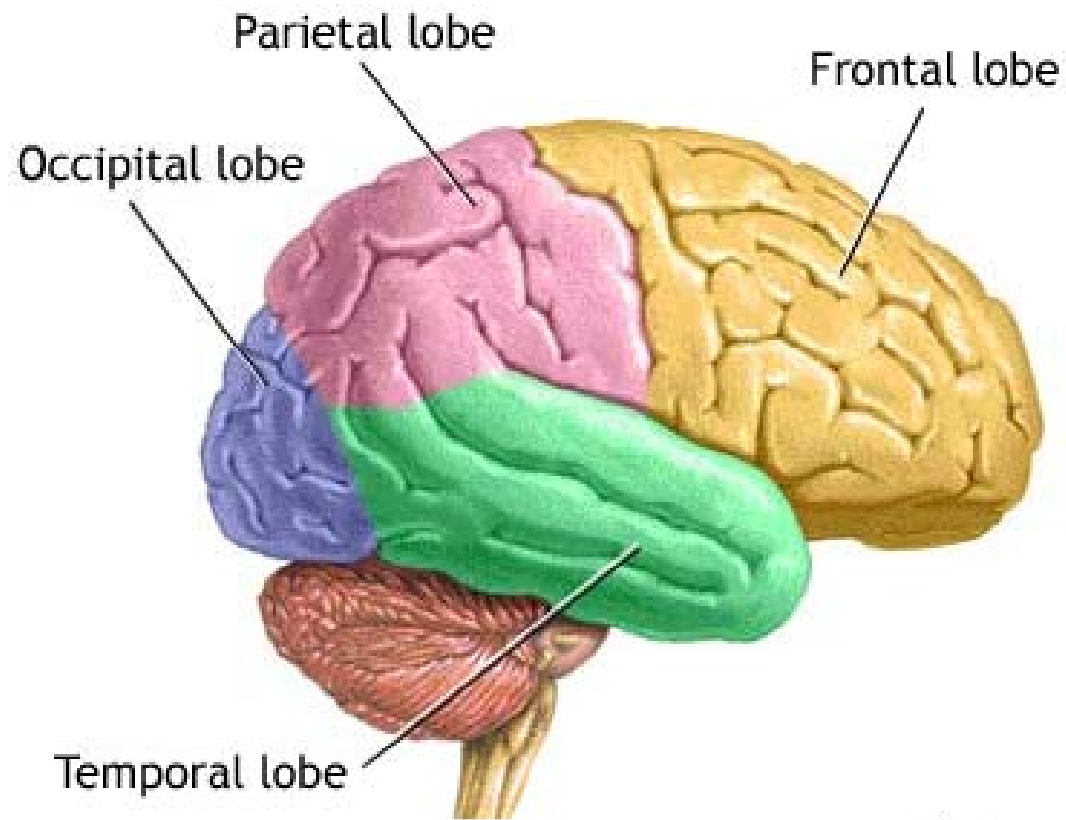


A wooden desk with a yellow pencil and a clear plastic folder. The pencil is on the left, and the folder is on the right. The text is centered on the folder.

# ***Executive Function***

Presented by  
Patti Jenks  
Principal, ASSETS  
High School

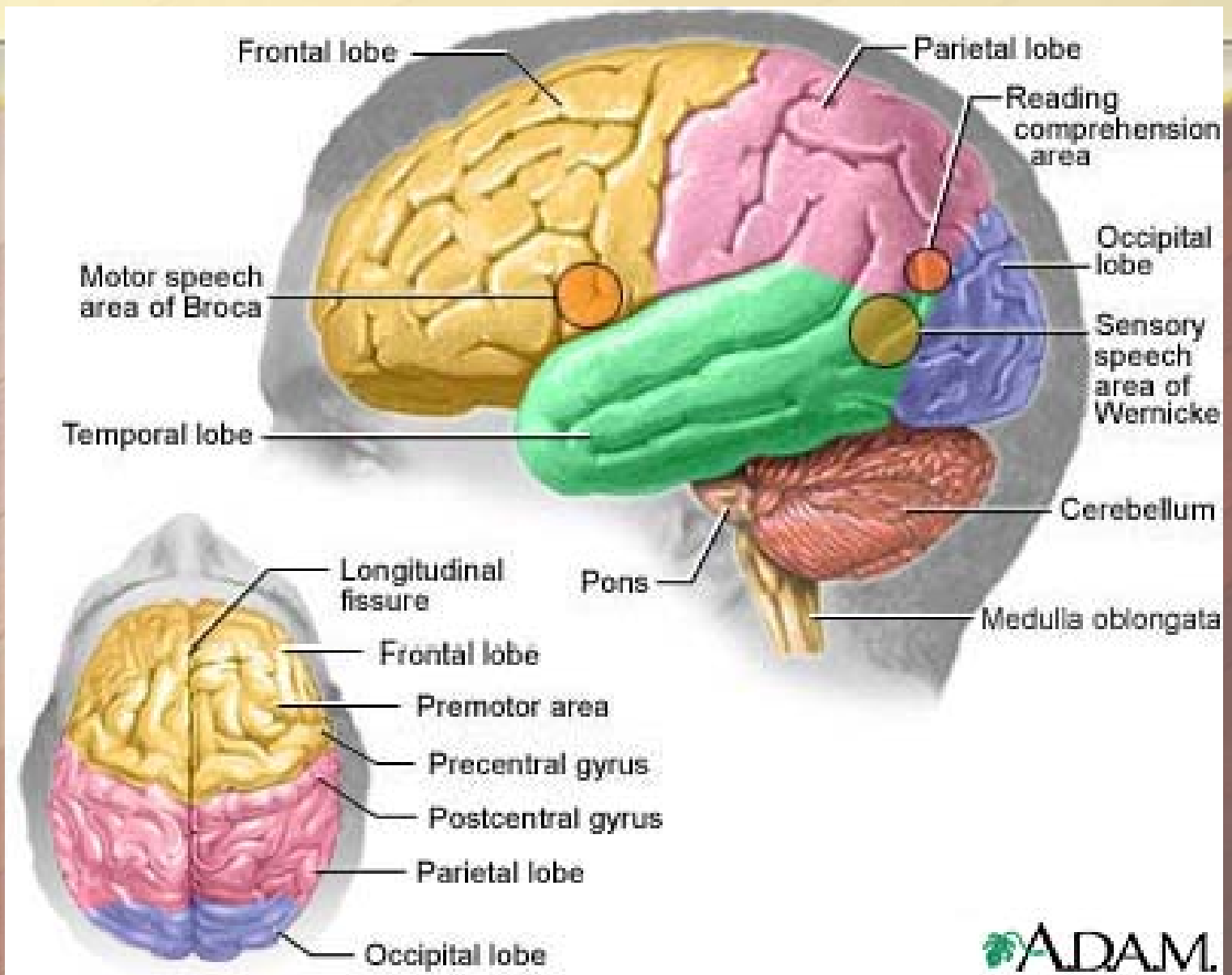
# 4 Major Lobes of the Brain



ADAM.

NO 2 HB

## Another look inside....



## How does the brain work?

- **Parietal Lobe** - orientation, calculation, certain types of recognition
- **Occipital Lobe** - visual processing
- **Temporal Lobe** - sound, speech and some parts of long-term memory
- **Frontal Lobe** - planning and thinking
- **Pre-frontal Lobe** - working memory
- **Motor Cortex** - body movement
- **Cerebellum** - coordinates every movement; monitors impulses from nerve endings in the muscles; important in learning/performance, timing of complex motor tasks

## Brain Facts

- There is a parallel between development of the brain and development of the child's ability to act, think, and feel.
- Growth spurts and plateaus occur at approximately 4, 8, 12, 15, and 20.
- Motor function, cognitive development, and brain development are not unified processes. Think webs.
- The development of the prefrontal cortex (working memory) is separate from the occipital cortex (analyzes visual information)
- Executive functions are generally not fully developed until 23 years of age, however, not everyone reaches maturation at the same point in time
- Brain functions are multiple, not single capacities
- Neural circuits are routed through the frontal lobes

## What is executive function?

The Learning Brain, Sarah-Jayne Blakemore and Uta Fritch

The capacity that allows us to control and coordinate our thoughts and behaviors.

- ability to direct our attention
- plan future tasks
- inhibit inappropriate behavior
- keep more than one thing in mind at a time

## Executive Function, Lynn Meltzer

Complex cognitive processes that serve ongoing goal directed behavior.

- Regulates goal-directed behavior
- Contextualizes intended actions in light of past knowledge and experience, current situational cues, expectations of the future, personally relevant values and purposes
- Provides a sense of readiness, agency, flexibility and coherence

*I remembered the strategy, but I forgot to be strategic.*

## Overview of Executive Function Skills

- 
- Planning
  - Goal setting
  - Organization
  - Time Management
  - Working Memory
  - Metacognition
  - Response inhibition
  - Self regulation of affect
  - Task initiation
  - Execution
  - Implementation
  - Flexibility
  - Goal-directed persistence

# Write a paragraph...

## **Prepare to Write**

- Planning
- Goal Setting
- Organization
- Memory
- Focus

## **Pick up Pencil**

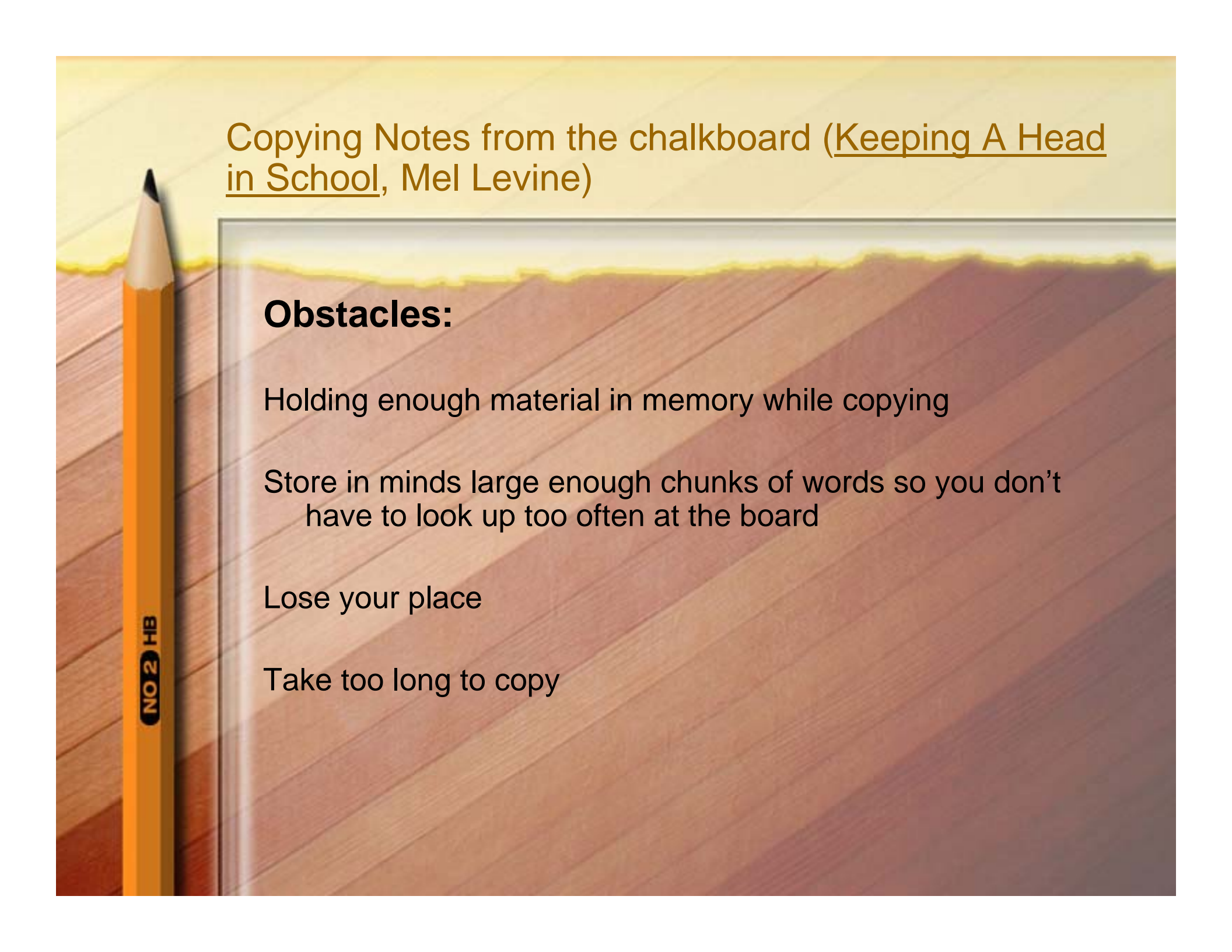
- Motor integration
- Goal Setting
- Organization
- Initiation
- Working memory

## **Activate Process**

- Working memory
- Initiation/Execution
- Organization
- Time Management
- Self Regulation
- Implementation

## **Review**

- Planning
- Goal Setting
- Organization
- Focus
- Working memory



## Copying Notes from the chalkboard (Keeping A Head in School, Mel Levine)

### **Obstacles:**

Holding enough material in memory while copying

Store in minds large enough chunks of words so you don't have to look up too often at the board

Lose your place

Take too long to copy

## How a motor action works - Mel Levine, Keeping A Head in School

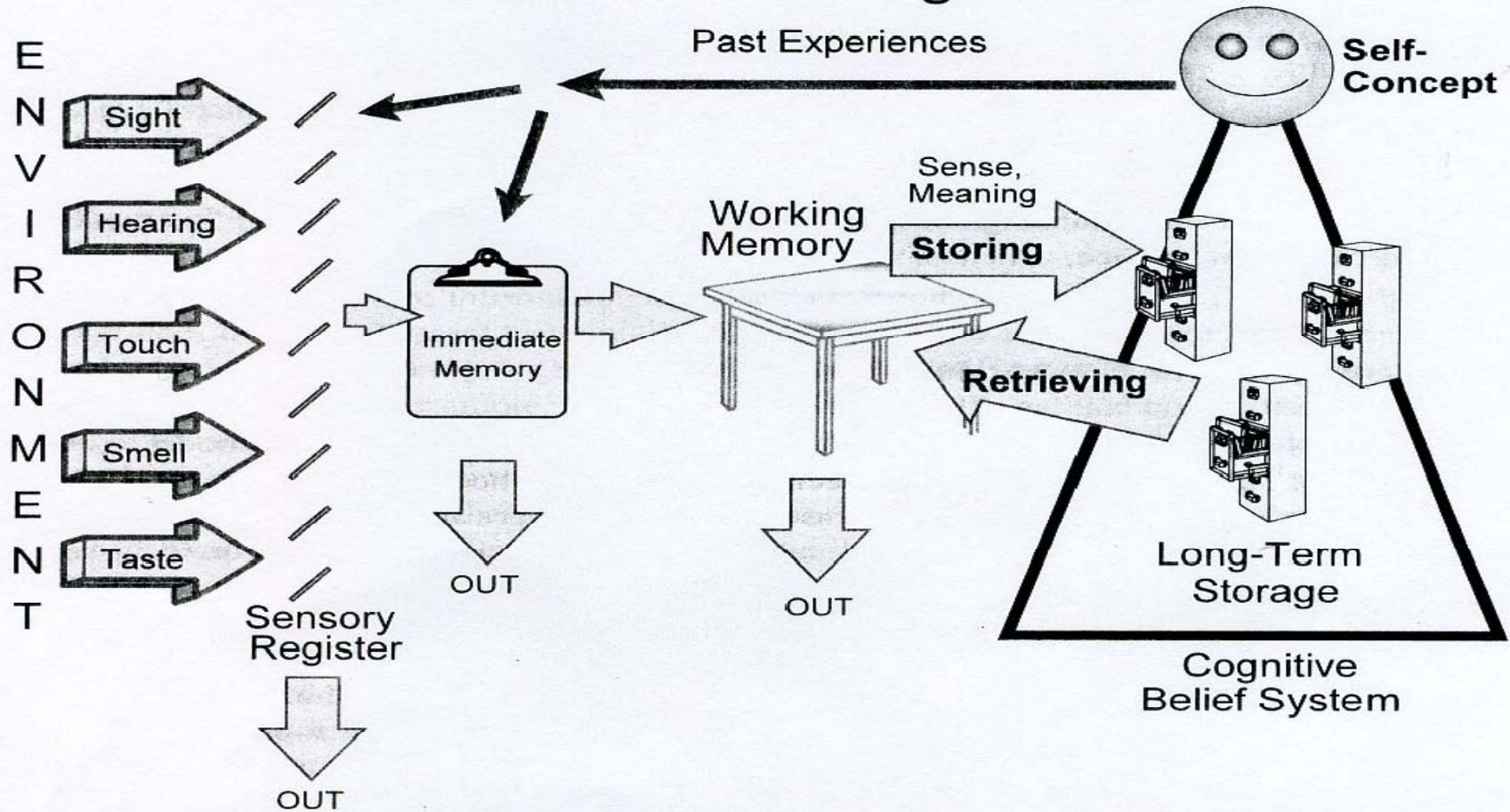
- Knowing what you want to do
  - Gathering the information needed to do it
  - Making up a motor plan (Preview)
  - Getting the right muscles to work in the right order

### Making adjustments

- Self Monitoring (watching what you're doing)
- Remembering what you wanted to do
- Knowing if and when you are finished

NO 2 HB

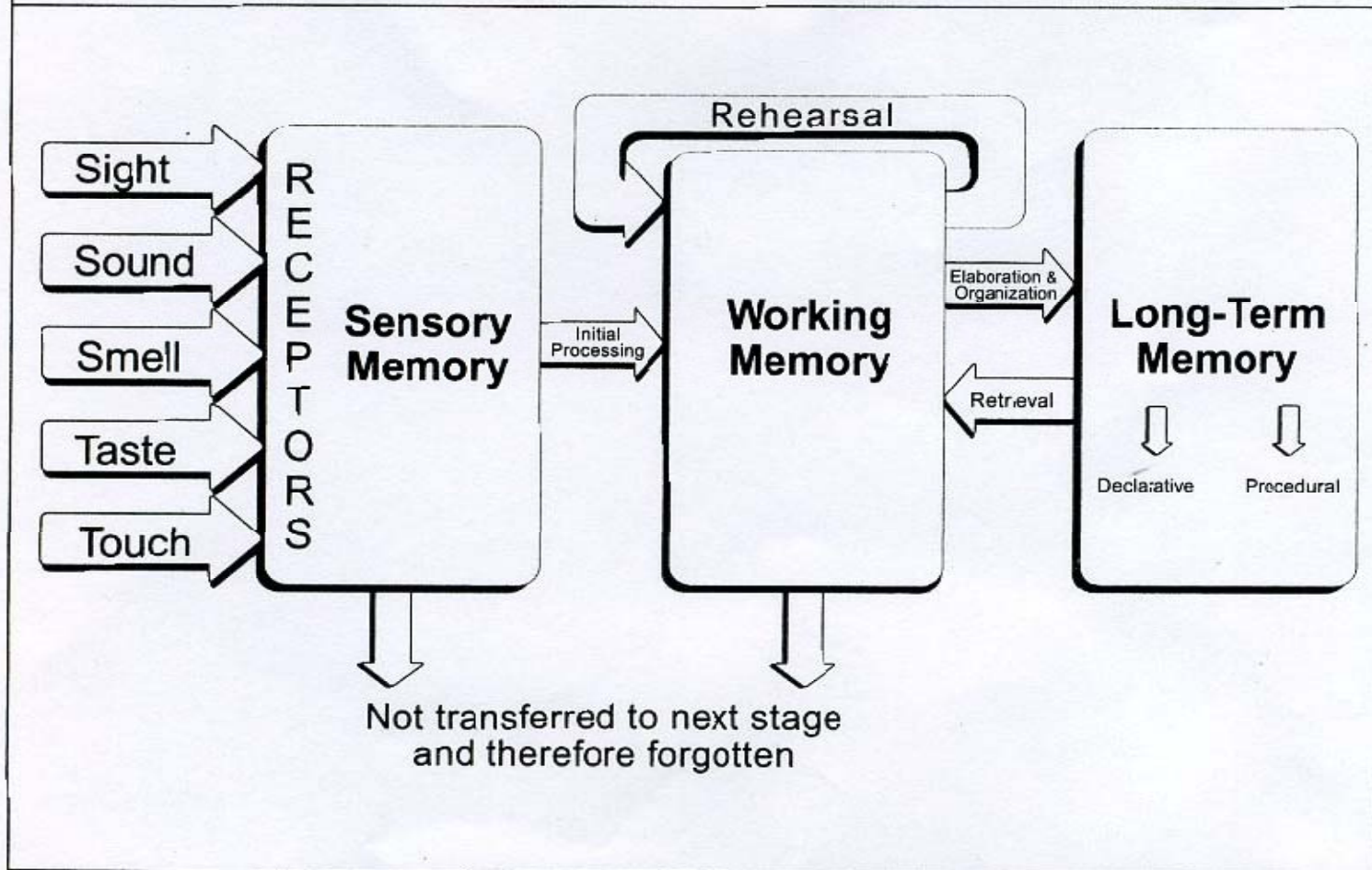
# Information Processing Model



**Figure 2.1** The Information Processing Model represents a simplified explanation of how the brain deals with information from the environment. Information from the senses passes through the sensory register to immediate memory and then on to working memory for conscious processing. If the learner attaches sense and meaning to the learning, it is likely to be stored. The self-concept often determines how much attention the learner will give to new information.

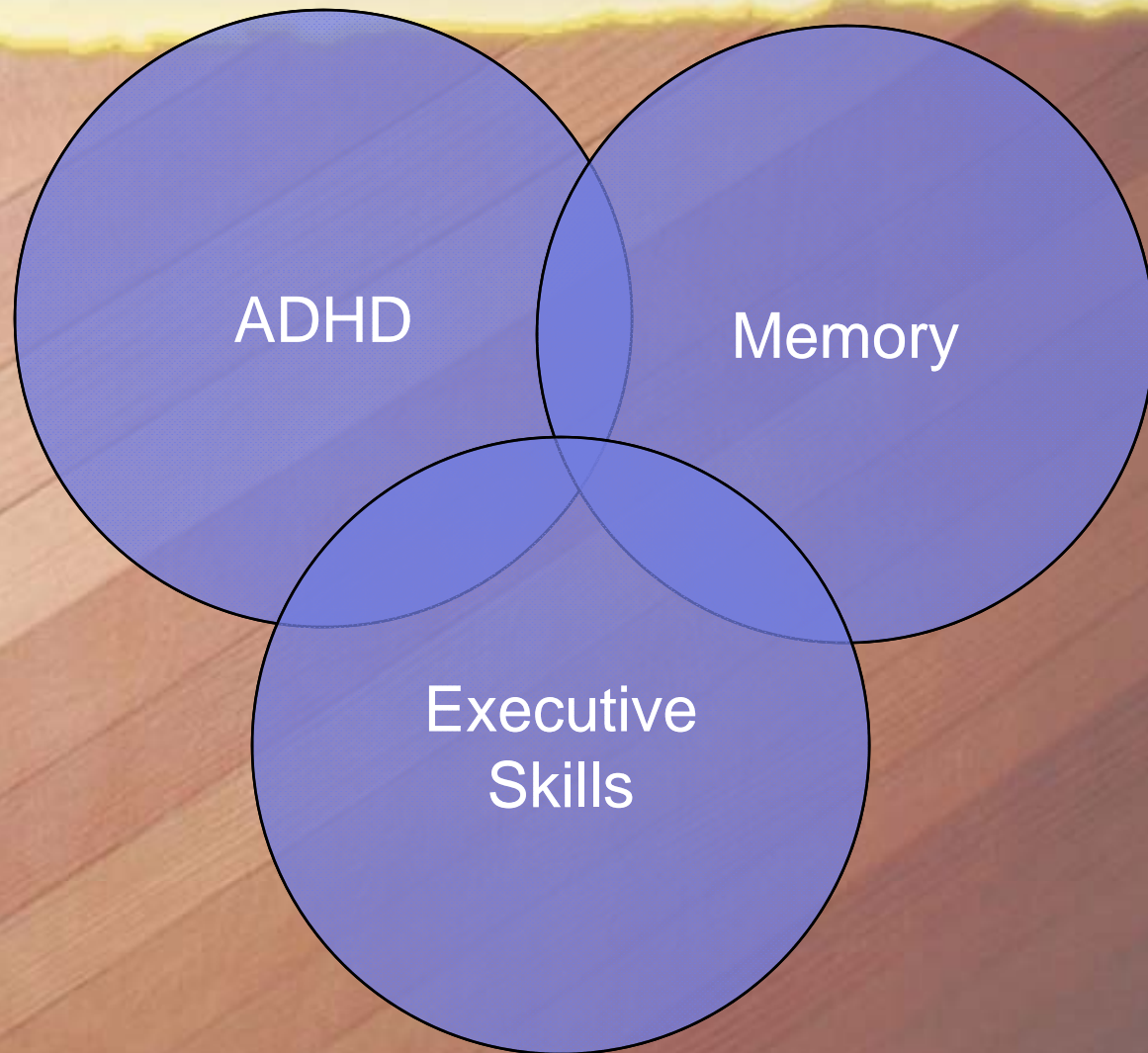
Graphic found on page 39 or [How the Brain Learns](#) by David Sousa, Corwin Press, 2006.

~ Figure 5.1 ~  
**AN INFORMATION PROCESSING MODEL**



Graphic found on page 77 of Brain Matters – Translating Research into Classroom Practice by Patricia Wolfe, Association for Supervision and Curriculum Development, 2001.

# Triple Whammy



NO 2 HB

## Strategies to Support Executive Function Development

1. Structured systematic approach to instruction
2. Strategy integration
3. Coaching
4. Reflection
5. Progress monitoring

# Structured, Systematic Approach

## Literacy Development - Orton Gillingham and Slingerland

- Establish routines
- Direct instruction
- Provide rehearsal
- Expand connections
- Plan multisensory learning experiences
- Teach for transfer
- Deliver through hands-on activities
- Teach focus

# Strategy Integration

Heighten awareness and expectation for practice of strategies and response to outcomes (i.e., ASSETS Integrated Behavior/Counseling)

- Inhibit immediate response
- Stop, look, listen
- Engage executive processes
- Evaluate behavior
- Substitute a more adaptive response
- Take time to analyze and set goals
- Plan and develop an organized approach for communication

*Memory, Attention, Executive Function?*

# Coaching

Develop the skills for “self-talk”

- Regulate
- Focus
- Plan
- Organize
- Initiate
- Analyze

# Well-Structured Talk

- Dr. Catherine O'Connor
- 9 year project socialize intelligence through language use study resulted in project to develop academically produced talk in classrooms.

- Accountable to Community


Everyone has an obligation to hear and understand

Accountable to standards of reasoning

Good standards of organization

Accountable to knowledge

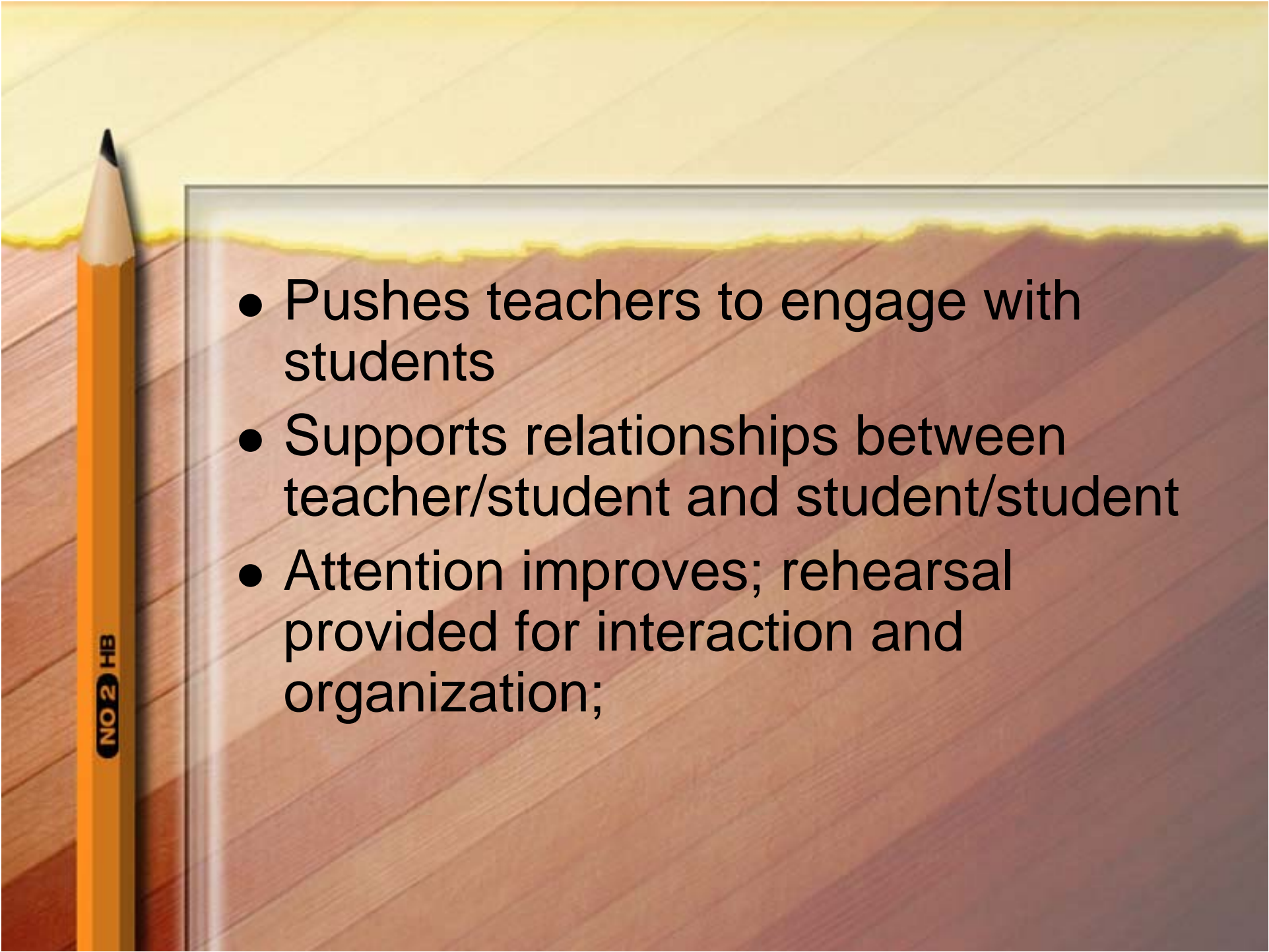
There are facts

- 
- Say more
  - Agree/disagree
  - Repeat what was said
  - Why do you think that
  - Where's your evidence
  - What is it

Instead of “Yes, you’re right” “who can repeat/state in your own words/restate \_\_\_\_\_ answer(s).

Do you agree or disagree?

I know I might be called on...my view is important

- 
- Pushes teachers to engage with students
  - Supports relationships between teacher/student and student/student
  - Attention improves; rehearsal provided for interaction and organization;

# Reflection

- Pause and assess
  - Self -Monitor/checking
  - Shifting flexibly
  - Memorizing
  - Prioritizing
  - Organizing
  - Planning and goal setting
- 
- Judge direct appropriate strategies
  - Situational demands
  - Problem solve

# Progress Monitoring - Executive Skills in Children and Adolescents, Dawson & Guare

*The goal of assessment is intervention*

Step 1 - Collect assessment information

Step 2 - Review data; identify specific executive (domain) skill to target

Step 3 - Develop a behavioral goal

Step 4 - Design the intervention

Step 5 - Evaluate the effectiveness

*Student is actively involved in all steps*



## The relationship between reading comprehension and executive control (Lynn Meltzer, Executive Function in Education)

- Reading must make sense
- Understanding is the result of planning to understand
- Prioritizing leads to maximize time and effort
- Accessing background information helps organize new information
- Self-checking enhances goal achievement
- Having a flexible mindset provides opportunities for increased understanding
- Understanding is improved by self - assessing

## Key Points

- Executive Function skills are an integral part of brain function
- Executive Function skills and processes continue to develop through our early 20's (or later)
- Issues with attention, language, and memory compromise the effectiveness of Executive Function skills and processes
- Executive Function skills and processes can improve with strategic support, instruction, practice

## References and Resources

Dawson, Peg and Guare, Richard, Executive Skills in Children and Adolescents. The Guilford Press, 2004. ISBN 1-57230-928-8

McCloskey, George, Ph.D., *Executive Skills and Learning*, presented at the 2007 Learning and Brain Conference, Harvard University, Cambridge, Mass.

Meltzer, Lynn, Executive Function in Education. The Guilford Press, 2007. ISBN-13: 978-1-59385-428-7

Sprenger, Marilee, Learning and Memory: The Brain in Action. Association for Supervision and Curriculum Development, 1999. ISBN 0-87120-350-2

Souza, David A., How the Brain Learns. Corwin Press, Inc., 2006. ISBN 978-1-4129-3660-6

Wolfe, Patricia, Brain Matters. Association for Supervision and Curriculum Development, 2001. ISBN 0-87120-517-3

## Websites

- LD Online  
<http://www.ldonline.org/indepth/study>
- National Institute of Health  
<http://www.nimh.nih.gov/health/publications/teenage-brain-a-work-in-progress.shtml>
- All Kinds of Minds - parent toolkit  
<http://www.allkindsofminds.org>
- Neuroscience for Kids  
<http://faculty.washington.j.html>
- National Geographic - Memory  
<http://ngm.nationalgeographic.com/2007/11/memory/brain-interactive>

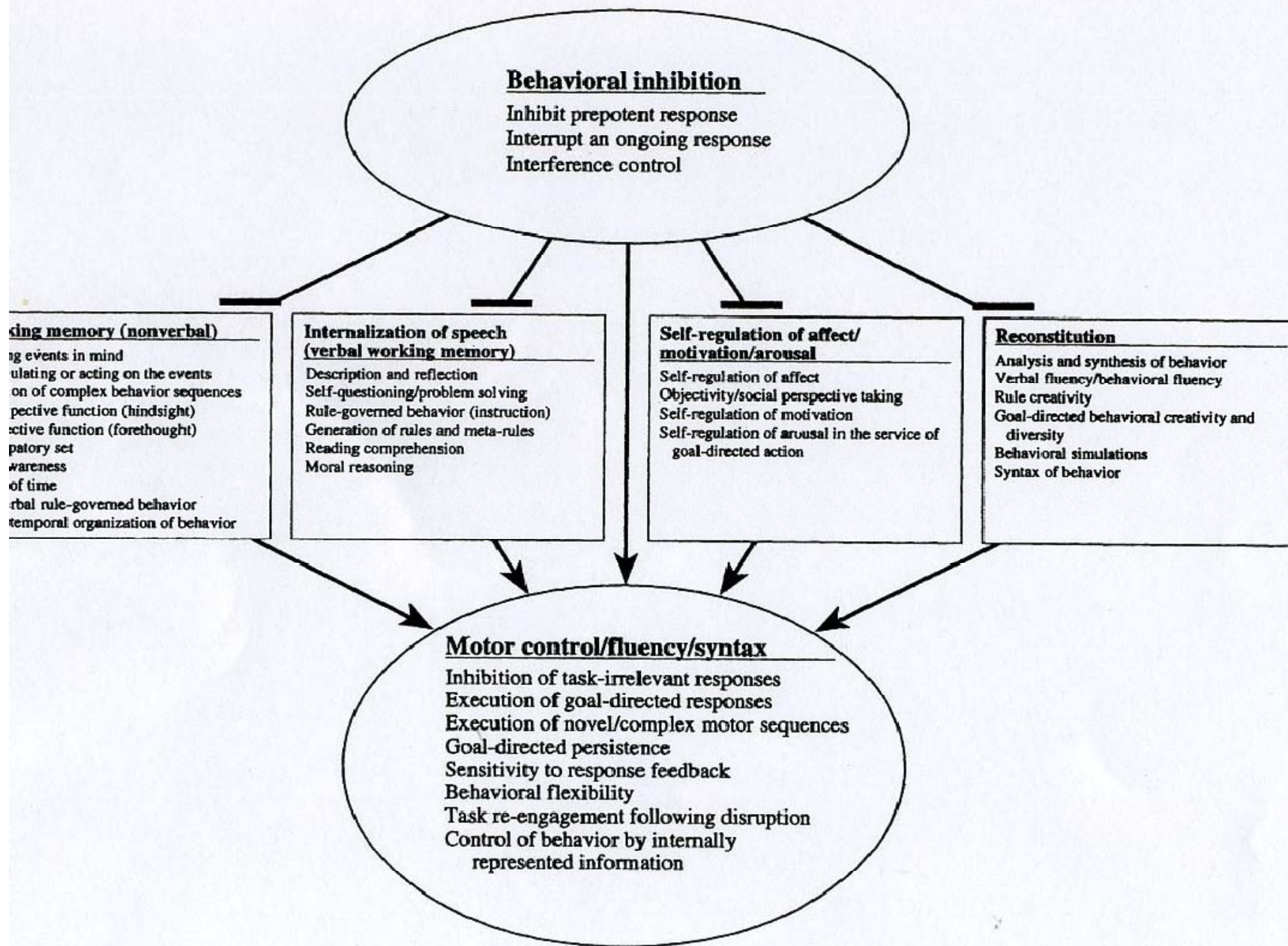
# Helpful Resources

For graphic organizers

- [http://gotoscience.com/Graphic\\_Organizers.html](http://gotoscience.com/Graphic_Organizers.html)

Study Skills

- <http://www.Idonline.org/indepth/study>
- <http://www.studygs.net/>



complete hybrid model of executive functions (boxes) and the relationship of these four functions to the behavioral inhibition systems. From Barkley (1997, p. 191). Copyright 1997 by The Guilford Press. Reprinted by permission.