it was a huge opportunity to learn even more about teamwork.
I tried to use all the notions I’ve learned in this course and during summer to be as effective as possible since day one, and I’m amazed about how the team energy was positive.
Everybody worked the extra mile in her/his own field, and everyone showed support and gratitude to other team members anytime they showed the result of their effort.
I enjoyed working with Wui Shuen on refining the project design in Y2E2, with Nick on the design journey map and with Eric on the summaries. I appreciated all the effort the team poured designing the posters, developing the app and the beautiful physical models.
I tried to be useful in the areas I feel can provide value, such as designing the journey, refining texts and creating and presenting the idea with an impactful pitch and seeing people trusting me on that - as much as I trusted them in their field - was a rewarding and inspiring experience, especially because it involved sustainable farming that I believe it’s a theme of primary importance for our future. Therefore I really believe a project like Vertical Roots would have a major impact on sustainability.

Personal Self Reflection | A rewarding design challenge
Sumaiyya Ali

This assignment was both challenging and rewarding. I thoroughly enjoyed collaborating with my group members, especially since they were individuals I hadn't interacted with extensively in class. Stepping outside my comfort zone to build these connections was a positive experience.

Agriculture was a new territory for me, so I focused on leveraging my creativity to contribute to the team. Given the week-long timeline, I'm impressed with our progress and the dedication of each member.

The concept of speculative design fascinated me. It's a powerful approach that aligns with how major corporations innovate. I plan to incorporate this methodology into future design projects.

While I found the poster presentation a fun challenge in combining academic rigor with design aesthetics, I personally preferred the pitch format. It allowed for more direct engagement with the audience and fostered valuable networking opportunities.

Overall, this project was a valuable learning experience.

Personal Self Reflection | Harvesting The Future of Sustainable Food Production
Ong Wui Shuen

Upon hearing that the project was going to be completed with a bigger group, that got me excited, yet a little nervous. Having two heads is always better than one. However, with clashing personalities, progress may be hindered. Luckily, my fears were allayed during our first discussion together as everyone was not just eager to contribute, but also willing to compromise and come to a common consensus together quickly. I was truly heartened as it gave me confidence in our team's potential.

We quickly and decisively chose "Agriculture" as our project focus. I appreciated the "blind pick" approach and (random?) groupings as it mirrors the reality of life, whereby we do not always get to choose our work or colleagues.

Personally, the design process went relatively smoothly as everyone in my team worked very cohesively. We proactively helped each other out and were not shy to reach for a helping hand when we needed it. This fostered a healthy culture within our team and I personally felt a strong sense of camaraderie with my teammates, even though I may not have interacted with them before.

Unlike the other projects, this project highlighted the spirit of teamwork. Rather than seeking individual recognition, our collective effort amplified our ideas and results. As the saying goes, "To go fast, go alone; to go far, go together."

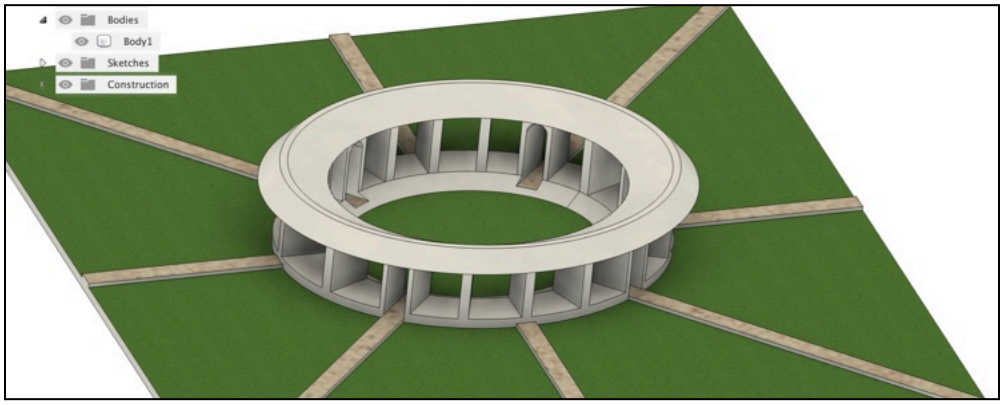
I couldn't have imagined a better way to conclude this module.

CEE 176G/276G SUSTAINABILITY DESIGN THINKING SPEC SHEET

High-Efficiency Community * sPARK.

Adam Tang, Adelya Makhankova, Alexander Pezzei, Jolene Ong, Milo Pitera and Rawda Al Jneibi

Wednesday, Aug 14, 2024



CONCEPT STATEMENT

sPARK. is a visionary hub within the local community that bridges different stakeholders. It promotes sustainability in its space-efficient design of modular terrain and easily reconfigured pods for versatile use. It is family-oriented by inspiring kids to explore science and tech.

MVP FEATURES

- Circular central park with modular terrain for multi-functional usage
- Modular magnetic levitating tech-savvy pods for versatile uses
- Collaboration hub with research institutions

MVP+ FEATURES

- Science center for children
- Dog-friendly design
- Mariposa Market

PROBLEM STATEMENT

Traditional town centers fail to connect businesses, institutions and families which limit opportunities for creativity and growth.

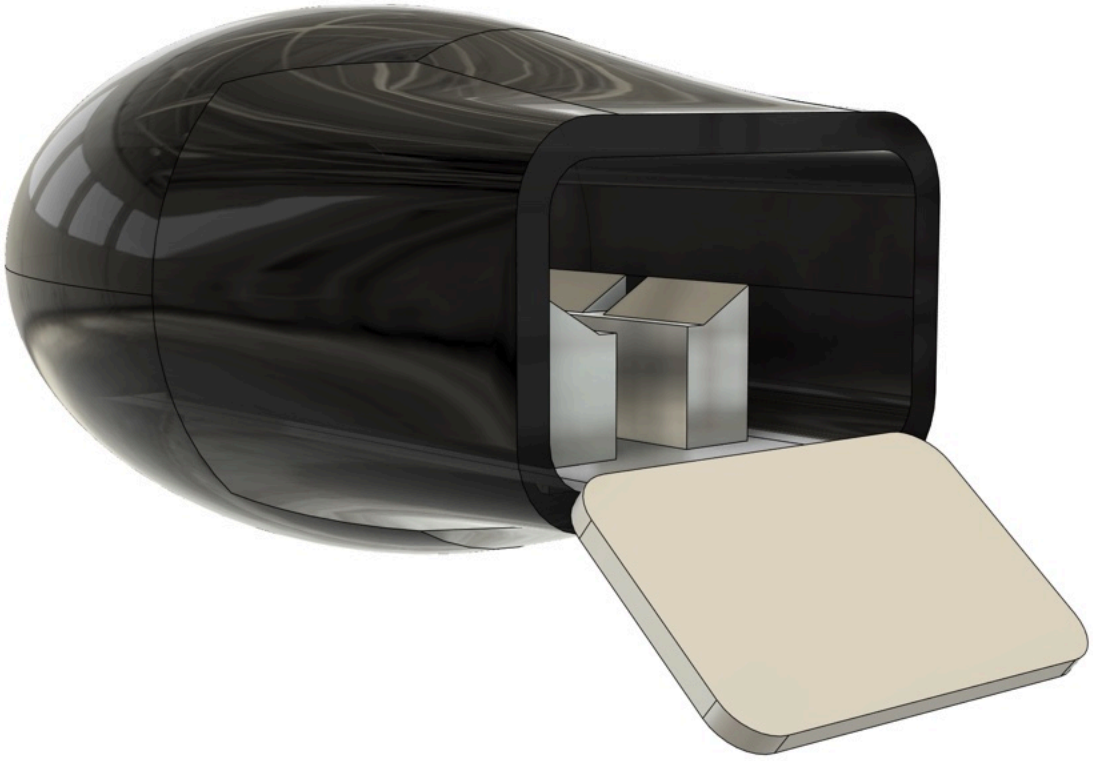
COMPOSITE CHARACTER PROFILE

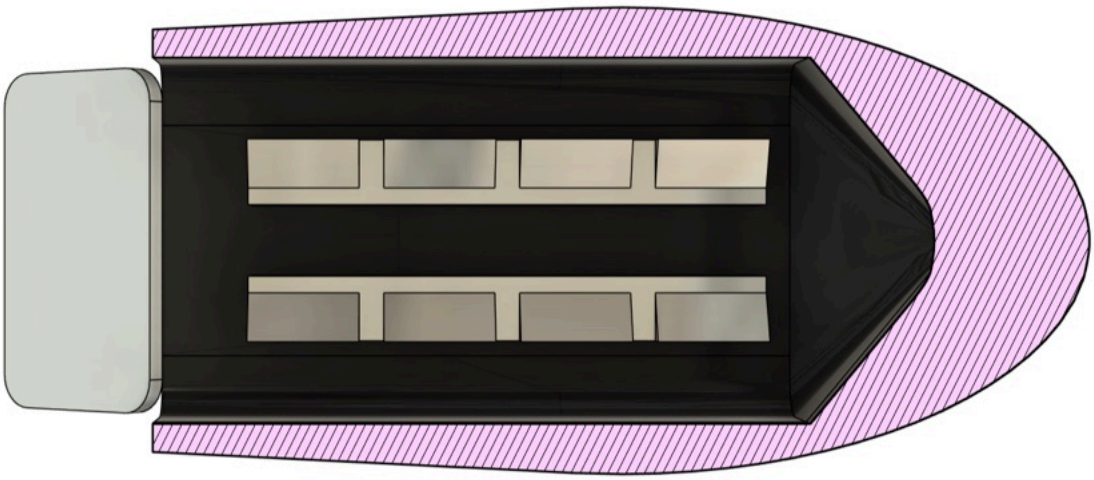
Tech-y Tom, a 42-year-old dad from Cupertino, is passionate about tech. He has two kids and a family dog. Tom is keen on introducing his children to technology in a fun and engaging way.

POV STATEMENT

Tom needs a children-oriented conducive space for their experiential learning in sparking interest in tech or other STEM-related degrees.

POD PROTOTYPE:





PERSONAL SELF-REFLECTION

FROM DIVERSE IDEAS TO UNIFIED VISION

ADELYA MAKHANKOVA

This project was both challenging and rewarding, involving the exploration of a wide range of innovative ideas. We considered concepts like Lego-like modular designs, 3D printing homes using alternative materials, space-efficient tiny homes with multi-use furniture, and the integration of sustainable features such as rooftop gardens, rainwater collection, permeable pavements, and solar PV systems. We even discussed creating a science center combined with an amusement park, featuring futuristic rides that showcase the latest technology. The goal was to design a space that could withstand extreme weather conditions projected for 2050, with a focus on energy efficiency, insulation, and passive heating and cooling.

Collaborating with a team of individuals I had not worked with before, each bringing unique viewpoints, made it challenging to unify our ideas and settle on a single topic. Initially, we struggled to find a single idea that everyone was passionate about, which was a significant challenge, especially given our limited time until the deadline. However, the experience of working together, navigating our differences, and ultimately finding common ground was truly amazing. It allowed us to blend our diverse perspectives into a cohesive vision that everyone was excited to work on.

Despite the challenges, I am glad that everything came together so well in the end. The final result was not only innovative and sustainable but also deeply human-centered. Looking back, I can not help but wish that such a concept existed when I was growing up—it would have been an inspiring and exciting environment to learn and grow in.

Personal Self Reflection
Alexander Pezzei

Combining different viewpoints into one idea

Design Project 3 was more challenging than the first two projects. This was partly because we only had a week to complete it, but also because it was a larger group than in Project 2. Although we could split up our work better, it was still challenging, especially in the beginning, to agree on ideas. More people means more viewpoints and opinions, so it was a little difficult to combine all those opinions into one idea. At first, we came up with things like 3D-printing homes, space-efficient living, and off-grid housing structures, but we had some disagreements about those ideas.

Nevertheless, after a discussion session in Y2E2, we finally managed to find an idea that every team member liked: A town center that connects innovative companies and families with features such as a circular park, modular terrain, and hovering pods in which companies could show their newest innovations. After we finally all agreed on one idea, we assigned the work and everybody did their part, which allowed each of us to focus on our tasks without having to worry about whether the other team members would do their work or not.

Looking back, I think it was an interesting project to conclude the class with, because we had to design a bigger space this time, which made us apply the various techniques of the design-thinking process, which we had learned in the previous projects. Although we had some disagreements initially, in the end, we managed to work together well as a team and produced a final design that we were all proud of.

Personal Self Reflection
Milo Pitera

Identifying Core Direction With Brainstorming.

This project was an intensive learning experience in terms of the active application of design thinking skills. We utilized divergent convergent thinking to explore a wide breadth of potential options, as well as applying brainstorming techniques to facilitate team communication.

I believe this team initially struggled with the broad scope of our project. We were given three general categories of communities, families, recreation, and research and development. We struggled to decide on a specific community to dedicate to brainstorming, and some members sought to accommodate the needs of all three communities. While this did benefit us in that it gave us a wide breadth of ideas to work with, that broad community-serving concept meant that oftentimes people were approaching two different problems with two different potential solutions.

In order to consolidate our team's objectives and understanding, we held a meeting on Monday, where we were able to break down our individual concepts into their basic parts. We used a post-it brainstorming technique to identify the key aspects and objectives of several of our ideas and then organized them to get a better understanding of the direction of the group in general.

Having gained a greater understanding of the group's alignment through the post-it brainstorming process, I proposed a pivot. While we had previously pivoted to realign our project with some of our objectives, they often struggled to stick as they wouldn't properly align with the group's direction. I noticed that while our project had been based around housing, none of the contributors at the meeting had written anything down about housing. I suggested a family and community-oriented space, like a town center, which better accommodated the direction of the team. Having finally aligned on a direction, we were able to quickly organize and design our project, the sPARK, breaking the project down based on deliverables for ease of management.

PERSONAL SELF-REFLECTION: Ideation and Working Together Without Consensus

Adam Tang

When we first started our ideation, we were not a cohesive unit. Our assigned dream team seemed to be the opposite, in which all of us had such different ideas that we couldn't even agree on one idea, even with compromises. I feel that our limited options in the scopes we had— which were families, R&D, and recreation— made our path very narrow and much harder for our ideas to intersect. Given this, the willingness to sacrifice what we drove for initially was really important during our design thinking process, as we shifted from a 3d-printing urban city design to a tiny off-grid rural community, to our final idea of the community suburban transforming amphitheater. It was an idea that required another separate meeting outside of regular class times, but if we hadn't, we likely would never have agreed on it.

Afterward, we all meshed into our roles seamlessly. All of us had different areas of expertise, such as myself working on the 3d model with Milo, while Adelya worked on the poster and Jolene + Alex typed up the script. In this way, we were able to maximize the potential of our entire elevator pitch simply by doing what we did best. During the making of our script, was hectic and last-minute, but we added humor in order to make the pitch overall more engaging, and I feel this made us successful in conveying our message fully. If we had more time and less constraints, I feel we could have improved our sustainability component, as we only had permeable pavement and (kind of) a solar array to power everything with green energy. But overall, for such a short timeframe and many constraints, and with so many disagreements in the start, I am more than satisfied with our end product.

Personal Self Reflection
Rawda Aljneibi

Balancing Futurism and Human-Centered Design in Sustainability Projects:

In our sustainability project for Design Project 3, my team and I encountered several challenges while trying to envision a community space set many years into the future. Initially, when tasked with creating this space, we all imagined a place equipped with cutting-edge technology—innovations that hadn't yet been seen or even conceived. However, our idealistic visions clashed with the specific topics we were assigned: R&D, recreational, and family-oriented spaces (urban, suburban, rural). These constraints made it difficult to keep our design futuristic while also being practical and human-centered.

One of our biggest hurdles was agreeing on a single focus. We struggled to align our diverse ideas with the topics we were given, and it felt like we were pulling in different directions. After much discussion, we decided to combine all three themes, which posed another challenge: ensuring the space remained human-centered despite its futuristic elements.

Every idea we considered seemed promising but lacked a cohesive vision until we finally landed on a concept that seamlessly integrated all our ideas. This breakthrough was the result of persistent brainstorming and using the sticky note method to organize our thoughts and prioritize the most critical elements. By the time we prepared our pitch, we had successfully incorporated all the important points, presenting a well-rounded, futuristic, and human-centered design. This experience not only deepened my understanding of design thinking but also highlighted the importance of collaboration and perseverance in overcoming creative challenges.

Personal self-reflection: “crazy” ideas
Jolene Ong

I found this project the toughest yet the most rewarding.

We initially struggled with finding common ground - everyone had different ideas and no one appeared willing to compromise. The three prompts of family, R&D and recreation were meant to give scope. For us however, it was too much scope since each idea was vastly different in focusing on entirely different separate prompts.

Yet it was these differences that really brought across the significance of divergent-convergent thinking. What a valuable opportunity it was for us to practice it! On Slack, I picked out the most salient feature of each idea: the large space a park provides, modular buildings as Milo suggested and a digitally focused design. Converging these seemingly different ideas led to our final design: a park with modular terrain and digitally-savvy pods.

In facilitating our group’s discussion, Colin also provided a particularly insightful point: a theme park for a small community may sound “crazy” but what we learn at Stanford is to explore how to make something like this work. It reminded me about the class exercise on ranking our “crazy” Frisbee ideas which showed starkly how someone’s “crazy” might just be another person’s “normal”. I was overjoyed at this challenge. It was a personal moment for me since I had initially felt my ideas were insufficiently crazy back in Design Project 1 and yearned to put myself to the test. I’m really glad Design Project 3 challenged me, allowing me to witness just how much I’ve grown.

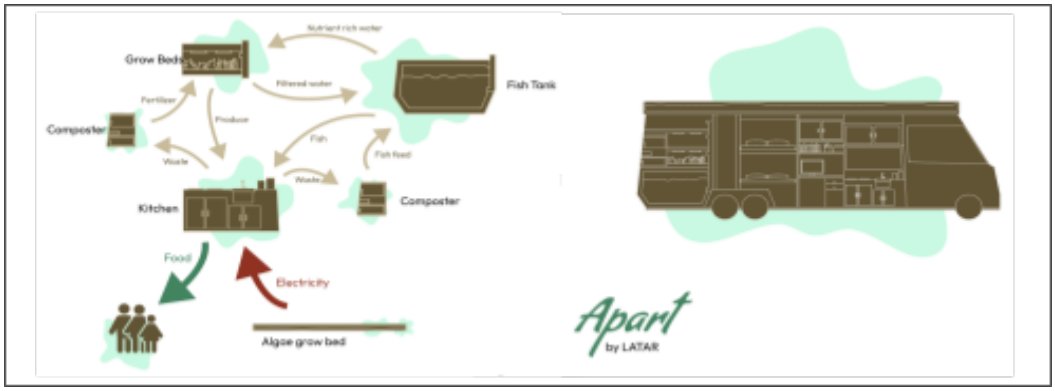
CEE 176G/276G SUSTAINABILITY DESIGN THINKING SPEC SHEET

Built Environment* APART

LATAR

Team Member Names: Alejandra Santos, Tom Shahar, Albert Tan, Rowan Winchell, Lateifa Alsamahi

Design Date: Wednesday, August 14, 2024



CONCEPT STATEMENT

The APART motorhome uses an algae-based biofuel grown on the roof. An aquaponics system recycles waste and provides food for the residents. APART communities can meet and exchange food varieties. Alternatively, APART can be used as a clean home powering system.

MVP FEATURES

- Recreational Vehicle
- Integrated aquaponics food production system
- Algae-based biofuel technology

MVP+ FEATURES

- “APART-Together” shared community in nature
- Greywater recycling system
- Alternative home powering system

PROBLEM STATEMENT

Declining environmental systems and public health from on-the-grid living causes people to feel stuck and stressed.

COMPOSITE CHARACTER PROFILE

Idle Ida: 35 years old, hates the noise of urban life, vegetarian; passionate about yoga, meditation, and traveling; 1 kid.

POV STATEMENT

Ida needs a flexible environment that balances relaxed, natural vibes with safe, cozy convenience because she wants to embrace a healthier lifestyle with meditation without abandoning her family.

Algae Powered Aquaponics Recreational Truck (APART)

DESIGN SPECIFICATIONS

- Total Length:
  40’ (12m)
- Living area:
  26’ (7.9m) length
- Aquaponics system:
  12’ (3.7m) length
- Width:
  8’ 6” (2.6)
- Height:
  12’(3.7m)
- Algae bed:
  40’ x 7’ (12m x 2.1m)

RESOURCES USED

(Recycled or Renewable)

- Aluminum
- Steel
- Glass
- Wood
- Water
- Crop seeds
- Fish eggs

POWER REQUIREMENTS

- Algae biofuel
- Supplemental Solar Power

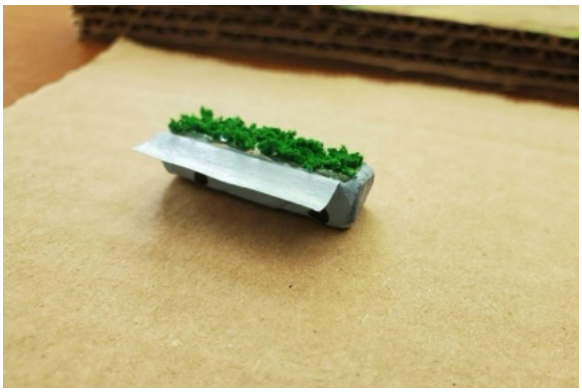
OTHER FEATURES

- Bunk beds
- Kitchenette
- Washer and dryer duo
- Bathroom with toilet and shower
- Additional storage



SUSTAINABILITY

APART uses an algae-based biofuel, which sequesters CO2 during its growth cycle, resulting in net negative emissions. Food is also produced independently through the aquaponics system located in the back. Through this, a multitude of plant and fish varieties can be grown, either to cook soon after or to be shared with the APART community. Any waste can then be reincorporated into the aquaponics ecosystem. To ensure sustainability throughout the life-cycle of the vehicle APART strives to use entirely recycled materials in its construction.





DESIGN THINKING SELF-REFLECTION

Personal Self-Reflection: Road to Success
Laura Alejandra Santos

When first introduced to design project three in class, I felt overwhelmed by the number of prompts for ‘High-Efficiency’ community spaces and the different ways the options could be turned into ideas and designs. I saw my group assignment and became even more nervous as I had never worked with those individuals before, but those thoughts were quickly dispelled. My group consisted of the most hardworking individuals I could imagine, and we all clicked instantly. Once we picked and reviewed our three options for the project we all chose the same category of ‘Off-the-grid’ without hesitation and got to work.

Our idea shifted quite drastically from our original pitch in class; we went from a ‘build-your-own-aquaponics kit’ to a recreational vehicle that was powered by algae and had an integrated aquaponics system. To ideate our final project, we did almost a ‘Post-it’ method of thinking, where we all sat down and began to say our ideas out loud with no regard for normalness. By using a tactic that had the same aim as the ‘Post-it’ method, we were able to widen the scope of our creativity for the project. After that, just like in design project two, communication was key. Because of the limited time, we all had to work quickly and efficiently, so I mainly took to Slack to keep the team updated on my designs, models, and writings to ensure there were no miscommunications.

Overall, this was a fun project to quickly merge all of the class concepts.

DESIGN THINKING SELF-REFLECTION

Personal Self-Reflection:
Tom Shahar

First and foremost I want to give special credits to my group for this project! I think we all brought something important to the team and I really appreciate everyone's contributions especially in the ideation stage. When I saw the "Off-the-grid" topic I had a very particular vision in my head, but that changed so drastically multiple times over the course of the project in very productive ways. We began by thinking of an off the grid community with a number of different features, but it was clear that there wasn't really a unified idea that got at the theme in a way we all liked. As we moved through the design thinking process, we each had ideas, whether it was ways to make it more futuristic, more revolutionary, more sustainable, or more human centered. The idea for a RV was able to unify each of our ideas, and I think we did a good job representing everyone's goals and visions.

Another thing I appreciated about this project was the opportunity for research. While this didn't end up being a huge portion of the final deliverables, I did a lot of reading about algae-based power, aquaponics, and self-contained ecosystems. This opportunity was super enjoyable and a great way to nail home the 'sustainability' aspect of the class. I really feel like I learned a lot about both sustainability and design-thinking from this project.

DESIGN THINKING SELF-REFLECTION

Planning the Unpredictable
Albert Tan

I love how the design project was set 30 years in the future.

The unpredictability was challenging. The world is changing at an unprecedented rate, so imagination of the future environment is necessary to identify potential improvements. The setting redefined the observation phase in design thinking. We had to take one step further to make bold assumptions based on our observations, experiences, and knowledge. The hole-in-the-paper approach made sure we didn't forget the details when putting these aspects together. Ultimately, we aimed for a comprehensive yet careful scenario that best balanced creativity with practicality.

The unpredictability was empowering. The sustainable options today seem to be so limited; nearly everyone included solar panels or artificial intelligence in the previous two design projects. The futuristic perspective allowed us to utilize potential solutions that seem unattainable today yet quite promising in the future, namely the algae system. The setting really helped the ideation phase in design thinking: it once more reminded us that we should not give up crazy ideas too early. Everything might be possible in the future, and we need iterating prototypes to find out what's really within reach.

The unpredictability also raised human-centeredness to a new level. What people needed 30 years ago was quite different from what is valued today; what is valued today will deviate significantly from what will be in the trend 30 years later. Our solution was to focus on the universal wish to seek peace in the natural environment as the pivot for our design.

DESIGN THINKING SELF-REFLECTION

Personal Self-Reflection: Avoiding Potholes and Racing Home
Rowan Winchell

The time constraints for design project three led to a drastically different process than the previous two had. The rapid pace forced many of the tasks to be completed simultaneously rather than in succession, as it had mostly been done in my earlier projects. However, it felt very achievable. Our team was extremely efficient at planning, completing the tasks, and communicating.

There was a sense of urgency that drove our team on from the very beginning. We quickly agreed on the domain of our project and set out brainstorming our preliminary concept. We agreed on the off-the-grid domain and something involving aquaponics, though our original idea was somewhat dull. Remembering the revelation that my team and I had in DP2, I suggested coming at the concept with a different perspective in our next meeting. I explained my desire to travel in the future and presented some possible routes we could take with the project. The others were extremely receptive and it was then that Tom proposed the motorhome concept we used.

My experiences in DP2 involving changing my perspective on how to approach design, allowed me to more easily identify when our concept was growing stale later in DP3. Additionally, I knew what to look for when our team agreed to rethink it. It wasn’t hard to convince them to do so as they also seemed to have been considering it, yet my actions helped initiate that process. Overall, this class has helped me to identify issues both in the world and with my own thinking, and I am thankful for the opportunity to work on both!

DESIGN THINKING SELF-REFLECTION

Personal Self-Reflection:
Lateifa Alsamahi

I want to extend my heartfelt thanks to everyone in our group for the incredible work we did on the “APART” project. Working with such a dedicated and talented team made this experience both enjoyable and enriching. Together, we designed an entirely self-sufficient community, focusing on minimal land use and achieving zero emissions. Our concept revolves around an aquaponics food system and renewable energy sources, creating a self-contained environment with modern appliances and essential outside communication and health systems.

Participating in this project has been a profound learning experience. From conceptualizing a self-sustaining community to understanding the benefits of subsistence living, I have gained valuable insights into sustainable living and collaborative problem-solving. Our modular, premade system aims to lower barriers to entry for those interested in this lifestyle, offering a pathway to healthier living and a stronger community bond.

I also want to express my sincere gratitude to Dr. Glenn and Dr. Colin for their guidance throughout the course. Your expertise and support have been instrumental in our success this summer quarter. Thank you for fostering such a dynamic and engaging learning environment.

In summary, this project has not only been a testament to our collective effort but also an inspiring glimpse into a sustainable future. Thank you all for making this journey so rewarding.






WILD & CRAZY

Closing Remarks

Yesterday. Today. Tomorrow. We touched on these perspectives through the Your Personal Story exercises. For the past 8 weeks, we worked on the projects described in this collection of Spec Sheets. And now, I am mindfully musing on the learning outcomes showcased by these Spec Sheets & personal reflections. But my excited heart & imagination is pondering what each of you will do next. Have you become capable & confident design thinkers?

Our design thinking process involved a sequence of steps: empathizing, defining, ideating, prototyping, testing & communicating. We also introduced a more structural framework comprising open, explore and close. And many of the transitions were couched in games & exercises. Which games & exercises do you remember? Did they help you clarify & assess your strengths, your mindset, & your passion?

What makes your MVP+ list for your own design thinker profile? What will you add to your resume about this class? Does “design thinker” make the list? How about “crazy” or “nudger”? How will you present your business card, mind & heart when from now on you join other teams to address new challenges? I hope that the reflections from this class will be as rewarding as the experiences with & products from your projects. WOOHOO!

Colin

