

# Adapting Learning Measures to Evaluation of Exploratory Search Interfaces

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# Measuring Learning: Bloom's Taxonomy

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- n Knowledge
- n Comprehension
- n Application
- n Analysis
- n Synthesis
- n Evaluation



# Measuring Learning: Bloom's Taxonomy

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- n Knowledge
- n Comprehension
- n Application
- n Analysis
- n **Synthesis**
- n **Evaluation**



# Exploratory Search as Learning

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- n Information-seeking is a two-step process
  - n Exploratory search to define boundaries
    - Corresponds to **Synthesis**
  - n Focused search to retrieve items
    - Corresponds to **Evaluation**

# Learning in Exploratory Search Interfaces

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- n If exploratory search involves learning, how can interfaces support this learning? (not exhaustive)
  - n Scratchpads or workspaces
    - Terry & Mynatt, 2002
  - n Enhanced “Back” button and history functions (including annotation)
    - Hightower et al., 1998
    - Jones et al., 2001
    - Capra & Pérez-Quñones, 2003
    - Komlodi, 2004
  - n Expansion of search to include local documents
    - Dumais et al., 2003



# Learning vs. Usability

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- n Can learning measures be used to evaluate exploratory search interfaces?
  - n Tasks created using Bloom's Taxonomy guidelines for synthesis/evaluation
  - n Compare between subjects using new interface vs. control

# Evaluation Issues

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- n Controlling for reading comprehension skill
- n How should subjects formulate responses?
  - n Paragraphs invite writing skill effects
  - n Concept maps not deep enough
- n Other variables
  - n Time spent -- is it useful in this context?
  - n Perceived level of effort
- n Evaluation of responses
  - n Just researcher?
  - n Researcher + domain experts?
  - n Inter-rater reliability

# How does Learning Differ from Usability?

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- n Depends on how we define usability . . .
- n Ability to measure learning would get beyond issues of how easy an interface is to use to how much it helps with complex information tasks.



# For more information:

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