

Design Project 2: Embrace your constraints

*Design is not just what it looks like and feels like.
Design is how it works.*

– Steve Jobs

GOAL

The goal is to create an interactive design that responds to the specifications provided below. Primary criteria for judging your design will reflect the *user-centered*, *transparency*, and *computer imagination* themes of this course (discussed next week).

You will conduct a usability test on your initial design and then revise the design according to the test results. These revisions will reflect the needs of the end user, not your personal preferences. A rationale for your redesign must be provided as well.

You will work as a member of a two-person team, different from your first team.

The Setting

My colleagues and I waited with anticipation to hear Steve Job's latest announcement. There were rumors flying that Apple was to unveil a new series of iPods, particularly one that includes touch and Wi-Fi. And yesterday, September 5, 2007, that's exactly what happened. See: <http://www.apple.com/itunes/>



Wow! Our company, InteractiveFuture, Inc. (IFI) knew that the iPod would inherit the features of the iPhone, but no one anticipated that it would come this soon. Our CEO, Marissa Sanders, called us together and told us that the quiz interface we had been developing for the web would now be replaced with a new iPod touch interface.

Other uses of the new iPod touch would be unveiled in Q1 of 2008 [Q1 is business lingo for “first quarter of the year” or January through March; Q3 is the third quarter or July through September; etc.], and we are an Apple contractor working on these applications. Marissa gave us approximately one week before we needed to show her our new designs which would eventually be presented to Apple later this month. Things do move quickly here at IFI.





I am a member of a two-person team exploring new interaction ideas for interactive multiple-choice quizzes. When we could use a large web screen, the problem was relatively easy. Now with the iPod touch constraint, we needed to rethink our design.

A multiple choice item can be as simple as this:

The largest city in INDIA (according to population size) is:

- a) Delhi
- b) Mumbai
- c) Chennai
- d) Calcutta

Or, it may be more complicated:

The colors of the South Korean flag are:
(select all that apply)

- a) Red
- b) Green
- c) White
- d) Black
- e) Orange
- f) Blue
- g) All of the above

Of course questions and answer choices could be short or long, from single words to a paragraph in size; items may include graphics as well.

The Problem

Your team's job is to:

1. Create a screen layout for multiple choice items.
2. Create a feedback signaling system that indicates if the overall answer is correct or not.
3. Create a feedback signaling system that indicates which part of the item is right, wrong, and unmarked. So, for example, in the South Korean flag question, the correct answers are red, white, black, and blue. What happens if the student selects red, black, and blue? What happens if the student selects red, green, and blue? You might be able to think of other possible combination types.
4. Create a way for the student to see the correct answer(s).
5. Create a way for the student to see an explanation.
6. And the above must be done with the constraint of the iPod touch interface and size.

For this project, the target user group includes ADULT and TEEN LEARNERS. Think of specific kinds of people who might use the e-learning system. Create a short narrative that allows you as designers to empathize with the emotional connection to the activity.

Your design team needs to generate two different personas, one for two different users in your target user group. Use these personas to inform your design choices.

Usability Testing

Even though we will conduct a usability test, you are not expected to become usability experts in this exercise (although you should improve on your methods from Project 1). Instead, you are being given the full range of tasks: look at user needs, design interactions, usability test, redesign and document.

There are many ways in which usability testing can be conducted; some people make careers in this line of work. We will be taking a simplified approach in this exercise but we do expect your team to do a quality job. Future exercises will be more difficult in the requirements imposed in this area. For this exercise you should:

- Determine the user's goals and what she or he needs to accomplish while using your interface (check your personas).
- Develop a test consisting of a series of tasks you want a user to perform when using the product.



- Recruit TWO test subjects. Document the relevant characteristics of the subjects (e.g., age, gender, experience using iPods, etc.).
- Determine how you are going to capture your data. Observation forms? Digital camcorder? How many observers? Where will you do the testing?
- Have the users perform the test with one team member leading the testing session. The other team member remains in the background to avoid interfering with the user's performance (i.e., making them nervous). You may decide at some point to allow the other team member to interact with the user, but don't overwhelm the user with a lot of questions.
- Give the test user the opportunity to quit the test at any time. Provide clear directions at the beginning of the test, telling the user what he or she will be doing. (*In general, apply Human Subjects Committee standards for research ... without the need to actually seek HSC approval, which can be a lengthy process.*)
- Meet as quickly as possible after the test to review the impressions of team members. The longer you wait the more you will forget.
- Draft your recommended improvements in the design and things to retain in the design.
- Redesign the interface based on the results of your two user tests.

About Constraints

Recently I received an e-mail from a former HCI/d student. He now works in a high-tech software company in California. This is what he wrote:

Fri 8/31/2007 12:35 PM

Hi Marty,

I was thinking about you beginning a new semester of your design class this week. I have been having some discussions about constraints in design and figured you were probably close to that point of discussion in your class. I also figure that the teams will be getting frustrated by constraints sometime soon...

I'm getting into some nitty-gritty design at my new job finally. I was a little worried that design was not taken as seriously and philosophically as I'm used to but I had some great interactions with co-workers this week. More specifically, I was just talking to a colleague in our Calgary office about constraints in design. Actually, to back up the story a bit, she was asking my opinion as a new hire of what they should be looking for when they hire a new designer. [Company name removed] has pretty high standards and they're trying to figure out how to screen for the qualities that any great designer should embody. I told her a couple things like the ability to deliver design on time and a willingness to never settle.



One thing I really emphasized was the ability to work under constraints. We are always taught to accept constraints in grad school. However, I realized recently that a great designer should actually go one step further than accepting constraints. He or she should embrace constraints. I think the word "constraint" has a negative connotation in everyday life but in design, constraints actually create great design. At [Company name removed] we have constraints everywhere--it was one thing that was reiterated in all five of my interviews a couple months ago. We have to design something that can be built, it has to work on less-than-capable computers, it has to be able to be translated into different languages, it has to make sense culturally on every continent, and of course, it has to be designed in less time than you can possibly do it. In my short time here I've already seen a design feature axed because the lead designer on the project didn't embrace his constraints. He couldn't accept many of them and his team ended up unable to build his design.

Anyway, in my discussion with colleagues this week, we came to the conclusion that embracing constraints is one of the most important qualities for a designer to embody. It's important that designers go beyond simply accepting constraints but actually realizing that constraints channel your creativity and essentially force innovation. Rather than continue on this rant, I've attached some links a colleague sent to me on this subject. They're short blog posts about how constraints breed creativity in design. Maybe these will be helpful to your class:

Creativity Loves Constraints:

http://www.businessweek.com/magazine/content/06_07/b3971144.htm?chan=search

Constraints Drive Innovation:

<http://innovateonpurpose.blogspot.com/2007/05/outrageous-constraints-drive-innovation.html>

Anyway, hope all is well. From reading your blog, it appears that you are as excited as ever with the start of a new semester. What an exciting time. I think I'm having withdrawal—this is the first fall I've not been in your class since 2002! Can I still join a team or be a remote mentor?

Take care,

[name deleted]

Consultations

Each team may wish to consult with a mentor; send e-mail to one of the mentors:

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What to Submit

This project is intended to teach you that good design can be found in the details. Creating a complete design is likely to take more time than is allocated. Completion is not the only goal or even the most important goal. How your team tackles the problem and solves fundamental aspects of the problem – the core of the problem – is more important than a weak solution addressing many issues. Quality, not quantity is demanded here. To put this more concretely: it is possible to earn an A+ on this project by creating an excellent solution to the core problems.

Here is what is to be submitted:

1. Personas for your design.
2. Design mockup prior to testing. You may do this as a sketch on paper or computer screen (say, using *PowerPoint* or another tool).
3. Testing procedures and results.
4. Design mockup after testing. You may do this as a sketch on paper or computer screen.
5. Design argument / explanation / rationale. Why did you do what you did? Why did you change it? This is an important part of the project.

Submit 1-5 as one or more documents in one of the team-member's drop box on *Oncourse*. Be sure that BOTH team members' names are on all documents. In one team member's drop box, create a folder called "Project #2" and put your files in that folder. The facilitator should back up all files for safe keeping.

And remember, smart people ask questions! ☺

