CS 6755 - Human-Computer Interaction Foundations

Discount Evaluation and User Testing: Addressing Student Food Insecurity at Georgia Tech

Figure 1: Students sitting in front of food trucks at Georgia Tech

Source: Georgia Tech Institute Communications via Flickr
https://www.flickr.com/photos/georgiatech/albums/72157641523515634

Pirates of the GAAARibbean
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Methods

Discount Evaluation

Participants
Classmate Testers: Ellie, Meghna, Aby, and Jisu (Ziyi was not present)
Teammate Facilitators: Ariana, Rajath, Gabi, Aastha. Annette was left without a partner due to Ziyi's absence, so she documented the testing process with pictures and videos.

Evaluation Techniques for Both Requirements
Task-based scenario testing measures successful attempts and captures think-aloud feedback. The SUS questionnaire measures opinions on the solution as a whole.

High-Level Analysis Process for Both Requirements
Throughout the tasks for both requirements, participants' think-aloud feedback was noted and later affinity mapped. Findings were pulled to summarize implications.

Convenient Access

Description
Design criteria focused on enabling students to determine the timing of use and inform them about food options, availability, and locations. Essentially, the solution should be convenient for the student to use and should also facilitate convenience in the food acquisition process.

Tasks
Scenario 1: You decide to go to a food truck for lunch. You've recently decided to go on a celiac-friendly diet due to a wheat, barley, and rye intolerance. Identify the location of a food truck on campus that meets your dietary needs.
Scenario 2: You are using Klemis Kitchen as a food source for the first time. You learn that there is a schedule of donation drop-off information for Klemis Commons. Identify where and when the weekly grocery store donations at Klemis Kitchen are.

Analysis Process
Scenario 1: The goal was to compare the success rate of using the existing Georgia Tech dining website vs. using the Klemis Commons website to identify the locations of food trucks that meet students' dietary needs. Students' identification of the location of a food truck meeting dietary needs was considered "successful" and the number of attempts taken was noted.
Scenario 2: The goal was to have the student explore the Klemis Commons schedule and select either the external donation drop-off schedule tile or the ellipses beside the "Klemis Kitchen Donation Drops" list to learn when weekly grocery store donations happen. As a follow-up question, users were asked if they had a preferred method of entry (ellipses or tile) to

the donation drop-offs. Students' identification of a food truck location from the schedule was considered "successful" and the preferred method was noted.

Dietary Autonomy

Description

Design criteria focused on enabling students to make their own choices based on dietary needs and preferences.

Tasks

Scenario 1: You want to visit an on-campus food truck soon. Recently, you have tried to eat primarily plant-based meals due to health reasons. Identify the names of which food trucks meet your dietary needs.
Scenario 2: Students were provided background ahead of the prompt. Background: *"Previously, your peers have reported that relying on food pantries makes nutrition difficult and donations are dessert and meat-heavy. "Vegetarian options and fresh produce are more preferable to the million cupcakes that are always present" (Participant 9, personal communication, October 2, 2023".* After reading the scenario, they were asked to evaluate how they felt about the dietary choices available through the food trucks.

Analysis Process

For Scenario 1: The goal was to compare the success rate of using the existing Tech dining website vs. the Klemis Commons website to identify names of food trucks that meet students' dietary needs. Students' identification of food trucks on Klemis Commons that met dietary needs was considered "successful" and the number of attempts taken was noted.
For Scenario 2: The goal was for students to feel as though having funds to access food trucks provided them an increased variety in dietary options. We also wanted them to feel satisfied with how the filters help them find food trucks that align to their dietary needs. Students' positive feedback about the variety of dietary options provided by the food trucks was considered "successful."

Test Users vs. Actual Users

Similar to: Classmates were graduate students with international representation. In this aspect, they were similar to the subgroup of our primary users who are grad students, and the subgroup of primary users who are international students (both graduate and undergraduate).
Different from: To our knowledge, our classmates are not currently facing food insecurity. Our classmates also did not have the background knowledge that our primary users would regarding STAR, Klemis Kitchen, and stakeholders in the food insecurity space at Georgia Tech.

Student User Testing

Participants

Georgia Tech students who are Klemis Kitchen patrons

Facilitators: Annette, Ariana, Rajath
Note-takers: Gabi, Annette, Ariana

Evaluation Plan

The evaluation plan for the Klemis Kitchen patrons was designed to be a simulation of how they might actually use Klemis Commons. With the help of Steve Fazenbaker, we planned to have $30 worth of Buzzfunds added to their Buzzcards as compensation for their participation in the prototype evaluation. We planned to have the facilitator guide them through the scenarios and then end with a visit to a food truck where they could purchase a meal using the Buzzfunds disbursed. Due to logistical limitations with Buzzfunds disbursal, we were unable to perform the food truck visit portion of the simulation. Students were provided with five meal swipes as a substitute for the Buzzfunds.

High-Level Analysis Process for Both Requirements

Throughout the tasks for both requirements, participants' think-aloud feedback was noted and later affinity mapped. Findings were pulled to summarize implications.

Protect Dignity and Independence

Description

Design criteria focused on preserving the agency of students. The solution must provide assistance to students in a dignified and independent manner.

Evaluation Techniques

Task-based scenario testing measures successful attempts and capturing think-aloud feedback. Students were given some context and a starting point and then given free rein over the prototype. Likert scale questions measure opinions on the facet of the solution helping protect a student's dignity and independence. SUS questionnaire measures opinions on the solution as a whole.

Tasks

Scenario 1: As someone who is enrolled in the Klemis Commons program, you plan to visit a food truck on campus for lunch the next day. You are desiring a plant-based meal for lunch. We would now like you to explore Klemis Commons for options that might help you fulfill this desire.

Analysis Process

The goal of this task was to simulate the procedure of how a Klemis Kitchen patron might explore food truck options and then visit a selected food truck when planning to pay with the Klemis Cash on their Buzzcards. We would measure if students felt that details about their situation were kept private and if they had an experience equal to their food-secure peers. If students gave positive feedback that Klemis Commons protected their dignity while also giving them a sense of independence, our design requirement was considered "successfully" met.

Cross-Culturally Understandable

Description
Design criteria focused on being clear and communicative to students from all backgrounds. The solution must outline specifics such that international students (who form a majority of the Klemis Kitchen patron pool) understand Klemis Commons and the resources offered through STAR.

Evaluation Techniques
Task-based scenario testing measures successful attempts and capturing think-aloud feedback. Likert scale questions measure opinions on the communication of resource prevalence, availability, and procurement. SUS questionnaire measures opinions on the solution as a whole.

Tasks
Scenario 1: You are a Klemis Kitchen patron. You visit Klemis Kitchen at least once a week and you use the donation drop-off email from Steve Fazenbaker to plan when you visit. You receive a new email from Steve describing a program called Klemis Commons. The email also mentions that you have received funds which are called Klemis Cash. With this in mind, we would now like you to use the prototype to explore the concept of Klemis Commons.
Scenario 2: As someone who is enrolled in the Klemis Commons program, you want to look at the different food avenues available to you at Georgia Tech and how accessing these might fit into your day.

Analysis Process
For Scenario 1: The goal of this task was to measure if the solution communicated the concept of Klemis Commons clearly and transparently to the students. We would also monitor the questions they had during their exploration and if they could find answers on their own by exploring the prototype further. Students' confirmation and clear restating of the concept for Klemis Commons was considered "successful."
For Scenario 2: The goal here was to see if students would be able to discover the different food avenues available in and around Georgia Tech and understand how, when, and where they might go to access them. Students' identification of different food avenues within and around Georgia Tech was considered "successful."

Results

We conducted a discount evaluation with four class peers and user tests with three target users. Some findings came from the discount evaluation and user tests, while some were primarily in one or the other.

Discount Evaluation Findings

Our primary findings around information organization were that we should have grouped information purposefully instead of centrally on the home page and the tiles on the schedule should have included location to facilitate comparison. On the interaction side, some participants found the carousel pop-up and calendar interactions confusing, specifically the non-collapsible calendar sections, the clickable tiles, and the ellipses for additional information. We found that our solution has a learning curve and that international students may not be aware of the dietary terms used, such as gluten-free. We also received future design ideas from participants, including displaying the Klemis Cash balance within the solution and opening locations in Google Maps for added information.

Category	Finding	Data
Visual Design	Connection between some schedule imagery and resulting interaction was misleading	U1, U2, U3, U4 - All users found ellipses icon to be misleading U4 - Clicked on tile in schedule, but said interaction wasn't obvious
Learnability	There is a learning curve - once users are in the solution and using it, they have less difficulty	U1 - Was confused by terms, but once prompted to explore and try to find definitions was able to answer their own question
Learnability	International students may not be aware of the dietary terms used on the site (i.e. gluten free)	U4 - Was confused by the terms "gluten-free" and "plant-base meals"
Interaction	Food truck carousel pop-up should be more intuitive	U3 & U4 - Did not expect carousel arrows to navigate to the next food truck
Interaction	Schedule sections should be collapsible	U3 - User found calendar sections to be overwhelming, suggested collapsing them
Interaction	Schedule extra information could be in a different format than a pop-up	U3 - User did not expect a pop-up with more information
Information	Information should be grouped purposefully instead of centrally displayed on the home page	U2 - User says there is too much text on the home page. Suggests seperating some information to an About page.
Information	Schedule tiles should provide location of food opportunity to facilitate comparison	U1 & U2 - Users wish that location was visible on calendar block for easier information access and comparison
Evaluation Design	Evaluation wasn't designed to help users understand concept of Klemis Cash with respect to the food trucks	U4 - User did not understand relationship between Klemis Cash and Food Trucks
Design Idea	Klemis Cash balance would have been beneficial to see within the solution	U3 - Wanted to see Klemis Cash balance while navigating in profile or home page
Design Idea	Option to open locations in Google Maps would have helpful for first-time visitors	U3 - Would like to open location information on "Google Maps" if it's their first time

Figure 2: Discount Evaluation findings with session notes
Source: Primary via Miro, see complete table

Shared Discount Evaluation and User Testing Findings

Both the discount evaluation and user testing found that the frequently asked questions (FAQs) page was comprehensive, helpful, and accessible and the food truck filters and location information were intuitive to users. We also learned that tabs and buttons should have been more descriptive, specifically the "Food Trucks" tab and the "Add to Schedule" button. Lastly, we found that both peers and target users thought the branding was welcoming, open, and warm.

Category	Finding	Data
Visual Design	Branding was welcoming, open, and warm	(UT) U2 & U3 - Users like the aethetic, colors, and welcoming message (DE) U1 - "I do really love the UI and the backgrounds and the colors"
Interaction	Schedule export functionality is appreciated by users	(DE) U3 - User liked ability to export calendar with location information (UT) U1 & U3 - Likes export capability. U3 says, "I like that I can export it so I can pick everything I want for the week and have it on my phone"
Information	Labels on tabs and buttons should be more descriptive	(DE) U3 - User expected food trucks tab to be "Find a Meal" (DE) U3 - User clicked "Add to Schedule", but said they weren't sure of expected result (UT) U2 & U3 - Users were confused where food truck was being added to with "Add to Schedule"
Information	FAQ page is comprehensive, helpful, and accessible	(DE) U1 - User says FAQs are comprehensive and easily accessible (UT) U2 & U3 - User says solution answered most of their questions in home page and FAQs
Information	Food truck filters and location information were intutitive to users	(DE) U2, U3, U4 - Users found filters easy to understand and use (UT) U3 - "I think this [food truck information] is really straightforward"
Information	Users wanted more food truck menu information within solution	(UT) U1, U2, U3 - Users wish menu was built into pop-up information (DE) U4 - User wanted to see food truck meal ingredients
Evaluation Design	Evaluation wasn't designed to help users understand "adding food trucks to schedule" in prototype	(UT) U2 & U3 - Users were confused where food truck was being added to with "Add to Schedule" (DE) U3 - User clicked "Add to Schedule", but said they weren't sure of expected result

Figure 3: Discount Evaluation and User Testing findings with session notes
Source: Primary via Miro, see complete table

User Testing Findings

Our target users found the onboarding content and solution to be understandable. However, they did highlight wanting more information during onboarding, familiar Georgia Tech branding to increase trust, simplified communication of qualification/eligibility, and an information reliability measure (i.e. when was this last updated). Our users shared they would only access Klemis Commons monthly as a planning tool and highlighted hesitation to use the solution if the functionality of Klemis Cash was not vetted. One user explained, "The only thing that makes me hesitant is, what if it doesn't work...and I don't have a backup payment option." Users highlighted that the solution would provide them the same experience as their non-food insecure peers and increase their dietary options/choices. User-proposed future design ideas included allowing meals/food trucks to be “favorited” and enabling Klemis Cash to be used flexibly across dining halls and campus restaurants in addition to food trucks.

Category	Finding	Data
Information	More information needed to be presented upfront during onboarding	U1 - In onboarding email user did not like idea of "look at our solution, it's so great but then they don't tell me more about the solution"
Visual Design	Georgia Tech branding would have increased trust during onboarding	U1 - User wants more Georgia Tech signage because current email could come off as spam
Information	Solution was cross-culturally understandable in onboarding, solution content, and solution use	U1 & U2 - User understands Klemis Commons is building on Klemis Kitchen and gathers different food opportunities together
Information	Naming of Klemis *Commons* gives incorrect impression this is a "physical" space	U1 - User suggests name be changed to Klemis Collective, because says Commons could suggest there is a physical space
Design Idea	Future work could include a community space for Klemis Commons	U1 - Says Klemis Kitchen patrons might want a physical space, "right now the space feels intangible"
Interaction	In current optimal use case, students should only need to access solution during planning period, not frequently	U1 & U2 - Users estimate they would use solution once a month to plan, not more frequently
Design Idea	To support a frequent use case, additional rotating information would need to be added	U1 - Users says they only need to understand when things are happening
Information	Qualification/elligibility requirements should have been more clear	U2 - User would have liked a classic checklist to verify elligibility
Design Idea	Solution could be strengthend with a food truck partnership	U1 - User was worried errors would happen with Klemis Cash at food trucks U2 - User says would need technical support if Buzzcard funds don't work as expected at food truck
Design Idea	Food opportunity information could be presented in an alternative format to current calendar/schedule	U2 - User says they are unsure of the calendar as it is now
Information	Reliability of information needed to be communicated to user	U1 - User wanted to know when information in the schedule was last updated
Design Idea	Solution could meet user needs by incorporating favorting of meals/food trucks	U2 - User says would save my favorite meals to know if they have the meal I want
Interaction	Reservations around using solution if the functionality isn't vetted	U1 - "The only thing that makes me hesitant is what if it doesn't work...and I don't have a backup payment option"
Design Idea	Solution would be stronger if funds could be more flexible across dining halls and campus restaurants	U1 - User would have liked to have "choice between dining hall swipes and food trucks" U2 - User thinks peers might want to go to Student Center, would have liked the option to use Klemis Cash there too
Interaction	Solution gives students the same experience others have	U2 - User says "I would be having the normal experience that others have"
Interaction	Solution increases dietary options and choices	U2 & U3 - Users say solution would give them more dietary options, which they see as beneficial

Figure 4: User Testing findings with session notes
Source: Primary via Miro, see complete table

SUS

In the discount evaluation, we received four SUS scores ranging from 85-100, which according to research can be interpreted as an A+, labeled as “Best Imaginable” [1].

In the student user testing, we received three SUS scores ranging from 82.5-97.5. Two out of three can be interpreted as an A+, “Best Imaginable”, and 1 is an A, “Excellent” [1].

5-point Likert Questions

In the discount evaluation, we asked two unrelated 5-point Likert scale questions about whether participants felt the solution would increase the variety of accessible dietary options and whether the filters supported specific dietary needs. Both received the same frequency of responses, one response for 3, “Neutral”, one response for 4, “Agree”, and two responses for 5 “Strongly Agree”.

In the student user tests, we asked five 5-point Likert scale questions. All three respondents “Strongly Agree” that there wasn’t stigma associated with using Klemis Cash. Two respondents reported being “Not at all hesitant” and one “Somewhat hesitant” to using Klemis Cash. One user “Strongly Agreed” and two “Agreed” that access to Klemis Cash increased their dietary options. Two users “Strongly Agreed” and one “Agreed” that they would likely visit a food truck with a peer if they had Klemis Cash. One user “Strongly Agreed” and two “Agreed” that they were satisfied with the resource information provided by Klemis Commons.

Discussion

The discount evaluation and user testing results provided significant insights into how well our prototype aligns with our design requirements by showing strengths and areas for improvement in our solution. Both the discount evaluation and user testing results showed that there were no major issues with the overall functionality of the system. Our prototype mostly fulfilled the success criteria for Convenient Access, Dietary Autonomy, and Protection of Dignity and Independence. However, it failed to meet the requirements for being Cross-Culturally Understandable.

Discount Evaluation

Our prototype satisfied the requirement for Convenient Access because participants were able to quickly find the location information in the food truck pop-up. However, the schedule needs improvement and does not fully meet our design. The participants wanted more information on the schedule tiles so they could quickly compare food truck options. Though we offered two different methods to access more information from the schedule tiles, the participants found neither clicking on the tiles nor the ellipses to be intuitive.

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[1] J. S. PhD, “5 Ways to Interpret a SUS Score – MeasuringU.” Accessed: Dec. 05, 2023. [Online]. Available: https://measuringu.com/interpret-sus-score/

Our prototype fulfills the criteria for Dietary Autonomy because participants were able to easily filter the food trucks page for vegan/vegetarian food trucks. However, our design needed refinement around dietary understanding. Users who came from countries where dietary restrictions are not common were unaware of the dietary terms used on the site, making filter selection difficult. The food truck pop-up carousel design also confused participants, since clicking on the arrows showed another food truck rather than more information.

User Testing

The requirement for Protection of Dignity and Independence was mostly met by our prototype because participants felt that the branding of Klemis Commons was warm and welcoming, reflecting the purpose of Klemis Kitchen. However, participants expressed concerns regarding potential technical issues while using their Buzzcards for payment. This is particularly important as our users are a vulnerable population who rely on these meals and may not be able to get another source of food.

Our prototype did not meet the requirement for Cross-Culturally Understandable, highlighting an area of improvement in the conceptual understanding of relationships within Klemis Commons. Participants immediately had questions upon opening the onboarding email and accessing the Klemis Commons home page. The participants wanted a clearer indication that they were eligible for the different elements of Klemis Commons, mentioning that it was hard to find the eligibility rules. They also did not understand the relationship between Klemis Commons and the food trucks, which left them with more questions as they accessed other parts of the solution.

The evaluation results highlighted the prototype's successes in offering an understandable solution for users while revealing details and interaction areas that require refinement.

Design Implications

Ideas for Iterating on Our Prototype

Discount Evaluation Design Requirement	Findings:	Design Implications:	How Our System Should Be Designed:

Convenient Access	• Participants wanted more information on the schedule tiles so they could quickly compare food truck options
	• Participants felt that clicking on the tiles to see more information was not intuitive based on the schedule current design
	• The use of ellipses that users could click on for more information was not intuitive to the participants
	• Participants were able to quickly find the location information in the food truck pop-up, reinforcing convenient access
		• The system should provide relevant information at a glance
		• The system should use familiar iconography and interaction cues
			• Our schedule page should include location information on the tiles so that users can quickly compare how far they will be from each food opportunity
			  • Having the location information on the tile may also help signal to users that they can tap the tile for more information
			• We would have to iterate on alternative methods of conveying information once the tile has been clicked
			  • For example, Outlook and Google Calendar have less obstructive pop-ups to display time and location information

Dietary Autonomy	• International students who come from countries where dietary restrictions are not common may not be aware of the dietary terms used on the site • The design of our food truck pop-up carousel was not intuitive – participants expected that clicking on the arrows would show them more information about the current food truck, not an entirely different food truck • Participants easily filtered the food trucks page for vegan/vegetarian food trucks, reinforcing dietary autonomy	• The system should be comprehensive across diverse cultural backgrounds • Reinforces that our system should use familiar interaction cues	• Our food trucks page should include the definition of each dietary term • This can be achieved through methods such as a glossary on the food trucks page or tooltips that appear when users hover over each filter • We would have to iterate on which visual cues would make interacting with the food truck carousel more intuitive • Currently, the filters for our food truck page are just common dietary restrictions. If we were to actually bring our site to development, we would have to work backwards and use the type of food truck to determine which filters are shown on the site
User Simulation Design Requirement	**Findings:**	**Design Implications:**	**How Our System Should Be Designed:**

Protect Dignity and Independence	• Participants felt that the branding of Klemis Commons was warm and welcoming, reflecting the purpose of Klemis Kitchen
	• Participants were concerned about technical issues when paying with their Buzzcards
	  • There is more at stake for our users because they are not able to simply pull out a credit card if their Buzzcards are declined – they would have to figure out how they're going to get another meal and they would have wasted time standing in line
		• The system should continue to create a warm and welcoming experience for users
		• The system should inform users about how to handle potential technical issues
			• We should continue to incorporate the same visual design language
			  • This includes rounded elements, a warm color palette, and dyslexia-friendly fonts
			• Within the solution, we should consider adding reassurance (in addition to the backup process described below) to inform students of the testing that has been done with this transaction method so they feel reassured and trust the solution.
			• We would have to work with the food trucks and students to identify how best to handle situations where a Buzzcard is declined. We would then incorporate that information in the onboarding email or in the FAQs.
			  • One initial idea we have is to incorporate a code word/phrase that students can say to food truck employees (i.e. "Put this on George Burdell's tab")

Cross-Culturally Understandable	• Participants immediately had questions upon opening the onboarding email and accessing the Klemis Commons home page
	• Participants wanted a clearer indication that they were eligible for the different elements of Klemis Commons
	• Participants did not understand the relationship between Klemis Commons and food trucks
		• The system should provide key information at a glance so users do not have to go searching for it
		• The system should clearly convey eligibility requirements for Klemis Commons and Klemis Cash so that users do not have to guess whether they are able to use either resource
		• The system should clearly define new food opportunities outside of the current Klemis Kitchen system
			• The onboarding email should be redesigned to incorporate more information so that users only have to look through the Help page as a last resort
			  • However, we must also iterate on how much information would be overwhelming to users
			• We should include additional information in the onboarding email and/or the home page about who is eligible for Klemis Commons (anyone on the Klemis Kitchen mailing list) and who is eligible for Klemis Cash (Klemis Kitchen patrons who have demonstrated need by accessing Klemis Kitchen in the past month)
			  • We would have to research whether revealing the eligibility requirements for Klemis Cash would encourage students who are no longer food insecure to access Klemis Commons solely for the free food truck meals
			• We should include information about how food trucks relate to Klemis Commons in the onboarding email and add food trucks to the "Klemis Commons Food Opportunities" section of the home page

Figure 5: Discount Evaluation and User Testing Design Implications for our system
Source: Primary via Miro, see complete table

The design implications that we pulled from our Convenient Access evaluation findings were that the system should provide relevant information at a glance and the system should use familiar iconography and interaction cues. We would address this in future iterations of our prototype by including more information on the schedule tiles and iterating on ways to make the tiles appear clickable. The design implications that we pulled from our Dietary Autonomy evaluation findings were that the system should be comprehensive to users of all backgrounds and use familiar interaction cues. We would address this in the future by defining dietary terms used on the food truck page, iterating on how to make the food truck pop-up interaction more intuitive, and testing filter categories from the types of food trucks available at Georgia Tech.

The design implications that we pulled from our Protect Dignity and Independence evaluation findings were that the system should continue to create a warm and welcoming experience for users and inform users about how to handle any technical issues. We would address this in the future by continuing to incorporate the same visual design language, informing students about

solution testing, and adding an instructional section to our website on steps to take if their Buzzcards are declined. The design implications that we pulled from our Cross-Culturally Understandable evaluation findings were that the system should provide key information at a glance, clearly convey eligibility requirements, and define new food opportunities that are not currently part of Klemis Kitchen. We would address this in the future by incorporating more information into the onboarding email. This information would include the eligibility requirements for Klemis Commons and Klemis Cash and how the food trucks relate to Klemis Commons.

Ideas for General Future Work

Discount Evaluation Design Requirement	Design Implications:	How Similar Systems Should Be Designed:
Convenient Access	• The system should provide relevant information at a glance • The system should use familiar iconography and interaction cues	• Similar systems should place key information (i.e., eligibility criteria and application process) where users can find it easily without having to search around the site or resort to external sources for information. For Klemis Kitchen in particular, a list of food opportunities and how to take advantage of them could be added to the website so that students do not have to discover the information on their own. • While Klemis Commons was designed for college students, who are most likely familiar with technology, governmental assistance websites may be accessed by people who are not as tech-savvy. This means that it is especially important that those websites use iconography that matches users' mental models (i.e., magnifying glass for search) and contain cues that an element is interactive.
Dietary Autonomy	• The system should be comprehensive across diverse cultural backgrounds • Reinforces that our system should use familiar interaction cues	• Because of time constraints, we were only able to use English throughout Klemis Commons. Governmental assistance websites should enable users to change their language preferences and provide instructions and resources in multiple languages. • Again, because people who use governmental assistance websites may not be familiar with technology, the websites should contain cues that an element is interactive.
User Simulation Design Requirement	**Design Implications:**	**How Similar Systems Should Be Designed:**
Protect Dignity and Independence	• The system should continue to create a warm and welcoming experience for users • The system should inform users about how to handle potential technical issues	• As Klemis Kitchen currently does not have cohesive branding, they could incorporate the Klemis Commons color palette, which has already been approved by several patrons. Governmental assistance websites should also use warm colors and incorporate relatable images that represent their diverse user base. • Governmental assistance websites should clearly convey what users are doing wrong in error messages so that users can easily correct their actions. These websites can also incorporate chatbots or virtual assistants so that users do not have to go searching through a FAQs page to find answers.
Cross-Culturally Understandable	• The system should provide key information at a glance so users do not have to go searching for it • The system should clearly convey eligibility requirements so that users do not have to guess whether they are able to use a resource	• Both Klemis Kitchen and governmental assistance websites should feature essential information on the home screen and use an intuitive navigation structure so that any information that cannot be displayed on the home page is only a few clicks away • Both Klemis Kitchen and governmental assistance websites could incorporate an interactive checklist so that users can easily assess whether they meet eligibility requirements

Figure 6: Discount Evaluation and User Testing Design Implications for other systems
Source: Primary via Miro, see complete table

Similar systems that we have identified within our problem space are the Klemis Kitchen website and the website for governmental assistance programs, such as SNAP.

Based on our Convenient Access design implications, we recommend that similar systems display key information where users can easily find it and use familiar iconography and interaction cues, especially because governmental assistance websites may be used by people who have limited familiarity with technology. For the Klemis Kitchen website specifically, we recommend adding a list of food opportunities so that students do not have to find this information on their own. Based on our Dietary Autonomy design implications, we recommend that similar systems enable users to change their language preferences and provide instructions and resources in multiple languages.

Based on our Protect Dignity and Independence design implications, we recommend that Klemis Kitchen incorporate the Klemis Commons branding and that governmental assistance websites also incorporate warm colors and images reflective of their diverse user base. These government websites should also provide clear error messages that enable users to correct their actions and provide avenues to facilitate user support. Based on our Cross-Culturally Understandable design implications, both Klemis Kitchen and governmental assistance websites should display essential information on the home page, use an intuitive navigational structure so that any information not on the home page is easily found, and incorporate an interactive eligibility checklist for user self-assessment.

Reflection

Problem Definition

In D1 and almost for D2, we suffered by being too broad with our problem statement and therefore with our research. For example, we had wanted to focus on both food insecurity and housing insecurity for D2 but ultimately decided to focus on just food insecurity following guidance from our TA. Had we proceeded to research and ideate on both insecurities, we would have ended up with shallow ideas for both.

Design

From a process standpoint, it would have been valuable to start designing sooner. We did paper prototyping and it helped to get early feedback, but between then and our final design, there were elements that could have had more time and refinement iteration. It is ultimately an issue of time available in the semester, but it still would have been valuable to see how ideation could start sooner so our design could mature more.

We also had limitations around Figma familiarity, if we hadn't used design time to learn how to use Figma we could have had more polished results with the intended interactions.

Had we learned about participatory design earlier on in the semester, it would have been interesting to see what our system would have ended up being had we designed *with* our target user group or the STAR Director instead of *for* them. However, we were able to conduct an enactment with one of our users by having them use our prototype and go to a food truck afterward.

Ideation Process

Similar to the comment in the "Design" section, ideation was valuable but went by quickly. We received several questions on "why food trucks" when presenting our concepts. At the time, the food truck experience was the most novel concept that came out of our ideation. In reality, we created a hub of information and a new process in the system of providing students with food. Food trucks are only a piece of the concept at this point.

Team Contributions

Aastha
I created the user evaluation protocol with Raj. I facilitated a classmate discount evaluation. I transcribed my notes from that evaluation that I conducted into the team affinity boards and collaborated with the team to affinity map the notes. I helped pull out findings from the affinity map.

Ariana
I actively facilitated and participated in team planning meetings for this last leg of work. I began this phase by kicking off the recruitment of our primary student users for optional evaluation sessions after Thanksgiving. I reviewed the evaluation protocols created by my team during Thanksgiving and provided feedback. Specifically, my contributions were focused on the facilitation of a classmate discount evaluation, the facilitation of an evaluation with one of our primary student users, and the support in note-taking for a second student user evaluation. Between evaluation sessions, I participated in the transcription of notes into the team affinity boards and collaborated with the team to affinity map and pull out findings for both the class discount evaluation and our student user evaluations.

Annette
I created the peer discount evaluation plan and worksheet with Gabi, facilitated an evaluation with one of our primary student users, and was the note-taker for a second student user evaluation. Following the evaluation sessions, I transcribed my notes into sticky notes and collaborated with Ariana to affinity map all notes from the student user evaluations to extract takeaways. I provided support to my teammates during the discount evaluation by taking pictures and videos for documentation purposes.

Gabriela
I worked with Annette to develop the peer discount evaluation plan and worksheet. For the user simulation, I coordinated meeting invites. I facilitated and took notes on one peer discount evaluation session and one user simulation. I transcribed my session notes to Miro for affinity mapping and participated in a team session to gather takeaways. I interpreted the results for all SUS and 5-point Likert questions. I compiled a comprehensive findings table and wrote the report "Results" section.

Rajath
I worked with Aastha on the user (Klemis Kitchen patron) evaluation protocol. I corresponded with Steve Fazenbaker on providing compensation to our primary users as a thank-you for their help throughout the semester. I facilitated a classmate discount evaluation session and then transcribed the notes from the session into sticky notes on a Miro board. I facilitated an evaluation session with a member of our primary user group as well. I then collaborated with the team to affinity map the notes gathered and pull takeaways.