Evaluation Assignment 4
Usability Test Plan

App: Water Erosion Prediction Project (WEPP)
Team 5: Swept Away

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Contents

1 Introduction

This report provides a detailed usability test plan for the application named Water Erosion Prediction Project developed by undergraduate student team 5. The report first describe the app briefly. Then it outlines the usability test events such as instructions, questionnaires, consent form, test scenarios and bug report. The required forms are included in the appendices.

2 System Description

The undergraduate students of team 5 have designed an application which will allow citizen scientists and high school students to utilize the Water Erosion Prediction Project (WEPP) model for predicting hill-slope scale erosion. There are two pages in the application: 1) default landing page, 2) result page. The default landing page contains a table for user inputs. User can input climate region, soil type, slope length, slope gradient and cover percentage to create a new query. Based on users query, the result page shows the probability of runoff, probability of erosion and probability of delivery. All values are shown as percentage. After displaying the result, a recalculate option is provided which allows users to change some or all inputs.

3 Outline of the Usability Test

The series of tasks that will be performed in the usability test are:

1. Instructions to participants
2. Signing consent form
3. Demographic questionnaire
4. Performing the experiment
5. Post-experiment questionnaire

4 Instructions to Participants

Before starting the experiment, the experimenter will explain the goals and objectives of the app. Then the tasks that they have to perform will be explained briefly. The experimenter will ensure that there will be no risk using this app. Also, the experimenter will mention that the confidentiality of the participants will be maintained. Then the participants will be asked if they have any questions regarding the usability tasks.

5 Signing Consent Form

The participants will sign an informed consent form that acknowledges: the participants can cease at any time, and the privacy of their identification will be safeguarded. The experimenter will ask the participant if they have any questions. The participants can only participate in the study after signing the consent form. The consent form is included in Appendix A.

6 Usability Questions

Two sets of questions will be used in the usability test. The first one is demographic questionnaire which will be given before scenarios are tested and the second one is post-experiment questionnaire which will be given after the scenarios have been tested.

6.1 Demographic Questionnaire

After signing the consent form, the participants will be given a questionnaire which ask basic demographics questions such as participant's age, gender, previous experience about soil erosion, experience in using smartphone and so on. The demographic questionnaire is included in Appendix B.

6.2 Post Experiment Questionnaire

After performing the experiment, the participant will be given another questionnaire. This questionnaire asks about the experience of the participants during the experiment. Also it asks the participants to provide suggestions or comments about the app. The post experiment questionnaire is included in Appendix C.

7 Bug Report

Bugs are errors in the program. A bug report form is included in Appendix D. Every time a user encounters a bug, unique bug number is given and the bug name. When a bug is first encountered, an asterisk is put by the bug. For multiple occurrences of the same bug, no description is written except the bug name. Bug location indicates which page of the website that has the bug

8 Test Scenarios

The three test scenarios are described below. Any one of the tests will be carried out during each testing session.

8.1 Test Scenario 1: Entering Input in Text Fields

Test Goals

- To check if the app validates user input for specific values
- To check what kind of feedback the app provides
- To check if the app has a mechanism to handle unusual event

Scenario Description

The participant will start the app and enter some arbitrary values in the input fields such as Slope Length, Slope Gradient and Cover Percentage. Then the participant will be asked to select other options (Climate region, Soil Type and Location) in the query arbitrarily. Finally the participant will be asked to submit the query.

Task List

- Start the app.
- Enter some specific values in the input fields.
- Choose region, soil type and location from drop down menu.
- Click Calculate button to submit the query.

Quantitative Measurement List

- No. of text fields in which participant can input arbitrary data
- Number of events when participant didn't receive any feedback for entering invalid data.
- Number of events when the app crashed for invalid input.

Qualitative Measurement List

- Whether the participant is confused and if so, why?
- How difficult it was to navigate through the page while filling up text fields.

Potential Observations of Participant

- What is the expression of the participant?
- Did they ask any questions?

Bug Report Form

A Bug report form will be used to indicate functional software problems, including the person reporting the problem, the nature of the problem and instructions for replication. A Bug report form is included in Appendix D.

Post Experiment Questionnaire

After completing all tasks, the participants will be asked to fill up a post experiment questionnaire. A post experiment questionnaire for this scenario is included in Appendix C.

Test Set up Details

All testing will take place in library room 233. The participants will be welcomed and asked to sit down. The participants will be given a smartphone and instructions to find out the app icon. No other specific setup is required.

8.2 Test Scenario 2: Getting Correct Latitude and Longitude

Test Goals

- To check if the app correctly retrieve the location coordinates
- To check whether the participant can navigate a map to enter location manually.
- To verify the speed of the retrieval of latitude and longitude.

Scenario Description

The participant will start the app and enter some arbitrary values in the input fields. Then the participant will be asked to enter the location using GPS or manually. Finally the participant will be asked to submit the query.

Task List

- Start the app.
- Enter some random values in the input fields.
- Click on **Use GPS Location** or **Manual Coordinate Input**.
- Click Calculate button to submit the query.

Quantitative Measurement List

- Time taken by the app to retrieve the latitude and longitude.
- Number of events that the app retrieved the location incorrectly.
- Number of events that the app retrieved the location correctly.

Qualitative Measurement List

- Was the approximation of the location correct?
- Did the users face difficulty to enter location?

Potential Observations of Participant

- What is the expression of the participant?
- Did they ask any questions?
- Were they confused about location coordinates?

Bug Report Form

A Bug report form will be used to indicate functional software problems, including the person reporting the problem, the nature of the problem and instructions for replication. A Bug report form is included in Appendix D.

Post Experiment Questionnaire

After completing all tasks, the participants will be asked to fill up a post experiment questionnaire. A post experiment questionnaire for this scenario is included in Appendix C.

Test Set up Details

All testing will take place in library room 233. The participants will be welcomed and asked to sit down. The participants will be given a smartphone and instructions to find out the app icon. No other specific setup is required.

8.3 Test Scenario 3: Identifying Buttons and Texts

Test Goals

- To check if the background of the app, buttons and the texts have appropriate color
- To check if the font size is appropriate
- To check if the buttons are of proper sizes

Scenario Description

The participant will start the app and navigate through the home page. Then he/she will be asked to enter some random data in the input fields. At this point, the participant will be asked to locate any button or text in the page.

Task List

- Start the app.
- Navigate through the home page
- Enter some random values in the input fields.
- Verbally report a specific button or text.

Quantitative Measurement List

- Number of events when the color of background, button and text seemed inconsistent.
- Number of events when the font and button size seemed to large or small.
- Time to interact with the app.

Qualitative Measurement List

- Did they face any difficulty find a specific text or button in the app?
- Did they face any difficulty to read texts in the pages?
- Did they look closer while reading texts in the app?

Potential Observations of Participant

- What is the expression of the participant?
- Did they ask any questions?

- Did they seem confused while locating a text or button?

Bug Report Form

A Bug report form will be used to indicate functional software problems, including the person reporting the problem, the nature of the problem and instructions for replication. A Bug report form is included in Appendix D.

Post Experiment Questionnaire

After completing all tasks, the participants will be asked to fill up a post experiment questionnaire. A post experiment questionnaire for this scenario is included in Appendix C.

Test Set up Details

All testing will take place in library room 233. The participants will be welcomed and asked to sit down. The participants will be given a smartphone and instructions to find out the app icon. No other specific setup is required.

9 Appendix A - Consent Form

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 students in 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 provide and 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 test are anonymous. Do not write your name on the survey. No one will be able to identify you or your answers, and no one will know whether or not you participated in the study except for the instructor of the class that 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. If you have any questions about the study, please contact Dr. Robert Pastel, Assistant Professor, Computer Science Department, Michigan Technological University, Houghton, MI 49931.

The MTU Institutional Review Board has reviewed my request to conduct this project. If you have any concerns about your rights in this study, please contact Joanne Polzien of the MTU-IRB at 906-487-2902 or email jpolzien@mtu.edu.

Participant signature and date:

10 Appendix B - Demographics Questionnaire

1. Age
2. Gender
3. How many years have you used a smart phone?
4. Do you have any difficulties with viewing colors, contrast, or fonts on a smart phone or computer screen that you are aware of?
   (a) yes
   (b) No
5. Did you ever use any app or website to predict water erosion?
   (a) yes
   (b) No

   Please indicate your level of agreement to the follow statements:
6. I am very interested in the testing of this application.
   (a) Strongly agree
   (b) Agree
   (c) Neutral
   (d) Disagree
   (e) Strongly disagree
7. I am familiar with the consequences of soil erosion.
   (a) Strongly agree
   (b) Agree
   (c) Neutral
   (d) Disagree
   (e) Strongly disagree
8. I am familiar with various factors contributing to soil erosion.
   (a) Strongly agree
   (b) Agree
   (c) Neutral
   (d) Disagree
   (e) Strongly disagree

11 Appendix C - Post Experiment Questionnaire

Please indicate your level of agreement to the follow statements:

1. Overall, this application was easy to perform the task.
   (a) Strongly agree
   (b) Agree
   (c) Neutral
   (d) Disagree
   (e) Strongly disagree
2. I enjoyed using this application.
   (a) Strongly agree
   (b) Agree
   (c) Neutral
   (d) Disagree
   (e) Strongly disagree
3. The text was easy to read and understand.
   (a) Strongly agree
   (b) Agree
   (c) Neutral
   (d) Disagree
   (e) Strongly disagree
4. I was able to complete my tasks efficiently.
   (a) Strongly agree
   (b) Agree
   (c) Neutral
   (d) Disagree
   (e) Strongly disagree
5. I would use this application again.
   (a) Strongly agree
   (b) Agree
   (c) Neutral

(d) Disagree

(e) Strongly disagree

6. What did you like most about this application?
7. Do you have any suggestions for improvement of this app?

12 Appendix D - Bug Report Form

Scenario Name:
Reported By: Sadia Nowrin

Bug Number	Bug Name	Bug Uniqueness	Bug Location	Bug Description