HW8: Brainstorming & User Research

Warm up due Wednesday 3/23 at 4pm (grace period until 11:59pm)
Main due Monday 3/28 @ 4pm on Courseworks (no grace period – feedback will be given in class)

The challenge for the second half of the class is to:
- Design and build a **web** application
- That allows a user to **interact** with media
- Within a **domain of your choosing**
- To help a user learn an introductory topic **interactively**
- And help them assess themselves with a **quiz**.
- And keep learning through **feedback** from the quiz.
- In under **10 minutes** total

The user should be someone in this class. Your TA must also feel like this is something valuable for them to learn (otherwise they won't be able to give you feedback). In this class, we focus on designing *for people* and *getting feedback* from the people we are designing for. To do this, we need to have a ready supply of people we are designing for. Hence, we are designing for people in this class. Consequently, you **cannot** design for: (bad)
- Kids or teenagers (they aren't in this class)
- People who only speak Serbian (everyone in this class speaks English)
- Architecture Majors. Not enough people in this class are Architecture majors – plus Architecture Majors don't need to learn introductory topics. But you could teach an introductory topic in architecture to a CS student who want to learn something cool and useful about Architecture when they browse the streets of NYC.
- The hands of poker. Almost everybody in this class took the same introductory CS class you did and had to program the rules of poker already. But, there are other things and other games that you could teach people about.

The topic may be in a domain of your choice (e.g. chess, basketball, art history), but the topic within the domain must be small enough to teach in 10 minutes. For example: (good)
- how and when to perform 3 different opening moves in chess for chess beginnings (who already know the moves the pieces can make, because that's mostly common knowledge)
- how to run a pick and roll in basketball for casual NBA fans
- how to tell impressionist paintings from post-impressionist paintings for ArtHum students
- how to mix a drop swap for aspiring DJs

The topic has to be small enough that it can be learned in 10 minutes, but has to be hard enough that they don't already know it. For example, things that are **too easy** (bad):
- Which bin to put things in the recycle. Most people know 90% of the recycle rules (there are just a few tricky one). They may or may not follow them.

- Count to 5 in German. Although people may or may not know this – what need to be learned is to memorize 5 things. It's just not that hard, and there are great solutions out there already to help you do vocabulary memorization.
- Distinguish a major chord from a minor chord. (Almost everyone can do this without 10 minutes of training)

The basic insight we are basing this design on is that people learn through interaction and feedback. Thus, the method by which you teach your topic must include interacting with media. A terrible way to learn is to go read a Wikipedia page about something (art history, music theory, statistics, architecture, basketball, model-view-controller), and then be expected to perform a skill based on that "info dump". A much better way to learn is through interaction – like Duolingo or Codecademy (founded by two Columbia students) – where you get to practice and get feedback. If your design does not have interaction and media – or your design has significant amounts of "info dumps" (big blocks of text/media without interaction) you will receive a zero for that assignment.

This assignment is to be turned individually. However, there are parts that need to be done individually and parts that need to be one together. For group parts of the assignment, all team members can (and must) turn in the same answers.

1. **Group. Group members.** Who is in your group? List all the members including their names, emails and phone numbers (you may XXXX out the last 4 digits for privacy if you want). We just want to make sure you have a way to contact each other in an emergency.
2. **Group. Google Drive.** Make a google drive folder for your group. Include you TA on this drive as an editor. To prove you've done this, copy the link to the drive as the answer to this question.
3. **Individual**. **5 domains**. What are 5 domains that you could teach things to your classmates?
   1. Note: These must be things were you already know a lot of stuff, because you obviously can't teach a topic that you don't know well.
   2. Note: domains are broad like chess, basketball, art history. Next, we'll think about specific topics, which are must less broad
4. **Individual**. **Specific topics.** For each of those 5 domains, list 5 specific topics that you could teach interactively in under 10 minutes.
   1. For each specific topic,
      a) What media would you use?
      b) What would you quiz users on to test their knowledge? (a short sentence or phrase is fine)
   2. Note: It has to be hard enough that people don't already know it, but specific enough that you can teach it in 10 minutes.
   3. Note: To get from a broad domain to a specific topic, you may need to narrow the topic down more and more. For example: Art History -> The Modern Era -> Identifying types of paintings -> identifying post-impressionist paintings.
5. **Individual**. **Favorite topics.** Of these 25 potential topics, which are your favorites? List between 3 and 6 topics that you would be willing to pursue.
6. **Group**. **Group topics.** As a group, make a list of the 5 topics that you are all collectively most excited about. Although you are turning in this assignment in individually, the

What to turn in:
- A PDF or PDF(s) with your answers to all the questions. Please name your files appropriately

Main Assignment:
1. **Individual**. What was your participation in Wednesday's lecture?
2. **Individual. Competitor Analysis**: What are 5 existing products that allow you to learn by interactions and feedback. For each one, do the following:
    1. What topic does it teach? (if it teaches multiple topics – like multiple coding languages), pick one to focus (like JavaScript) on for the sake of concreteness.
    2. Who is the target audience (or who do you think benefits the most from it)?
    3. What media does it use to help people learn? (show a screenshot and describe it in a sentence)
    4. What is a major way it uses interaction to help people learn? (show a screenshot and describe it in a sentence)
    5. What are 3 things you like about the interaction and media usage that help people learn? (what might inspire your design?)
        1. Show a screen shot for each one.
    6. What are 3 things that could be better or different about the interaction and media usage that help people learn?
        1. Show a screen shot when applicable.
3. **Individual. User Interview**: For one of the domains you are considering teaching, find a target user and interview them for ~10-20 minutes. Get a sense of what they already know about the topic, and what they might be interesting in learning about it. Then, ask them about a really good learning experience they had in the past. Ask them to describe the experience and reflect on why they liked it so much.
    1. Note: Some sample questions to get your started.
        1. What are your experiences around (domain)? If this goes well, you can follow up about more specific topics?
        2. What do you already know about (domain)? If this goes well, you can follow up about more specific topics?
        3. What's potentially interesting to you about (domain/topic)?
        4. Tell me about a really good learning experience you've had in the past. Let's pick a specific instance and we'll talk about it in depth.
            • Note this has to be a *specific concrete* example.
                • **Bad**: I took a Spanish class one semester. It was fun.
                • **Good**: One day in Spanish class we were learning about the reflexive verb "Me gusta…". I was confused because in English, we don't have that construction, but the teacher did x,y,z ….
    2. Who is that person? (what's their name, age, relevant details like major, interests etc.)
        1. Example. *I interviewed Jeff, he's an unemployed man in his 40s from California. He loves bowling. He recently has a run-in with the law and he's interested in learning more about investigative techniques and how to follow up on random demands.*
    3. From this interview, what do you think are 3 potential topics you could teach? For each potential topic, say:

1. What's the domain?
2. What's the specific topic?
3. What makes you think the person is interesting in learning that? (give your reasoning and share a quote)
4. What's hard about this topic? (give your reasoning and share a quote).
4. From this interview, what's one surprising thing you learned about their good learning experience that could be relevant to your design.
4. **Group**. Prepare a set of slides with key findings. Be prepared to show them to your TA during your mentoring session on Monday.
1. Share two competitor analyzes that you did that were particularly insightful. Show your answers to the questions we asked about them. Say who in your group did that competitor analysis.
2. Share two user interviews that you did that were particular insightful. Show your answers to the questions. Say who in your group conducted that interview.
3. What are 5 potential topics you would all be willing to pursue in this class going forward.

What to turn in:
- PDFs with your answers to all the questions. Please name your files appropriately.
- A link to a Google Slide deck from your shared drive.