

P4: Toys for Learning

The project theme continues as we have been doing in P2 and P3, designing toys for learning and moving to a stage where you develop and test prototypes. Several factors are important in thinking about your project:

- **Human context:** we want this project to have a plausible “story” about the people who would use it, the benefit they would get from it, and the way it would fit into their lives. This includes testing your prototypes with users who are representative of your target audience.
- **Physicality:** each project should involve interaction that goes beyond the conventional screen. It could be a mobile application, something with sensors, special-purpose physical appliances, environmental actuators, etc. It may have multiple components, such as a screen-based interaction that operates in a larger system with some interaction on a physical device (think iTunes/iPod). Prototyping will be a mixture of creating devices, or mockup devices, and simulating how you would interact with them. There is a variety of different prototyping techniques, depending on the project.
- **Interaction implementation:** As a CS course, it is about software implementation. The primary steps are paper prototyping, implementing an operational software prototype that illustrates and tests some aspect of the larger picture, testing that prototype, and doing a heuristic evaluation.

Skills

The *skills* we will learn in this project are:

- **Mental Models:** What are a user’s theories about the design and functioning of your prototype? What organizing principles should structure your design of the prototype, and what mental models do these principles yield?
- **Prototyping:** You will create an *interactive* prototype. We are providing lab sessions to learn Arduino and Flash, and to introduce the N810, but you can use Java, C#, or any tool with which you feel comfortable.
- **Heuristic Evaluation:** Heuristic evaluation is a usability method that employs “experts” (in this case, your peers) to inspect an interface. It can be much faster and cheaper than traditional usability testing.
- **Testing:** There will be two rounds of testing in which you embody aspects of your design in a prototype and take them to users to see how they respond.
- **Iterative Design:** We prototype to gain feedback (from ourselves and others). With that new knowledge, we iterate. Then we prototype to gain feedback (from ourselves and others)...

Schedule of activities and deliverables

The final project is organized into iterative cycles, with different kinds of testing in each. You have specific milestones to bring in for discussion in each class:

Tues 1/27/2009 **Initial Vision Statement, Related Inspirational Designs**
See separate handout (already done)

Tues 2/3/2009 **Initial Observations and Low Fidelity Prototype**

You should have gone and observed kids and discussed with them their needs and concerns in relation to your basic ideas. If mechanics make it impossible to do this by Tuesday, do it as soon after as possible. Your first pass at prototyping the interaction should make use of whatever low fidelity prototyping is effective at starting to test the interaction. It can include storyboards, flipbooks, physical models, or paper prototypes. For your project you may want to use one or all of these – whatever lets you start envisioning and testing out what the interaction will be in practice.

Thurs 2/5/2009 Prototype Iteration

Based on the Tuesday studio, refine the prototype to the point where it can be effectively tested with your target users. We'll talk more about testing

Tues 2/10/2009 Refined Visual/Mechanical Design

Early prototypes may be "works like" prototypes that test the interaction mechanisms with initial quick visuals. You should now put effort into the interesting aspects of the final look and feel.

Thurs 2/12/2009 Proposal for alternative designs (of components) to test

Decide what questions you about your design that can be resolved in testing over the next week. Bring proposals (possibly more than one so we can discuss) for what your testing will focus on, for discussion in studio.

Tues 2/17/2009 Individual Goals/Objectives for the Project

In an interdisciplinary team, each person will have specific roles and activities. We don't have a fixed view here of what you should do, but want you to think about it. Part of your individual grade will be based on how well you articulate and then complete your goals. See additional handout to come on this.

Thurs 2/19/2009 Testing Results

Bring in your notebooks and other materials that reflect what you learned in testing. Studio will be based on these with the goal of guiding what should be done for the next iteration.

Tues 2/24/2009 Goals for Final Prototype

At this point you are preparing to do the final development work and one last round of testing. Studio will be on where to put priorities, how to manage the things that need to be done, etc.

Thurs 2/26/2009 Prototype

Bring your current prototype and plans for testing for discussion in studio.

Tues 3/3/2009 Prototype

Studio on your current status and progress.

Thurs 3/5/2009 User Test Results

Bring your test results for studio. We'll discuss the last round of changes and presentation.

Tues 3/10/2009 Low Fidelity Prototype of Presentation

Bring a sketch of what you will do in your presentation for studio.

Thurs 3/12/2009 Final Project Documentation (see separate description to be passed out)

Studio on whatever needs to be done in the final rush.

Monday 3/16/2009 Presentations 6:30-9:00pm at the d.school

Presentation details to be announced as we get closer.

Grading P4

- 20%** **Process** – we're still looking for process, but we're more results-oriented
- 40%** **Solution** – design that works for your intended users
- 25%** **Implementation** – quality of implementation is important for design
- 15%** **Presentation** – The talk and the demo/poster