

ECO-CERIES

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Low Fidelity Prototype and Refinement

Project Title, Team Member Names and Roles

Ecoceries - The Ecofriendly Grocery App

Members:

Kara Fong - Group Manager

Nanako Era - Designer

Jasmine Wang - Documentation

Alisa Yamanaka - Testing

Problem and Solution Overview

As people's lives begin to get busier and busier, they are forced to make trade-offs in how they live. One such trade-off concerns their health. Many people may not be informed of their options to lead healthier lives. Sustainable foods offer people ecologically sound products that are beneficial to both their health and the environment. However, information about sustainable foods are not easily accessible. With the growth of ubiquitous computing, a mobile application that would allow users to access information about where and what foods are available would serve to benefit consumers and the community around them. Products can differ drastically across various stores. An application that provides users with the option to make eco-friendly decisions about food would not only improve the health of many people, but also benefit the local and sustainable farms that make an effort in growing healthy, as well as environmentally-friendly, products. The app would help users evaluate their current food purchases, learn about some better choices when it comes to grocery shopping, and find where the best places to buy eco-conscious foods are in their area.

Paper Prototype Description, with Overview and Close-Ups

Our paper prototype (figure 1) is a mock up of mobile phone screens. We created one screen that had the main header, with the home and "My Account" button that is consistent throughout the whole application, no matter what function you go to. The other screens can then lay directly below the header. We also created blank field boxes so that the users can "type" in things such as ingredients for the "Groceries Under Budget" function, and the SKU number for the "Scanning Products" function.

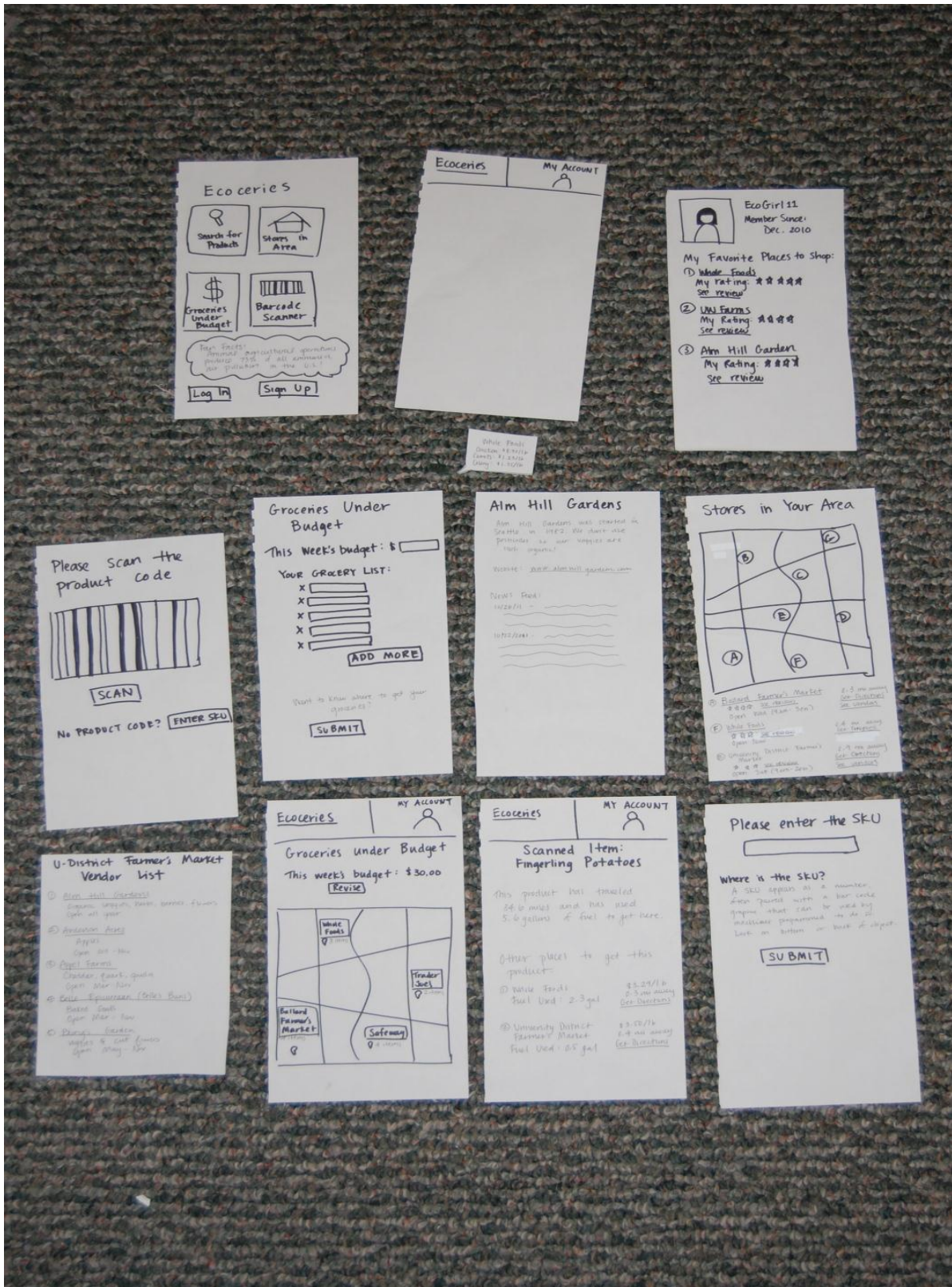


Figure 1: Paper Prototype

Testing Method

Participants

We found three volunteers, all through mutual friends, to test out our application. All participants were conscious of sustainable growing practices while they did their grocery shopping, so they were very interested in seeing what Ecoceries had to offer. Participant 1, Chris, is a male in his mid 20's. He and his girlfriend do their grocery shopping together. Chris likes to focus on buying groceries that are healthy and organic. He likes to know where his produce comes from. His girlfriend likes to buy groceries that are cheap. Together, they try to find the healthiest products at the lowest price.

Participant 2, Joyce, is a female in her late 40's to early 50's. She has just recently started looking into buying more organic and sustainable groceries, so she is fairly new to this style of living. She also has little experience with smart phones, but is looking into purchasing one in the near future.

Participant 3, Sam, is a male in his late 40's who has been concerned with buying sustainable groceries for the last couple of years, after his doctor told him it would be in his best interest to start eating healthier. He wants to eat foods that are both healthy and sustainable, but doesn't want to spend a fortune. He is fairly proficient in his use of a smart phone, as he uses it often for work.

Environment

The environments we conducted user testing in were all chosen by our participants so that their comfort was ensured. We conducted user testing with Chris at a local coffee shop, where one of his friends joined in to watch so that someone familiar to Chris was there. We all sat at a circular table so that we could see how Chris was interacting with our prototype, and so that we could also easily change the screens when need be. For Joyce and Sam, we conducted user testing in their homes, as that was easiest for them. Both homes had large rectangular dining room tables which we sat at while performing testing. In the case of Joyce, her husband was nearby and came to watch the testing periodically. For the most part, our surroundings were quiet, with the exception of us talking. With Sam, we were in an environment where his wife was cooking in the kitchen and his children were watching TV in the adjacent living room. So it was a little noisier than expected, but we were still able to conduct user testing just fine. In both cases, our seating arrangements were the same. The two of us who were speaking directly with the participant and switching the screens sat on one side of the participant, while the note-takers sat on the opposite side.

Tasks

Task 1 (Easy): **Check Information on a Product**

While grocery shopping, you want to know the price and nutrition information on a product without searching through databases on the internet. You want to know how this product compares against products from other brands.

Task 2 (Moderate): **Find Information on a Vendor from a Farmer's Market**

There are many different choices of vendors when visiting a farmer's market, and choosing which one to purchase goods from can be difficult if you don't know very much about them. Use the Ecoceries application to find a nearby farmer's market, and look up information on a vendor.

Task 3 (Hard): Find an Optimal Grocery List Based on the User's Weekly Grocery Budget

One primary reason people give against shopping for sustainable groceries is the perceived more expensive cost. Build a grocery list of the best/healthiest combination of groceries based on your financial capabilities.

Procedure

For each user testing session, we followed the same procedure. In terms of who conducted which function during the testing, Nanako was the one who spoke directly with the participant, Jasmine switched the screens as the user tested the prototype, and Alisa and Kara took notes during testing.

Each user test began with Nanako telling the participant about the Ecoceries application and why we were performing the user testing. She closely followed a script that we wrote up beforehand, so that each participant would be given the same information. We also made sure to inform the participant that the testing was not a reflection of their abilities, and we weren't testing them, but rather testing the prototype. We encouraged our participants to think out loud during the testing, and to ask questions if they had any. Basically, we wanted the participant to feel as relaxed and comfortable as possible during this process. After explaining the application and testing process, we showed the user a quick example of how to use the application by taking a look at the home screen and demonstrating the use of buttons and text boxes. This gave the participant an understanding of what different functions on the application looked like and how to use them. Then we jumped into the actual user testing.

While the participant was using our prototype, Nanako would ask the participant questions from time to time that would help us have a better understanding of what the participant thought of different features they were using, or if they knew what certain buttons did just by what the label of the button said. She also asked why the participant chose to click certain buttons, in the event that it was unexpected or if the participant didn't indicate why they made the decisions they did.

When the participant was finished testing out the prototype, we asked the participant what they thought of the application, what kinds of changes they would like to see, what kinds of features they would like added or removed, and overall their satisfaction with the application. We also asked if it was something they would use, or recommend to a friend. After our questions were answered, we thanked the participant, and were on our way.

Test Measures

During user testing, we placed a lot of emphasis on the ease of use of the overall application and the understandability of instructions and buttons. We took detailed notes on the length of time it took for users to arrive at the correct action and paid special attention to occasions when they veered from the correct path. During these instances, we allowed the users to voice their reasoning behind their actions and improvement or changes they would make to our application to make it more understandable for themselves. We also made note of areas of the screen that the users thought were interactive but were in reality not. The combination of the above methods gave us a clear idea of which components of our application needed improvement.

Testing Results

Through our user testing, we discovered many interesting things about our application and ways that we can improve on it. The following is some of our key findings and things we are now giving serious thought into changing or modifying.

Sign-up and Login Usage

In task #1 (checking information on a product), all of the users had no difficulty identifying the correct button (Search for Products) to click to access product information. However, 2 of them were confused by the login button on the home screen and questioned whether they had to login first before using the application. Participant 2 went on to log in and was taken to the profile page. From there, participant 2 thought the most logical place to look for products was under the favorite stores section and proceeded to click on her favorite store. However, our application currently does not have any functionality beyond this point, so the user was forced to find a way back to the home screen.

Barcode Scanning

One participant noted that during the scanning of the barcode, it is redundant to have a scan button at the bottom and the application should instead automatically recognize the barcode when it is placed within the scan area.

Search Stores Button

When the participants were asked to find information on a vendor from a Farmer's Market, 2 of them were unsure of which button to click initially on the home screen. When asked why they showed hesitation, the participants replied that they were confused by the wording of "Stores in Area". This tells us that maybe we should change the wording of the button to reflect the fact that pressing it will also allow the user to search for farmers markets, too.

Auto-complete and Drop-down Text Boxes

Both participants 1 and 3 mentioned the use of drop-down boxes or auto-complete texts when adding items to the grocery list. Participant 3 stated, "If I start typing in a product, I think it should give me options in terms of brand and maybe sizes or quantity, unless I type in a really specific product. You also might want to add a box for quantity, or drop-down box option or something." This was really useful because we hadn't taken into account the quantity of specific products the user would want on their grocery list. It also makes sense to add auto-complete searches because the user might type in or misspell a product that isn't listed in our database.

Back Button

While working through task 2, participant 1 went an unexpected route to search for products. Because we didn't have functionality past clicking a favorite stores button, participant 1 had to navigate back to the home screen. At this point, we realized we had no back button, and the only button that could be pressed to go back was the home button. However, this would pose a problem if the user was looking at a specific vendor, as in task 3, and then wanted to go back one page to see the whole list of vendors. Their only option would be to hit the home button. This is something that is incredibly important that we integrate into the next iteration of our application.

Adding a Product to Grocery List

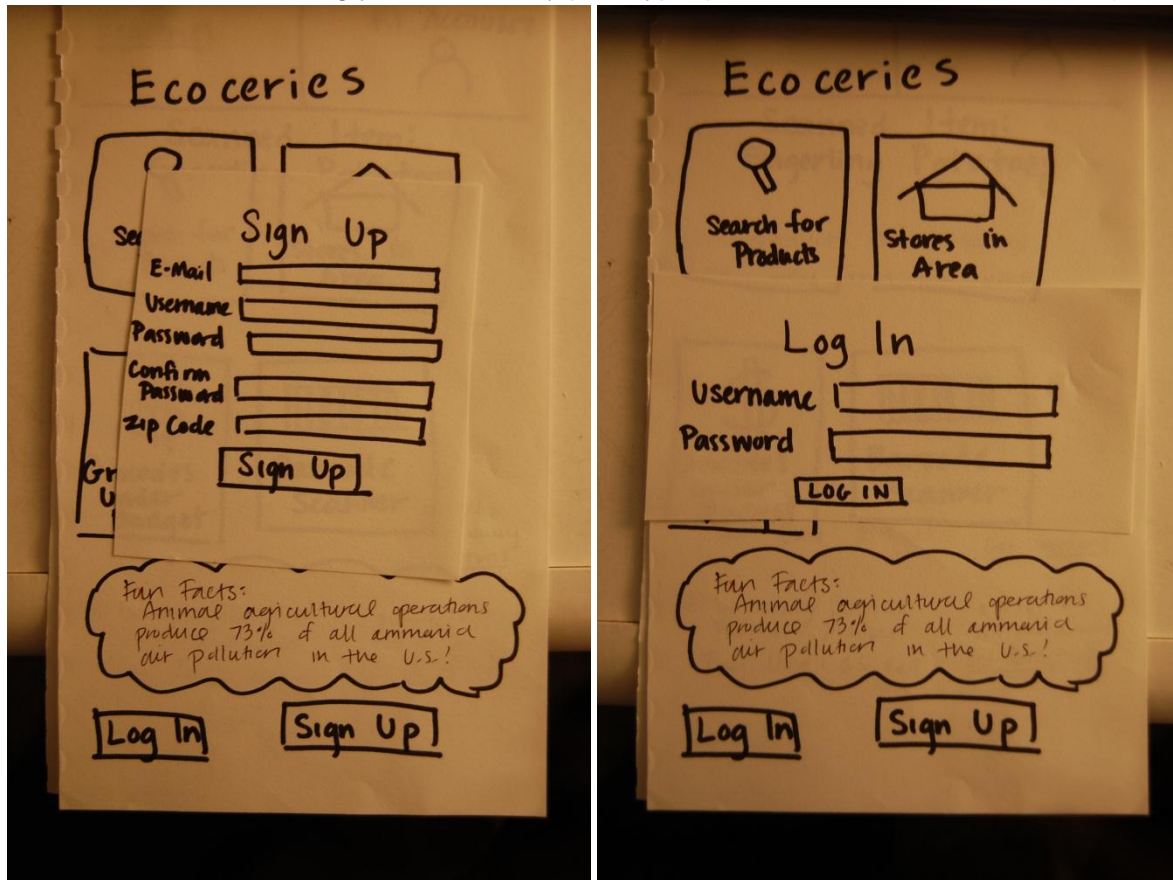
Two of our participants during the grocery list-building task mentioned that they wished there was a function on product screens to add that item to the list, as opposed to having to type in all of the products from the grocery list screen. That way, they could more easily build their list as they shop, or they can read up on a product before adding it to their list.

Numbers Under Store Names After Building Grocery List

We were concerned with how our participants would view the number of items under each store name after they finished creating their grocery list. One way to look at it would be to read the number as being that many items from the user's grocery list at that particular store, regardless of price. The other way would be reading the number as the number of items from the user's list at the cheapest price, or seeing the numbers as a road map of where to get their products at the cheapest price. Luckily, our participants viewed it as the former, as evidenced in a statement from participant 3, "I'm guessing the number of items under each place is how many of my items that place has. I would click on the store with the largest number of my listed items."

Interface Revision Sketches

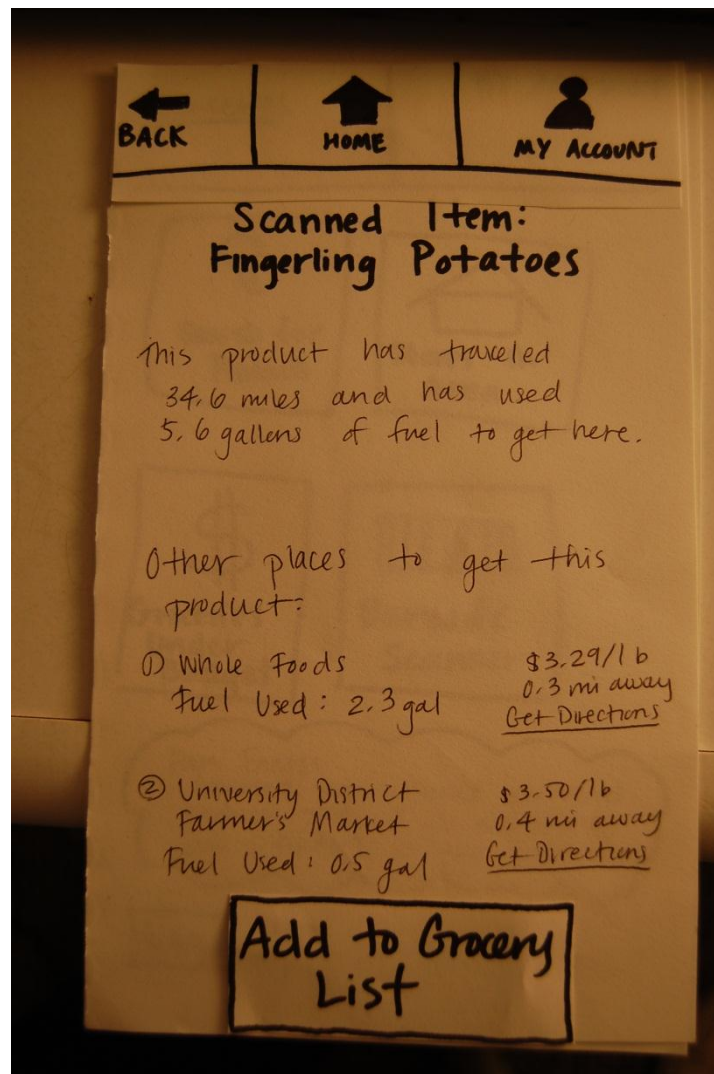
a) Sketches clearly showing previous design and new design. Provide rationale for changes made as a result of testing your low-fidelity prototype (refer to content of the sketches).



Two out of three of our users tried to log in or sign up when starting to use the application:

“Do I need to log in first? Or can I use everything without signing up?” – Sam
[Joyce initially clicked the log in button.]

Therefore, we decided to add the “Sign Up” and “Log In” screens. Instead of creating new screens, we created pop-up screens so that the user does not have to go back and forth between screens. The log in and sign up buttons will be at the top right of all screens consistently. If the user runs into a function where they have to sign up or log in in order to use it, then they will be prompted to log in/sign up.



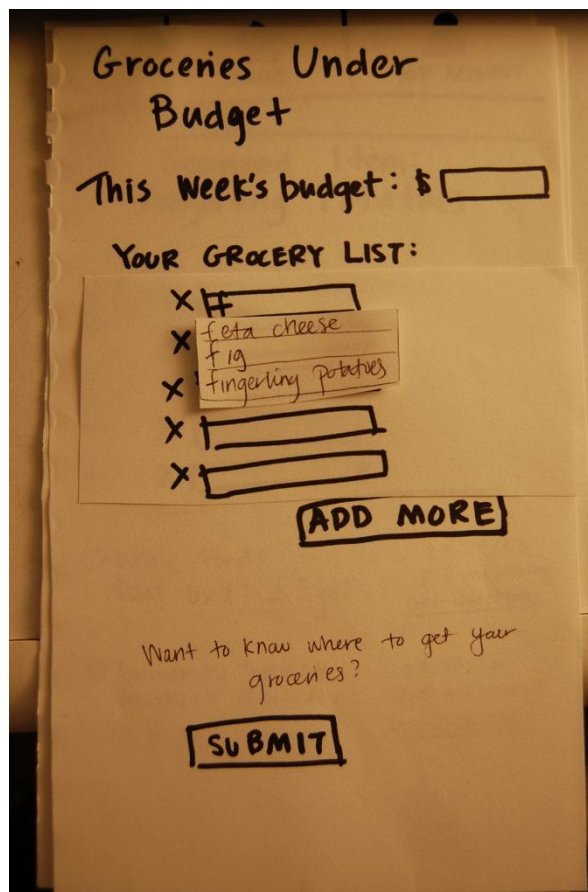
One user expressed concern for not having a “Back” button to go back to the previous screen that he was on. We felt that this was an important feature that we missed, and added it to the

top navigation panel. Without a back button, users constantly had to go back to the home page and go through steps to get to the previous page all over again.

Chris also expressed concern for being able to add a product to your grocery list after scanning or searching for it:

“I don't recall seeing any way to add items to the list from product page. If that isn't a feature, it should be added.”

We thought this would be a helpful feature, so that the user does not have to go back and forth between the product page and the grocery list page. However, this function will only be able if the user has an account and is logged in; with an account, users can save their own grocery lists and be able to add products that they searched for.



All three participants wanted a function where a drop down menu would pop up while the user was typing in the grocery item. We thought this would be a good function to have so that the user will not type in an item that is not in our database.

Summary Discussion and Lessons Learned

In order to minimize input, one user suggested that we implement an auto-complete feature in the search box. To do so, it is possible to put create an archive of items that users frequently purchase and this database would continue to populate through the user of our system.

User-testing helped us realize that the descriptions on the buttons were not as clear as we initially thought. A complaint that was consistent throughout our participants was that text should be more indicative of the response the user would expect from the system. Some of the feedback we got from our user testing included the Importance of back or undo button. This is not surprising considering that the back button is one of the most often used features on an application. We initially thought that including a “home button” as indicated by the Ecoceries logo would be sufficient. However, users advocated the need to go back to the previous screen.

It seems that users would like to see confirmation of how helpful the use of this app would be or has been to them. Perhaps if there was a way where the system could indicate how much money a user has saved compared to purchasing items elsewhere. There should be some sort of analytics or statistics that are calculated so that users can see how much the use of this application has paid off and benefited them.

We also learned that we had been mistakenly using the term SKU wrong, not realizing that they are actually two quite different entities. UPCs, or Universal Product Codes are standardized for business use and provide a product description that, once scanned, anyone could read. In contrast, a SKU, or Stock Keeping Unit, is a number assigned to a product by the company for stock-keeping purposes and internal operations. With this in mind, we will change all occurrences of SKU within our app to UPC.

User Testing allowed us to learn about how users like automation. In particular, our app makes good use of this through the fun facts feed that self-populates. We also had a suggestion to get rid of scan button. A participant pointed out that the app should just be able to detect the barcode when the camera is in use. This would minimize the number of actions a user would need to complete a task.

Users expect this app to work the way that resources familiar to them respond to a particular action. For example, clicking on a point on the map should react the same way Google Maps would in that it would display information about that particular location, give the user an option to get directions, etc.

Overall, user testing allowed us to truly evaluate the design of our user interface from another point of view. It is important for us to get feedback so that we could make improvements as we deem necessary because our design aspects could often be overlooked. From inconsistencies, response from the UI, and matching user expectations we would hope to maximize the user experience.

Appendices

User-Testing Script

“Ecoceries is a smartphone app that allows users to look up sustainable products within their vicinity, and compare prices between stores that sell these sustainable products. Users can also create grocery lists under their budget, because sustainable foods can be pricey. Within our database, we have included both grocery stores and farmer’s markets. Please know that this user testing is not a test of *your* abilities, but rather a test of how well our product is designed and how user friendly it is. Please think aloud while doing these tasks, and point out anything that stands out to you, good or bad. If anything does not make sense, understand that it is definitely *not* your fault, but rather our design’s fault that we need to improve on. Please try to work through any problems you encounter, and remember to think aloud when trying to solve problems. “

We then showed how our prototype works, and where would be appropriate to write (“type”) in information.

Notes from User Study

Participant 1

Approximate Age: ~ 25 years old

Gender: Male

Task 1:

- After quickly reading through options, clicked on "Search for Products"
- Tapped box to enter in SKU
- Used on-screen keyboard to enter "fingerling potatoes"
 - "I would want some kind of autocomplete, or drop-down box after I start typing in a food."
- Arrives at item screen
 - "I didn't scan anything, yet it says I scanned in 'Fingerling Potatoes'. Minor detail, may want to fix to reflect entry method."
- "Does this app know where I am? It says 'other places to get this product, implying places other than where I am."

Task 2:

- Took a few seconds before clicking on "Stores in Area"
 - May want to change text on button to say it is a search for stores and markets nearby
- Initially clicked see reviews
- No "Back" button; was forced to click "Ecoceries" link at top of app and re-navigate to "Stores in area"
- Clicked "see vendors"
- Clicked name of vendor to see more information
- Clicked link to website found on vendor page

Task 3:

- Instantly clicked "Groceries on budget" button
- Clicked text box to enter budget amount
- Clicked first empty box to add item
 - "I think this should have an auto-complete feature, too, or list of items as you type."
 - "I don't recall seeing any way to add items to the list from product page. If that isn't a feature, it should be added."
- Clicked submit button
- "How is this saving me money? Or how is this making sure I stay in my budget? I feel like this is just telling me where to get my groceries"
- Thought number of items under each place was how many total items from list could be found there. Would want to visit place with largest number of items.
- "What happens when I click this place? Is it a link (the number of items)? How do I know which of my items they have?"

Participant 2

Approximate Age: Late 40s, early 50s

Gender: Female

Task 1:

- Really likes the fun fact on home screen
- Initially clicked login button
- Got to account screen and clicked name of first place in favorites list
- Clicked main "Ecoceries" link at top of app to return to home screen.
 - "Is there a way to search for products from the store page?"
- Clicks barcode scanner
- "You know, I'd probably check Google for this information. I feel like this might just be a middle-man type of app. Google would be easier."
- "Do I have to press this scan button? I feel like it should just recognize the barcode and I shouldn't have to press an extra button for it to scan."

Task 2:

- Clicked "stores in area" button
- Tried clicking letters on map, nothing happened
 - "I think a bubble should show up with more info about whatever is located there."
- Clicked name of farmers market
- "Hm, how do I look through more? Or are there only 5?"
 - We need to add scroll bars
- Clicked name of listed vendor

Not very attractive vendor page
• Good information, though.

Task 3:

- Clicked "Groceries Under Budget" button
- Clicked text box to enter budget
- Clicked "X" next to text box (where you add items)
- Added some items into list by clicking text boxes and typing in items
 - "What if I spell something wrong? Will it still know what I'm talking about? Can I scan stuff in while I shop and add it to the list?"
- Clicked "Add More" button to add more items
- Clicked submit
- "So do the number of items at each place mean I can only get 4 of my items there for under \$30? Or is that just the number of my items that that store carries?"
- "They don't look like links."

Participant 3

Approximate Age: ~ 40 years old

Gender: Male

Task 1:

- "Do I need to login first? Or can I use everything without logging in or signing up?"
- Clicked "Search for Products" button
- "I would want to enter the UPC code."
 - Interesting note on "UPC" as opposed to "SKU"
- Tapped text box to type in code, then clicked Submit.

Task 2:

- Was initially unsure of which button to click first, but then settled on "Stores in Area"
- "This map isn't very detailed. You should use Google maps."
- Clicked link to "See Vendors" for market
- "For each vendor, you should list what they're currently selling, since they're probably not selling the same stuff year-round."
- Clicked name of vendor
- "Oh, I guess that information could be found here (at the vendor page), but that's kind of an extra step."
- "What would be in the newsfeed?"
- "You should list more here, like the hours or what other locations they sell at."

Task 3:

- Clicked "groceries under budget" button
- Tapped text box to enter budget
- Tapped boxes to enter item names
 - "If I start typing in a product, I think it should give me options in terms of brand and maybe sizes/quantities, unless I type in a really specific product. You also might want to add a box for quantity, or drop-down box option or something."
- Clicked "submit" button
- "How does this factor in budget?"
- "I'm guessing the number of items under each place is how many of my items that place has."
 - "I would click on the store with the largest number of my listed items."