 **HUMAN-COMPUTER INTERACTION** THIRD EDITION DIX FINLAY ABOWD BEALE

chapter 9

evaluation techniques

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Evaluation Techniques

- Evaluation
 - tests usability and functionality of system
 - occurs in laboratory, field and/or in collaboration with users
 - evaluates both design and implementation
 - should be considered at all stages in the design life cycle

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Goals of Evaluation

- assess extent of system functionality
- assess effect of interface on user
- identify specific problems

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Evaluating Designs (expert based)

Cognitive Walkthrough
Heuristic Evaluation
Review-based evaluation

Cognitive Walkthrough

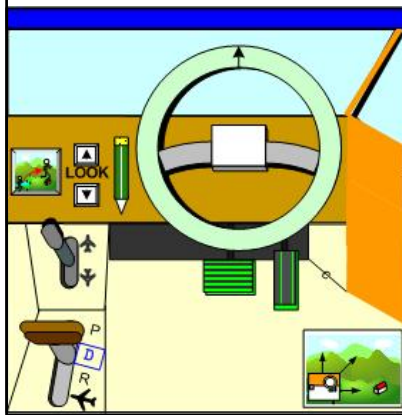
Proposed by Polson *et al.* 1992

- evaluates design on how well it supports user in learning task
- usually performed by expert in cognitive psychology
- expert 'walks though' design to identify potential problems using psychological principles
- forms used to guide analysis
- can be used to compare alternatives

Cognitive Walkthrough (ctd)

- For each task walkthrough considers
 - what impact will interaction have on user?
 - what cognitive processes are required?
 - what learning problems may occur?
- Analysis focuses on goals and knowledge: does the design lead the user to generate the correct goals?

Pen-based interface for LIDS



- UA: Press look up button
- SD: Scroll viewpoint up
- UA: Press steering wheel to drive forwards
- SD: Move viewpoint forwards
- UA: Press look down button
- SD: Scroll viewpoint down
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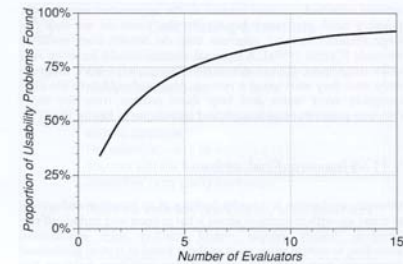
Pen interface walkthrough

- UA 1: Press look up button
 1. Is the effect of the action the same as the user's goal at this point?
Up button scrolls viewpoint upwards.
 2. Will users see that the action is available?
The up button is visible in the UI panel.
 3. Once users have found the correct action, will they know it is the one they need?
There is a lever with up/down looking symbols as well as the shape above and below the word look. The user will probably select the right action.
 4. After the action is taken, will users understand the feedback they get?
The scrolled viewpoint mimics the effect of looking up inside the game environment.



Heuristic Evaluation

- Proposed by Nielsen and Molich.
- usability criteria (heuristics) are identified
- design examined by experts to see if these are violated



Heuristic Evaluation

- Rank by severity
 - 0=no usability problem
 - 4=usability catastrophe
- Heuristics such as 10 from Nielsen
 - Visibility of system status
 - Match between system and real world
 - User control and freedom, etc.
- Heuristic evaluation 'debugs' design.

Review-based evaluation

- Results from the literature used to support or refute parts of design.
- Care needed to ensure results are transferable to new design.
- Model-based evaluation (e.g., GOMS, keystroke)
- Cognitive models used to filter design options
 - e.g. GOMS prediction of user performance.
- Design rationale can also provide useful evaluation information