

Usability Test Report

Green Stormwater



Team 3

UX Consultants :

1. Soufia Bahmani
2. Aditya Patil
3. Aakash Gunda

Developers:

1. Kevin Bak
2. Patrick Janssen
3. Sean McFall
4. Andrew Koman
5. Leela Root
6. Matthew Cronin
7. Maxim Reuchlein

Scientist:

1. Jessica Alger

1. Introduction

App Idea

The app idea, as outlined in the "GSI App Description" document, is centered around educating users about Green Stormwater Infrastructure (GSI) in Southeast Michigan. It aims to increase awareness and understanding of GSI's role in urban stormwater management, especially in the context of changing weather patterns. The app features educational content and an interactive map to engage various user types. Through this app, users can learn about GSI, contribute data, and potentially influence urban planning decisions regarding stormwater management. The app is designed to increase awareness about the role of green infrastructure in urban stormwater management, especially under the challenges posed by increasingly unpredictable weather patterns. Its features include an educational section providing insights into soil infiltration and different stormwater management infrastructures, and a map showing the locations of green infrastructure in the area. The app's primary goals are to educate users, encourage the identification of new green infrastructure sites, and support urban planning efforts to mitigate flooding.

Test Goal

The usability testing for the Green Stormwater application is primarily aimed at evaluating its user interface, which is tailored for educational purposes to enhance awareness about green infrastructure, especially among middle school students. The test assessed the application's simplicity, functionality, and its ability to educate users effectively. During this test, we gathered data based on user behavior, personal experiences of using the app, and participant evaluations. This valuable feedback is instrumental in refining and enhancing the app's features and overall functionality.

Outline of the Usability Test

A total of 8 usability testing sessions have been scheduled, all administered by UX consultant Soufia Bahmani. Each test is allotted a 1-hour time slot, and the UX consultant is accompanied by two developers. Except for one session, which

is conducted via Zoom, all sessions are scheduled in the library. All student attendees participated, with only one person absent. Efforts were made to find a replacement from my department.

2. Test Plan

Test Procedures

- Upon the tester's arrival, I welcomed them and expressed gratitude for their participation, then introduced myself and the developer.
- Asked the developer to talk about the app.
- Gave the tester the consent form to sign.
- Requested the tester complete the questionnaire.
- Provided the tester with a QR code printed with the password and user information needed for each test scenario.
- Describe the test scenario to the tester and ask them to begin the test with their phone.

Pre-Test Questionnaire Question

1. Age Group:

Please select the option that best describes your age group.

- **(a) Under 18**
- **(b) 18-24**
- **(c) 25-34**
- **(d) 35-44**
- **(e) 45-54**
- **(f) 55-64**

2. Gender:

Please select the option that best describes your gender.

- **(a) Male**
- **(b) Female**
- **(c) Prefer not to say**
- **(d) Other (please specify): _____**

3. Are you interested in testing this application?

- (a) Strongly Agree
- (b) Agree
- (c) Neutral
- (d) Disagree
- (e) Strongly Disagree

4. Do you know the purpose of this application?

- (a) Strongly Agree
- (b) Agree
- (c) Neutral
- (d) Disagree
- (e) Strongly Disagree

Test Scenario

Test Scenario 1: Student Account Creation and Login

Scenario Name:

Student Account Creation and Login

Scenario Goal:

To evaluate the app's account creation process for ease of use, intuitiveness, and user-friendliness, as well as the login process for returning users.

Scenario Description:

This scenario focuses on a high school student's first interaction with the Green Stormwater Infrastructure app, from account creation to their initial login and exploration of the app. It aims to assess how effectively new users can navigate the registration process, understand the requirements, and begin engaging with the app's content.

Task List:

Accessing the App: The student opens the Green Stormwater Infrastructure app on a mobile device.

Navigating to Account Creation: Choose the option to create a new account.

Filling Out Registration Form: Enters email, password, school name, and class code. Optionally fills in interests related to GSI.

Submitting the Registration Form: Review and submit the form.

Email Verification: Checks email and activates the account via a verification link.

First Login: Log in with the newly created credentials.

Exploring After Login: Navigate through the app, focusing on educational content and the "Submit GSI Location" page.

Quantitative Measurement List:

- **Completion Time:** Tracks the duration from account creation initiation to successful login.
- **Error Rate:** Notes the number and types of errors encountered during the account creation and first login process.

Potential Observations:

- Observations regarding the clarity of instructions and ease of navigation throughout the account creation and login process.
- User reactions and any verbal feedback during the process, noting any points of confusion, frustration, or satisfaction.

Test Setup Details:

- **Device Requirements:** A mobile device with the latest version of the Green Stormwater Infrastructure app installed.

Test Scenario 2: Uploading a Picture of a GSI Site

Scenario Name:

Uploading a Picture of a GSI Site

Scenario Goal:

To evaluate the app's usability and functionality in allowing users (high school students) to upload pictures of green stormwater infrastructure sites, focusing on the process, requirements, and user support mechanisms for image uploads.

Scenario Description:

This scenario involves a high school student utilizing the Green Stormwater Infrastructure app to upload a picture of a GSI site. It aims to assess the ease of use, the clarity of upload instructions, and the app's support for users during the photo upload process, including compliance with specified image requirements.

Task List:

Login and Navigation: The student logs into the app and navigates to the "Add GSI Location" page.

Accessing Upload Interface: Select the option to add a new GSI location, viewing the photo upload instructions.

Preparing the Image: Ensures the photo meets app requirements (JPEG/PNG format, size $\leq 5\text{MB}$, resolution $\geq 1024 \times 768$ pixels, preferred landscape orientation).

Uploading the Image: Chooses and uploads the prepared image, adding any relevant caption or description.

Submission and Confirmation: Completes the GSI location form and submits the entry, receiving confirmation of successful upload.

Quantitative Measurement List:

- **Completion Time:** Duration from accessing the upload interface to the successful image submission.

- **Error Rate:** Number and types of errors encountered during the image upload process.

Potential Observations:

- Observations on the clarity and helpfulness of photo upload instructions and whether the requirements are easily understood and met.

- Student interactions with the upload interface, noting any hesitations, difficulties, or need for corrections.

- Reactions to the confirmation message, indicating satisfaction with the submission process or identifying areas for improvement.

Test Setup Details:

- **Device Requirements:** Access to a mobile device or computer with internet connectivity and the Green Stormwater Infrastructure app or website.

Test Scenario 3: Moderation and Content Management

Scenario Name:

Moderation and Content Management

Scenario Goal:

To assess the effectiveness and usability of the content moderation functionality within the Green Stormwater Infrastructure app, specifically the ability of teachers or scientists to review, approve, edit, or remove student submissions of GSI locations.

Scenario Description:

This scenario involves a teacher or scientist, acting as a moderator, using the app's specialized moderation features to ensure the quality and appropriateness of content submitted by students. It aims to evaluate the moderation tools provided by the app for ease of use, efficiency, and the ability to maintain a positive and educational Environment.

Task List:

Login and Navigation to Moderation Panel: Moderator uses their credentials to access the moderation features of the app and navigates to the moderation section.

Reviewing Submissions: The moderator is presented with a queue of new GSI location submissions for review.

Assessing Submission Quality: Submissions are checked for completeness, accuracy, and appropriateness. The moderator uses provided tools to closely examine photos and verify location coordinates.

Taking Action on Submissions:

- **Approval:** Suitable submissions are approved and made visible on the public map.
- **Editing:** Submissions with minor issues are edited for accuracy or completeness or feedback is sent to the student for corrections.

- **Removal:** Inappropriate or inaccurate submissions are removed, with an optional step to inform the student of the removal reason.

Quantitative Measurement List:

- **Review Time:** Duration required for moderators to review each submission and take necessary action.
- **Error Rate:** Number of submissions needing corrections or removal.
- **Moderator Satisfaction:** Moderators' perceived ease of use and efficiency of the moderation tools and overall satisfaction with the content management process.

Test Setup Details:

- **Participants:** Teachers and scientists with roles as moderators in the app.
- **Device Requirements:** Access to a computer or mobile device with internet connectivity and the latest version of the Green Stormwater Infrastructure app.

Post-Test Interview Questions

Overall Experience:

- How would you describe your overall experience using the app? Was there anything that stood out to you as particularly positive or negative?

Usability:

- Did you encounter any difficulties navigating through the app? If so, could you specify which parts of the app were challenging to use?

Educational Content:

- How informative did you find the educational content about Green Stormwater Infrastructure on the app? Did it enhance your understanding of the topic?

Functionality:

- When adding or viewing a GSI location, did the app meet your expectations in terms of functionality? Were there any tools or features you felt were missing?

Photo Upload Process:

- Could you share your thoughts on the photo upload process? Was the information about size, format, and quality requirements clear and easy to follow?

Moderation and Feedback:

- If you submitted a GSI location, did you receive any feedback or see your submission go through a moderation process? How did you perceive this interaction?

Technical Issues:

- Did you experience any technical issues or bugs during your use of the app? How did these impact your experience?

Improvements:

- Based on your experience, what improvements or additional features would you suggest the app?

Future Use and Recommendation:

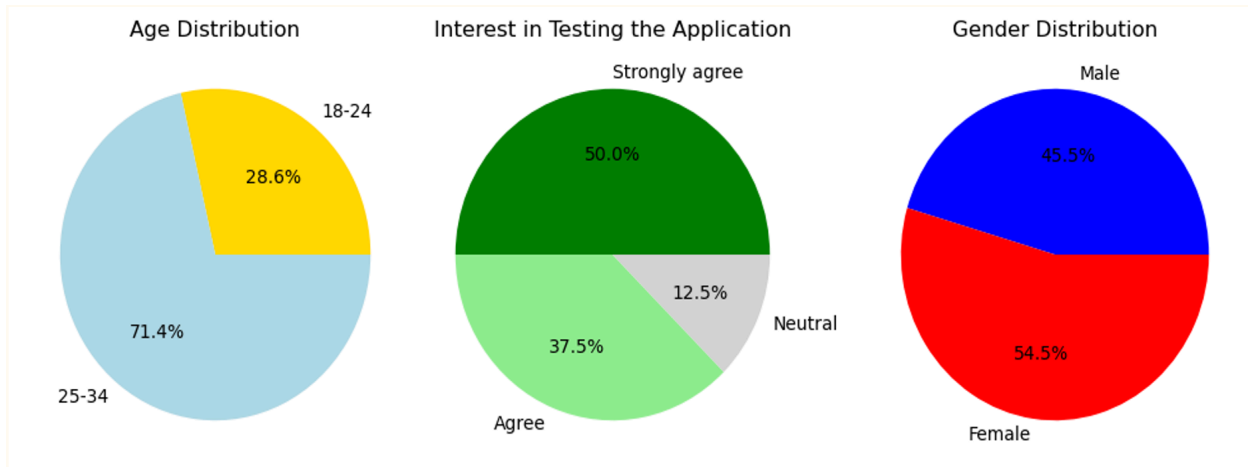
- Would you consider using this app again in the future? Would you recommend it to others interested in environmental conservation or education?

Anonymous Feedback:

- Is there any other feedback or comments you would like to share about your experience that we haven't covered in this interview?

3. Results

Pre-Test Questionnaire Results



As you can see the age distribution first—over 70% of our participants are between the ages of 25 and 34, which suggests our user base leans towards a more tech-savvy, younger adult demographic. Interestingly, nearly 30% are aged 18 to 24, indicating that our application also resonates with the college-aged segment.

Now, turning to their interest in testing the application, a whopping 50% strongly agree they're interested, with another 37.5% in agreement. This indicates a significant overall enthusiasm for the app, which is encouraging for our team. Only a small portion, 12.5%, remain neutral, suggesting almost unanimous intrigue and anticipation to engage with our product.

Lastly, we see the gender distribution among our participants is quite balanced, with 54.5% female and 45.5% male, allowing us to expect a diverse range of insights from the testing phase.

Test report from User

User	Map	Content	Add GSI	Add User	View Posts
User1	10	10	7	10	7
User2	9	9	7	10	8
User3	9	10	8	9	7
User4	9	10	8	8	8
User5	8	8	7	9	7
User6	10	10	6	8	6
User7	9	10	8	8	8
User8	10	8	6	8	9
Total	92.75%	93.5%	71.25%	87.75%	75.0%

The quantitative feedback was very telling. Overall, users rated our map and content highly, with scores close to 93%, demonstrating strong effectiveness and user satisfaction. However, features like 'Add GSI' and 'View Posts' scored lower, indicating areas where we need to focus our improvement efforts.

Participants Feedback

Positive	Suggestion
<ul style="list-style-type: none">• Easy to use & straightforward• The text was easy to read• Navigation between pages is smooth and intuitive, enhancing overall usability.• Implemented localization support to automatically translate forms to Dutch for users in the Netherlands• Location services are functioning effectively	<ul style="list-style-type: none">• Improve scaling of post page on mobile• Enhance size and visibility of 'next page' button on mobile• Expand functionality of the basic admin panel• Implement email verification for new user registrations• Add professional images for contact details• Introduce popups to inform users about features under development

On a bright note, our app's ease of use, readable text, and smooth navigation received applause, confirming our commitment to a user-friendly design. The successful localization for Dutch users and effective location services were also commended.

"Insights gathered directed us towards actionable improvements. Enhancing mobile responsiveness, increasing navigation button visibility, and expanding admin functionalities were top priorities. Additionally, implementing email verification and adding professional imagery will be critical next steps.

4. Conclusions

The usability testing provided critical insights from participants, highlighting the strengths and areas for improvement within the Green Stormwater app. Feedback underlined the app's user-friendly interface, with special mentions of its easy navigation and clear, readable text. The interactive map and educational content were particularly well-received, and praised for enhancing user understanding of green infrastructure. However, participants identified several functionalities needing enhancement, notably the 'Add GSI' feature and 'View Posts' capabilities, which were found to be lacking. Recommendations for improvement include:

Enhance Mobile Responsiveness: Address the mobile scaling issues to ensure the app is fully functional on all devices.

Increase Visibility of Navigation Controls: Improve the visibility and accessibility of navigation buttons to enhance user interaction.

Expand Administrative Functionalities: Develop more robust admin controls to facilitate content management and user interaction more effectively.

Implement Email Verification: Add an email verification step to improve security and user account management.

Professional Imagery: Incorporate professional images to enrich the visual appeal and informational value of the contact sections.

Overall Conclusion:

The app has been highly praised for its educational effectiveness, largely due to its engaging and comprehensible content. Particularly, the use of Leaflet for the map feature has distinguished the app, making it a favorite among users. The usability test sessions have been invaluable in refining the Green Stormwater app. The feedback collected has not only validated the app's educational value but also highlighted critical areas requiring development to better serve our target demographic of middle school students and the general public. Moving forward, the implementation of suggested improvements will be crucial in maximizing the app's effectiveness and user satisfaction. We are committed to an ongoing review and enhancement cycle to ensure that the Green Stormwater app remains a dynamic and valuable educational tool in urban stormwater management.

5. Appendix A

Development Team Attendances

Date	Location	Developer Members	Attendance
4/8/2024	Library 305	Maxim	Yes
4/8/2024	Library 305	Patrick	Yes
4/8/2024	Library 305	Patrick	Yes
4/8/2024	Library 305	N/A	N/A
4/9/2024	Library 301	Sean/Lela	Yes
4/9/2024	Library 301	Sean/Kevin	Yes
4/10/2024	Library 304	Patrick	Yes
4/12/2024	Zoom	Matthew/Andrew	Yes

6. Appendix B

Bug Reports:

Num	Bug Name	Description
1	Add GSI Functionality	Feature incomplete and requires fixing
2	Admin Post Editing	Currently non-operational; enablement needed.
3	Login Icon Visibility	Icon missing on Chrome/Safari for iPhone; correction needed
4	Account Creation with the Same Email	Multiple accounts per email are possible; need restriction.
5	Mobile Page Scaling	Address and correct post-page scaling for mobile compatibility

7. Appendix C

Testing Challenges No challenges were reported in the course of the testing.