

## Theory Matrix

<b>Theory</b>	Cognitive Information Processing
<b>Prominent Theorists</b>	Includes: J. R. Anderson; R. C. Atkinson; A. M. Collins; G. A. Miller; A. Paivio; M. R. Quillian; R. M. Shiffrin
<b>Learning Outcome(s)</b>	Declarative knowledge, procedural knowledge, memory
<b>Role of the Learner</b>	Attend to and process incoming information, relating it to what is already in memory
<b>Role of the Instructor</b>	Organize information, direct attention, enhance encoding and retrieval, provide practice opportunities, and help learners monitor their learning
<b>Inputs or Preconditions to Learning</b>	Sensory information in the environment
<b>Process of Learning</b>	Processing information and storing it in memory (including processes of attention, pattern recognition, encoding, chunking, rehearsal, and retrieval)

## Suggested Readings

- Dillon, R. F., & Sternberg, R. J. (1986). *Cognition and instruction*. Orlando: Academic Press.
- Gagné, E. D. (1985). *The cognitive psychology of school learning*. Boston: Little, Brown.
- Phye, G. D., & Andre, T. (1986). *Cognitive classroom learning*. Orlando: Academic Press.

## Reflective Questions and Activities

1. Consider cognitive information-processing theory in light of the epistemological traditions described in Chapter 1. To what tradition do CIP theorists seem most closely aligned? What evidence supports your choice?
2. Look for examples of the computer metaphor for learning and memory in popular culture and literature. Early episodes of *Star Trek* are likely sources. Analyze the characters' actions in terms of the information processing model. Are any of the model's assumptions or characteristics violated in the name of science fiction? If so, consider the implications for learning and instruction if those violations were indeed true.
3. Using the same learning episode you described in Question 4 of Chapter 2, generate a plan for improving performance that is based on cognitive information-processing theory. How does this plan differ from your behavioral plan? What aspects of learning are highlighted by each plan? Are they mutually exclusive, or might a combined plan be more effective than either alone?