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CS 522 - FSP Deliverable #2 - Report

User needs (Page 1)

After conducting our interviews, we decided to aggregate the results we received into two groups which are "irregular visitors" and "regular visitors" of UIC's dining hall. The needs of the irregular visitors, represented by the user persona of John Doe in Figure 1, are the following:

- The overall experience to be more organized, as the many stations and food options are overwhelming for an infrequent visitor.
- An easy way to locate food that aligns with their dietary restrictions and preferences. In the case of John Doe, he avoids pork, eats halal, and has allergies.
- Self-reliance when navigating the space rather than having to constantly locate workers for assistance.

The needs of the regular visitors, on the other hand, as represented by Jane Doe in Figure 2, are the following:

- Convenience, as they would like to locate foods that fall under their diets on the menu as quickly and efficiently as possible. In the case of Jane Doe, she would like to easily avoid spicy foods and those that contain pork.
- Ease when attempting to map the name of a food to the way that it looks in the space. Similarly, more time to read the displays that showcase the food options.
- Spending less time acquiring food and more time eating food.
- Receive clear answers rather than relying on the limited knowledge of the workers.

Quick Takes on John

Dining hall visit frequency	Regular
	Irregular
Dietary restrictions	No Pork
	Halal
	Allergy
	Vegan
	Vegeterian
Background	Grad Student
Prefer to navigate food menu via	Phone
	Laptop

Photo Credit: https://unsplash.com/photos/DSj40n6beGk

John Doe: An *"Irregular Visitor"* at the UIC Dining Hall

"If you are not regular and go to the dining hall for the first time, it will be a mess. You won't know where to look, how to look, and where to start."

Background: Graduate student at UIC

Frequency at dining hall: Irregular

- Key Goals

  John feels overwhelmed trying to navigate the dining hall during his infrequent visits. He feels that there should be an easier way to find food that aligns with his dietary restrictions and preferences. He wants to navigate and find food on his own and not ask people for help for small things. Also, he wants to make sure he does not eat something that falls under his dietary restrictions.

- Typical visit at the dining hall

  John prefers eating at the dining hall seating and does not do takeaways. Usually, he goes to the dining hall with some of his friends. It takes around 5-20 minutes for him to find food and then finally sit at a table to enjoy the meals.

  Unfamiliar with the dining hall's layout, John adopts an arbitrary approach for finding food items during his visits. He initially seeks out less crowded food corners, where he hopes to discover a familiar meal. If the options don't seem recognizable, he either skips them or consults the kitchen staff for clarification. John also takes into account his dietary restrictions, frequently seeking assistance from kitchen staff when uncertain. However, in instances where even the kitchen staff can't provide clear information, he opts to abstain from consuming such dishes.

  At times, he tries finding certain items he had before (e.g., coffee) but cannot locate it due to his unfamiliarity with the vast layout.

  Lastly, he feels that a mobile phone application could help a lot during at navigating the dining hall, specially for students who are new there or infrequently visit the dining hall.

Figure 1. Persona derived from initial findings (John)

Quick Takes on Jane

Dining hall visit frequency	Regular
	Irregular
Dietary restrictions	No Pork
	No Spicy
	Allergy
	Vegan
	Vegeterian
Background	Grad Student
Prefer to navigate food menu via	Phone
	Laptop

Photo Credit: https://www.istockphoto.com/photo/portrait-of-a-young-woman-carrying-her-schoolbooks-outside-at-college-gm1365601848-436410204

Jane Doe: A *"Regular Visitor"* at the UIC Dining Hall

"Despite being a regular, navigating the space and ingredients of the dining hall is not as convenient as I would prefer".

Background: Graduate student at UIC

Frequency at dining hall: Regular

- Key Goals

When Jane visits the dining hall, one of her main priorities is convenience. She would like to discover what foods that fall within her diet are on the menu as quickly and efficiently as possible; she no longer uses the online menu because, not only are there far too many links to press, but it is difficult to know what the foods are from their names alone. She also prefers not to wait in long lines only to discover she cannot eat the food in question nor get a clear answer from the workers.

- Typical visit at the dining hall

Exhausted after her gym workout, Jane finds that she is too tired to cook at home. Therefore, she and her friends visit the dining hall at a time when she knows less students are likely to attend. This allows her to avoid long lines. She like to take her time, spending 40 to 50 minutes there.

Being a regular, Jane has established a routine. She first navigates towards the station in the back to the left which has proteins. She intentionally avoids the stations to the right because, from her experience, they have foods she does not care about or foods that are too spicy. She finds that having to resort to the few safe foods is boring. However, this time around, the foods are unfamiliar, as the menu frequently rotates.

Concerned, she tries to look towards the screens that display the ingredients to avoid spicy foods and pork, but they switch too quickly for her to read. Therefore, she resorts to consulting the workers. The workers either claim the dishes are not spicy or confirm they do not know what is in the dish. She decides to take a risk and select a new food. The food turns out to be spicy despite the insistence of the workers that it is not. Because Jane does not like to waste food, she eats the entire meal and endures the pain.

Figure 2. Persona derived from initial findings (Jane)

The full-size personas charts can be found here.

Design alternatives (Pages 2-3)

Given the user needs extracted from our need-finding activities, we grouped them into two general groups as we mentioned before: regular and irregular dining hall visitors. Through that grouping, we extracted two personas called John and Jane. The first, being an irregular visitor, feels overwhelmed by all the dish options and the physical space and, therefore, needs help with spatial and information navigation. The second one is a regular visitor who prioritizes efficiency since the space and options are already more familiar to her. She wants easy access to information about the food of the day and to be informed about eventual new items.

With that in mind, we brainstormed screens and functionalities that support one of both personas' needs. This brainstorming exercise was done considering the initial interface proposed before. This means that the fundamental premises of the application are already in place (map, menu, and navigation) and this brainstorming presents paths for expanding and/or modifying the previous interface to fulfill the needs of our users.

Considering the two groups of people identified in our personas we decided to have an initial screen where the users can identify themselves in one of those categories (Figure 3). Based on that identification we can provide more information through an introduction to the United Table (if a new user) or assume familiarity (focusing on efficiency).
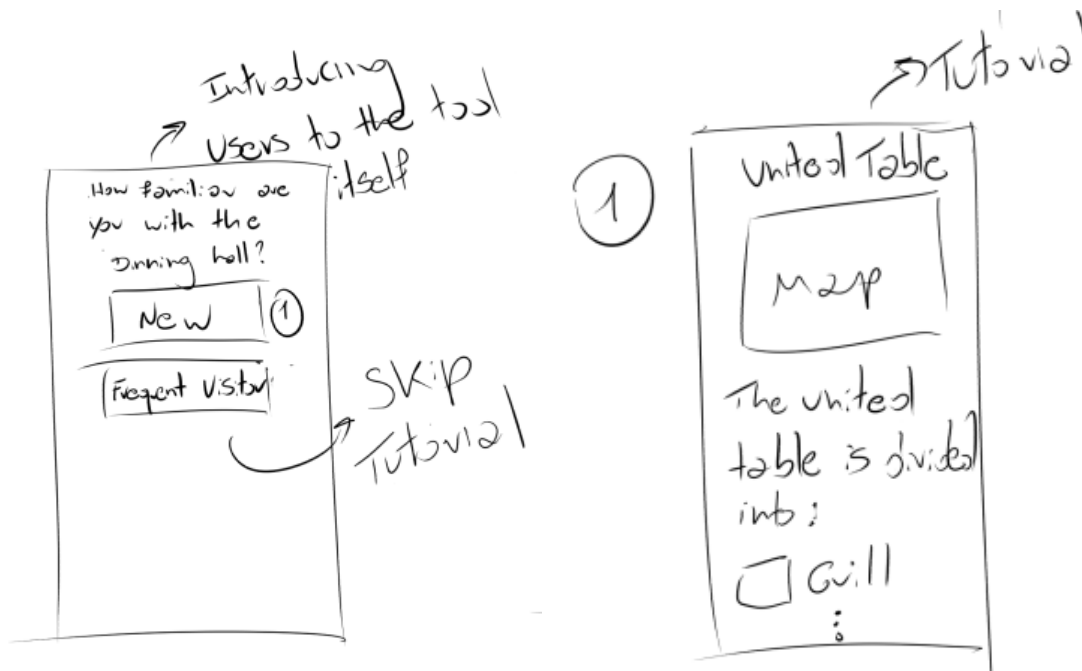

Figure 3. Identifying the user.

After opening the application for the first time the users are prompted with options to configure their profile with dietary restrictions and preferences (Figure 4). Based on that, plans are

recommended. This feature is specially designed for users like John who go irregularly to the United Table and might feel overwhelmed with all the options available (Figure 4).
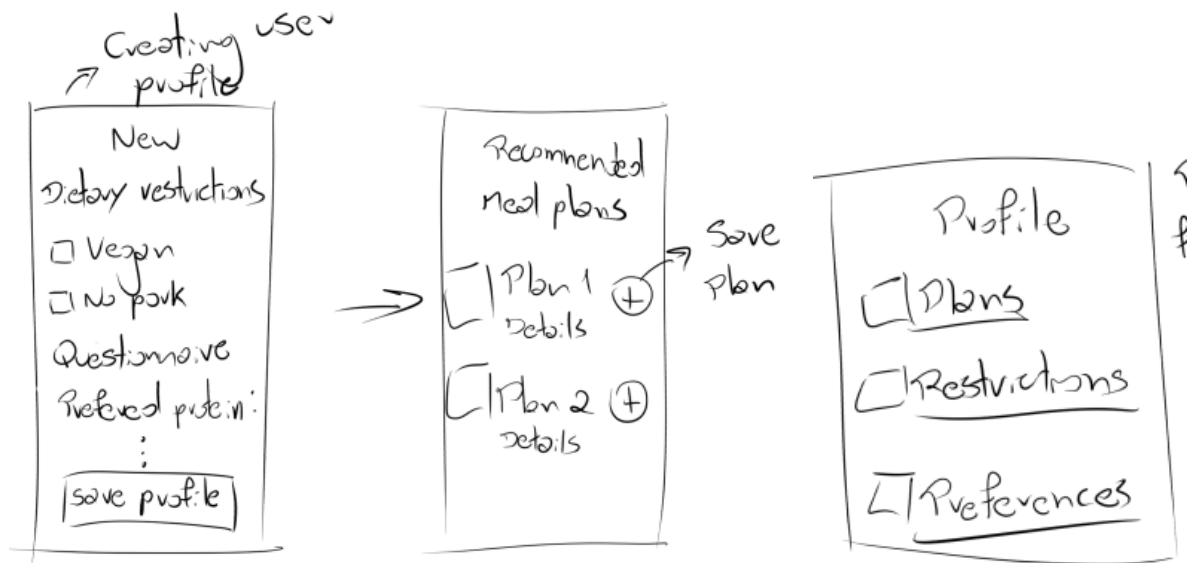

Figure 4. Creating user profile and meal plan recommendations.

Considering that the dining hall is a place used by the university community we pondered the idea of adding a community tab where users could leave comments about dishes or ask/answer questions (Figure 5). Even though these functionalities could enrich the application we decided not to include them because the benefits of exchanging information between users are not completely aligned with our users' needs and, therefore, do not justify the added complexity (and the need for community moderation).

Figure 5. Community tab for comments and questions.

For the exploration of available dishes, we have three main screens (Figure 6). The first one contains all the dishes available for the day and, due to the provided pictures, supports the mapping between the application and the real world. Users can also submit photos to enhance our database. The last two screens "Eat Again" and "Consider Trying" are targeted at recurrent visitors who already have preferred meals or want to try new dishes.
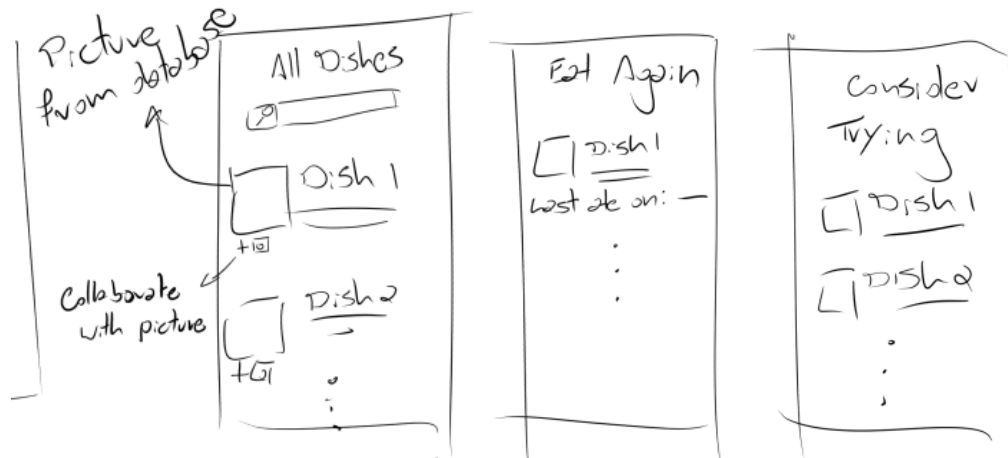

Figure 6. Dishes exploration.

Finally, trying to further support the mapping between the virtual menu to the real world, we created a dish identification screen (Figure 7). The idea is to allow users to take pictures of the dishes they see and, based on our image database, find the dish on the menu. Even though it is an interesting picture we decided to not implement the idea. That is because it would require the user to actively use their cellphones going against our comfort and ease of design principle. Moreover, once the user planned the meal, the application is already responsible for supporting navigation and guiding the user by providing pictures of the dishes.

Home page
Adding food preference and getting the recommended food list
Adding food options to get route for that day

User want to navigate the dining hall seamlessly
User want to find recommended food plan
Map the name of the food to the physical space

Figure 7. Dish identification.

Design prototype (Page 4)

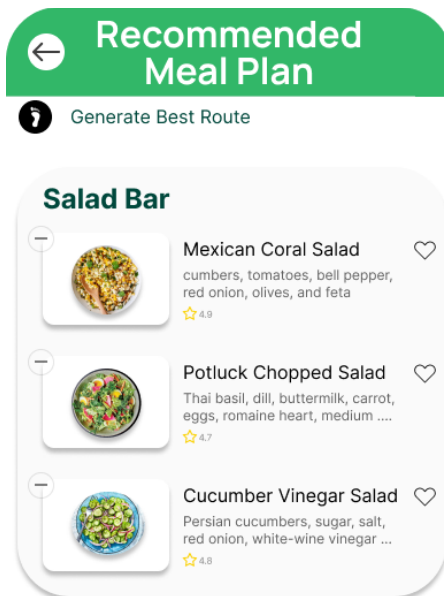Both personas had a common user need of ***finding food that falls under their dietary restrictions***. To serve this purpose, in our low-fidelity prototype we design this page, where users will be able to set their dietary restrictions and afterward they will be recommended a list of food items for a specific day that falls under their restrictions.

Recommended Meal Plan

ⓘ Generate Best Route

Salad Bar

Mexican Coral Salad ♡
cumbers, tomatoes, bell pepper, red onion, olives, and feta
☆ 4.9

Potluck Chopped Salad ♡
Thai basil, dill, buttermilk, carrot, eggs, romaine heart, medium ....
☆ 4.7

Cucumber Vinegar Salad ♡
Persian cucumbers, sugar, salt, red onion, white-wine vinegar ...
☆ 4.8

Users have the capability to choose from a recommended meal plan, which are tailored to their pre-defined dietary restrictions. Subsequently, the user can generate an optimal route by pressing the button "**generate best route**" to efficiently locate the food items they've chosen. This functionality serves the shared need of both user personas *to efficiently and effectively identify food items*. This will serve the user needs of both our personas on *receiving clear answers on recommended meal plans and navigating the space rather than relying on workers.*

When a user clicks on a food item here, they will also have access to its ingredient list. Furthermore, users have the option to mark an item as a favorite, enabling them to quickly locate it during their future visits to the dining hall.
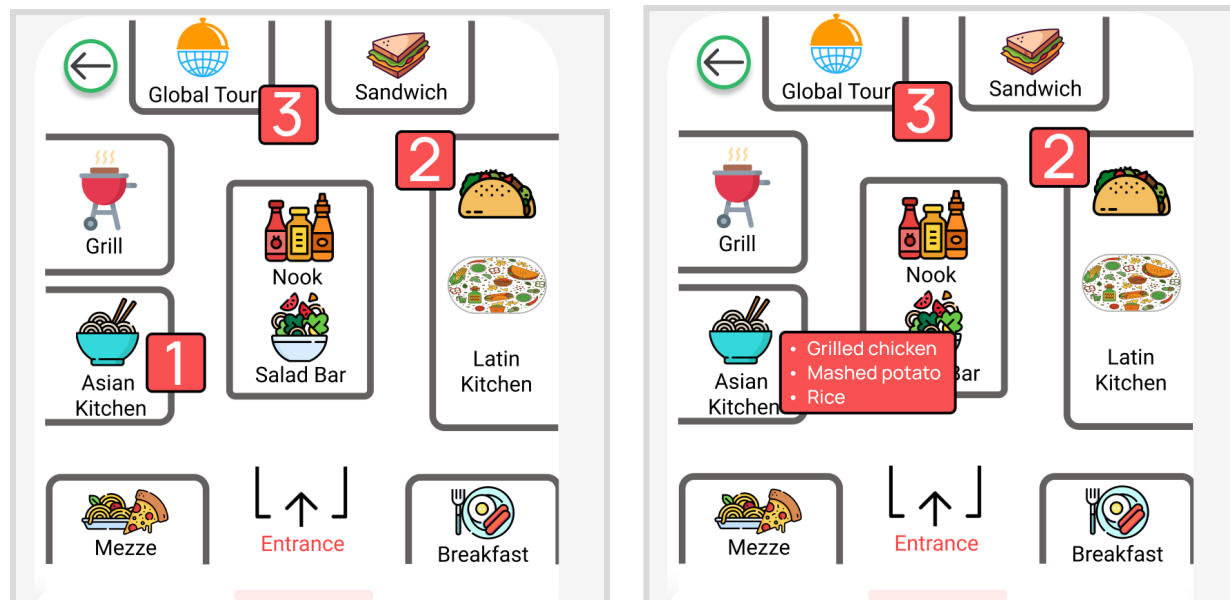
Once the user has chosen their food items, a dining hall map is provided to them with embedded numbers to various kitchen counters. These numbers indicate the optimal route for gathering the selected food items efficiently. By clicking on a number, the user can also access a list of food items they need to collect from the respective counter. This screen also serves the user needs of our personas to **efficiently find food items in the dining hall**.

Testing with users (Pages 5-6)

During the user testing phase, we engaged two participants: Participant 1(P1), a postdoctoral researcher at UIC who regularly visits the dining hall, and Participant 2(P2), a PhD student who infrequently dines there. The low-fidelity prototype was deployed on their respective mobile devices to simulate real-world usage. Each participant was assigned three tasks: 1) setting dietary restrictions, 2) checking food ingredients from the recommended list, and 3) generating the optimal route for acquiring selected food items. Throughout the process, users were encouraged to verbalize their thoughts, providing valuable insights into their navigation and decision-making processes.

During Task 1 (Setting Dietary Restrictions), P1 set their dietary restrictions, aiming to customize their dining preferences. P1 navigated through the interface to select their preferences, though P1 expressed initial difficulty in locating the button for generating the best route. P2 navigated through the interface, successfully completing the task without encountering any notable challenges.

In Task 2 (Checking Food Ingredients), P1 explored the recommended food list and checked the ingredients of a specific item. The participant executed this task seamlessly, finding the feature intuitive. p2 executed this task smoothly, expressing satisfaction with the feature's functionality.

For Task 3 (Generating Best Route), Both P1 and P2 generated the optimal route to gather selected food items. Once the participants located the button, the task was performed without further difficulty, ultimately appreciating the application's concept.

Overall, participants appreciated the concept of the application and recognized its potential benefits. By analyzing participants' feedback and specific pain points identified during the testing phase, we came up with features for next stage of prototype development:

Prominent Placement of "Generate Best Route" Button
This idea arose from User 1's feedback about initial difficulty in locating the button. Placing it prominently addresses this issue and ensures this critical feature is easily accessible
Incorporate User-Defined Preferences for Dietary Restrictions
This suggestion stems from the desire for greater personalization expressed by both users. Allowing users to add their own preferences caters to individualized dietary needs and preferences, providing a more inclusive experience.

Include Spicy Food Option in Dietary Restrictions
User 1 specifically mentioned looking for a spicy food option, indicating a specific taste preference. This suggestion aims to address this need and broaden the range of dietary options available.

Expand Information on Kitchen Counters
P2 suggested to include all available food options from a specific kitchen counter demonstrates the need for flexibility and informed decision-making. This ensures users have all the information they need to make the best choices.

Visual Cues for Navigation and Functionality
Both users provided feedback on the importance of clear navigation. This suggestion emphasizes the need for visual cues to guide users, reducing potential confusion and enhancing overall usability.

Collaboration record

Student Name: _Gustavo Moreira_
Contribution: Helped brainstorm and draw the design alternatives. Helped to structure the section of the document and the images.

Student Name: _Kazi Omar_____
Contribution: Created one of the personas. Made changes in the low-fidelity prototype in Figma. Conducted low-fidelity testing with two users. Wrote the design prototype part.

Student Name: _Shanghao Li___
Contribution: Created low fidelity prototype in Figma and wrote the testing with users parts.

Student Name: _Farah Kamleh__
Contribution: Described the user needs on the first page and created the Jane Doe user persona. Performed final edits to paper.