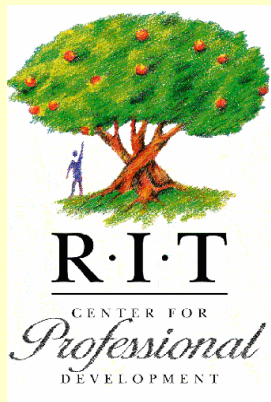


# How Students Learn



- Applying the Information Processing Model to the Learning Process
- Teaching Strategies that work with the Learning Process
- Student Assignments that work with the Learning Process

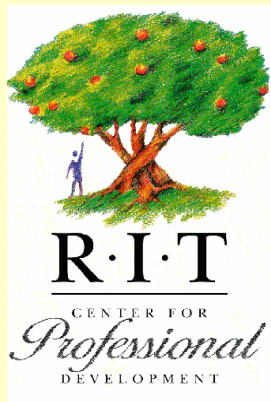


# The Information Processing Model



## Stages of the Information Processing Model:

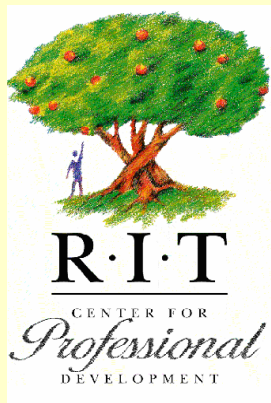
- Using the Senses and the Sensory Register
- Using Short-term Memory
  - Immediate Memory
  - Working Memory
- Facilitating Long-term Storage
  - Transfer
  - Consolidation



# Using the Senses and Sensory Register



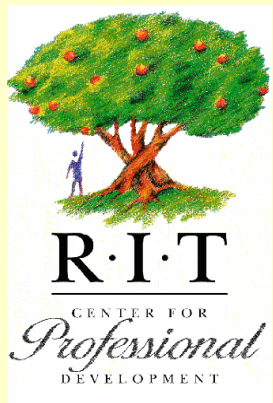
- Not all senses contribute equally to learning
- What goes into the Sensory Register is hierarchical in nature (threat, emotional salience, relevance/usefulness)
- The amount attended to is affected by “perceptual filtering” - attentional bias helps to determine what gets priority



# Short-term Memory Systems



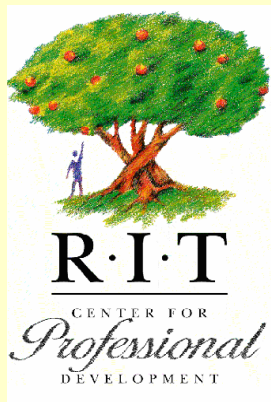
- Immediate Memory
  - Approximately 30 seconds (“use it or lose it”)
- Working Memory
  - Hours or days (“two-way street”)
  - Critical for reading, writing, mathematics, problem solving, etc.
  - “Chunking” increases capacity



# Long-term Memory Systems



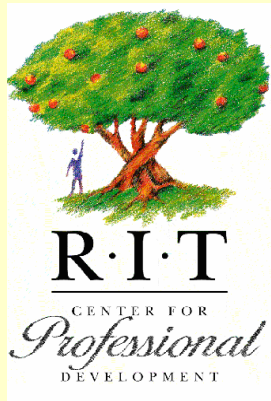
- Information is stored permanently
- Can be stored in a variety of ways:
  - Semantic/Declarative Knowledge
  - Episodic Knowledge
  - Emotional Memory
  - Procedural/Reflexive Memory
  - Automatic/Motor Memory



# Long-term Memory Processes



- Storage – “Makes Sense” vs. “Meaningful”
- “Transfer”
- “Consolidation”
- Retrieval

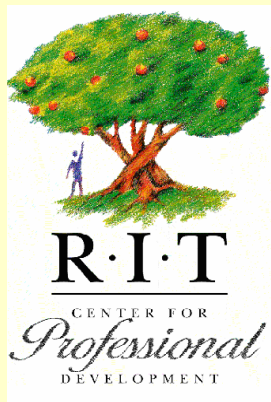


# Lesson Planning



“Teachers spend the majority of their time planning lessons that make sense...teachers need to be more mindful of helping students establish relevance.”

~ David A. Sousa ~

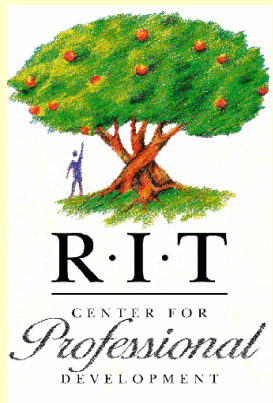


*(How the Brain Learns, 2001)*

# Lesson Plan Components



- Anticipatory Set
- Learning Objectives
- Purpose
- Input
- Modeling
- Check for Understanding
- Guided Practice
- Closure
- Independent Practice

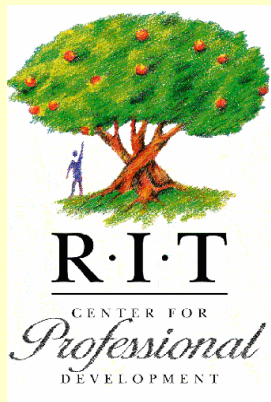




# Teaching Strategies that Work with the Learning Process



- Draw upon previous knowledge
- Make information relevant, not just “make sense”
- Use “attentional bias” to help students attend to appropriate material
- Use repetition, rehearsal, concept formation, “chunking”, and mnemonics to aid consolidation and transfer to long-term memory
- Give students time and opportunities to process new information and practice it
- Provide feedback in a variety of ways
- Encourage students to understand and use the Learning Process to their advantage



# Student Assignments that Work with the Learning Process



- Calling up Prior Knowledge  
***What do I already know about this?***  
(journaling, drawing, answering a question, brainstorming)
- Sensory Register and Working Memory  
***How can I make sense of this?***  
(Highlighting notes/texts, outlining, mind mapping, creating “cheat sheets”, vocabulary logs and lists, flash cards, mnemonics, practice problems, concept sheets, etc.)
- Long-term Memory  
***Why should I remember this?***  
(reflective papers, projects, programming, case studies, research, autobiographical activities, poster presentations, etc.)

