CS3724 Human-computer Interaction

Formative Evaluation of User Interaction: Introduction

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Formative Usability Evaluation

Users will evaluate the user interaction design sooner or later...

Let’s have them do it sooner, so we can make changes to improve usability!
Topics

- What it is: Formative vs. summative evaluation
- Types of formative evaluation
- Steps in formative evaluation
  - Last piece of the puzzle
  - We call it usability evaluation; it is NOT “user testing”
In contrast, summative evaluation is:

- Evaluation of interaction design to assess statistically the level of usability, after development is done.
- Often used for comparison with previous version, or with another system.
- Traditional human factors testing with rigorous statistics, statistical significance.
- Done with randomly selected participants.
Formative Usability Evaluation

Formative usability evaluation is diagnostic:
- Center of usability engineering process
- Evaluation of the interaction design, *as it is being developed*, for the purpose of improving usability
- Done with carefully selected participants
- Early and continual
  - "Those user interface people don't know what they're doing; they can't get it right the first time; they keep changing their minds"
  - Should have something to evaluate no later than 10% into a project schedule
Formative Usability Evaluation

- In sum, "When the cook tastes the soup, that's formative; when the guests taste the soup, that's summative."  (Robert Stakes)
Formative Usability Evaluation Methods

- Many possible ways to evaluate usability of an interaction design
  - Lab-based usability testing (Again, we do not do user testing)
  - Design walk-throughs – early but important
  - Expert usability inspection (e.g., Heuristic evaluation)
  - Remote usability evaluation methods (RUEMs) – usually post deployment
  - Other methods, variations
Formative Usability Evaluation Methods

- We’ll mention usability inspection, but focus on usability testing in the lab
- Caution: state-of-the-art in usability testing is more art than repeatable science
Formative Usability Evaluation

- Types of empirical formative evaluation data
  - As you might guess, a good match to data stated in usability specifications
  - Subjective — user opinion
  - Objective — directly observed user performance
Formative Usability Evaluation

- Types of empirical formative evaluation data
  - Qualitative — non-numeric data and results
    - Most important for finding and fixing usability problems
  - Quantitative — numeric data and results
    - For informally assessing usability achievements
    - To monitor converge via iterative cycles and for knowing when to stop iterating
Steps in Formative Usability Evaluation

- **Before** evaluation session:
  - Develop the experiment
- **During** evaluation session:
  - Generate and collect data
- **After** evaluation session:
  - Analyze data
  - Draw conclusions
  - Redesign & iterate