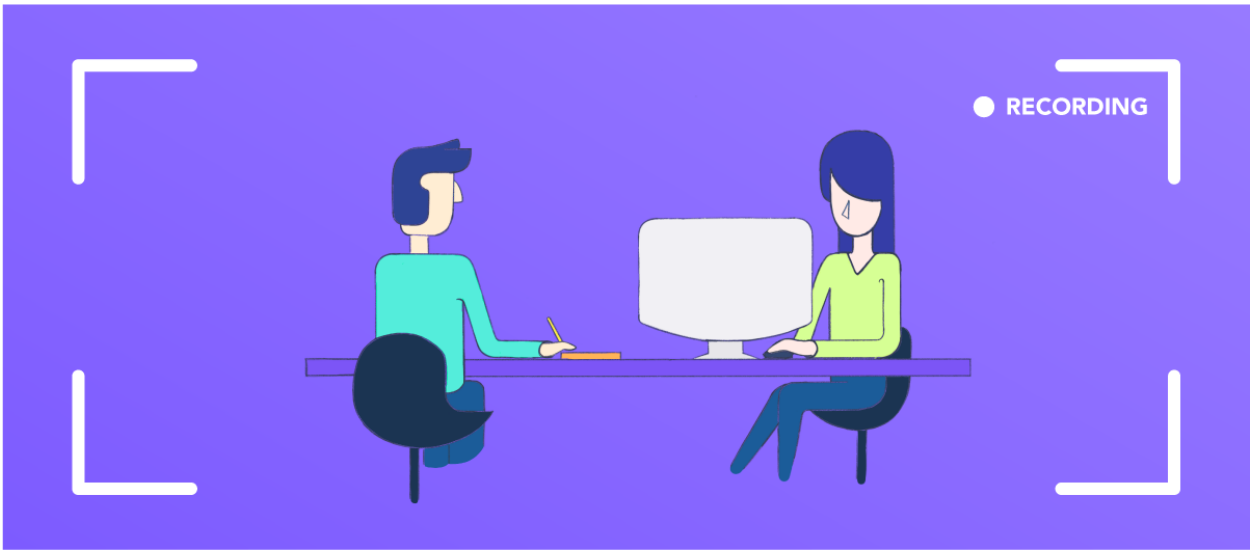
CS-639 Building User Interfaces, Fall 2019, Professor Mutlu

Assignments — Week 14 | Design | **Usability Testing**



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In this assignment, you will design and carry out a *mini* usability test of your Module 3 deliverable, *the shopping assistant*, in three steps. In the first step, you will make some decisions on the *why*, *what*, *how*, and *whos* of the study and write a two-page test plan that reflects your decisions. Next, you will recruit two volunteers from among classmates, family, and friends who can help you with your testing, and you will execute your test plan to collect quantitative and qualitative data on the use and experience of the shopping assistant. Finally, you will analyze your data and translate your findings into design insight. Your deliverables for the assignment will be your test plan from Step 1, the data you collected in Step 2, and a report of your findings and a discussion of their design implications in Step 3.

Step 1. Design a "mini" usability test. In this step, you will make some decisions about the format and design of a brief *formative* usability test and develop a *test plan*. First, you will determine two desired outcomes for your study. You can choose from five Es we have discussed in class (*effective*, *efficient*, *engaging*, *error tolerant*, and *easy to learn)*, the three dimensions of the ISO definition of usability (*effective*, *efficient*, *satisfactory*), or related concepts or outcomes (e.g., desirability, learnability, discoverability) that best fit to what you would like to evaluate. These will serve as your desired outcomes. Next, for each outcome, you will develop *questions*, *tasks*, and *scenarios* that will guide your testing. Then, you will choose two metrics: one performance, one self-report. Your deliverable will be a test plan that communicates these decisions and serves as a guide for the moderator (you) to run the test. The steps in the checklist below will help you in your decision-making and writing of your test plan and the form below that will help you draft your test plan. Your test plan should not exceed two pages.

Usability Test Design Checklist

- ❏ Choose two intended **outcomes**, e.g., effective, efficient, engaging, error tolerant, easy to learn, usable, satisfactory, etc.
- ❏ For each outcome, formulate a **question**, e.g., "To what extent are users satisfied with the shopping assistant" or "What is the overall usability of the shopping assistant?"
- ❏ For each question, devise a **task** using your shopping assistant that can help you assess how well your design meets the outcome. The task description should capture what you expect the users to do to successfully perform the task.
- ❏ For each task, develop a **scenario** that will provide context and guidance to the user. The scenario should prompt the user to perform the task you developed.
- ❏ Choose two **metrics** for measurement: one performance, one self-report. Examples of performance measures include task success (e.g., number of task substeps completed), time (e.g., seconds), or errors (e.g., number of deviations from expected use). For self-report measures, you can use the SUS questionnaire or all or part of the USE questionnaire.
    - ❏ Templates for SUS and USE.
- ❏ Write out your **test plan** using the form on the next page. Your plan should have three sections: (1) overview, (2) study design, and (3) test procedure. The overview section will briefly describe the context (including the "what" of the usability test, i.e., the scope of your interim or final design), the general goals for the testing, and the intended outcomes of the test. The study design section will outline your questions, tasks, and scenarios and your metrics. In test procedure, you will provide a step-by-step plan for the test in the form of a checklist.
    - ❏ You can see an example usability test plan from Barnum (2011) here. Your plan will not be as detailed as this example and should be *at most* two pages.

Usability Test Plan

Overview

1. *What part of the shopping assistant for users is easy to learn? (easy to learn)*
2. *What if the user types the information wrong? (error tolerant)*

Study Design

1. For the 1st question, the user will be tested on *the log in task*. **Task description:** If the user can type the identical login information to enter the shopping assistant, that means the log in task is easy to learn and use. If the user tries many times and still don't know how to log in with their information and enter the shopping website, it means the login task is hard to learn and use. **Scenario:** After users enter welcome commend to the shopping assistant. The assistant will lead users to log in first with "to explore more, log in first " this guide sentence.
2. For the 2nd question, the user will be tested on *the product task.* **Task description:** The user will enter the right commend to ask for product information. If the website will show the product information like category and price However, some products will be not provided on the shopping website. Therefore, once the users want to find products that not provided on the website, the assistant will report that the product can not found and what products type can be found from the shopping website. Instead of crashing, the assistant will lead user what can be found from the website. **Scenario:** After logging, the assistant will lead users to explore the products provided from the shopping website. "Please type what you want to find."

   Measure: For performance, I will choose "Errors". For self-report measures, I will choose USE questions.

Test *Procedure*

1. The user will be tested on a specific task.

2. Paying more attention to the scenario that needs to be tested and observed how users react.
3. Base on their react and measure the scenario.

Step 2. Execute your test plan. In this step, you will identify two volunteers to help you test your shopping assistant. They can be your classmates, friends, or family members. It is acceptable to pair up with a classmate and trade taking each other's test. You can use any version of your shopping assistant as long as you have a working prototype and choose to focus on any aspect of it. You can capture performance measures during the test, e.g., by timing them, counting errors, taking notes, or by recording them and watching later. You can present self-report measures on paper or on a computer screen after they perform all scenarios. Finally, be sure to make qualitative observations and ask questions, e.g., "you seemed surprised by that response, what were you expecting," to your participant where appropriate during and/or after the study. The deliverable for this step will be your data in table and/or text format pasted below. For performance, questionnaire, and qualitative data, provide the raw numbers or text that you will later organize and analyze in Step 3.

<your data>

Participant 1 (Chase -> a Senior in UW-Madison):

Usefulness: 4

It is useful. ----------5

It gives me more control over the activities in my life. -------2

It meets my needs. --------5

Ease of Use: 4

It is simple to use. -----5

It is user friendly.------5

It requires the fewest steps possible to accomplish what I want to do with it. ------4

Ease of Learning: 4

I easily remember how to use it. -----4

It is easy to learn to use it.----------4

Satisfaction: 4

It is wonderful. ------5

I feel I need to have it. --------2

I would recommend it to a friend. -------5

Comment: Chase thinks the assistant is clever and it can help him to find the products that want to see. However, he thinks the assistant is not clever enough. In the login task, he thinks the system should accept more commend sentences instead of one.

Participant 2 (Jack -> a Senior in UW-Madison):

Usefulness: 3

It is useful. ----------2

It gives me more control over the activities in my life. -------3

It meets my needs. --------4

Ease of Use: 2

It is simple to use. -----2

It is user friendly.------3

It requires the fewest steps possible to accomplish what I want to do with it. ------3

Ease of Learning: 3

I easily remember how to use it. -----2

It is easy to learn to use it.---------4

Satisfaction: 4

It is wonderful. ------5

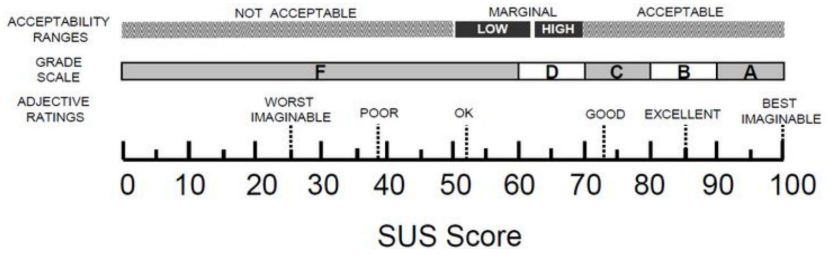
I feel I need to have it. --------4

I would recommend it to a friend. -------3

Comment: Jack never used a Voice assistant before, so he needed more time to learn how to use it. After several tempts, he learned it and fell in love with how smart the assistant is. He said the assistant will change his life and he would like to use it to shop. He also thinks the assistant should be funnier and it will make it more user-friendly.

Step 3. Analyze and report your findings. In this step, you will clean, consolidate, and analyze your results and translate them into design insight. For your quantitative data, calculate the average values from your metrics and report the averages. For self-report data, if you used SUS, follow the scoring method included in the template and give your shopping assistant a grade (e.g., "D") and level of

acceptability (e.g., "high marginal") using the guide below.[1] If you used a subscale of USE, such as "ease of use," average out the scores for all items to arrive at a single value and average out the values for both of your test participants. For qualitative data, categorize your notes and observations into a minimum of two high-level findings. If the quantitative data or the qualitative comments from your two participants vary significantly, you can also comment on these differing views. Report your findings in narrative form and end your report with high-level design insight and recommendations for how your shopping assistant might be improved. Your report should not exceed a page.



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[1] Based on Brooke, J. (2013). SUS: a retrospective. *Journal of usability studies*, 8(2), 29-40.

Usability Findings

Quantitative Summary

The average rate score of the first student is 4 and the average rate score of the second students is 3. The total average of these two students is 3.5. I noticed that alought the second students really like using assistant, due to he never used the assistant before, he still have touble learning how to operate the assistant at the beginning. To improve this, the assistant need to give some tips to teach the user how to use the assistant.

Qualitative Summary

In overall, they think the assistant is smart and easy to use. They would like to use the assistant to do more things. However, from the test, there are still some negative points. The login task can not accept many commends, it can only accept one style commend. However, users would like use many kinds of commends to log in. Another thing from the students is the assistant should have more funny response instead of the mechanical response. To improve these problems, first the assistant need to trained that can accepted more login commend. Second, the assistant need to response funnier that means the assistant is more like human. It can make user feel like they are not taliking to a mechine.

Conclusions

Overall, the assistant did succeffully so far. It makes many people like using it. However, the assistant is still not perfect yet. People like taliking to an assistant can response like a human. To make this, the assistant need to trained like human's response. It need to be have a stong personality. Another thing, people's lanauge cannot be limited. The assistant need to be clever and can unserstand users' different format response. To do this, the assistant need to be trained in many formats commends.