Introduction to Usability Testing

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Overview
What is usability testing?
- Determining the appropriate testing
- Selecting usability test type and method
- Understanding and identifying the purpose of usability testing
- Developing a user profile and selecting participants
- Creating a usability test storyboard
- Preparing the test environment
- Creating the test packet
- Defining team composition
- Collecting data
- Reporting results

Usability Testing
A formal and rigorous process involves:
- having users complete a series of typical or representative tasks on a product.
- letting the users complete tasks with as little interruption or intervention as possible.
- collecting information during a usability test by
  - Observing the users' actions.
  - Capturing comments as they "think aloud".
  - Analyzing information from responses to post-task and post-test questionnaires.

Usability Test Life Cycle
- Usability tests must be planned as part of product development.
- Usability testing must be integrated early and throughout the design and implementation phases of the development cycle.

Usability Testing Phases
Exploratory Test at Early Development
- Evaluate the cognitive model with a prototype.
- Key Benefit:
  - Permits creativity and flexibility in simulating early versions of a product.
- Objectives of the test:
  - Have a rough prototype for evaluating the effectiveness of design decisions.
  - Define issues to investigate based on earlier generic investigation techniques.

Methodology for Early Development Testing
- Low-fidelity prototyping:
  - A portion of the product is presented. Then the participants are encouraged to think aloud and communicate their thoughts.
- Optometrist tests:
  - Items are systematically varied one at a time to evaluate alternate possibilities.
- Design walkthrough:
  - Walkthrough an early design, following a task plan.
Assessment Test at Mid-Development
- Design decisions made during early development phase are tested.
- Key Benefit:
  - Helps evaluate realistic tasks to understand how well design decisions have been implemented.
- Objective of the test:
  - Qualitative data about user experience can be obtained (This test is not concerned with how participants perform the tasks, but how well they perform the defined tasks).

Methodology for Mid-Development Testing
- Formal laboratory methods evaluate common tasks as well as other important tasks
  - The most common tasks
  - Other important tasks
- Laboratory techniques
  - Thinking-aloud protocol
  - Co-discovery protocol (two participants working together)
  - Question asking

Validation Test at Late Development
- Evaluates the product compared to a predetermined usability standard
- Key benefits:
  - Provides useful information for benchmarking
  - Provides criteria for comparison
- Objectives of the test:
  - Validate that quality standards have been met
  - Ensure that usability goals that have been predefined
  - Explore fine-grained design choices that have not yet been tested

Methodology for Late Development Testing
- Formal laboratory methods evaluate:
  - Problems with the most common or other important tasks
  - If the user can perform tasks accurately and completely
  - If the user can perform tasks quickly
- Typical performance measures include accuracy, time to finish a task, time spent navigating, number of wrong choices, number of assists provided, and observations of frustration.
- Typical subjective measures include:
  - Preferences and reasons for them
  - Participants prediction of their own behavior
  - Self-reported ratings of participants satisfaction

Planning Usability Testing

Usability Testing Timeline

Preparing for a Usability Test
- Develop a user profile and select participants
- Create a usability storyboard
- Prepare a test environment
- Create a test packet
- Define the team’s composition
- Collect data
Develop a User Profile and Select Participants

- Identify and define the relevant skills and knowledge of the individuals who use or will use the product (target audience).
- Determine a user profile.
- Select participants:
  - Create screening questionnaire
  - Recruit participants:
    - Existing customers
    - User groups
    - Recruiting agency

Usability Storyboard

- Use real-life situations.
- Clearly explain and include all information necessary to complete each task.
- Do not give the participant too much information.
- Do not use jargon in the test that might give away information.

Storyboard Example

Act I
The facilitator
- greets the participant in the lobby of building C and explains the purpose of the test at a high-level. The participant completes the required forms (see the pretest checklist attached).
- shows the lab to the participant.
- explains how the test will unfold and orientate the participant to the audio and video equipment and the test tools.

Act II, Scene 1
- Ask if the participant has a topic to write about.
  - If yes, ask if there are any files to load onto the hard drive.
  - If no, provide a sample topic.
- Ensure that the participant has all the materials necessary to complete Exercise 1.

Prepare Test Environment: Usability Labs

- A main room where participant activities occur.
- A control room with the recording equipment.
- An observation room where the developers and other interested people can watch the activities.

Usability Labs at PST

Prepare Test Environment Equipment

- Three camcorders to capture the test participant’s face, monitor, and additional views.
- Scan converters to capture and convert the video signal output of the test participant’s computer screen and record the real-time images in a digital video tape.
- Lapel microphones to record the test participant’s voice and usability engineer’s assists. It also serves as the audio monitor for the data collectors and observers in the observation lab.
- VCRs and Editing Controllers are used to record and edit the videotape.

Test Packet
Test material:
- Consent and nondisclosure form
- Background and post-test questionnaires
- Interview questions
- Facilitator script

**Facilitator Script**
Create facilitator scripts as an attachment to the test plan
- Introduction to study
  - Overall introduction to the test
- Introduction to test exercises
  - Before participants begin an exercise
- Wrap-up exercise
  - After participants complete an exercise or after time for the test has expired
- Interview script
  - Standard questions to ask participants after the test is completed
- Final wrap up
  - After interviews thank and reward the participants

**Defining Team Composition**
- A team may have the following resources:
  - One facilitator
  - One or two data collectors
  - One recording operator
  - Any number of casual observers
  - Test Facilitator
- One person may do multiple tasks

**Collecting Data**
- Starting time
- Amount of time spent performing each task
- Number of times a participant referred the help manual
- Spoken comments
- Requests for help (include the reason for the request)
- Ending time
- Sequences of steps taken by each participant
- Problem-solving processes used
- Time to complete a task
- Number of errors made while attempting each task
- Time spent navigating
- Number of observations of frustration
- Participants’ ability to recall items

**Reporting Results**
- Statement of purpose
- The problem statement
- A summary of user profiles
- A compilation of questionnaire results
- A summary of observations
- A summary of participants’ reactions and comments during the interview process
- Data collection strategy
- Evaluation measures
- A summary of what aspects of the product worked well
- A summary of what aspects of the product need to be improved
- Recommendations based on findings
Conclusion