

CS5760 - Human Computer Interaction & Usability Testing

Spring 2023

Programming Analogies

Usability Test Plan

Application name: Programming Analogies

UX Consultants:

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Development Team:

Grayson Wagner - Product Owner
Emilie Rummer - Technical Lead
Dee Paulson - Developer
Ethan Jones - Developer
Jack Grant - Developer
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Test instructions

Firstly, Thank you for signing up to participate in our usability testing session! We're excited to have you join us as we test our web app.

Before proceeding I would request you to read and understand the Usability Test Roles below -

- **Administrator:** The person who runs the test. They will give the participant instructions, ask questions, and ensure the test goes smoothly.
- **Participant:** The person who is using the product or service being tested. They will complete tasks and provide feedback.
- **Observer:** The person who watches the participant use the product or service. They will take notes on the participant's actions and any problems they encounter.
- **Logger - User Interface(UI):** The person who tracks the participant's actions on the UI. They will note which buttons the participant clicks, which menus they open, and so on.
- **Logger - Body Language:** The person who tracks the participant's body language and facial expressions. They will note if the participant looks confused, frustrated, or happy.

The prerequisites for participants of the test; since the session is on Zoom it's advisable to have the following:

1. A laptop
2. An internet connection
3. Web Browser

I'm Ketan Patil, a UX consultant for the Programming Analogies team in Dr. Robert Pastel's CS4760/CS5760 course. I'll be the administrator of 8 upcoming usability tests, each lasting for 1 hour. Three developers will accompany me, each assuming the roles of Observer, UI Logger, and Body Language Logger.

Participants will read and verbally consent to the consent form before proceeding to a brief survey and answering some questions.

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 the computer 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.

Pre-test survey & questions

Survey:

1. What's your educational background?
 - a. High School
 - b. 1st year
 - c. 2nd year
 - d. 3rd year
 - e. 4th year
 - f. Graduate
 - g. PhD

2. What's your major?
 - a. Computer Science
 - b. Computer Engineering
 - c. Software Engineering
 - d. Electrical Engineering
 - e. Data Science
 - f. Cyber Security
 - g. Management Information Systems/Business
 - h. Other

3. Experience with programming?
 - a. Novice
 - b. Beginner
 - c. Intermediate
 - d. Advance
 - e. Expert

4. What is your preferred medium for learning a new programming language?
 - a. Official Documentation
 - b. Tutorials on websites
 - c. YouTube videos
 - d. Online platforms like Coursera, Udemy, Pluralsight, etc.
 - e. Other

5. Would you like or are you open to learning programming through analogies?
 - a. Yes
 - b. No

Questions: Please indicate your level of agreement with the following statements.

1. Do you have any disabilities that may hinder your ability to participate in this test?
 - a. Yes, I have a disability
 - b. No, I do not have any disability

2. Your experience with using software applications such as web apps or websites in general.
 - a. Novice
 - b. Beginner
 - c. Intermediate
 - d. Advance
 - e. Expert

3. What device are you using to test this application?
 - a. Laptop
 - b. Mobile phone
 - c. Desktop
 - d. Tablet

Test Scenarios

1. Test scenario no 1

- a. **Name:** Login and Register
- b. **Description:** User will to login if the user is a registered user. Users should be able to register/create a new account if they are not registered with the application.
- c. **Goals:**
 - i. Successfully login if the user is registered with the application
 - ii. Successfully register/create an account if the user is not registered with the application
- d. **Task List:**
 - i. Initially the user is ready and all set to login with the login page in front of the user.
 - ii. If the user is registered with the application then the user will proceed to login.
 - iii. If the user is not registered with the application then the user will proceed to register/create an account.
 - iv. User inputs the credentials to login.
 - v. User enters the information to register an account with the application.
 - vi. After creating/registering the account the user will proceed to login.
- e. **Quantitative Measurement:**
 - i. Time taken to login.
 - ii. Time taken to register/create an account.
- f. **Qualitative Measurement:**
 - i. Clarity of instructions.
 - ii. Ease of navigation.
 - iii. Did you receive an email in order to verify the account?
 - iv. Was the user prompted with instructions or rules when it comes to the specifics of account registration/creation such as format of username or password.
- g. **Observations:**
 - i. Facial expressions -
 - ii. Body language -
 - iii. Overall -
- h. **Potential Problems:**
 - i. Unable to register/create an account.
 - ii. Unable to login even if the user is registered.
 - iii. Login and Register page not loading.
- i. **Interview:**
 - i. Did the application ask for too much or extra/unnecessary irrelevant information to create an account.
 - ii. Is the application asking you for any personal/sensitive information such as credit card details or social security number.

- iii. Did you expect the home screen of the application after logging in to be different from what you had in mind?

2. Test scenario no 2

- a. **Name:** Search, view and 'Add as favorite' an analogy
- b. **Description:** User will search, view and favorite an analogy based on keyword associated with a particular programming concept.
- c. **Goal:** Successfully search, view, and add as favorite the analogy.
- d. **Task List:**
 - i. Once the user is logged in, the user is successfully directed on the home page.
 - ii. Users can clearly see the Search bar on the home page and proceeds to search the analogy.
 - iii. User enters the search term(s) into the search bar and clicks on the search button.
 - iv. Users can see one or multiple results based on the search and views/opens the analogy the user is looking for.
 - v. User then favorites the analogy by clicking on the 'heart' symbol on the top of the page.
- e. **Quantitative Measurement:**
 - i. Time taken for users to complete each step of the search, view, and add favorite analogy process (e.g. time to enter search query, time to view results, time to add to favorites)
 - ii. Number of analogies searched
 - iii. Number of analogies viewed
 - iv. Number of analogies added to favorites
 - v. Number of errors encountered by users during the search, view, and add favorite analogy process
- f. **Qualitative Measurement:**
 - i. Is the user presented with the right results regarding the search?
 - ii. Is the user able to view the desired analogy after the search results were displayed?
 - iii. Is the user able to favorite an analogy?
 - iv. User satisfaction with the ease of finding analogies
 - v. User satisfaction with the relevance and quality of analogies displayed
 - vi. User satisfaction with the ease of adding analogies to their favorites list
 - vii. User feedback on the overall user experience of the search, view, and add favorite analogy features
 - viii. User feedback on any potential issues or confusion encountered during the process
- g. **Observations:**
 - i. Facial expressions -
 - ii. Body language -

- iii. Overall -
- h. **Potential Problems:**
 - i. Incorrect search results.
- i. **Interview:**
 - i. Did the user find the desired result(s)/information regarding their search?
 - ii. Was the user satisfied with the speed and the ability of the application to produce the desired result(s)?

3. Test scenario no 3

- a. **Name:** Comparing Analogies
- b. **Description:** User will pick two different analogies to compare.
- c. **Goal:** Select two analogies to compare and close the analogy windows after comparing.
- d. **Task list:**
 - i. User either logs in or is already logged in.
 - ii. The user is on the home page.
 - iii. User can see the Compare button on the page. User will click the button of a particular analogy.
 - iv. After that user selects a different analogy to compare it with the previously selected analogy.
 - v. After the comparison, the user closes the analogy windows and returns to the home page.
- e. **Quantitative Measurement:**
 - i. Time taken to complete the process of comparing analogies, closing the analogy windows and return back to the home page.
 - ii. Completion rate of the analogy comparison task: measured as a percentage of users who successfully completed the task
 - iii. Error rate in completing the analogy comparison task: measured as a percentage of users who made errors or mistakes during the task
 - iv. Number of analogies compared per session
- f. **Qualitative Measurement:**
 - i. User satisfaction with the analogy comparison feature
 - ii. User perception of the usefulness and effectiveness of the analogies
 - iii. User feedback on the clarity and relevance of the analogies
 - iv. User feedback on the overall usability and design of the analogy comparison feature
 - v. Is the compare button able to show the selected analogy properly on the screen.
 - vi. Are the analogy windows presented properly to the user for easy viewing, understanding and readability.
- g. **Observations:**
 - i. Facial expressions -
 - ii. Body language -

- iii. Overall -
- h. **Potential Problems:**
 - i. User is not able to understand how to compare two analogies: the app as of now does not clearly guide the user to make this happen.
 - ii. There is no “help” page for the user to refer to, to understand how to compare analogies.
- i. **Interview:**
 - i. Can the user comprehend the process of comparing analogies without guide or instructions.

4. Test scenario no 4

- a. **Name:** View profile to check favorited and created analogy(s)
- b. **Description:** User will check to their profile to see analogies they have favorited and created.
- c. **Goal:** Navigate to your profile to go through or read the analogy the user has created and favorited.
- d. **Task list:**
 - i. User logs in or has already logged in.
 - ii. User is on the home page.
 - iii. User navigates to the ‘username’ on top right and clicks on the username.
 - iv. User lands on the profile page.
 - v. User can see the created and favorited analogy on the profile page.
- e. **Quantitative measurement:**
 - i. Time taken to visit the profile and view the contents on the profile page.
 - ii. Number of clicks required to access the profile page
 - iii. Time taken to load the profile page
- f. **Qualitative measurement:**
 - i. Is the user able to see the created and favorited analogy on the profile page.
 - ii. User satisfaction with the layout and design of the profile page
 - iii. User feedback on the ease of navigating the profile page
 - iv. User perception of the relevance and usefulness of the information provided on the profile page
- g. **Observations:**
 - i. Facial expressions -
 - ii. Body language -
 - iii. Overall -
- h. **Potential Problems:**
 - i. User profile page is not loading.
 - ii. Created analogy, and favorite analogy is not showing up on the profile page

- iii. User might wonder about how to change username or password and then not finding options to change the password or username on the profile page.
- i. **Interview:**
 - i. Do you expect that the profile page would have different information other than your favorite analogy(s)

Post-test questions

1. On a scale of 1 to 10, how would you rate your understanding of the overall purpose of this application?
2. How would you rate the simplicity and ease of use of the application?
3. How highly do you rate this application as a good source to learn to program?
 - a. High
 - b. Neutral
 - c. Low
4. Would you recommend this application to your friends/peers/colleagues?
 - a. Yes
 - b. No
5. On a scale of 1 to 10, how would you rate your overall experience with this application?

Post-test interview

1. Were you able to complete all the tasks that were assigned to you? If yes, describe your experience, if no, list down the difficulties you encountered.
Answer:
2. What particular task did you find most difficult?
Answer:
3. Based on your overall use of the application which is your favorite aspect/feature of the application?
Answer:
4. Were you satisfied with the overall experience of the application? Please describe your experience briefly.
Answer:
5. Please list down any suggestions and improvements for the application.
Answer:

Bug Report

List of all the encountered bugs in the application.

1. Application bug 1

1.1. Bug name:

1.2. Bug location:

1.3. Bug description:

1.4. Expected behavior:

2. Application bug 2

2.1. Bug name:

2.2. Bug location:

2.3. Bug description:

2.4. Expected behavior:

Testing challenges

Technical challenges encountered by the administrator or the participant with the testing environment not involving the application.

1. Technical challenge 1

1.1. Challenge name:

1.2. Challenge description:

2. Technical challenge 1

2.1. Challenge name:

2.2. Challenge description: