Core assignment: User research, Part I [+7.5]

Phase: User research
Due date: Friday, April 18 at 11:59pm PT
The goal of this stage of the project is to learn as much as you can about your potential users and interaction settings. Note: It is very common (and even expected) that you will doubt your initial project goals. When you feel that, take a moment to pause and ask why.
Course learning objectives this assignment facilitates: (1) Use and explain methods for user research; (2) Explore and express complex problems / practice communicating user research; (3) Reflect on what you know, don't know, and how to learn what you don't know
Grading: This is a group assignment. All members of the group are expected to participate fully. Each group will receive one grade. / Every member will receive the same number of points.
What to submit: In your project's Github repo, create a folder for User Research (i.e., "user-research") that includes all written/drawn responses to the below questions + notes for user research (as specified below). You can reuse this same repo for both parts of user research. **Submit the github repo link to BruinLearn. Only one person needs to submit for the group.**

Before you get started with users [+3]

1. [+1] As a group, discuss any assumptions you have about your users or usage contexts. Consider aspects such as language, age, dis/ability, indoors/outdoors, alone vs. small group vs. family vs. large social gathering, etc. Write a summary of your discussion and a clear statement of your assumptions going into user research.

- Age: highschool - college (undergrad)
- Life science students
- Would benefit from visual learning
- Not necessarily neurotypical, may have learning disabilities?
- Enrolled in an English-speaking institution (English instructions)
- Primarily studying alone, non-collaboratively
- (Have access to and) studying with computer/desktop
- Perhaps some form of offline usage (e.g. converting the visualization/storyboard to markdown)
- Different user groups based on learning motivation and experience
    - Non-life science majors (little to no experience studying life science subjects, learning to satisfy a degree requirement or for interest, includes highschool students)
    - Life science majors
        - Novice (little to no experience studying life science subjects)
        - Expert (2-3 of years studying a life science discipline)
- Learning for a class/exam, not for fun/personal enrichment…

2. [+1] As a group, share any hunches you want to test or unknown/open-ended questions you want to answer through user research. Summarize your discussion, listing out 2-3 things you want to learn through user research.

- How does their learning motivation influence their learning process/strategies?
- pros/cons of existing studying/memorization tools
    - Apps: Good Notes, Quizlet, Chegg, Google Docs, Notion, Obsidian, Evernote, Khan Academy, Anki?
    - Others: lecture slides, textbook, typed notes, handwritten notes, cheatsheet
    - What do you feel is lacking in these current tools? I.e. is there anything in those apps that you think, if it were done differently, would improve your understanding of the material?
- What learning methods/approaches do students employ when it comes to life science subjects? What proves to be the most and least effective? Why/How?
    - Do visualizations benefit certain people more than others (is it really appropriate to say there are distinct “learning styles”)? What are students’ attitudes toward leveraging visualizations when studying? What makes certain visualizations more informative/clear/helpful than others? Examples of good VS bad visualizations?
    - Does it vary depending on the specific subject or class/exam demands?
    - For experts: What methods have you abandoned? How did your learning strategy change over time?
- What are some common struggles students face when studying life science subjects?
    - What do students wish they had access to / did differently?
    - What external constraints do you have to work with when studying for life science subjects? (e.g. deadlines, other responsibilities, distractions, access to support)
    - For experts: Of the challenges/issues you have encountered, did you overcome them? How?
- How does studying life science subjects differ from other subjects?
    - More brute memorization?
    - Less abstract concepts?
    - Application based?
- To what extent would you collaborate in making notes if you had the opportunity? How useful do you think you would find that?
- What does your studying timeline usually look like (e.g. over the course of a quarter)?
    - Do you notice any major shifts that occur? e.g. studying strategy, mood/mental state, urgency, comfort level with the course structure/materials
        - What is a typical study session like in week 1 versus week 10?
    - How do the different studying tools you use fit into this timeline? Does the way you use them change?
- Do you think other people would agree with what you just said?

3. [+1] Write your user research protocol. Include the following:

- *Research approach ideas*
    - Observation (in-person):
        - students studying in libraries (e.g. biomed), cafes, etc

        - drop in on life science lectures?? (e.g. how do they take notes, when do they pay attention/get distracted, when do they look confused)
    - Contextual inquiry (in-person): hangout with friends studying for life science classes, take notes + ask questions
    - Survey (online): low effort, can reach more people, quantifiable data
        - (*will draft + finalize after conducting user interviews*)
        - Create a list of potential features
            - "On a scale of ___, how likely will you use the following features?"
            - "Do you find these features in any of the apps you currently use?"
            - Rank them in order of helpfulness?
        - Submit any life science subject notes
    - Think-aloud (in-person)
        - (*will finalize the think-aloud study details after the preliminary user interviews*)
        - Idea 1:
            - Give the notes to other people who those notes don't belong to
            - Give them a visualization representing the notes (to serve as an alternative to the notes)
            - Have users study the notes and verbalize their learning process and understanding, once with the notes. If they need to reference the visual, have them verbalize this and their reasoning for the decision
            - Post-study survey: for users to reflect on the utility of the visualization, their understanding of the content, exam preparedness
                - Quantitative questions (rate on a scale of 1-5)
                    - How easy was it to navigate and understand the visualization?
                    - How effective was this visualization in helping you understand the content?
                    - How confident are you in recalling key points from the notes after using the visualization?
                    - How comfortable do you feel taking an exam on this material after using the visualization?
                - Qualitative questions
                    - What aspects of the visualization helped you the most in understanding the material?
                    - What aspects were unhelpful? What do you suggest should've been done instead?
                    - How does this compare to your typical note-reviewing process?
                    - Would you use this method again for studying? Why or why not?

            - If you had an exam tomorrow, what parts of the visualization would you go back to review?
        - Idea 2:
            - Externalize while completing some task(s) with one of the existing studying tools
    - Semi-Structured User Interviews (preferrably in-person)
        - (*see interview questions below*)
    - Expert Interviews (online)
        - A life science core education professor
        - A psychology professor
        - (*and potentially others*)
    - Secondary Research
        - Existing literature (experiments, studies, reviews, etc) → more objective data
        - Reviews of the existing studying tools → more subjective data
        - Analyze life science notes collected from survey
    - A participatory design/co-design activity (*in later user research stages, not right now*)?
        - e.g. card sorting activity for information architecture, restructure components of an existing study tool

- *Recruitment strategy (e.g., whom to contact, how to contact, how many); any contingency plans in case you cannot reach 10-15 potential users*
    - Club outreach, friends/personal connections in life sciences
- *Time and place for each user research session (e.g., "in the afternoons, in person, in a meeting room")*
    - Timing at the convenience of the user
    - User research interviews will preferably be in-person. If participants cannot make in-person times, we can also do online meetings
    - Expert interviews will be online (experts' schedules may not be as flexible and we want to make the interview as accessible to them as possible)
- *Each member's role and responsibilities (e.g., For interviews: interviewer, note-taker, discussant, etc.)*
    - Interviews in pairs
        - one interviewer: asking the questions + leading the discussion with the interviewee
        - one note-taker: don't need to engage with interviewee

Initial round of user research [+3.5]

1. [+2] Prepare interview questions/script
    - Semistructured - so these questions are only launching pads for further discussion and I think we shouldn't worry too heavily about hitting every possible question. You guys bold the ones that should 100% be asked.

- *For all interviewees*
    - Can you introduce yourself with details like your major and year of study if you are comfortable sharing. <- Modify this for the experts of course
- *For expert (e.g. professor, TAs) interviews*
    - What platforms or tools do you usually use for organizing and creating course materials (e.g. study/review materials, lecture slides)?
        - What do you like and dislike about them?
        - Is there anything that you feel is lacking in these tools?
    - When you create your materials such as lecture materials, do you have a specific way in mind that students are supposed to be learning? For example a specific way for them to take notes, prioritize listening over writing, etc.
    - *Show different students' notes:* what do you think they're doing well and what would be more effective?
    - What do you think are the most common struggles you think students face when studying?
        - Did you, or do you continue to, face similar challenges when you study for these subjects? How do you go about overcoming them?
    - How do you think studying for life science subjects differ from other subjects?
        - More brute memorization?
        - Less abstract concepts?
        - Application based?
- *For user interviews*
    - *Beginning Questions*
        - What platforms or tools do you usually use for studying? Some examples could be Quizlet for flashcards or just Google Docs for notes.
            - What do you like and dislike about them?
            - Is there anything that you feel is lacking in these tools?
        - Can you describe how you usually go about studying? How do you tend to learn best? For example, do you rewatch lectures before an exam, review notes, make cheat sheets, hit the test bank, prioritize diagrams in your notes, etc.
            - What external constraints do you have to contend with when you're studying? (deadlines, stuff like that)
              Ask about their studying timeline and how their habits change as the quarter goes on.
                - Do you find your usage of certain studying apps (like the ones you described earlier) change greatly
        - Do you think studying for life science classes differs greatly from your other classes? More brute memorization? Are the concepts more abstract? Application or more theory based?
            - Perhaps propose our visualization approach and get their opinion right off the bat
        - Do you collaborate with others on your notes? Do you ask for other people's notes and how useful do you find them?

- *(Go into the section according to what category the interviewee falls under, then after finishing those questions, go to the "For both" section.)*
- *Non-life science majors (little to no experience studying life science subjects, learning to satisfy a degree requirement or for interest, includes highschool students)*
    - What life science classes have you taken and when?
        - Why did you choose to take them?
        - Did your interest in the subjects change afterward?
        - Were any aspects of the course(s) instruction, materials, and organization surprising or novel to you?
    - Did you use the same study habits and note taking techniques for your major classes compared to these life science classes? If not, how did you modify your approach? How effective were they?
- *Life science majors*
    - Novice (little to no experience studying life science subjects)
        - What have you found to be the biggest struggles in studying life sciences so far?
        - Do you use the same study habits and note taking techniques for your non-life science classes compared to life-science classes? If not, how do you modify your approach? How effective are they?
    - Expert (2-3 of years studying a life science discipline)
        - How have your studying habits and strategies for your major classes changed over the years? Any techniques or methods that you've added into your routine or any that you've abandoned? Why?
        - Are there any tips, resources, or tools you wished you found much earlier?
- *For both:*
    - Do the note thing described in the think-aloud procedure stated above.
        - After the exercise, ask the questions also listed accordingly. (The quantitative and qualitative ones)
    - To what extent do you think other students will agree with what you've just shared?

2. [+1.5] Interview 3 people
    a. Write and submit ~0.5-1p of notes for each user research session OR initial analysis of survey results

[+1] Reflect on process so far

1. What have you learned about your interview protocol from your initial interviews so far? Are you learning what you were hoping to learn? Consider: which questions are working well? Not so well?

2. Is there anything that you aren't learning? Or anything else you would like to learn? Update your interview protocol to facilitate this new learning. Summarize key changes.
3. What else do you need to do/change in order to be successful in the next round of user research? If there is anything the course staff can help with, please let me them know ASAP.
4. Did you use a generative AI tool for any part of this assignment? If so, which one and how?
5. How much time did you spend on this assignment as a group? Individually?

WIP: User research, Part II

Conducting user research [+5]

Here are some rough guidelines for how many users you should reach:
- 10 users/groups of users for interviews minimum; Groups of 4: 12 interviews, Groups of 5: 15 interviews

After you get started with user research [+4]

3. [+2] Synthesize your user research into:
    a. [+1] Personas + Scenarios (at least one persona, one scenario)
    b. [+1] Process map or more in-depth task analysis (at least one)
4. [+1] Articulate a problem statement. A problem statement should illuminate the core of the issue you observe. Often, there is a contrastive tension between what users want to do and what their current tools require them to do. If you cannot articulate this yet, describe why you think you are not able to converge yet, what promising directions to follow up with additional user research and feedback might be, and what steps you think you should take next.
    a. Tip: Rely on your process map. What is it telling you about what users want to do vs. have to do?
    b. Double check: Does your storyboard communicate/highlight this core tension?
5. [+1] Storyboard of how your proposed system could address the core problem. This is where you begin to imagine a prototype to address the core problem you identified.
6. DEPTH (optional, not required) [+1]: Map out a design space of existing tools (production or research) for supporting similar tasks x users x domains. Your design space should include at least five other comparable tools.

Communicate what you have learned [+2]

1. [+2] Draft blog post summarizing user research. Your blog post draft must include:
    - A description of methods and key findings
    - A clear problem statement describing the crux of the issue you identified through user research.

- Your storyboard
- At least 1 figure that is not from your storyboard

2. DEPTH (optional, not required) [+2]: Pick a model research paper with a formative study. Write your user research as a formative study section. In your submission, specify your model paper and why you chose it.

Reflection [+3]

1. [+1] Look back at your assumptions (in the “Before you get started with users” section). Has your user research contradicted or challenged any of these assumptions? If so, which ones? How?
2. [+1] What does your user research tell you about what kinds of interactive systems/solutions are unlikely to be useful/successful? Why not? Any hypotheses about what features of an interactive system will be useful? Why?
3. [+1] What questions do you have about your users? What hunches or hypotheses do you have about promising solutions? What is one thing you can do to begin answering these questions?
4. Did you use a generative AI tool for any part of this assignment? If so, which one and how?
5. How much time did you spend on this assignment as a group? Individually?

WIP: Additional group depth exercises

Each member in the group who participates in the below will receive the depth points.

- [+1] 25 users/responses for surveys
- [+2] 5 users to conduct contextual inquiries that are at least 1 hour in duration
- [+1] Conduct an additional round of user research with another method, involving at least 5 more users. Analyze the data.
- [+1] Meet with a community partner + come up with a plan for continued engagement with them.
- [+1] Depth: Interview 2 experts. Synthesize this new information.
- [+1] Depth: Talk to a local LA startup about your project. I recommend 2 group members (max) in a meeting with an LA start up. Share the contact information for people you met with + notes you took during/after the meeting. (Practice and Potential)
- [+2] Complete IRB training + submit an IRB to cover your project. Every team member must do this. Talk to the instructor about this.