

# 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!

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## 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"



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## Formative Usability Evaluation



- 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

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## 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

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## 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)

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## 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



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## 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

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## 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

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## 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

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## 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

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