**Activity Design**

**CS 3724**

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**Activity Design**

**Goal:** work from problems and opportunities of problem domain to envision new activities

- Transform old activities to new activities that use technology
- Focus on system "what" not "how"
  - "conceptual design", "task-level design"
- Focus on improvements
- Iterative

Problem scenarios: work from current practice to build new ideas

Activity design scenarios: transform current activities to use new design ideas

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**From Requirements to Design**

- Requirements analysis sets the scene
- Design transforms people’s activities
  - New technology, new tasks, new experiences
  - And the cycle continues...
Activity Design
- Emphasizes broad scope of what is being designed
- Establishes and maintains usage context
- Also referred to as conceptual design or task-level design

Why System Functionality First?
- Designers can focus on what a system will do
- Postpone the “how” question until later
- Hard to analyze UI needs without knowing what a system will do
- UI difficulties can destroy a system’s usability
### An Example

Problem: giving a presentation

Old activities:
- Use computer to control slides
- Use laser pointer to point to slides
- Use printed notes to help you remember
- Use watch/clock to keep track of time
- Take questions verbally from audience

### An Example

Problem: giving a presentation

New activities:
- Use computer to control slides
- Use mouse-based virtual laser pointer to point to slides
- Use notes on computer screen to help you remember
- Use timer on computer screen to keep track of time
- Take questions from audience via online submission

### Envisioning New Activities

- **Three activity design concerns to keep in mind:**
  - **Effectiveness:** Designing tasks that meet real needs
  - **Comprehension:** Designing concepts and services that your users can predict, understand
  - **Satisfaction:** Designing tasks that are motivating and lead to feelings of accomplishment, satisfaction

### Designing for Effectiveness

- Innovation is good, but how much is too much?
  - Build on what is already working well
  - Engage stakeholders in cooperative design
- What parts of a task to support via technology?
  - Leverage other aspects of the work context, both people and things (distributed cognition)
- Balance tendency toward general solutions with the needs of specific tasks
  - Predict and support exceptions, provide special cases for common or critical tasks
Designing for Comprehension

- Cannot directly observe comprehension
  - Must rely on users’ behaviors, reactions, comments
  - Make inferences about their mental models
- Metaphors play a crucial role in this
  - Designers explore metaphors to get new ideas
  - Users evoke metaphors to understand new concepts
- Try to leverage users’ existing knowledge
  - Anticipate and support analogical reasoning
  - But look for ways to “break” current understandings

Designer’s Model

User’s Mental Model

Systematic, logical, comprehensive
Ad hoc, informal, incomplete

Designing for Satisfaction

- Automate tedious tasks, but try not to remove sources of reward or accomplishment
  - Carefully examine sources of reward, maintain or enhance opportunities for feelings of achievement
  - Use the computer to make tasks more personal, more stimulating, more “fun”
- Balance the needs of individuals with those of the groups they work with
  - The people who do the most “work” when using a system may not be those who get the most “benefit”
Refining an Activity Design

- Ongoing claims analysis of activity scenarios
- Capture key ideas, begin to build design rationale
- Document problems to address during UI design

Participatory design
- Brainstorming sessions with stakeholders
- Share rough ideas, get them to elaborate (metaphors can be very useful here as well)

Consistency and coherence
- Reuse actors and objects to increase coherence
- Complement with ongoing "what if?" reasoning to expand and test the overall design

Grocery Shopping - problem

- Soccer mom:
  - Screaming kids
  - Browsing strategy
  - Search strategy
  - Weekly repeats

- Shopping cart:
  - + 1 slot for 1 kid
  - - >1 kid?
  - - Have to push

Grocery shopping - activity scenario

- Online grocery
- Soccer mom:
  - Puts screaming kids outside
  - Repeating purchases, template
  - Search items quickly
  - Linked recommendations: beer + diapers
  - Browsing?