Water Matters
Usability Test Report

Team-2: Creative Types
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Introduction

Our development team is tasked with developing an application that teaches about water conservation and rainwater harvesting for the residents of colonias who have poor access to water resources. The application was intended to use on desktop and smartphone.

When the user accesses the website, they are presented with a mission statement on the homepage which showcases the information about the website. There is a button to choose for the language which switches between English and Spanish. There is additional information such as the email address of the scientist. On the top, there is a navigation bar that has four buttons: Home, Harvesting, Conservation, Rainfall calculator.

The harvesting section contains information about rainwater harvesting. The information is laid out through text, images, videos. As the user scrolls through the website, he can find images that display the techniques and methods for harvesting rainwater. There is an educational video that explains the implementation of rainwater harvesting methods. By using the navigation bar above the user can move to other sections.

The water conservation page has information about various methods and products related to water conservation. Like the harvesting page, this page provides information through Text and images. As the user scrolls through this page, he can find information about various equipment their cost, and benefits. Next, using the Navigation bar the user can move on to the rainfall calculator section.

In the rainfall calculator section, the user can calculate how much of the rainfall can be collected based on the area. The user needs to select the units between meters and feet, Area and need to enter values: Average, Length, and Width. All the information about these terms is provided on this page. There is an additional calculator available which can be used to compare the values.

Test goals

The main objectives of usability testing are to discover usability problems within the application. We were interested in learning about how well the user was able to use the application, accessing each section and using the rainfall calculator. We are looking to find any bugs within the application and receive feedback about the implementation and suggestions for further improvements.

Test description

The usability test is conducted using the zoom application. The participant was provided with the test scenario which in brief is to access every section of the application. We had a verbal conversation during the test where a participant is asked questions about the implementation of the application. We have done usability testing in the desktop and mobile versions of the application. We allowed participants to provide any concerns or feedback about the application and suggestions to improve the application.

Testing Plans

Test Scenario – 1: User Experience

Test Goals
The test will determine if the users can access and understand the content within each menu section easily and clearly.

Required Equipment
Zoom software, Web Browser

Quantitative Measurements
- Time taken navigating sections
- Time taken within each section
- Number of clicks within each section
- Details entered in the calculator section

Scenario Description
You are a resident of a Colonia interested in learning more about water conservation due to poor access to water. You have heard about this application and would like to use it. You will use the application for the first time accessing every section and reading through resources that might apply to you.

Task List
- Access the website to enter the main page.
- In the taskbar, click on harvesting to enter Water Harvesting Section.
- Go through the information within the harvesting section.
- Click on the conservation to access the Water Conservation section.
- Read through the content within this section.
- Click on the Rainfall calculator.
- Select area type, enter length and width values.
- Calculation results appear in form of gallons.

Qualitative Measurement
- Verbal feedback given during the test.
- Are participants able to access all the sections?
- Usage of Rainfall Calculator.

Test Setup Details
The participant will use the zoom application to share their screen access to the website.

Test Scenario – 2: Rainfall calculator and Bilingual

Test Goals

The test will determine if the user can properly utilize the rainfall calculator, seamlessly switch to the Spanish language, view images, and videos within each section.

Required Equipment

Zoom software, Web Browser

Quantitative Measurements
- Time is taken to obtain results from the rainfall calculator.
- Values entered in the calculator.
- Switching to the Spanish language.
- Time spent viewing images and videos.

Scenario Description

You are a resident of a Colonia from New Mexico who is looking for an application to calculate rainfall accumulating in an area and learn more about water harvesting. You are fluent in English and Spanish and want to learn the information through images and videos.

Task List
- Access the website to enter the main page.
- In the taskbar, click on harvesting to enter Water Harvesting Section.
- Go through the information within the harvesting section.
- Click on the conservation to access the Water Conservation section.
- Read through the content within this section.
- Click on the Rainfall calculator.
- Select area type, enter length and width values.
- Calculation results appear in form of gallons.

Qualitative Measurement
- Verbal feedback given during the test.
- Are participants able to understand and utilize the rainfall calculator?
- Are participants able to use results from the rainfall calculator?
- Are participants can switch to any language they prefer?
- Are participants able to access images and videos without any bugs?

Test Setup Details

The participant will use the zoom application to share their screen access to the website.

Usability Testing process

- o Greet the participant
- o Collect verbal consent for usability testing and recording
- o Explain the application and test scenario
- o Asking questions during the test
- o Post Scenario Questions
- o Collect feedback
- o Survey

Data Collected

- o Functioning of the application
- o Verbal feedback from the participant
- o Bugs within the application
- o Mobile and desktop view comparison
- o Calculator usage
- o Survey

Results

For testing, we focused mostly on testing scenario – 1 which is focused on user experience. Testing scenario-2 requires the implementation of the Spanish language which was not properly implemented at the time of testing. The usability testing was able to emphasize using a rainfall calculator.

The following table displays the average times that each participant spends from the main page to the rainfall calculator. (this includes only the desktop version)

Participant	Time spent within the application (minutes)
Participant - 1	10:13
Participant – 2	7:13
Participant – 3	6:45
Participant – 4	6:10
Participant – 5	5:20

This table results only show the time spent by each participant to reach from homepage to the rainfall calculator section for the first time. Many participants would access certain sections after viewing the whole application for the first time and spent more time providing feedback on those sections. Every participant was able to play the video but didn't finish it since the video is long and which could take a chunk of our testing time. These results show that every participant was able to successfully view or access the complete application at least for the first time.

Every participant was able to properly understand the information presented in the application. For the rainfall calculator section, most of them were able to use the calculator successfully by providing inputs and selecting the area, units. We didn't provide any specific inputs to participants as we were interested in learning how well the participants use the application and discover any bugs we might encounter.

Since this application doesn't capture or generate any kind of results we relied on feedback from the user.

This table presents the answers to the question: "What did you like about the app?"

I really like the layout and the explanations of the different ways of harvesting water
It was simple and easy to use.
It was easy on the eyes. The organization made it easy to go back and find anything I wanted to look for.
It was the user interface was very intuitive.

Based on the answers, we can understand that the application can be used easily used, simple in operation and organization is good. Overall, the developers were able to develop a user interface that is intuitive and easy.

We have asked a question about the size of the text in the application. This question is very important since this application is intended for users who are inexperienced with using technology or of an older generation. Overall, most of them agreed that the text size is sufficient, and everyone can be able to easily view it. Many complained about the text size in the mobile version, as it is too big, and the user must scroll a lot to view all the information.

The following table presents the answers to the question: "What difficulties did you have performing the task?"

the calculator was hard to use because it was not specified which metric should be used, ex. feet inches yards miles, or centimeters meters kilometers
The calculator can give unrealistic answers, the menu button sometimes appears off the screen and changing it to Spanish sometimes turns back to English.
I did not have any difficulties performing the task. If I were a Spanish speaker though and only knew Spanish, that part of the website was not necessarily updated yet, but you all were already pretty aware of that.
I did not have any difficulties. Some pictures did not properly display, but that did not interfere with my ability to do a task

We didn't find any major issues which might prevent the user from performing any task. One of the participants has an issue regarding the metric which is present in the calculator. Any user can choose the metric between meters and feet. I guess we might have missed that one. At the time of testing only the Spanish version is implemented only for the homepage. So, the sections can be viewed only in English at the time of testing. The current build has the implementation of the Spanish language across all the sections.

Many participants expressed some issues with the mobile version of the application. We just used the google chrome developer tools for simulating the mobile view of the application. The feedback is mostly towards the text size which is quite large for the mobile view. There were certain issues with the missing nav bar when accessing certain sections and the alignment of the video and images. The developers are aware of these issues regarding the mobile version and added some changes regarding that.

Many participants expressed that they were able to learn about water harvesting and conservation through the information and resources provided. The videos and images provided visual learning, and many acknowledge providing information about the cost and usage of harvesting equipment.

When the participants asked the question "If you would recommend this application to anyone" most of them answered yes that they would suggest this application.

The following pie chart shows the ratings which show easiness in performing a task:

How easy to perform a task
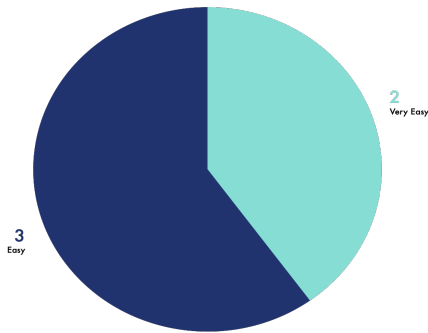
- o The rating is done on the scale of 1 – difficult and 5 – very easy
- o 40% of the participants choose very easy in performing a task
- o 60% of the participants choose easy in performing a task.
- o This rating shows that the application is easy to use and in performing a task.

The following pie chart shows the efficiency of the application:

Please rate how efficient it was for you to complete the task
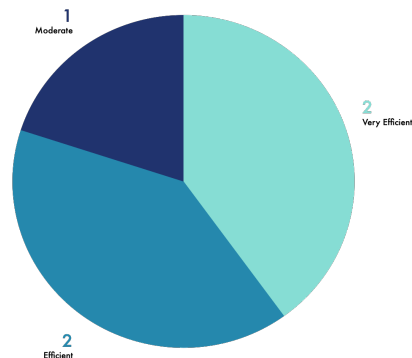
- o The rating is on the scale of 1 – very inefficient, 5 – very inefficient
- o 40% of the participants choose very efficiently in performing a task
- o 40% of the participants choose efficient in performing a task
- o 20% of the participants choose moderate in performing a task.
- o This rating shows how effortless it is to perform any task in the application and using a rainfall calculator.

Conclusion

Usability Problems

We didn't find any major usability issues that prevent a user from using the application. The following are some minor usability problems:
- There wasn't any proper indication for the user on which page they are present
- Alignment issues with text and images at the time of testing.
- A lot of scrolling is required for the mobile version due to the big text size and it can be quite frustrating for the user.
- The images and text were not properly aligned in the mobile version.

Suggestions for improving the user interface

- Highlighting the tab based on the section the user was on.
- Adding styling and alignments to the text.
- Reduce text size and make the mobile view more consistent with the desktop view.
- Implementing the Spanish language to other sections of the app.
- Adding more information to the calculator section.
- Improving homepage by adding more content.

Appendix A

The following table presents the undergraduate student's attendance at testing:

Date	Start time	Developers attended
4/12/2021	12:00 pm	Wesley Condie, Don Nguyen
4/13/2021	4:00 pm	Justin Murie, Meagan Pothoven
4/13/2021	5:00 pm	Justin Murie, Wesley Condie
4/15/2021	4:00 pm	Parker Laffey, Meagan Pothoven
4/15/2021	5:00 pm	Parker Laffey, Wesley Condie
4/16/2021	12:00 pm	Don Nguyen, Meagan Pothoven

Appendix B

<u>Bug Report</u>

Bug Level	Bug Name	Location	Bug Description
Level - 3	Missing images	Harvesting Section	Two images are missing in the harvesting section which appears after the video (this is fixed)
Level - 3	Missing images	Conservation Section	There is one image that is broken or missing in the equipment section (this is fixed)
Level - 2	Navigation bar	Mobile view	Inconsistent location of navigation tab in the mobile view

Appendix C

<u>Testing Challenges</u>

- o For the first usability session, the tomcat server was not working so we had to conduct the usability test on the local build using zoom remote access.
- o Accessing the mobile was difficult for some participants.
- o We couldn't test the application on mobile since the zoom experience is not great with it.