Interaction design for a Masters Project

Sandy Speicher, 09 March 2005

227x: Interaction Design for Learning Environments

Professor Mike Mills
Understanding anatomy spatially
Understanding anatomy through key views
Understanding terminology and its visual form
Testing understanding
Learning goals

– Understand we have the ability to create new solutions we see as insufficient

– Develop deeper understanding of current problems and generate new ideas (combine critical thinking and innovation)

– Learn to work in collaboration with others
Initial ideas
Exploration idea #1: Visualization software

**Representational**
- Logo Net
- SIMCity / The SIMS, etc.

**Diagrammatic**
- Inspiration
- Teachable Agents: Betty
Exploration idea #2: Learning/Process software

Legacy software

Figure 1. In addition to the explicit inquiry cycle which guides decisions about adaptation, STAR.Legacy includes simple software tools for modifying the resources available in each phase of inquiry. Typically, teachers work with and modify a STAR.Legacy that has been filled with activities and resources designed for inquiry into a specific topic like ecosystems or electrical circuits (see Border Blues.Legacy in Schwartz, Lin et al., in press; and DC.Legacy in Schwartz, Biswas et al., in press). STAR.Legacy makes it easy for teachers to add new resources including texts, patches to other programs or websites, and video clips of themselves, their colleagues, and their previous students. For example, video clips of colleagues commenting on various challenges that might occur in the Multiple Perspectives part of the inquiry cycle. This allows teachers to introduce the explicit inquiry model of STAR.Legacy.

Figure 2. The explicit inquiry model of STAR.Legacy has been in response to our observation that learning is enhanced when teachers and learners can “see where they are” in a complex sequence of inquiry. This became apparent during the implementation of an integrated model of instruction and assessment called SMART, which stands for “Scientific and Mathematical Arenas for Refining Thinking” (Barron et al., 1998; CTGV, 1997). Using the SMART model, classrooms progress from problem-based learning that develops a solid knowledge foundation to more open-ended project-based learning. Within the model, there are many opportunities for students to generate their own ideas, consult knowledge resources, share thoughts, and assess and revise their understanding. By moving through cycles of learning and revision in the context of related topics.

Figure 3. In a computer rich classroom, one way to use the notebook feature is to have each student generate ideas into a separate notebook. Alternatively, for the LBD.Legacy, the challenge was watched as a whole class, and students generated their initial ideas on paper. Afterwards, students offered their ideas in the whole class context, and the teacher combined those ideas into the collective notebook shown in the figure. The notebook served as a focal point for further discussion of the generated ideas. There are several reasons that Generate Ideas is an explicit component of the Legacy cycle. One is that it encourages students to share ideas; everyone has an opportunity to hear what others think. For the teacher, this complements the Look Ahead by providing a more specific assessment of what the students understand about the topic. For example, Figure 3 reveals that students.

Figure 4. Test Your Mettle. When students feel that they have developed their understanding of the original challenge, they are asked to complete Test Your Mettle before they can Go Public with their solution to the challenge. The “test” can take a number of different forms including multiple-choice tests with feedback, rubrics for evaluating products they plan to make public, and “near transfer” problems. Test Your Mettle is meant as a formative instructional event not a final exam. It is a chance for students to bump against the world to see if their knowledge is up to the task. If it is not, they should return to Research & Revise to improve their understanding.
User understanding
Personna & scenario development
Jackson

Studies hard, but doesn’t often get a lot accomplished. Just got his drivers license, now needs a car.

Avoids using the computer, thinks he’s too slow.

Has no idea what he wants to study in college, but can’t wait to go!

Amanda

Has lots of friends, uses technology like IM and email to stay in touch with them all.

Uses the computer as a tool for schoolwork and making stuff. But mostly for communicating.

Not even thinking about college yet, but assumes she’ll end up in business, maybe accounting.
Meghan

Plays on the all-county volleyball team and is in the drama club.

Knows how to use computers, but tends not to.

Is considering becoming an engineer, but mostly because her parents are.

Vince

Listens to hip-hop music all day long, despite his mom’s requests.

Uses the computer all the time. Developed his own web site when he was 12.

Wants to become an artist. Has lots of ideas about the way things should be. Maybe he’ll study film.
Yo. What's with all the plastic? There's got to be a way to make plastic or a plastic-like thing in a better way.
Audience assumptions

– High-school sophomores and juniors, approximately 14-16 years old

– Basic facility with technology, although varying levels of skill and knowledge

– Varying levels of emotional, academic, and interpersonal development

– Technology will be used individually, in small groups, and as a shared larger group.
My Criteria

– Technology is a support to the program, not a primary learning tool

– Technology needs to be creatable and implementable with low development cost

– Technology needs to have a low learning curve to accommodate different user needs
Support needs

Shareable reflections

News/research

Team workspace/capture ideas

Store shared photographs

Facilitates class communication
<table>
<thead>
<tr>
<th>Support needs and technologies</th>
<th>Technologies</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shareable reflections</td>
<td>Blog</td>
</tr>
<tr>
<td>News/research</td>
<td>RSS feed</td>
</tr>
<tr>
<td>Team workspace/capture ideas</td>
<td>Wiki</td>
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<tr>
<td>Store shared photographs</td>
<td>Post space</td>
</tr>
<tr>
<td>Facilitates class communication</td>
<td>All</td>
</tr>
</tbody>
</table>
Basic site structure

- Login
  - Home
  - Individual
    - Blog
    - Research List
  - Team
    - Brainstorm Idea Base
    - Customizable Wiki
  - Class
    - Photos
    - Blog Index
    - Workspace Images
  - Schedule
  - Maps
ECO-PRAXIS

Login:
Name: [Redacted]
Password: [Redacted]

→
JULY 13, 2005 9:05AM

Tour of Palo Alto Landfill
12:00
Meet on the oval

WORKSPACE
VINCE'S BLOG

July 13, 2005 6:35am
I read an article about how there are like a million shopping bags cluttering up the landfills. And they're not bio-degradable. Maybe there's something to do about this?

July 11, 2005 5:15pm
Dudes, that tour was awesome. Bucky was cool.

Other Blogs:
Inn

Research List:
- Corn-based...
- Shopping bags...
- Rain team
Waste-a-Team Workspace

BRAINSTORM

What are some ideas for problems we could solve?

Last update 7/11/05, 2:08p
by vince

Clothing
Plastic classification/recycle
Manufacturing?
Printing?
Educate people
Invent new plastics

other teams

Themes
BlueSky
Technology

➔ Brainstorm
Funny

Add
Delete
Manage

Pages