Usability Testing Review

Usability Tests

Usability test 1
The participant for our first usability test was a roommate of one of the team members, conducted in their apartment. The reason we chose this participant is because she is one of the people who inspired the project idea, since she had been spotted incorrectly sorting items at home. It also takes place in the target environment of the project, which is within a home.

The testing process definitely revealed a few flaws.
1) The bins are not labelled very clearly.They were previously labelled with their corresponding letter (ex: T for trash), and it was suggested for our next usability test that we color and label the bins appropriately, similar to the bins you usually see in public. Now, each bin has a corresponding symbol and color to make it more clear.
2) Another hiccup occurred during the transition between our first and second screen. The first screen displays the streak as the main focus while the second screen, which appears when a person is detected nearby, minimizes the streak number and focuses on a random fact about the environment. The transition between the two never really quite makes sense to the participant until it is explained to them. Thus, we decided to take out this feature, so the home screen just remains the same until someone presses a button.
3) Lastly, we had a participant throw away a plastic water bottle when the screens were meant for compost, confusing them. Thus, we decided to first specify a few items that the participant could throw away, and our screens matched these items, making the process a lot smoother.

Usability test 2
After our first usability test we changed our prototype a bit and shifted our focus to more of a household garbage bin system. We gave our different bins symbols that are more descriptive with the common color of blue, green, and black for recycling, compost, and garbage, respectively. We also only have 1 home screen instead of

displaying a tip whenever someone is close. The tip now comes after someone throws an item away.

The second usability test was done by a house mate of a group member which is a shared house of 21 people. This was done in the kitchen against the wall to simulate where the bins would most likely be in a home. The amount of people in a home was of interest as more waste would need to disposed of. However, each floor would have their own as they each have their own kitchen. This could help the streak feature and would have less people so they might care a little more because they have a larger impact on the streak. The participant thought that the streak did not have much too it or didn't know at the first use what the streak really meant. He also believed that there could be milestone like goals that when met could have an animation to have more encouragement from proper waste habits. One of the larger issues that was pointed out was the knowledge to slide our graphs on the tracking page to edit or delete them. There wasn't an indication to tell the user to do that to edit or delete the graphs, therefore we got rid of the sliding functionality. Once the edit graph is selected they did not know how the format would work with the slider for the time that is shown or further breakdowns of the waste.

User feedback:
Like "home" button instead of house symbol
Parties every milestone (with a progress bar)
Post scan screen should have recycling symbol
		Easier b/c doesn't need to name each individual item disposed
Way to know to slide to edit graphs/charts

Usability test 3
The third usability test used the same paper prototype as the second usability test. This usability test was done by a college female student that lives in a house of 10 individuals. This test also was done in the kitchen against the wall to simulate where the bins would most likely be in a home. With a smaller home it might be more meaningful and could be perceived differently. Both second and third participants believed that showing the symbol of the bin after scanning an item would be more helpful than words saying which bin it goes in. This would make it more simplified and could be used by most age levels, possibly kids in family homes. Also, the issue of sliding to edit and delete the graphs in the tracking page didn't seem intuitive. The third participant did suggest just having an edit button on the side which could change the type of graph as well as the time that is shown. They also believed it was easy to use and had a nice way

of trying to correctly dispose of their waste. The scanner was believed to be not obvious when told to hold it in front of it. That might be because it is on a flap on a box that we are using as a bin, so we made it bigger. The home screen seemed to be a little squished which we changed. A button to cancel the scanning on the scanning screen could be easier to quickly cancel than just having the home button in the top left corner, which we also added.

User feedback:
Once scanned show symbol of bin
        Actually being used to label the bin
Edit with the slide isn't intuitive
        Little edit button on the side
Easy to use
Streak is nice
Bigger and more obvious scanner
More space between streak words and button
Cancel button during the scan screen

Usability Test Tables

| Incident	Positive/Negative	Severity
There should be a cancel button included in the scanning screen	Negative	1 (Easy Fix)
More space on the home screen (less clutter)	Negative	1 (Easy Fix)
Bigger and more obvious scanner	Negative	2 (Fairly easy fix)
Show symbol of proper receptacle after scanning instead of words	Negative	1 (Easy Fix)
Edit button for graphs isn't intuitive with sliding	Negative	1 (Easy fix)
Celebrate more milestones	Negative	1 (Easy fix)

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Final Prototype

Prototype overview:
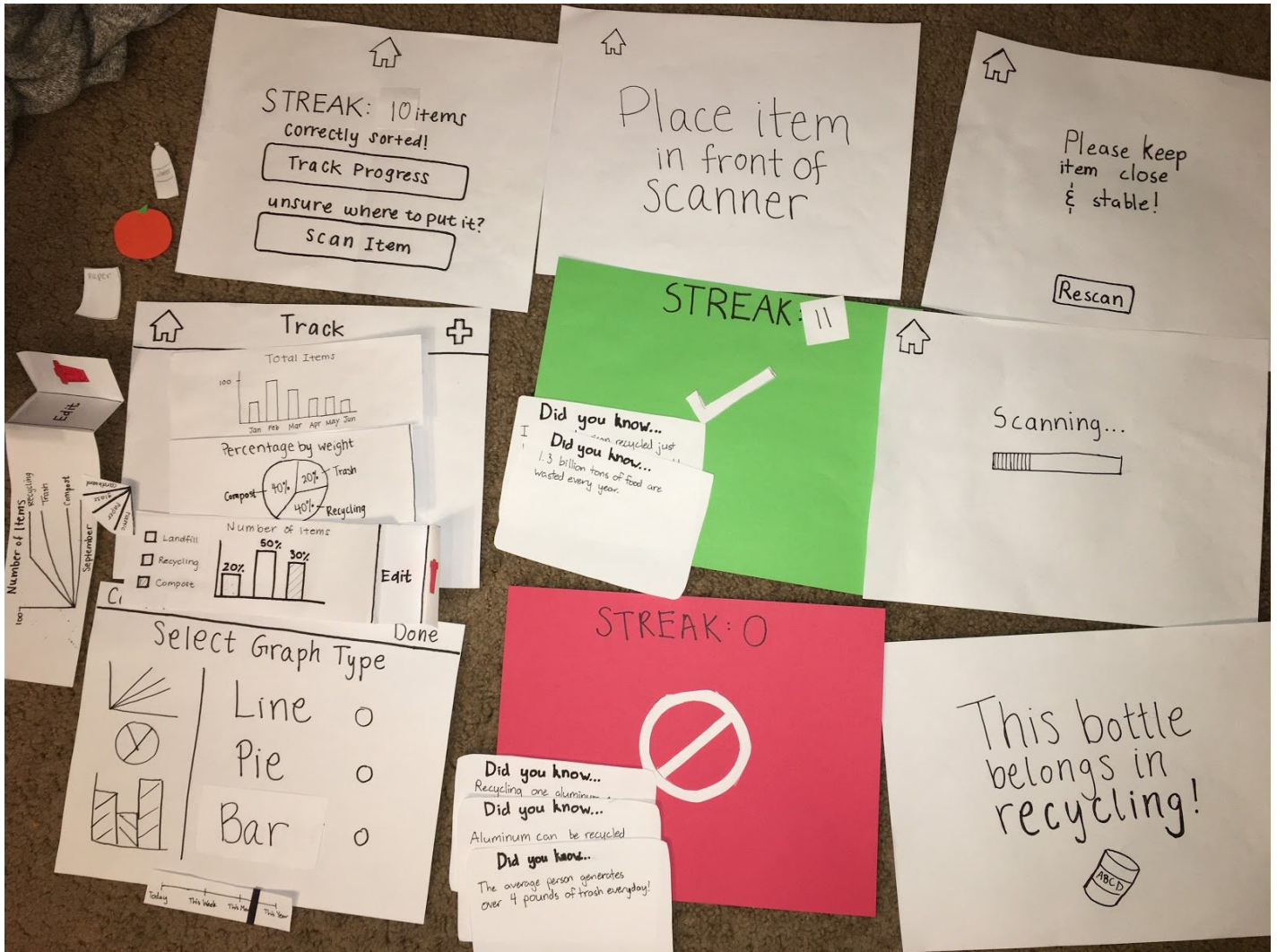
Task 1: Sorting

The three bins: the left is compost, the middle is trash and the right is recycling. The scanner is the dot above the trash, and the home screen above the scanner.
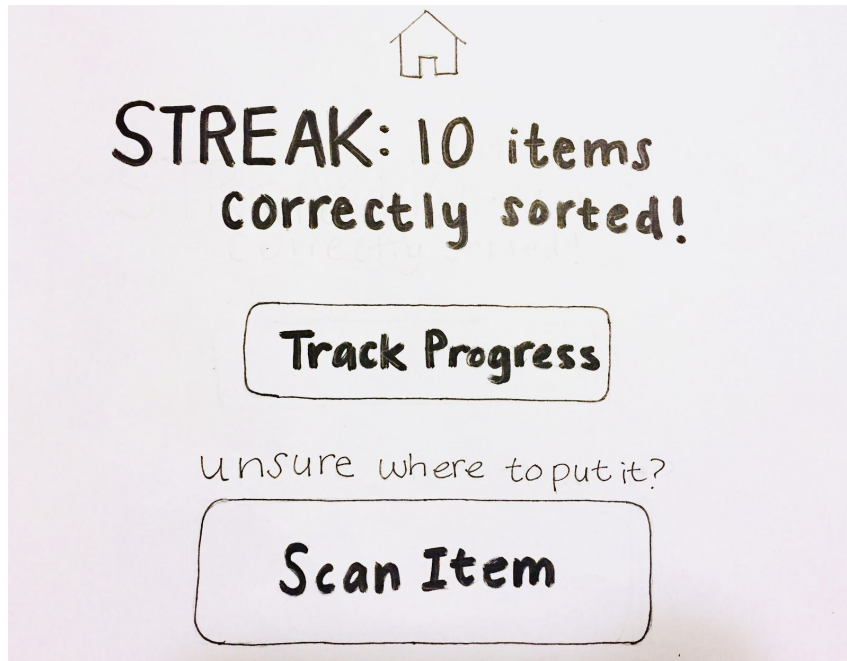
The home page indicates the current streak of items correctly sorted, and displays two different options. One is to track the progress of waste disposed, and the other is to scan an item if you are unsure of where to put it.
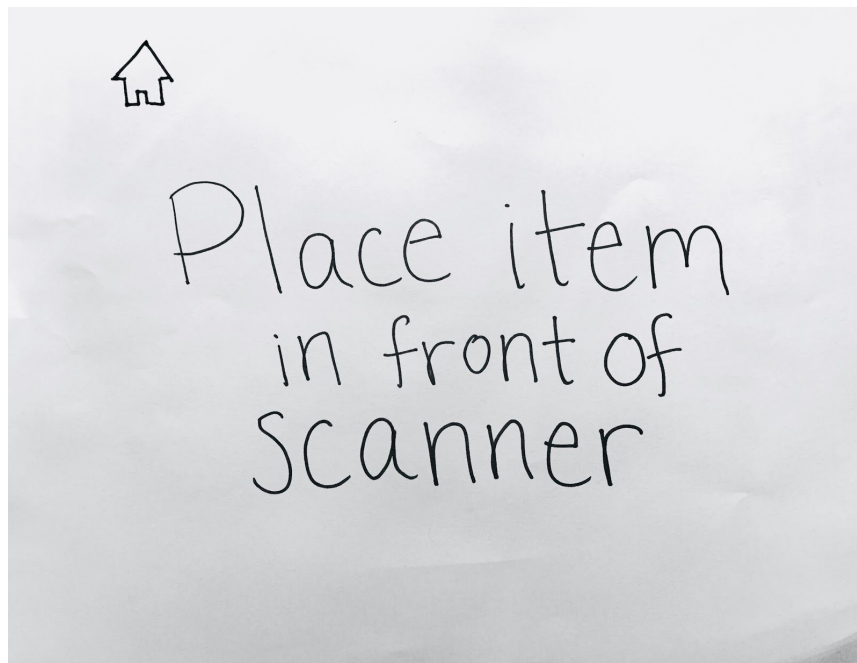
This is the page that appears if you click "Scan Item" on the home screen. It instructs you to place the item in front of the scanner and offers a way to go back to the homepage.

Scanning...

cancel
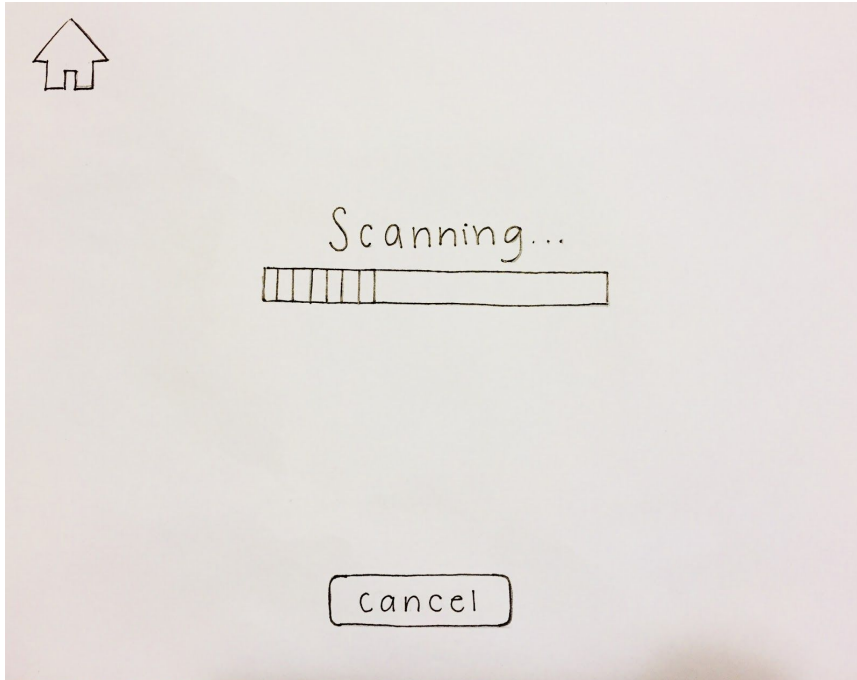
When an item is detected in front of the scanner, it begins scanning and shows a progress bar.

Please keep
item close
& stable!

Rescan
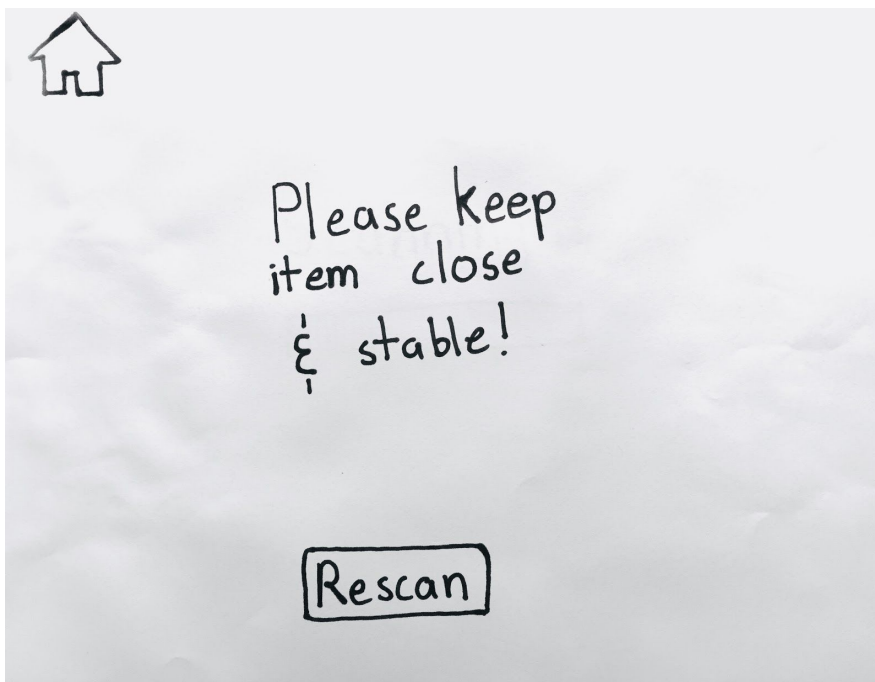
This is an error recovery page for if the item is too far away from the screen or keeps moving.
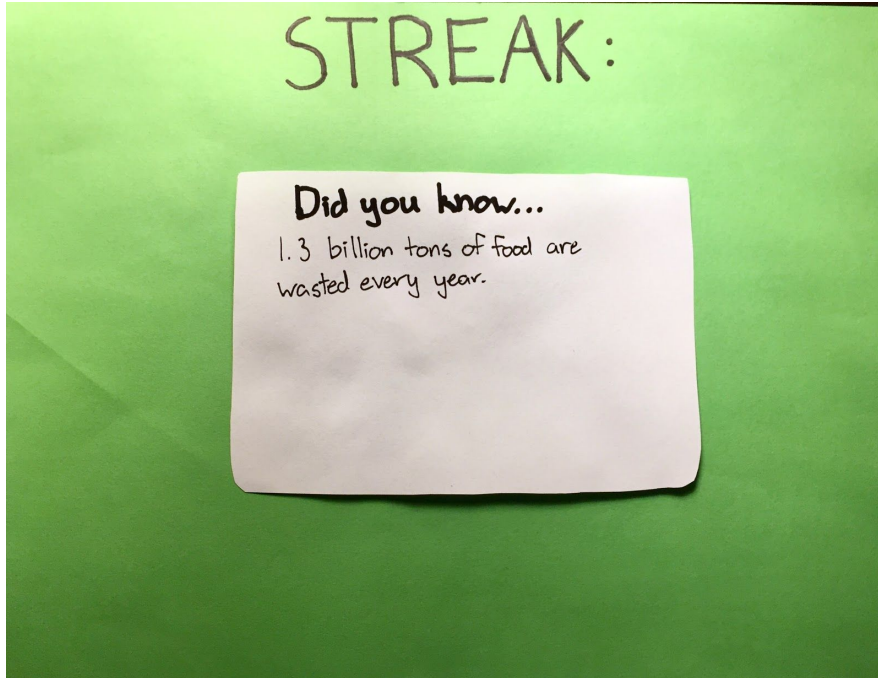
Once the item is scanned and the category identified, the user is notified along with an image of the item.
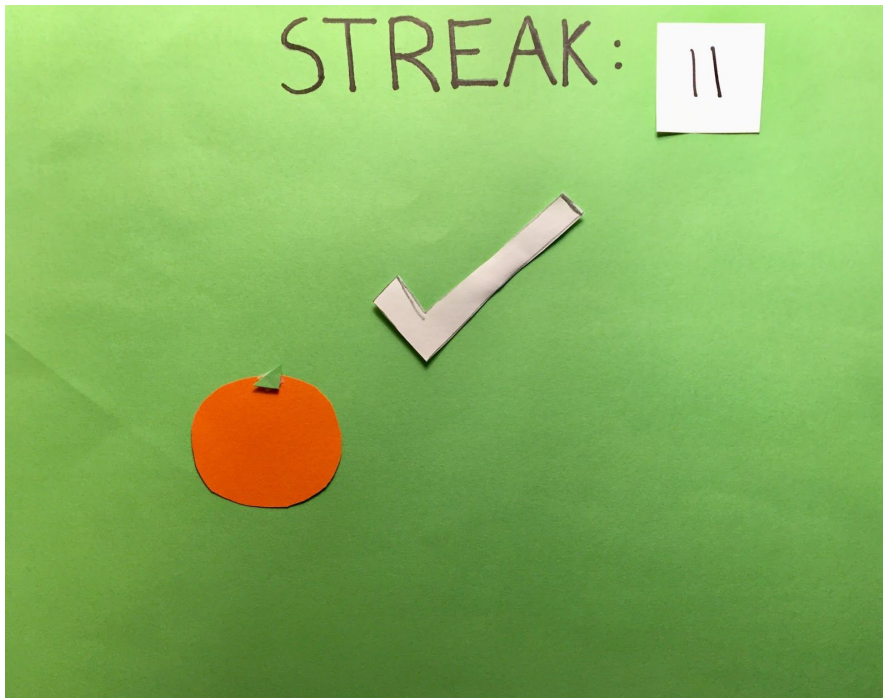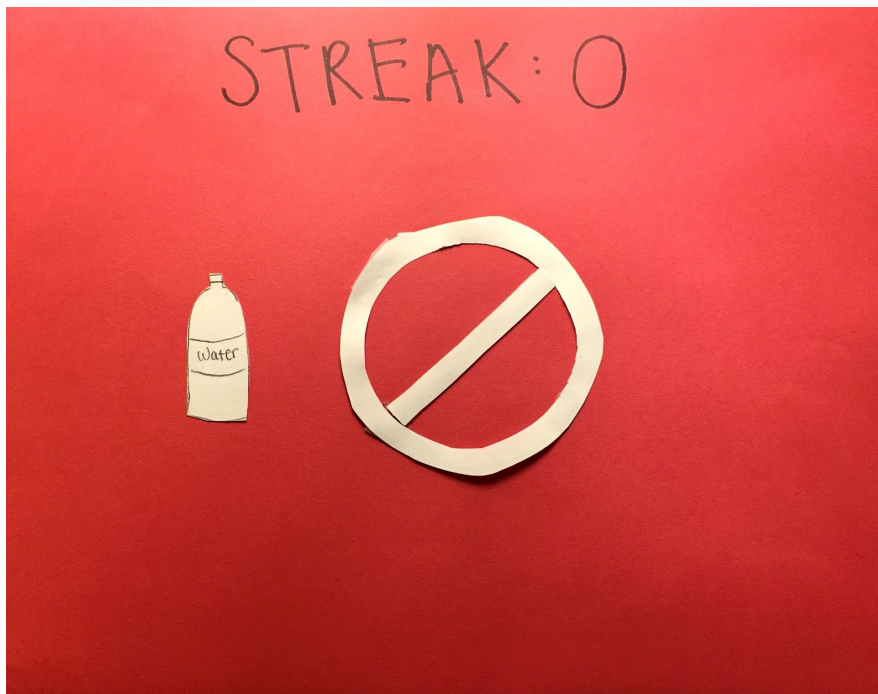

If the item is correctly disposed of, a green screen with a check mark appears along with an image of the item. The streak is also updated with an increased item.
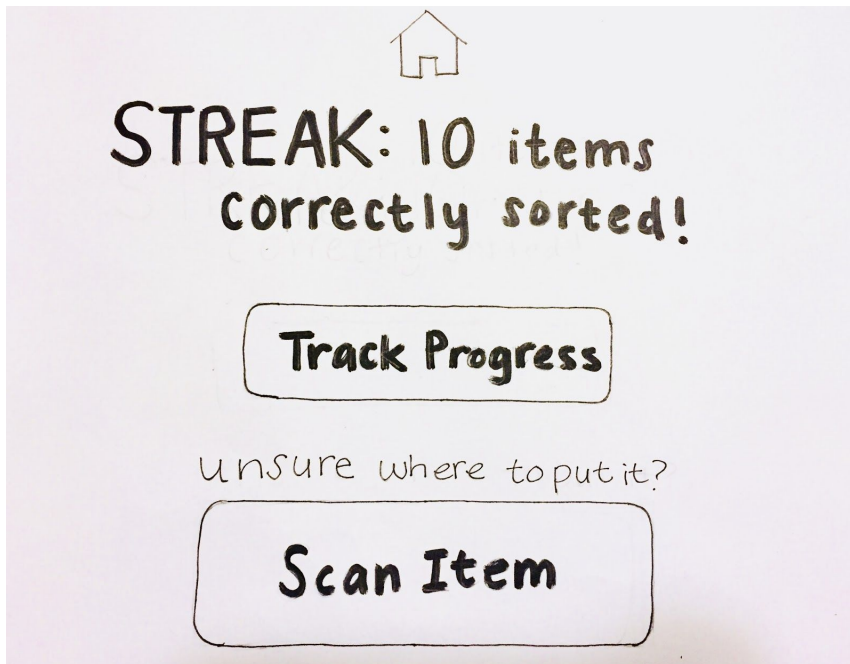
After a few seconds of the previous screen, a pop-up appears giving the user a tip or fact that is custom to what they threw away.
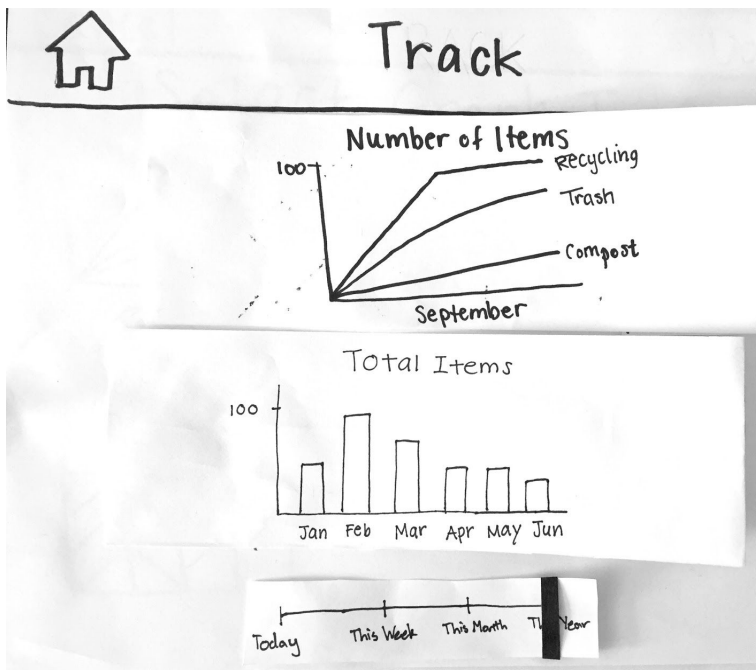

This is the screen for if the item is incorrectly disposed of. The streak goes down to zero.

Task 2: Tracking

The home page

This is the tracking page, which appears when you click "Track Progress". It shows 4 default graphs. One graphs the number of items disposed of for each category; the second, the total number of items overall; the third, the number of incorrectly vs correctly disposed items; the fourth and last, the breakdown of items by weight. The slider at the bottom controls the time frame in which the graphs are shown; it can be anywhere from the a day to a year.
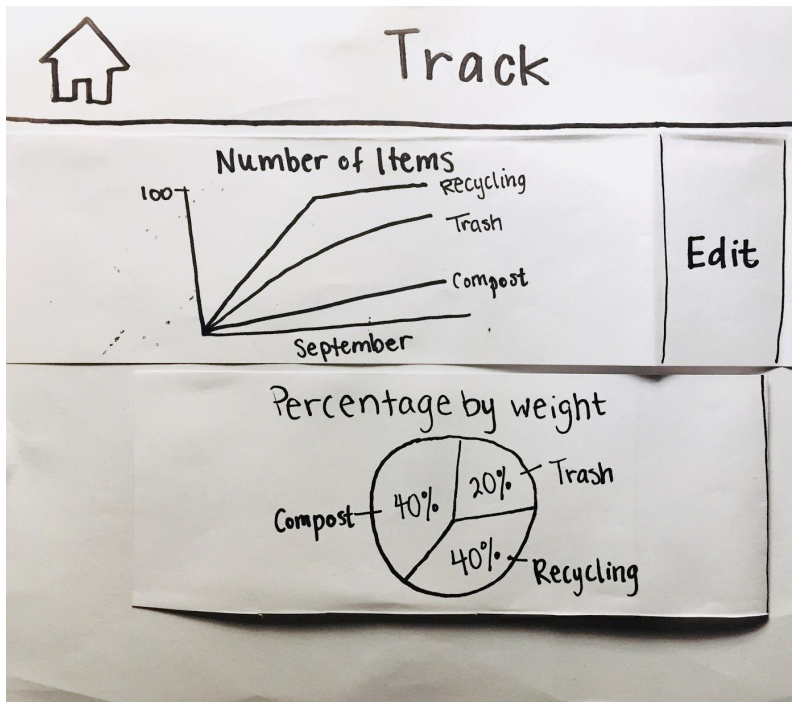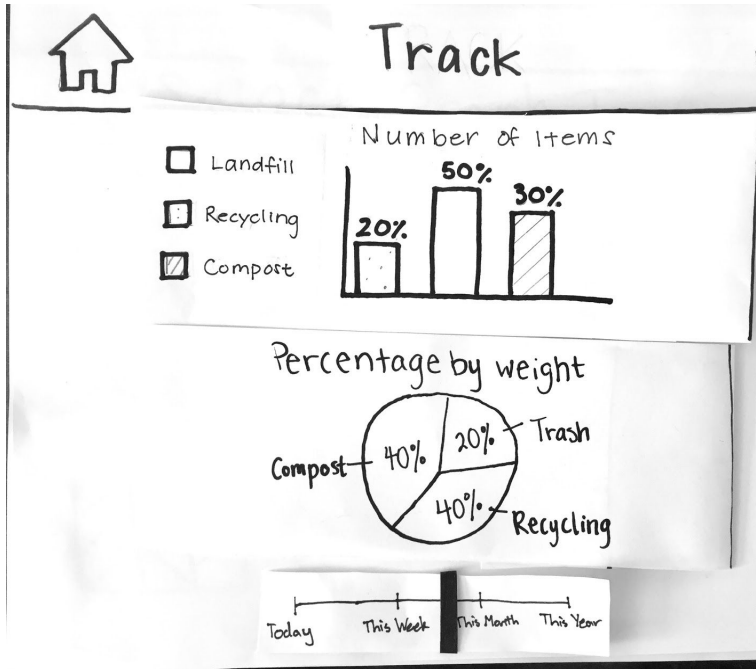
You can edit the graph using the edit button on the side.
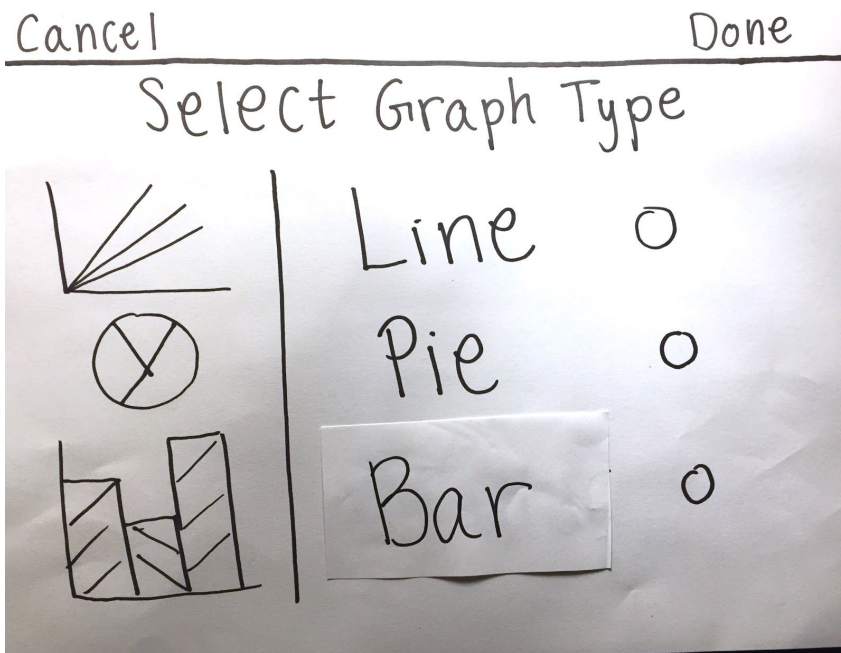
This is the edit screen, which allows you edit the format of the graph is displayed, although the info the graphs track cannot be changed.
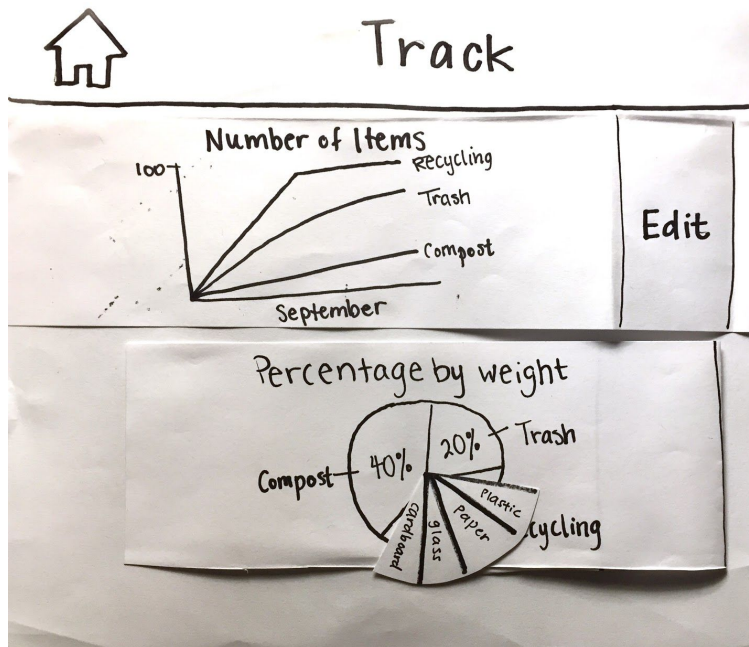
Another functionality for some of the graphs is that if you press down on a certain section, it expands and gives you the more detailed breakdown of the categories within that section.

Revisions

1. Change the home screen so that the scan button is bigger and everything is more spaced out. This revision is important because the home screen is gives the first impression of the design, so making it more inviting and intuitive encourages people to use it. Making the scan button bigger also makes the feature more obvious.
2. Remove the swiping capability for editing graphs and remove the delete buttons. We found that the participant was confused by the unnecessary feature of swiping to see the edit and trash icons next to the graphs. Therefore, we will have the "edit" button always visible and remove the trash/delete button, making it easier to change the graph type and impossible to remove graphs from view. This will make the tracking aspect of our design smoother.

Contribution statement:
Alex - conducted 2nd & 3rd usability test
Anne - conducted 1st usability test, helped construct final prototype & labeled images
Christine - Helped construct final prototype, elaborated on revisions
Matt - Helped construct final prototype