

Eelgrass Usability Tests: Report and Findings

Team 3 - Quadrilateral Cowboys

Usability Experts: Zack Marten, Shashank Munnooru & Anne Linja



Eelgrass Monitoring App

- *Massachusetts Division of Marine Fisheries:*

- *protocol to measure the amount of eelgrass*
- *specific locations of the Duxbury-Kingston-Plymouth Bay estuary's health*

- *Citizen scientists are trained to collect and document data*



Eelgrass Monitoring App

- Citizen Scientists assigned specific locations (harbors and stations)
- Go out on boats during the day and collect the data
- Currently entering the data on paper; this app will replace the paper and be used to input the data.



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Overview of Usability Testing:

1. Consent and Study Overview
2. Demographics and Pre-Test (Google Forms)
3. Review Eelgrass Monitoring instructions for Citizen Scientists
4. Review what participants will be expected to do
 - including “think-aloud”
 - will be recorded
5. Citizen Scientist scenarios:

Step	Field		Scenario 1 Data
1		<input type="button" value="Start a Trip!"/>	
2	Date of Trip	Date of Trip: <input type="text" value="mm/dd/yyyy"/>	7/4/2018
3	Harbor	Harbor: <input type="text"/>	Houghton
4	Crew Members	Crew Members: <input type="text"/>	TE, KF, PV
5	Boat Name	Boat Name: <input type="text"/>	Gloucester Maritime
6	Station Number	Station Number: <input type="text"/>	9065
7	Latitude	Latitude: <input type="text"/>	XYZ

6. Run Admin scenarios:

The screenshot displays the 'Select Data to Download' interface of the Eelgrass Monitoring App. At the top, there is a globe icon and a 'Log Out' button. Below this, the title 'Select Data to Download' is centered. A filter section includes 'Start Date' (16 August 2018), 'End Date' (21 April 2019), and 'Harbor' (All), with a 'Filter' button. A table lists data rows with columns for 'Select', 'Date', 'Boat Name', 'Harbor', and 'Station'. A 'Download Data' button is positioned below the table. The footer contains logos for 'Marine Fisheries Commonwealth of Massachusetts' and 'Massachusetts Bays NATIONAL ESTUARY PROGRAM'.

Select	Date	Boat Name	Harbor	Station
<input type="checkbox"/>	2018-04-19	USS Enterprise	Jacksonville	4
<input type="checkbox"/>	2018-04-20	USS Enterprise	Jacksonville	4
<input type="checkbox"/>	2018-05-16	Mayflower	Massachusetts Bay	A1234
<input type="checkbox"/>	2018-03-27	Mayflower	Delaware River	B2345
<input type="checkbox"/>	2018-04-19	Isle Royale Princess	Portage	C3456

7. Post-Test Questionnaire (Google Form), open-ended interview conducted by Anne and developers

8. Debriefing

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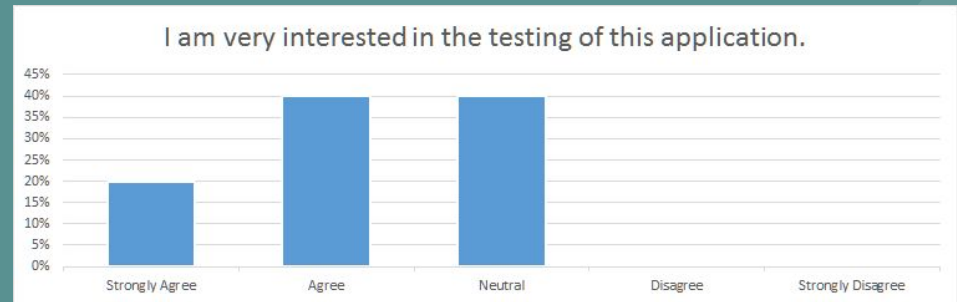
Demographics n=5

Age **18-21**

Gender **4 Males, 1 Female**

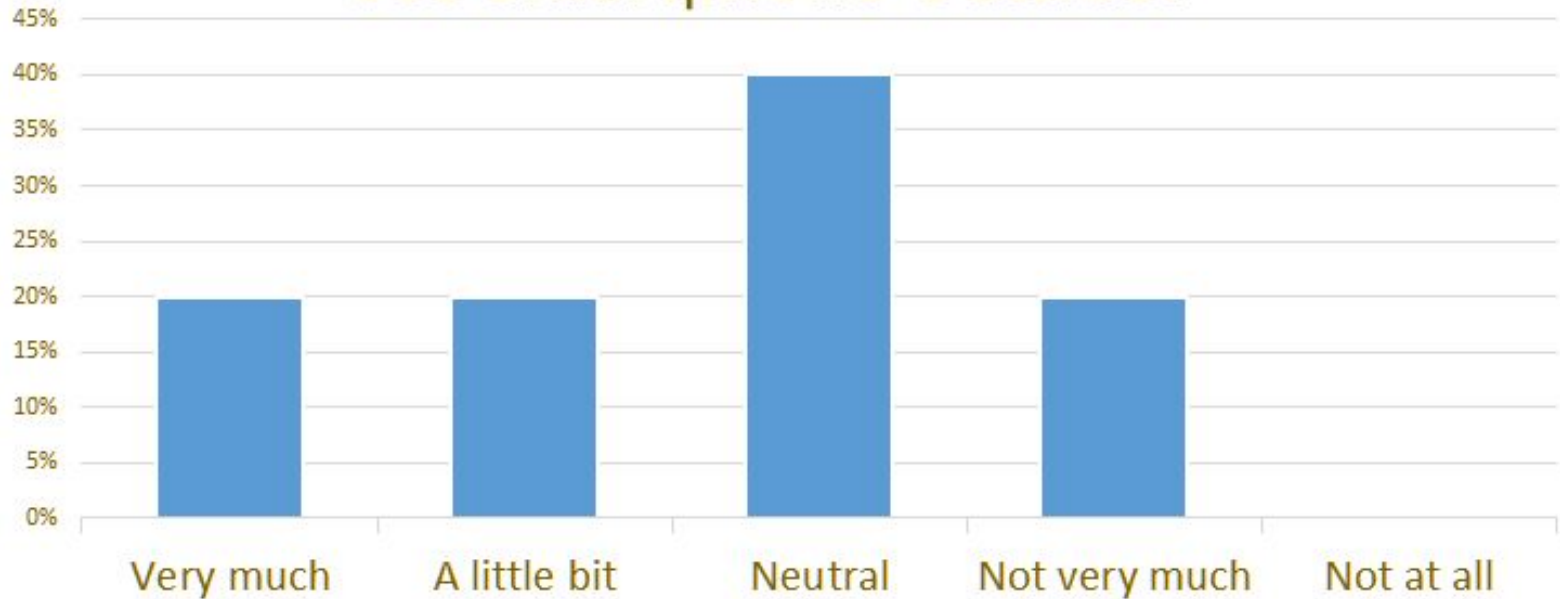
Own smartphone? **All**

Citizen Scientist? **None**



Eelgrass Monitoring App

Use Smartphone Outside?



General Findings

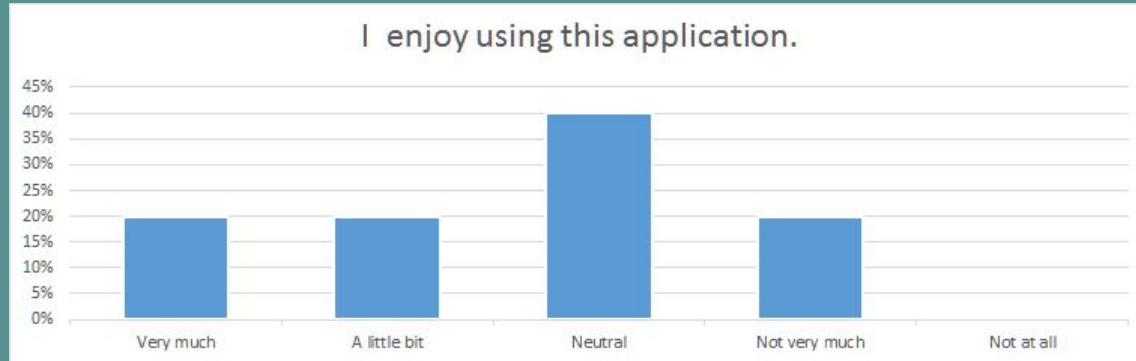
- App is intuitive, follows logical order
- Participants predict that app will mostly work well outside, on a boat with one exception – would like bigger checkboxes
- iOS, Android and PC platforms had different results when entering the same data
 - (not due to a gap in development; this is something outside the scope of the project, and should be addressed in the future)

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Common Usability Test Questions:

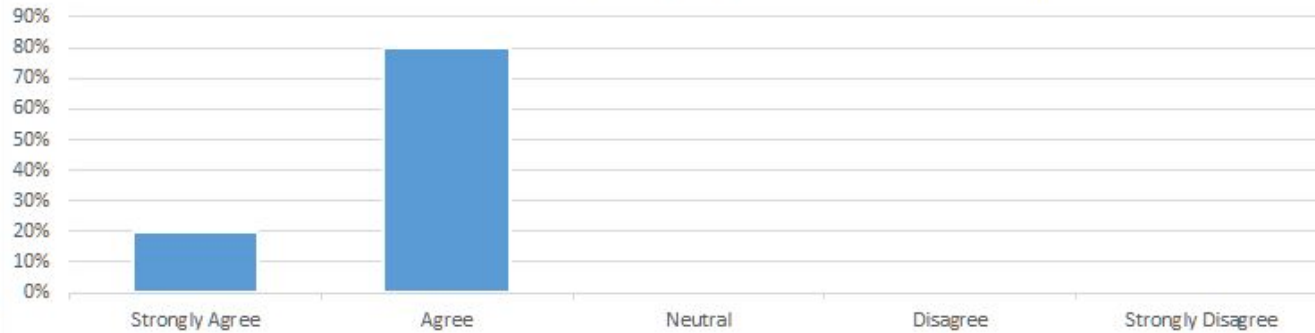
*Average Number
Years Using
Smartphone =
6 Years*

Please indicate your level of agreement to the following statements:

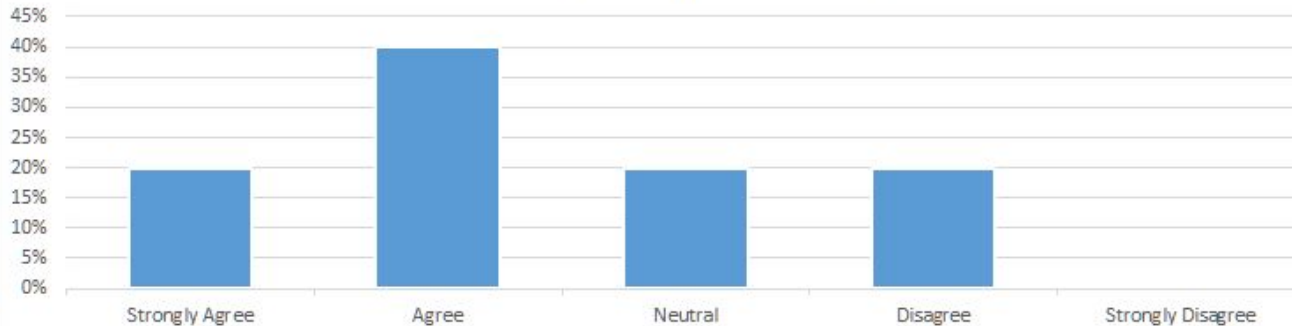


Eelgrass Monitoring App

Overall, I found the tasks easy to perform in this application.



I would use this application again.



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<u>Bug #</u>	<u>Bug Name</u>	<u>Bug Uniqueness</u>	<u>Bug Location</u>	<u>Bug Description</u>
1	Water Depth	5	Secchi Sample	Fields aren't labeled, so it's unclear that the first field is for a numeric value and second field is for unit of measure
2	Back button	4		If you press the back button, the data you entered on that previous screen is gone
3	Summary Data	4	Summary Screen	Summary does not contain data just entered
4	Indicator Station Data	5	Indicator Data	After checking "Indicator Station", the screen didn't appear to enter the data
5	Help	3	Help Page	Help Pages are still under construction
6	Validation	5	Numeric Fields	Validation missing - app allows alpha text in numeric fields (will be present when app is completed, just isn't there yet)

Recommendations:

- Validation
 - Alpha/numeric fields
 - Disallow bad data
 - Pop-up note warning about field that's been left blank
- Bigger checkboxes. Also, include the labels in the "clickable area" to make it easier to select since they're on a boat

Recommendations: (cont)

- Field Labels:
 - identifying field expectations
 - e.g. "UOM" (unit of measure), Crew Members (Initials)

- Make summary screen easier to read. Use names other than the database field name. Citizen Scientists won't know what "sed5" means.

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**For more information please see
my full usability test report on the
classroom website.**

Allow me to introduce:

Shashank Munnooru

Eelgrass Monitoring App

Overview of Test Process:

1. Consent and Study Overview
2. Pre Test Questionnaire
3. Review Eelgrass Monitoring instructions for Citizen Scientists
4. Usability Test Scenarios
 - Evaluating the size of elements and functionality
 - Text input validation, feedback and errors
 - Login Page and Download Trip Data
5. Post Scenario Questionnaire
6. Post Test Questionnaire and Open Ended Interview/Discussion

Eelgrass Monitoring App



Demographics

Age

18-20

Gender

5 Males, 1 Female

Using Smartphone
and Computer?

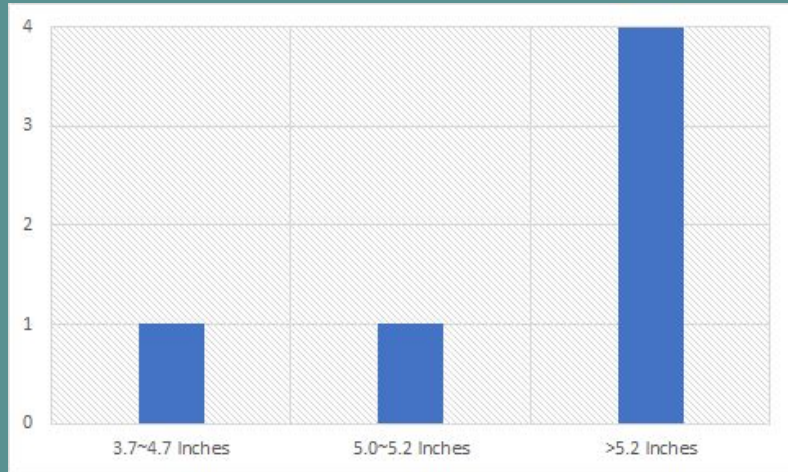
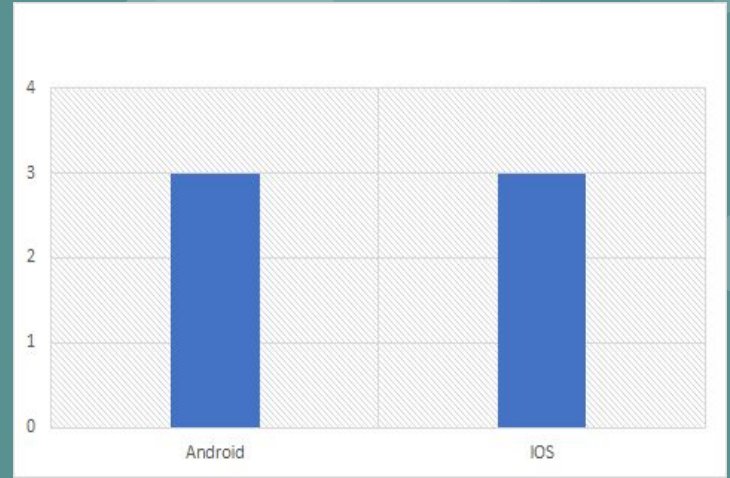
All of them over 3 Years

Participated in
Usability Test Before?

None

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Smartphone OS used by
Participants



Size of Smartphone
Screen

Eelgrass Monitoring App

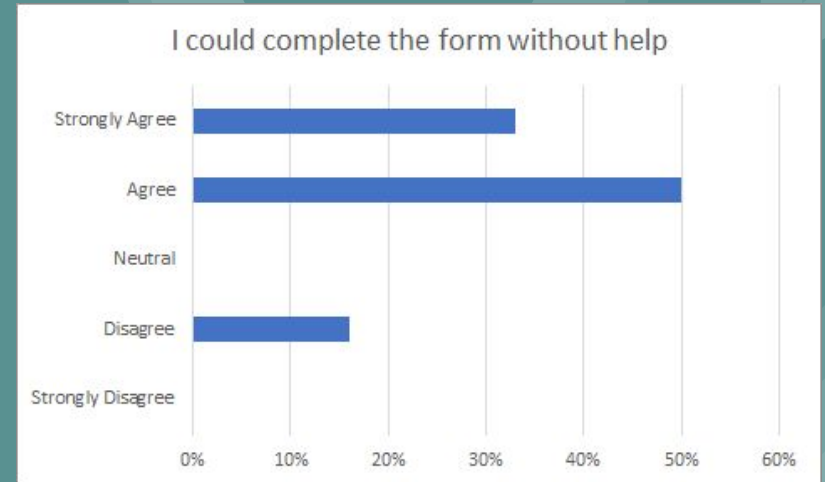
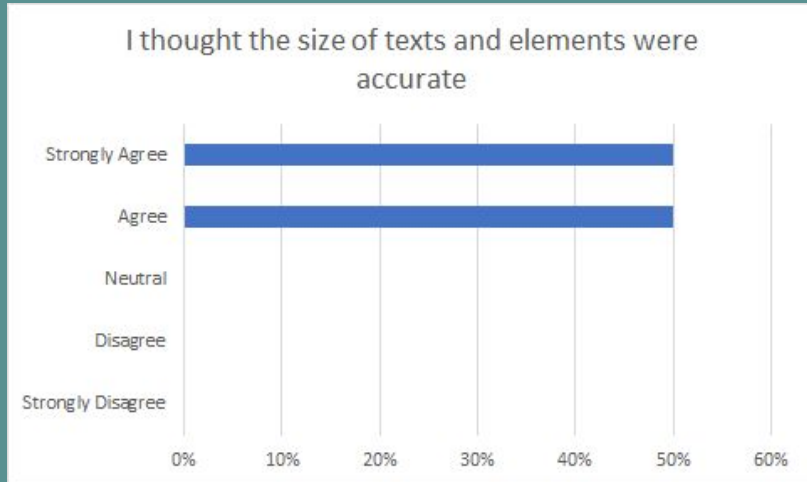
General Feedback

- ❖ The Fonts and Colors used are clear and readable
- ❖ The UI was clean and responsive
- ❖ Checkboxes could be enlarged and the login button could be made more visible
- ❖ Wording of Labels could be improved



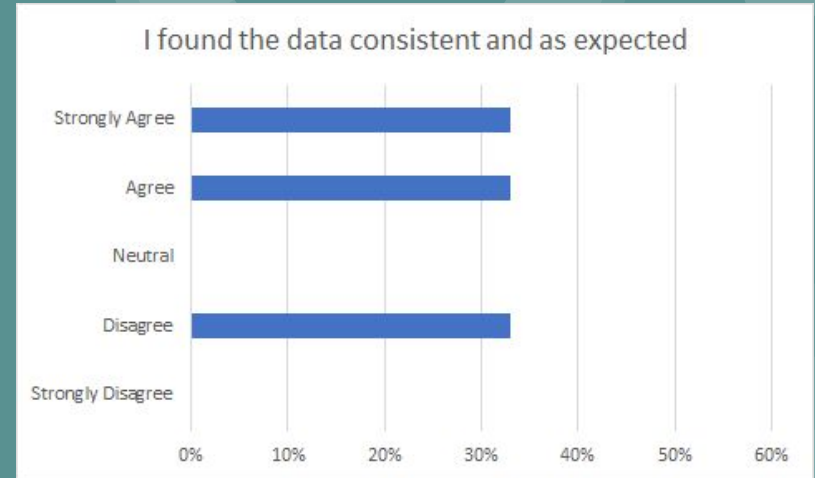
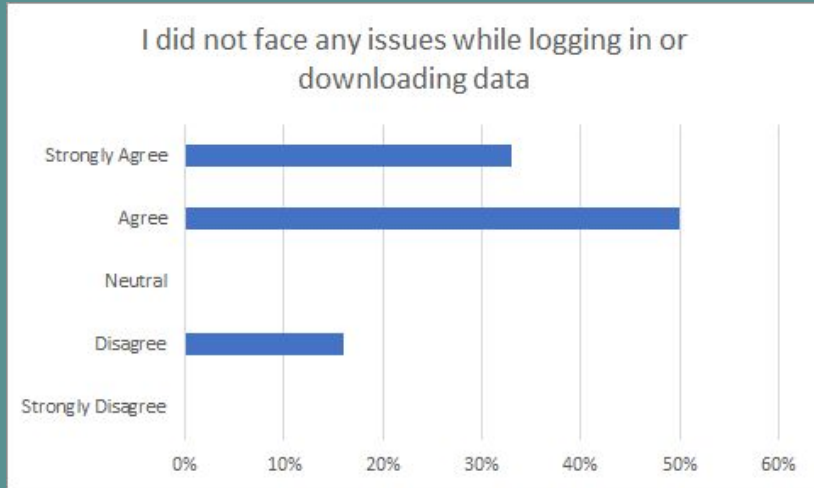
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Scenario Based Questions



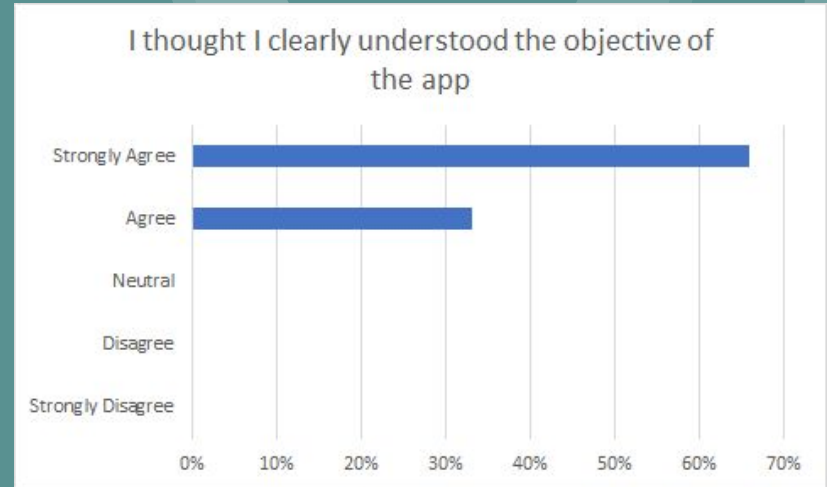
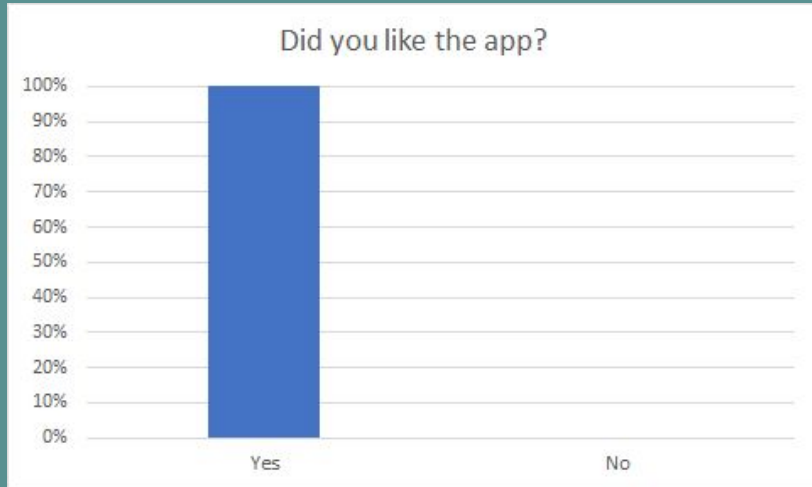
Eelgrass Monitoring App

Scenario Based Questions



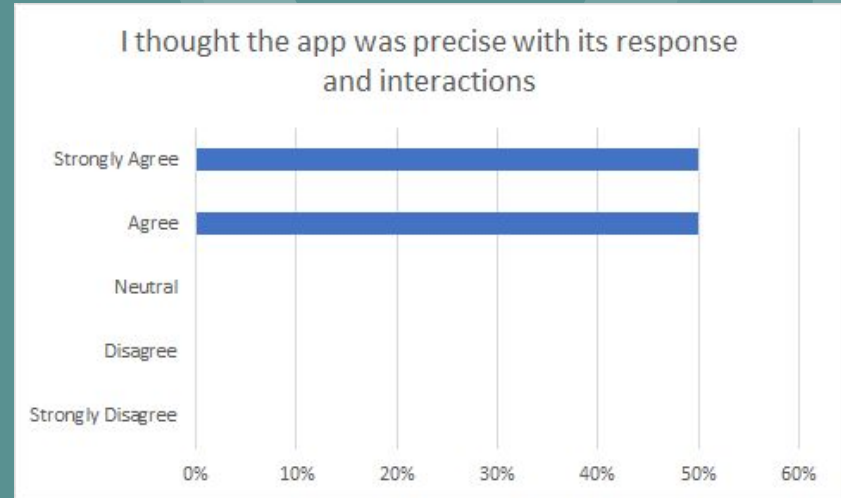
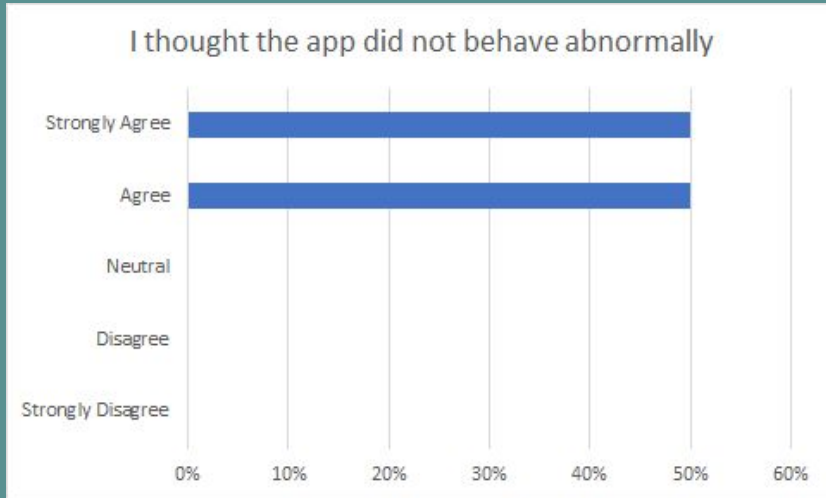
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Usability Test Questions



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Usability Test Questions



Eelgrass Monitoring App

Bug #	Bug Name	Bug Uniqueness	Bug Location	Bug Description
1	Missing Validation	5	Text fields	The app does not have validation for multiple fields and does not store the trip data if any field is empty
2	Compatibility with IOS	5	App running on IOS	Going back clears the data recorded in a page when tested on an iPhone
3	Multiple Users	3	App running on any device	The app cannot create records if multiple users are simultaneously entering trip details
4	Summary section (Units and Readability)	4	Summary section	The Summary section had multiple fields with no units and the nomenclature of labels was difficult to understand
5	Download Data Login Button	5	Login Screen (Admin)	The participant was not able to locate login button reported it to be small
6	Secchi Notes	2	Downloaded Secchi Information File	Downloading the excel sheet with data shows an empty secchi notes column. The form does not ask the user for this data.

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Recommendations

- ❖ Ensure the app is cross browser and device compatible
 - Use Emulators to test the functionality
- ❖ Allow multiple users to record data simultaneously
 - Storing data in sessions, tables or temporary files
- ❖ Increase the size of login button in Spring Security
 - Using Custom Views
- ❖ Size of checkboxes can be increased

Eelgrass Monitoring App

Recommendations

- ❖ The Summary Page could be made more readable:
 - By dividing into sections
 - Improving the wording of labels
- ❖ Validation should be addressed and the user should be notified of any missing fields

Next up is:

Zack Marten



Humanities Tests

Tests conducted by: Zack Marten, Nik Sauer, & Tyler Morgan



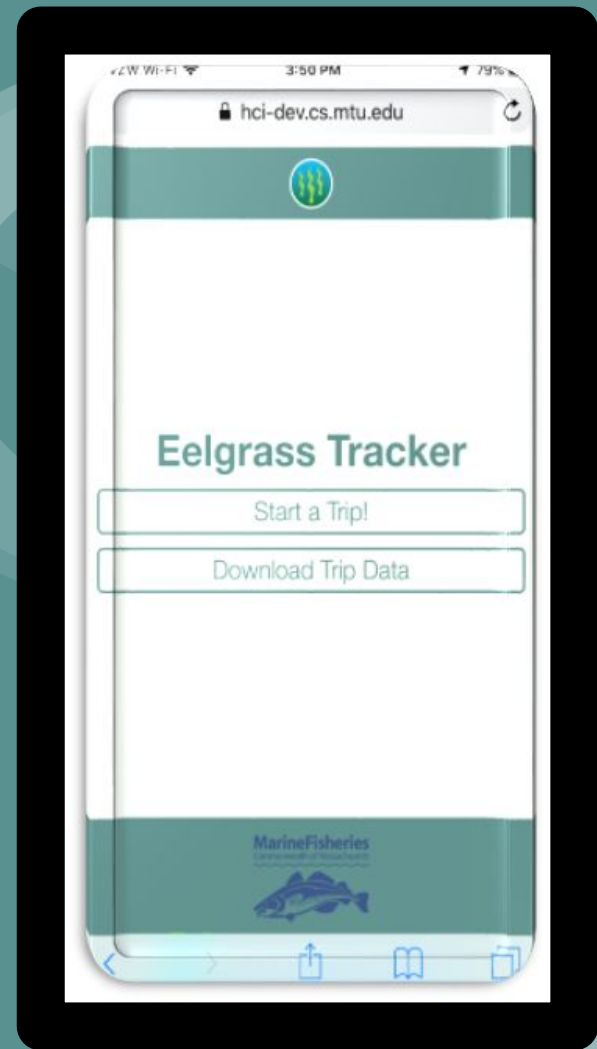
Usability Testing Highlights

- All Usability testing consent forms were signed and collected
- 100% of users were able to successfully complete the program
- The average time of completion was around 10:00 minutes.
- Feedback on the apps user interface was mostly positive.
- FAQ's compiled for help documentation
- Minor hiccups in UI discovered and corrected

Usability Testing Procedure

Our test subjects were asked to use a provided data sheet and run through the app and fill it out as effectively as they could. They then downloaded the data from the server they just entered. This accounted for the total time recorded for each subject. The first part was performed on a android smartphone (android) and the second portion was done on a laptop.

They were also encouraged to ask any questions they felt necessary during the process, both to make up for the lack of existing help documentation, and because we believed this would be an effective way of determining content for our help pages and FAQ section.



Post Test Questions

After the test, our subjects were given a questionnaire meant to further determine the usability of the app and try to determine any more problems with the UI.

1. Was it easy or difficult to figure out where each data set was supposed to go? Why or why not?
2. Were there any problems with the mobile interface that you noticed?
3. Did any section take significantly longer than any other? If so, was this something user side, or because of the app?
4. Were all instructions (written prompts) clear for every set? As someone who might be generally unfamiliar with some of the lingo used, is it still understandable?
5. What things could you see making the app difficult to use given the context of it's userbase?
6. Do you have any suggestions for the help pages that are being developed?

Results

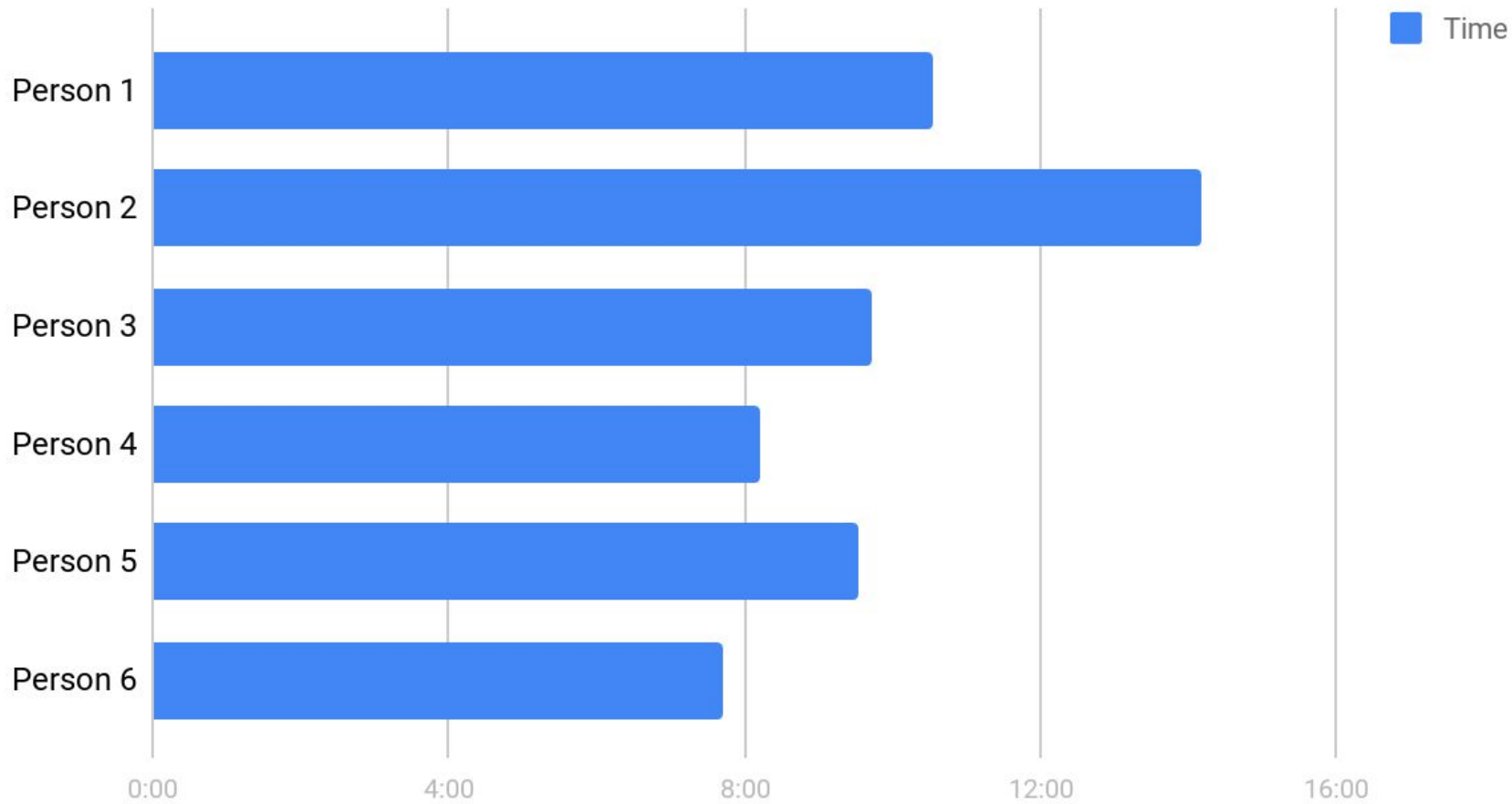
Tests:

- Each of the test subjects was able to understand and use the app with minimal difficulty.
- Average time to completion: 10 min (rg. 7m43s - 14m11s)
- Some minor flaws with the UI or data entry styles of certain sections were discovered. These flaws have been addressed, fixed, or is in the process of being fixed.

Questionnaire:

- General feedback was positive.
- UI was clean and responsive. No glitching.
- Requests for definitions and clarification in certain areas.
- Cross platform functionality requested.

Time to Completion



Recommended Changes/Help Documentation

- Make the initials field all caps
- Use number field for lat/long
- Timestamp has a “strange clock design”
- Military time or AM/PM
- Help Screen
- May be difficult to record data as you go.
- Define terms and secondary options
- Explain how to enter data
- “Disk hits bottom” confusing to many people. Clarification Needed
- Make the summary screen more clear
- Can't enter negative values to Lat/Long (number pad)
- Data values for specific circumstances are ambiguous
- Consider use of the app with just one hand
- Include media (images, video) in the help docs

Questions?

A decorative pattern at the bottom of the slide consisting of numerous vertical bars of varying heights and shades of teal, creating a stylized bar chart or waveform effect.