Designing with the Mind in Mind: The Psychological Basis for UI Design Guidelines

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Abstract
UI design rules and guidelines are not simple recipes. Applying them effectively requires determining rule applicability and precedence and balancing trade-offs when rules compete. By understanding the underlying psychology, designers and evaluators enhance their ability to apply design rules. This two-part (160-minute) course explains that psychology.

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Introduction
User interface design principles, guidelines, and heuristics (collectively called "design guidelines") have a basis in the psychology of human perception, learning, memory, and problem-solving. Unfortunately, people who design and evaluate user interfaces usually learn the design rules without understanding their psychological basis.

UI design guidelines are not simple recipes to be applied mindlessly. Applying them effectively requires determining their applicability (and precedence) in specific situations. It also requires balancing the trade-offs that inevitably arise in situations when design rules appear to contradict each other.

By understanding the underlying psychology for the design rules, designers and evaluators enhance their ability to interpret and apply them. Explaining that psychology is the focus of this course. The first part focuses on perception; the second focuses on cognition.

Learning Objectives

After taking this course, attendees will understand the basic perceptual and cognitive psychology underlying UI design principles, guidelines, and heuristics. The hoped-for outcome is that the usability of interactive systems will be improved.

Intended Audience

This course is intended for software designers and developers of all experience levels, especially those who did not take perceptual and cognitive psychology in college or who want to update their knowledge of it. Others who may benefit: Software Q/A engineers, usability testers, development managers.

Agenda

Introduction (5 mins)

Perception (75 mins)

- Perception is biased by experience, context, goals
- Vision is optimized to perceive structure (Gestalt principles)
- We seek and use structure
- Color vision is limited
- Peripheral vision is poor, and visual search is linear unless target "pops" in periphery

Cognition (75 mins)

- Attention is limited; Memory is imperfect
- Limits on attention and memory shape our thought and action, e.g., change-blindness
- Recognition is easier than recall
- Easy: learning from experience, and executing learned actions; Hard: novel actions, problem-solving, and calculation
- Hand-eye coordination follows rules

Summary, Q&A, wrap-up, evaluations (5 minutes)

Instructor Biography

Jeff Johnson is a Professor in the Computer Science Department of the University of San Francisco. He also is a principal at Wiser Usability, a consultancy focused on usability and accessibility for adults 50+. After earning B.A. and Ph.D. degrees from Yale and Stanford, he worked at Cromemco, Xerox, US West, Hewlett-Packard Labs, and Sun Microsystems. In 1990, he co-chaired the first Participatory Design conference, PDC'90. He serves on the SIGCHI U.S. Public Policy Committee. He has also taught at Stanford University and Mills College, and in 2006 and 2013 he taught HCI as an Erskine Fellow at the University of Canterbury in New Zealand. He is a member of the ACM SIGCHI Academy and in 2016 received the SIGCHI Lifetime Achievement in Practice. He has authored or co-authored many articles and chapters on Human-Computer Interaction, as well as the books *GUI Bloopers*, *Web Bloopers*, *GUI Bloopers 2.0*, *Designing with the Mind in Mind*, *Conceptual Models* (coauthored with Austin Henderson), *Designing with the Mind in Mind, 2nd edition,* and *Designing UIs for an Aging Population* (coauthored with Kate Finn).