

Usability Test Report

Team 2 : The Berry Bunch

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Introduction

The undergraduate students developed a website called Backyard Berry. Backyard Berry is a website functioning app that is available for the residents and tourists of the Great Lakes Region. The purpose of this website is to provide people with knowledge on location, type, and preventative measures for the overall health of berries in this region. When users provide data on these topics they get submitted to the sites creators, the information then gets collected to be kept track of for the impact berries have on local culture. Backyard Berry can help to share the wide diversity of berries in the Great Lakes region and the importance of protecting their health. This app can also be used by scientists for their search. Currently, there are three scientists involved in this project, Angie Carter, Tara Bal and Erika Hershe-Green.

In the homepage of the website, there is a navigation bar which will guide the users to harvest survey and demographic survey. Three scientists' information are also provided in the homepage. The last part of the homepage contains the developers' information. There is a separate page for scientist view. In this page, some tables/figures are provided for scientists to view and download.

There are three test scenarios. First scenario is to fill the harvest questionnaire. Suppose a user just finishes berry picking and he wants to share data with others. He needs to fill this harvest questionnaire. The purpose of this scenario is to check if questions are clear and comprehensive. Second scenario is to fill demographic survey. Users can choose to fill this survey, it is not required. By filling this survey, developers can have a deep knowledge about the distribution about users. The purpose of this scenario is to check whether demographic can be submitted successfully and how to deal with illegal input. The last scenario is about the scientist view page. The purpose is to check whether the data provided are sufficient and clear for scientists.

Test Plans

APP Introduction

This document provides details about usability test plans for an app, The Berry Bunch. It is an app which is trying to collect preliminary data about recreational berry picking and foraging across the region. The test consists of 6 sections, each section will include 4 students (one graduate student, two undergraduate students from CS4760 and one undergraduate student). The test is conducted through Zoom on April 11 and April 12.

Test setup:

Usability test is conducted through zoom. This requires participants can access to the Internet during the test. Participants also need a microphone to ask any questions or provide comments during the test. Participants need to share their screens during the test. Participants should sign the consent form and perform a pre-test questionnaire before the test. Participants should follow the task list to conduct the test. Participants should record any bugs or errors they detect during the test and fill the bug report form. About how to record bugs, please refer to Appendix A. After participants finish one test, they should perform a post-test questionnaire. Also, if you meet any challenges during the test, please fill the Testing Challenge Form (Appendix B). The test is organized as follows:

- Share the zoom link with the participants and developers
- Explain the app
- Sign the consent form
- Perform the pre-test questionnaire
- Explain the scenario to participants
- Participant starts to test app
- Record any bugs, erros, questions or comments during the test
- Perform post-test questionnaire

Computer User Interface Usability Testing Consent Form

You are being invited to participate in a research study to determine the usefulness and usability of computer user interfaces. This study is being conducted by Dr. Robert Pastel of Michigan Technological University Computer Science Department and Dr. Pastel's Human-Computer Interaction (HCI) courses. The students are performing the usability tests as part of their project and to fulfill the HCI course requirements.

There are no known risks if you decide to participate in this research study. There are no costs to you for participating in the study. The information you and the tasks that you will perform will determine the usefulness and usability of user interfaces. The questionnaires and the tasks should take less than an hour to complete. The information collected may not benefit you directly, but the information learned in this study should provide more general benefits.

The questionnaires and tests are anonymous. No one will be able to identify you and your answers, and no one will know whether or not you participated in the study except for the instructor of the class who is giving you credit for participating. Should the data be published, no individual information will be disclosed.

Your participation in this study is voluntary. By completing the questionnaires and performing the tasks, you are voluntarily agreeing to participate. You are free to decline to answer any particular question you do not wish to answer or not to perform a task for any reason.

The testing may make use of video conferencing software which will record your tasks on computers screen and from your webcam. The webcam recordings will not be shared, and you may mute the webcam at any time. Before sharing your screen, you should clear your desktop of any open apps except your browser. Also you should clear your desktop of any icons or widget that you wish not to be observed.

If you have any questions about the study, please contact Dr. Robert Pastel, Associate Professor, Computer Science Department, Michigan Technology University, Houghton, MI 49931. The MTU Institutional Review Board has reviewed the request to conduct this project. If you have any concerns about your rights in this study, please contact Joanne Polzien of MTU-IRB at 906-487-2902 or email jpolzien@mtu.edu.

Pre-test questionnaire:

Google form link:

https://docs.google.com/forms/d/e/1FAIpQLScc31YyNX-2U6fF2w5l4P467qQX-E6uAFAXi8okrq1VN41oTg/viewform?usp=sf_link

1. Please indicate your level of agreement to the follow statement:

I am very interested in the testing of this application.

1. Strongly agree
2. Agree
3. Neutral
4. Disagree
5. Strongly disagree

I am very interested in picking berries.

1. Strongly agree
2. Agree
3. Neutral
4. Disagree

5. Strongly disagree

2. How many years have you used a smartphone?

3. Do you have any expectations before using this website/app?

Test Scenario #1

Name: Fill the harvest questionnaire

Goals:

- To check if questions in harvest questionnaire are clear for participants
- To check if harvest questionnaire can be submitted successfully after participants finish it
- To check how to deal with illegal input

Scenario description:

You just finished berry picking. You would like to share your information with others. You enter the harvest questionnaire part and answer their questions. You should first input normal values to test if functions work fine. Next, you should simulate a user who happens to enter some illegal input, such as a negative age. Try to detect if some error message occurs.

Task list:

- Open the app
- Click “Take Harvest Survey” in navigation bar

- Enter all information required such as date of harvest, types of berries and wild or farming, etc.
- Click “submit” after you finish first part
- Enter your personal information, such as age, gender etc
- Click “submit” after you finish
- Repeat the processes above but try it with illegal input. For example, you can enter a negative value in “Quantity”

Quantitative measurements:

- Responding time of system after click “create”
- The number of errors occurred during the test
- The number of participants who have questions or confusions during the test
- The number of participants who can successfully finish the questionnaire once

Qualitative measurements:

- Any questions or comments during the test
- Any errors appeared during the test
- Tips from the system when participants enter an invalid input (e.g., a negative age)

Potential observations:

- Participant’s confusion about questionnaire
- Participant’s responding time after one operation
- The interactions between participant and developer
- Whether system will crash when participants enter an invalid input

Post scenario interview and questionnaire questions:

Google form link:

https://docs.google.com/forms/d/e/1FAIpQLSdpvjv3Pj4r2vhA8Qs3FinuZig5CNXnEYj8ok6PFyVdehj7NA/viewform?usp=sf_link

1. Are questions in the questionnaire clear?
2. Do you think the questions in the questionnaire are comprehensive?
3. Do you think is it necessary to add more questions? If so, please specify that.

Test Scenario #2

Name: Fill the Demographic Survey

Goals:

- To check if participants can successfully submit form
- To check how to deal with illegal input

Scenario description:

You finished your berry harvest and already filled the harvest survey. There is another survey you have to fill which is the demographic survey. This survey asks you to fill your personal information, such as your age or gender. You don't have to input your real demographic, some faked information is okay, but it should be reasonable. Also, you should enter some illegal value such as a negative age to see whether the web will provide some error messages.

Task list:

- Open the app
- Click “Demographic Survey” in navigation bar
- Enter all information required such as age, gender.
- Click “submit” after you finish first part
- Repeat the processes above but try it with illegal input. For example, you can enter a negative value in “age”

Quantitative measurements:

- Responding time of system after click “create”
- The number of errors occurred during the test
- The number of participants who have questions or confusions during the test
- The number of participants who can successfully finish the questionnaire once

Qualitative measurements:

- Any questions or comments during the test
- Any errors appeared during the test
- Tips from the system when participants enter an invalid input (e.g., a negative age)

Potential observations:

- Participant’s confusion about questionnaire
- Participant’s responding time after one operation
- The interactions between participant and developer
- Whether system will crash when participants enter an invalid input

Post scenario interview and questionnaire questions:

Google form link:

https://docs.google.com/forms/d/e/1FAIpQLSciVtq-FAHsIslvn8mj5ZmQ2KBztULrSWs06f3qBjKgS03fPw/viewform?usp=sf_link

1. Do you like the interface? Any suggestions about the interface?
2. Do you think is it necessary to add more questions? If so, please specify that.

Test Scenario #3

Name: Scientist view page test

Goals:

- To check if participants can successfully access scientist view page
- To check if data/figures displayed are easy to understand for scientist

Scenario description:

You are a scientist who works on the diversity of berries in Great Lakes region. You happen to know this app from other people. You are interested in this project and download it. You access to scientist view page and try to find some data related to your research.

Task list:

- Access to scientist view page

- Check some berries' information displayed in scientist view page

Quantitative measurements:

- The amount of data which are presented in this page
- The number of participants who have questions or confusions during the test

Qualitative measurements:

- Any questions or comments during the test
- Whether the figure is clear enough to understand

Potential observations:

- Participant's confusion about questionnaire
- Participant's responding time after one operation
- The interactions between participant and developer

Post scenario interview and questionnaire questions:

Google form link:

https://docs.google.com/forms/d/e/1FAIpQLScKuXJZoUMUdbF-eXeoJLBSQ3uZC7Vts5eIJ7nR8u22o9ydNA/viewform?usp=sf_link

1. Do you think the functions provided are enough for scientists? If not, please specify what functions are needed.
2. Do you think the figures in this page are clear and easy to understand?
3. Do you think the scientists should pay for the data or not? Why?

Post-test questionnaire:

Google form link:

https://docs.google.com/forms/d/e/1FAIpQLSdgHSZ9iTwn5S9zv2N7DsGfN3nPgH83I8w-wKQTKZNaKQi-bw/viewform?usp=sf_link

1. Please indicate your level of agreement to the follow statement:

Overall, this application was easy to perform the task.

1. Strongly agree
2. Agree
3. Neutral
4. Disagree
5. Strongly disagree

2. Please indicate your level of agreement to the follow statement:

I enjoy using this application.

1. Very much
2. A little bit
3. Neutral
4. Not very much
5. Not at all

3. Please indicate your level of agreement to the follow statement:

I would use this application again.

1. Strongly agree
2. Agree
3. Neutral
4. Disagree
5. Strongly disagree

4. Please indicate your level of agreement to the follow statement:

I will recommend this app to my friends.

1. Strongly agree
2. Agree
3. Neutral
4. Disagree
5. Strongly disagree

5. Do you prefer a website application or a mobile app? Why?

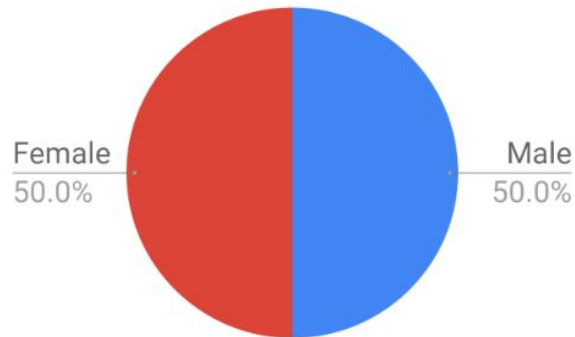
6. Any other suggestions or comments about this app?

Test Results

Attendance:

4 attended

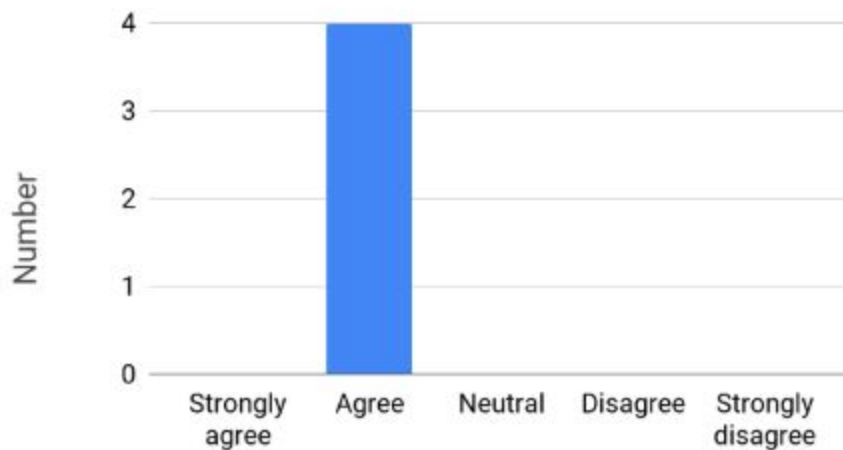
2 missed



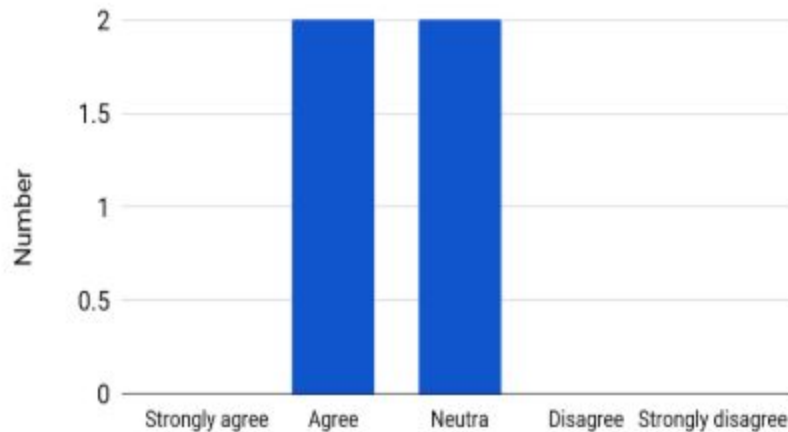
We planned to have 6 students to attend this test. Unfortunately, only 4 students attended this test. Two students are female and two students are male. I think this is one of the weaknesses of the test. We can not have enough participants to test the website, which may cause some bias results. But from the results of the test, I think the results are reasonable. I did not detect any bias results although we lacked participants.

Pre-Test Questionnaire:

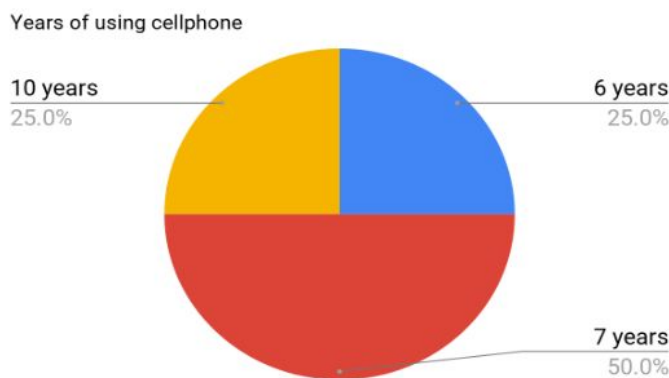
1. I am very interested in the testing of this application.



2. I am very interested in picking berries.



3. How many years have you used a smartphone?



4. Any expectations before the test?

- Only the standards I have from using previous websites and apps.
- I would like it to show me where the best place to pick the type of berries that I want to eat around my location.

In the pre-test questionnaire part, I designed four questions. From the results we can see that all participants are interested in this test. But not all of them are interested in picking berries. I also asked how many years they have used a smartphone. The maximum is 10 years and the minimum is 6 years. Therefore, all participants are proficient in using smartphones. Some participants had expectations before the test. One of them said he would

like to know where the best place to pick berries. The other one said he just expects some standard functions from the websites he used before.

Test Scenario 1:

In the first test scenario, participants were provided the link of the website. Participants should first successfully access the website and read the information in the homepage. Then, participants were asked to fill the harvest questionnaire. Harvest questionnaire contains some questions such as longitude and latitude of berry location, quantities of berry picked, etc. The purpose of this test is to check if questions in the harvest questionnaire are clear and comprehensive for participants.

This test does not cost too much time for participants. Most of them finished in two minutes. No participants had questions when they were filling the questionnaire. Two students were confused when they submitted the questionnaire since there were no messages to indicate whether they submitted successfully or not. Participants were also asked to try some illegal input to test how this website deals with invalid information. During the test, we detected a small bug that participants can enter a negative value in latitude and submit it successfully. Please refer to the bug report form to get more information about this bug.

The results of post-scenario interview are as follow:

Post scenario interview	Response
Are questionnaire clear?	Yes: 100%
Are questionnaire comprehensive?	Yes: 75%; No: 25%

Do you think is it necessary to add more questions? If so, please specify that.

- I think it would be cool to add how long you were there for and a ranking of how satisfied you were by the berry that was harvested. Also asking why they were berry picking and how many times they have been berry picking.
- You should specify the type using a text box. Also explain the fruit fly part more since it is included.

From the post-scenario interview we can detect that all participants agreed that the questions in the questionnaire are clear. But one of them thought it was not comprehensive enough. They also provided some suggestions about the questionnaire. For example, they think the reason to pick up berries should be added to the questionnaire. They also suggested that the level of satisfaction and time spent on picking berries should be added.

Test Scenario 2:

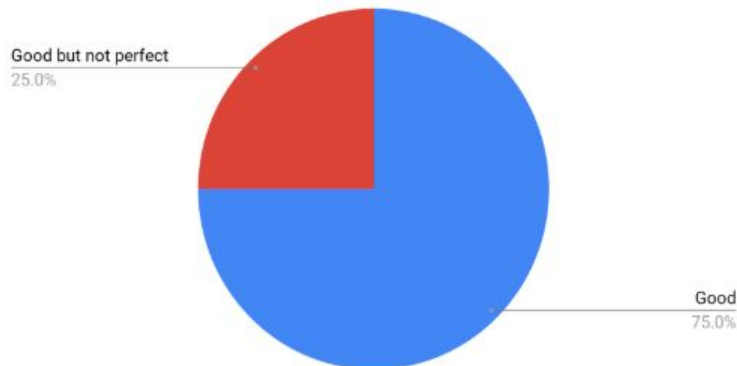
In the second test scenario, participants were provided the link of the website. Participants were asked to fill the demographic survey. Demographic survey requires participants to input their personal information such as gender and race. Participants were not required to enter the real information, some fake information is okay but they should be reasonable. The purpose of this test is to check whether demographic survey can be submitted successfully. Also, participants were asked to input some invalid value such as a negative age to test how this website deals with illegal input.

All participants were able to finish this task in one minute, which indicates this task is easy to perform. No participant had questions during the test.

The results of post-scenario interview are:

1. Do you like the interface? Any suggestions about the interface?

Feeling about interface



Suggestions about the interface:

- I wish that when I was typing in answers I could see my entire response and not just a snippet of what I am saying.
 - I did notice error messages when shown scroll with the screen awkwardly so the problem is no longer marked other than the red text.
 - I would recommend a better home page with more images.
2. Do you think is it necessary to add more questions? If so, please specify that.
- You could maybe ask where the person is from, to see how many people come from out of town to pick berries.
 - I would look to add more questions within reason to give users an accurate result.

From the results of the post-scenario interview, we can see that participants were satisfied with the interface. But they still provided some suggestions. One participant suggested that more images should be added

in the homepage to make it more clear. One participant said he wished to see his entire response when he was typing. Another participant thought it is necessary to add more error messages in demographic survey. Participants also provided suggestions about questions in the survey. One participant said it would be better to ask where the person is from. Overall, they thought the questions are comprehensive and clear but adding more specific questions will make it more accurate.

Test Scenario 3:

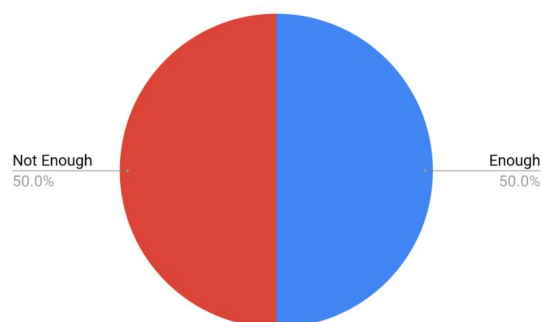
In the last scenario, participants were provided a separate link to access the scientist view page. Basically, scientists should be able to download data from this site. But, the download function is not finished yet. Therefore, we just let the participant access this page and provide any suggestions. Now, it is a simple demo of scientist view page. Data displayed here were hard coded by the developers.

All participants can finish this task in two minutes, which indicates this task is easy to perform. One participant was confused about the data displayed in the scientist view page. He did not understand content in some columns. Developers answered his question.

The results of post-scenario interview are:

1. Do you think the functions provided are enough for scientists?

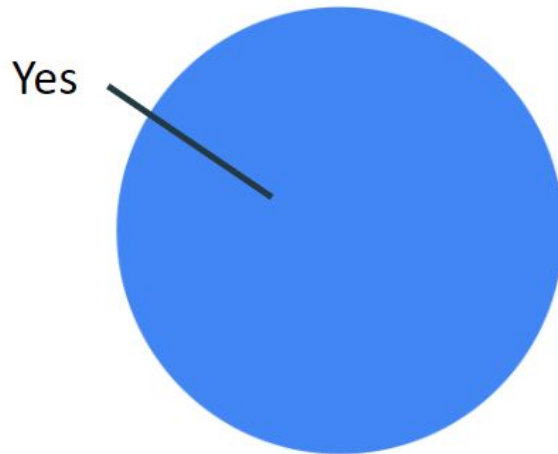
Do you think the functions provided are enough for scientists?



Suggestions:

- Download function should be finished.

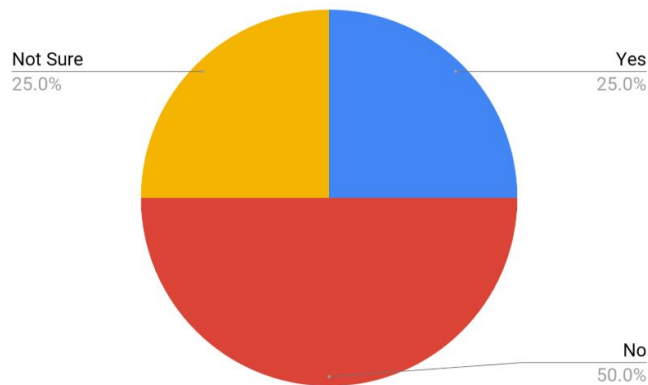
2. Do you think the data/figures provided are clear and easy to understand for scientists?



Suggestions:

- Biome and company are a little confusing.

3. Do you think the scientists should pay for the data?



From the results we can see that all participants agreed that functions provided here are enough for scientists, but there is a controversy about the scientist view page. Some columns are not clear (e.g., company and biome). Download function is not finished. Those drawbacks may affect scientists when they use this website. Another discussion is about whether scientist should pay for the data. Two participants said no, one participant said yes and one participant was not sure. Participant who said no thought it is a community effort to upload the data, therefore it should be free for scientists. Participant who said yes thought that there should be levels of information that is given to them for certain amounts of money. The small details of being in a tribe and the ethnicity are small details that they should

have to pay extra for if they need the information. I am not quite sure about the answer of this question. I think it depends on the user's will. If users agree to share the data for free, then that is okay. But if users refuse to share their data for free or they want to earn some money from their data, I think it is also reasonable because they spend time on picking berries. Maybe a consent form can be provided for users who would like to share their data for free. This question needs more discussion in the future.

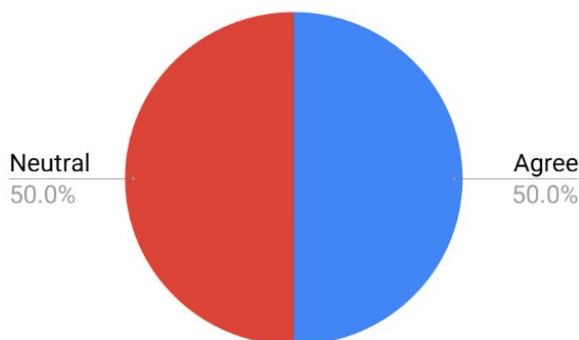
Post-test questionnaire:

The results below are post-test questionnaire:

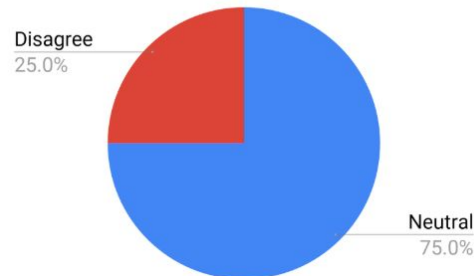
Question	Response
This application was easy to perform the task	Strongly agree: 100%
I enjoy using this application	Agree: 100%

I will use this application again:

I will use this application again



I will recommend this app to my friends
I will recommend this app to my
friends



From the results above, we can find that this website/app is easy to use and the tasks are easy to perform. Two participants said they will use this app again only one participant said he will not recommend this app to his friends. Overall, participants had a good impression and user experience about this website. But they also provided some suggestions, one participant said he was a little confused on what the apps does. In the beginning he thought it was to find where he can pick berries but later he think it is just an app for scientist to gain information about who and where to pick berries. I think the reason is that functions for common users are not completed yet. For example, berry map is not provided for common users. If those functions are finished, common users will feel better about this app.

Conclusions

Overall, according to the test results and my perspective, I think they did a good job on the website for now. The homepage is clear and includes necessary information. The questions in the questionnaire are easy to understand. Functions provided for scientists are enough and convenient to use. Most of the participants gave positive feedback about this website. However, some bugs and issues were detected during the test. Participants can input an invalid value in latitude, some items listed in scientist view page are not very clear, download function is not finished and functions for common users are not enough. Therefore, based on the discussion above, I give some suggestions from my view.

First, input validation should be added in the latitude field. I think there are two ways to solve this problem. An error message can occur promptly once the user enters an invalid value, or users can be informed there is something wrong after they finish the questionnaire and submit the questionnaire. The website should make sure all data submitted are reasonable, otherwise it may cause some potential problems.

Second, try to clarify the items in scientist view page. I think a separate document can be attached in this page to explain the items listed. This document will contain the specific details about each item. Scientists can also save their time by referring to this document.

Third, finish the download function in scientist view page. Currently, scientists can only view data on this page. It is inconvenient for them to get data to conduct some analysis. Also, developers should make sure the downloaded data are consistent with the original data.

Fourth, add more functions for common users. As I mentioned above, one participant was confused about this website due to lack of the functions for common users. Currently, users can only fill harvest questionnaire and demographic survey. I think at least berry map should be provided for common users.

Fifth, I did not see the FAQ part on the website. I suggest that FAQ part can be added. Since users may meet different problems when they use this website, FAQ part should provide solutions for most frequently occurring

problems. Users can save their time by referring to FAQ part.

The website is in a good direction although there are some small bugs and issues. Suggestions above may help to optimize the performance of this website. But in order to provide a better service for users and scientists, more works and details should be considered and specified in the future.

Appendix A:

Attendance:

Administrator	Undergraduate Students	Participants	Attended
Niusen Chen	Drew Stockero, Joe Taylor	Alec Trent	Yes
Niusen Chen	JC Helm, Drew Stockero	David Torstenson	No
Niusen Chen	JC Helm, Joe Taylor	Ethan Polick	Yes
Niusen Chen	Brandon Paupore, Jacob Jablonsky	Charlotte Hildebrandt	Yes
Niusen Chen	Dawson McKenzie, Brandon Paupore	Ransom Duncan	No
Niusen Chen	Dawson McKenzie, Jacob Jablonsky	Alayna Starll	Yes

Appendix B:

Bugs & Issues Report Form:

Bug ID	Bug Name	Description	Severity
1	No input validation in latitude	In harvest questionnaire, users are required to enter the latitude of berries. During the test, we detect that users can enter a negative value of latitude and then successfully submit harvest questionnaire. There is no error message to inform the user that he/she inputs an invalid value.	Small
2	Download function is not finished	Scientists should be able to download data from scientist viewpage. But this functions is not finished before the test, therefore participants can only view the data displayed on this page but can not test the download function.	Small
3	Insufficient functions for common users	The target audience of this website are common users and scientists. But common users can only fill harvest	Medium

		questionnaire and demographic survey for now. Berry map is not finished yet, therefore common users can not test the map function.	
4	Lack of FAQ part	There is no FAQ part on the website. Users don't know where to ask for help when they meet problems.	Small

Appendix C:

Test challenges report:

Challenges ID	Description
1	Some participants were not familiar with Zoom.
2	Network connection is not stable. Sometimes I can't hear the participant's response clearly.