W13 Report (Project Part II):
Usability Study Report

Team: Phoenix

November 29, 2018

Evaluation and Analysis Results

a) Topic

- **Interface chosen : Yelp**
- An interface to support planning an outing with one or more people.
- More specifically, planning an outing to multiple locations with constraints provided by the user.

b) Evaluation Goals

1. Can the user keep track of their progress when composing and arranging their itineraries through the interface? (Keeps track of visual feedback)
2. Can a user perform every aspect of the task with ease?

c) Summary of evaluation

We recruited 6 participants for our evaluations. We asked each participant to perform specific tasks on our medium-fidelity prototype, then got them to fill out a questionnaire followed by an interview. All participants were students between the ages of 18-25 because we recruited people that we knew. Each member in our group ran at least one evaluation, and had a procedure walkthrough to follow (in A.2). Before beginning, the observer defined important terms, such as itinerary and prototype. To evaluate our prototype, we recorded the participant's computer screens and audio recorded the participant as the they completed the tasks on our prototype. We gave each participant the same set of 8 tasks (in A.3.2) to follow, and asked them to use the think-aloud technique as they perform each step. Meanwhile, the observer recorded any hesitations that they observe, as well as any additional notes that the observer finds useful, on a coding sheet. Once the prototype-walk-through portion was completed, each participant filled out an online questionnaire using Qualtrics surveys, where they rated the ease of each task, their performance, and whether they felt that they could keep track of their progress. This was immediately followed-up by an interview portion, where each observer asked the participant open-ended questions to give their opinions about the prototype, including questions about the design, its ease of use, and things that can be improved.

d) Evaluation Rationale

Justification for evaluation goals

We chose these goals because they lead to the best responses pertaining to the added functionality and we had the tools to evaluate them accurately. We acknowledged that receiving correct and meaningful feedback was a priority when designing an interface because we wanted people to learn it quickly and easily. We also focused on ease because if something is difficult to use the number of users of that thing was likely to decrease.

Justification for evaluation methods

We chose to gather data using three sources namely, screen recordings with audio from the think aloud observations, interviews and online self-rating questionnaires. We focused on getting the subjective and quantitative data from the participants rather than relying on our observations, for accuracy and standardisation, so we used the online questionnaire to get self-ratings on the ease of use of the interface to complete each task. We used a questionnaire because it was an easy and accurate way to gather data on ease as it was provided by the participants themselves. We used the interviews to gain information about the usability and user experience requirements we had set for the interface and to answer our goals more comprehensively. Because all the interviews and screen-recordings were analysed as a team, it was important to have both an audio and video screen recording of the tasks being completed so that we could revisit and use them to form an affinity diagram (A.3.3) that detailed all the problems we noticed with the interface, gathered from the common mistakes made by the participants. This helped us in our general assessment of the functionality of the interface and of the wording of the tasks. We used these sources because it triangulated our data for increased validity.

Justification for Protocol

For our protocol, a script was written for all the evaluators to follow so that they would conduct the study in the same way. This eliminated the variability in the wording, and ordering of the tasks and interview questions as it was important to make sure all the participants had the same study experience to allow for better comparison of the results in answering our goals.

e) Prototyping Rationale

For our medium fidelity prototype, we chose to move vertically rather than horizontally because it allowed us to focus on implementing the functionality required to create an itinerary. We could then answer our evaluation goals based on the tasks that were specific to creating an itinerary. A horizontal scope would not have been useful for our prototype design because it would have been unnecessary to implement functionality that was not relevant to our goals and tasks. To really narrow in on our evaluation goals, the interface was designed to provide adequate feedback by using color changes in map icons (time 2:51 -3:21 on video) and confirmatory messages () when deleting or creating a new Itinerary. To accomodate for ease of use we kept the look of interface clean to not distract our participants. We used icons that were recognisable through use of other applications to signify specific functionality, such as the blue add icons used in 2:51-3:21 of the video and the create an Itinerary button(4:22), to capitalise on positive transfer effects. A decision was made to change the prototyping software from Axure to Proto.io because we found it to be easier to use and learn, and it provided the necessary functionality to make the interface as interactive and aesthetically pleasing as we wanted it to be.

f) Summary of Data, Findings and Analysis:

Lack of required input and feedback

It was noticed that in Task 1 (Reference section A.3.2) three users (A1, D2, O1) never inputted a location which is a required user input to perform a search. This is an aspect to look further into, what happens when a user does not specify certain inputs to perform their search.What inputs are essential to perform a search, which are optional and which search elements are set to a default. Additionally, some participants demonstrated confusion when they tried to search again not from the home page but from the result page and there was no visual cue showing that the page was reloading.

Problems with the prototyping tool

Given that the interface tested was a medium fidelity prototype there were faults with the software causing clickability problems that interrupted the flow of tasks for at least three users (A1, A2, O1). This influenced the user performance and self-rating even though this problem were not part of the interface design and would not be present if the prototype was a functioning program.

Discoverability and negative transfer issues

Three participants (O1, D2, C6) out of six said that adding a location to an itinerary was challenging because of the location of the add button. All participants informed in the interview that there was an adequate feedback response when navigating the interface, yet acknowledged that it could be further improved for extra clarity. As three participants (A1,A2,T1) did struggle with Task 6 where the first one was directly displayed on screen, while the second caused struggle amongst participants as it required users to hover over the location pins in the map to display the information. Task 6, had an overall presentation of high scores regarding its difficulty (Reference section A.3.1).

Similarly, Task 7 presented the highest difficulty according to user results. Two participants (O1, C6) mentioned that they had a different expectation on how to perform the removal operation, as they thought the edit feature would be placed within each location object and not in the outer frame of the interface. Two participants clicked the “My itineraries” button and left the page having to subsequently come back. Overall the feedback provided by users on this was that the button for editing the locations placed within an existing itinerary was difficult to find.

Additionally, two users mentioned that they wanted to scroll down on the “My itineraries” page as some text located in the bottom of the screen was cut out in the rendering of the prototype leading these two users to believe that the page was scrollable, which it was not.

Learnability

Two tasks; 2 and 4 were the same and users successfully transferred from their learning in Task 2 to Task 4. Some users had to explore the result page to understand how to perform the addition operation to the itinerary, and had no trouble when going to Task 4. This demonstrates that the interface allow for user learnability.

Resolution

While the study found details that can be improved that interfered in the performance of some tasks in the interface. Overall from the data gathered in the interview six out of six users said that the interface was not challenging to use as four out of six said the interface was simple. Participant C6 said that the interface was not hard to navigate due to the simplicity and size of objects in the screen. Participant T1 commented that the interface was organized intuitively. Thus, based on the positive feedback gathered from users it can be said that the interface answers one of our evaluation goals; ensuring the interface was easy and intuitive for users. Though there were elements that could be improved, nothing in the interface projected as an outlier that would completely fail due to difficulty or inability to guess the user's mental model.

g) Conclusions

Overall participants thought that they performed well on the interface. Two participants rated themselves as excellent, three as good and one as poor.

The first evaluation goal was can the user keep track of their progress when composing and arranging their itineraries through the interface? There were mixed responses from participants when asked if they felt they could keep track of their progress; one said excellent, three said good, one said average and one said poor. A prominent finding was that participants needed more feedback when adding to an itinerary and removing from an itinerary, which was expressed when asked what they thought needed improvement. When adding to an itinerary the visual feedback was not very significant, and in one instance A1 left the page and went to the specific itinerary to verify it had been added.

The second evaluation goal was can they perform the task with ease and largely participants expressed that they thought the interface was easy to use. All 6 participants in their interview expressed that it was not a challenging interface to use and four express they liked how simple it was. Participant T1 was additionally said that it was well organized and intuitive.When looking at how participants rated ease at each task it becomes more mixed and Task 6 and Task 7 are spikes in difficulty. Due to ease of usability participants expected there to be more functionality than the prototype supported in it's medium fidelity form. For instance, sometimes users went beyond the tasks given and explored the interface which resulted in disappointment or confusion when their actions did not receive responses.

The evaluation goals were able to be answered with the data collected. Quantitative data such as the self rating the participants gave for each step and observer tallies of repeated problems users experienced provided numbers from which to draw conclusions. Additionally qualitative data provided gave insight as to why our study produced the numbers it did, answering why participants encountered problems. Additionally, after running the pilot study our findings were able to improve our final study to yield the most relevant data.

Recommendations and Critique

h) Design Recommendations

Our interface met the basic functionalities that we were trying to implement, such as the ability to create and edit itineraries, view businesses and itineraries on map and list form and search for businesses. However, because of the constraints of the prototype tool proto.io and time constraints, there were small details that invalidated the quality of our interface design. Most of these details were discovered from running the evaluations. For example, when editing the itinerary, the interface allowed you to move on to another page even when you have not clicked "done" to save the edit. It would make more sense to have a pop-up window or some other feedback to warn the user that their changes would be erased if they do not click "done" before exiting. Another design flaw was that when someone wished to edit the itinerary list while the tab was closed, they could not. A design recommendation would be to open the tab when you click edit locations. Another design recommendation would be to add more textual feedback after adding a search result to itinerary "this location has been added" because the feedback for this function is the colour-changing pin on the map that some people may miss. Lastly, our design could have included more functionality in terms of having feedback to indicate a result page is being loaded from the search and not having irrelevant pictures in the search results. These small bugs and lack of feedback in some cases invalidated the quality of our interface design by making it look glitchy or unfinished in some parts. Our recommendation is paying more attention to the small details that add quality to the design. However, overall, our interface had the basic functions that we wanted to create and evaluate.

i) Self Critique

As a whole our design process was good and yielded a useable, testable prototype. Our evaluation process was also effective at answering our goals, staying in line with our interface requirements and generating both quantifiable and qualitative data to measure our prototypes successes and failures. We improved our design process from the previous class project by adding an interview and audio/screen recordings to gain better insight into user experience and have concrete data to support our findings. The affinity diagram (A.3.3) was useful for categorizing issues when analyzing our observation and interview data. The information we extracted from this method was supported as correct analysis by information derived from our participant questionnaire and coding sheet. An obstacle we needed to overcome in the design process was switching prototyping softwares because we found Axure challenging to use and collaborate on. Due to the new prototyping software, we had to overcome a significant learning curve. An area of improvement for our design process would be to have lent more time to implement more basic functionality and detail (e.g. a business page for results) but due to time constraints, we chose to focus on the functionality we would be testing. To improve our study, we could have included more participants and additionally have had them vary in age to gather

even richer data. Lastly, we should have had all open ended questions in our interview rather than questions 2, 5, 6 being closed to allow users to elaborate rendering these questions more fitted for our questionnaire.

Appendix A

A.1) **Medium Fidelity Prototype Video**

https://www.youtube.com/watch?v=ZIu3n_4F1gQ

A.2) **Evaluation Instruments**

THE UNIVERSITY OF BRITISH COLUMBIA

Department of Computer Science
2366 Main Mall
Vancouver, B.C., V6T 1Z4

November 12, 2018

Consent Form

Human-Computer Interaction Course Projects (CPSC 344)

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Introduction: Thank you for participating in this study. This work is affiliated with the UBC course Human-Computer Interaction CPSC 344. This course project is designed to investigate how people interact with our prototype of Yelp.com, specifically a feature that allows users to create an itinerary based on their search results on a desktop/laptop interface.

Purpose: The purpose of this study is to test our prototype's usability and gather information on how to improve its functionality. Please note that we are seeking people who are of age to consent or are a UBC student that look for businesses online to plan their outings (experience with Yelp is not necessary).

What you will be asked to do: After you have read this document, I/we will respond to any questions or concerns that you may have. Once you have signed this consent form, you will be asked to:

- interact with digital systems (e.g., a laptop)
- be observed and recorded while using our prototype (e.g., searching for a restaurant, creating an itinerary)
- participate in an audio recorded interview regarding the interface
- fill out a short questionnaire

This should take about 30 minutes and be completed in one session. Please note that you can choose to discontinue your participation in this experiment at any time.

How the data collected will be used: Data collected (including any audio/video/screen recordings) will be used for analysis and may also be used for class project presentations and other research presentations. Although only a course project in its current form, this project may, at a later date, be extended by one or more of the student investigators to form the basis of their thesis research and/or be submitted as a research publication.

Confidentiality: The identities of all people who participate will remain anonymous and will be kept confidential. All data from individual participants will be coded so that their anonymity will be protected in any reports, research papers, thesis documents, and presentations that result from this work.

Data Retention: Identifiable data and video/audio/screen recordings will be stored securely in a locked metal cabinet or in a password protected computer account. All data from individual participants will be coded so that their anonymity will be protected in any reports, research papers, thesis documents, and presentations that result from this work.

Remuneration/Compensation: There is no compensation for participating in this study.

Contact Information About the Project: If you have any questions or require further information about the project you may contact Professor Dongwook Yoon's email yoon@cs.ubc.ca.

Contact for information about the rights of research subjects: If you have any concerns about your treatment or rights as a research subject, you may contact the Research Subject Information Line in the UBC Office of Research Services at 604-822-8598.

I, _____, have read the explanation about this study. I have been given the opportunity to discuss it and my questions have been answered to my satisfaction. I hereby consent to take part in this study. However, I realize that my participation is voluntary and that I am free to withdraw at any time.

_____

Participant's Signature Date

Procedure Walkthrough

Hello my name is … and I will be your evaluator today. The goal of this study is to test our **prototype** for a function of Yelp that allows users to build itineraries from their search results. Note that the interface you will be using is a prototype of the Yelp interface and is not fully functional. You will be asked to perform a series of tasks that will build up to the final task of you creating an itinerary. The testing will be followed by a brief interview where we would like to gather further information on your thoughts about the process and the interface you just used. **We will be screen and audio recording your interactions as well as audio a recording the interview**. Before we begin please sign this consent form outlining that you agree to participate in our study and that your participation is completely voluntary and can be withdrawn at any time.
Any questions? (answer the questions)

!!Begin by explaining that you are there to guide through the prototype interface if the participant gets lost or stuck and that they may ask questions at any time. Mention again that **they will be screen and audio recorded during the observation**. Begin the testing with a computer open to the prototype & screen recording software ready and ask participants to complete the following:

Definition: An itinerary is a travel document recording a planned route or journey.
"While performing each task please walk us through what you are doing out loud"

Task 1: Search for a restaurant of your choice in Vancouver
Task 2: Add this search result to existing itinerary #1.
Task 3: Verify that it's been added i.e what changed on the screen?
Task 4:Choose another result and Add it to itinerary #1
Task 5: View all your itineraries, then click on itinerary #1
Task 6: Find two ways you would view a business's contact information on this page.
Task 7: Remove location 2 from your existing itinerary
Task 8: Create a new itinerary named Day Trip

Once tasks are completed move into online questionnaire asking for self-rating on a Likert scale, participant will be provided with a list of ordered tasks for reference.

https://ubc.ca1.qualtrics.com/jfe/form/SV_5dad2WXhWEyBdiJ

Once questionnaire is completed move into interview portion of the study which will be audio recorded:

Interview Questions

Q1. What did you like about the interface?
Q2. Did you find our interface challenging to use?
Q3. What did you find most challenging about the interface? Why?
Q4. Which task did you feel you struggled most with? Why?
Q5. Did you feel that you were given enough information and responses from the interface to understand your progress?
Q6: Did you feel you knew what was happening at each step in the process?
Q7. What would you change about the interface (look and feel)?

Ask if there are any last comments or questions form the participant. Thank them for their participation.

Task List to be used by participant for reference during questionnaire

Task 1: Search for a restaurant of your choice in Vancouver
Task 2: Add this search result to existing itinerary #1.
Task 3: How do you know it's been added i.e what changed on the screen?
Task 4: Choose another result and Add it to itinerary #1
Task 5: View all your itineraries, then click on itinerary #1
Task 6: Find two ways you would view a business's contact information on this page.
Task 7: Remove location 2 from your existing itinerary
Task 8: Create a new itinerary named Day Trip

Participant ID:
Observer:
Setting:
Date:
Start time:

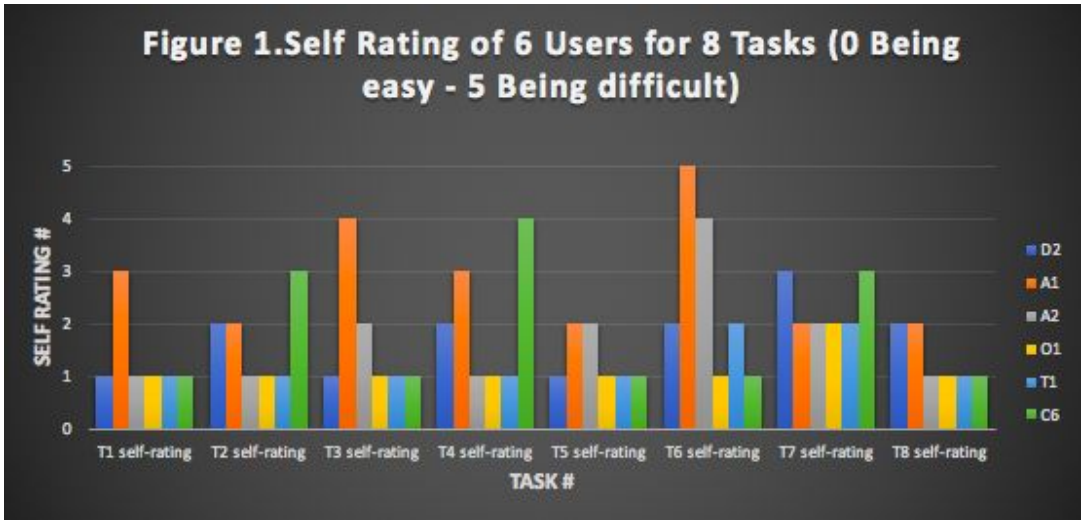
	Task 1	Task 2	Task 3	Task 4
Time to complete task				
Repeated step? How many times?				
Areas of encountered difficulty				
State of distress on scale from 1 to 5 (1- no visible signs of distress, 2- barely shows signs of distress 3- mildly distressed 4- many sign of distress 5- extremely distressed)				
On a scale from 1-5 how effectively did the user complete the task? (1- very effectively, 2- pretty effectively 3- somewhat effectively 4- not very effectively 5- not effectively at all)				
Relevant things the subject said (words of frustration, confusion, satisfaction, etc.)				
Did the user improve? Were they able to learn the site?				

A.3) **Supplementary Analysis**

A.3.1: Figure 1

Bar graph of the self-rating given by six test prototype users for each task (total 8). Each individual is represented by a unique color across tasks as rating are grouped by task.

The rating scale works as follows: 1 - extremely easy, 2 - somewhat easy, 3 - neither easy nor difficult, 4 - somewhat difficult, 5 - extremely difficult.



A.3.2: List of tasks performed in the evaluation

Task 1: Search for a restaurant of your choice in Vancouver

Task 2: Add this search result to existing itinerary #1.

Task 3: Verify that it's been added i.e what changed on the screen?

Task 4:Choose another result and Add it to itinerary #1

Task 5: View all your itineraries, then click on itinerary #1

Task 6: Find two ways you would view a business's contact information on this page.

Task 7: Remove location 2 from your existing itinerary

Task 8: Create a new itinerary named Day Trip

A.3.3: Affinity Diagram