Using a Recognition Memory Test to Measure Expert-Novice Differences in the Encoding of Physics Diagrams

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Method:

Study-portion
• Subjects shown a slideshow of 20 diagrams
• Each diagram shown for 10 seconds
• Subjects give a short verbal description

Test-portion
• Subjects shown either the same diagram or the other diagram from each pair
• Subjects respond “old” or “new” to each diagram shown

Results:
• Novices perform equally well on the two types of diagram pairs
• Experts perform significantly better on pairs that include a physics difference

Notable Pairs:

Signal Detection Theory:
• SDT is widely used to measure performance in recognition memory tests
• By using both the Hit rate and False Alarm rate, a measure of sensitivity, d', is not dependent on a subject’s tendency to answer “old” or “new” when unsure of the answer

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For a complete introduction to SDT, see: T. D. Wickens, Elementary Signal Detection Theory (Oxford University Press, New York, 2002).