

A decorative graphic on the left side of the slide consisting of white lines and circles on a blue gradient background, resembling a circuit board or neural network.

MY STUDENT HAS EXECUTIVE FUNCTION DEFICITS... NOW WHAT?

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SPEAKER DISCLOSURES

- Reed currently serves as a Vice President on the board of the Speech-Language-Hearing Association of Virginia (SHAV).
- Reed does not receive any financial compensation for this webinar.
- Reed does not have any financial stake in any of the products, services, or resources described in this presentation.

LEARNING OUTCOMES

Upon completion of this webinar, participants will be able to:

- Define executive functions (EFs) and describe their role in children's development
- Describe the occurrence and prevalence of EF deficits
- Implement direct and indirect services for children with EF deficits

The background is a blue gradient with abstract white lines resembling circuit traces or data paths in the corners. These lines connect small circles, some of which are larger than others, creating a network-like structure. The lines are more prominent in the top-left and bottom-left corners, and less so in the top-right and bottom-right corners.

WHAT ARE EXECUTIVE FUNCTIONS?

WHAT ARE EXECUTIVE FUNCTIONS?

- Cognitive skills used to perform goal-directed behaviors
- Three main functions:
 - Plan
 - Organize
 - Do (execute)



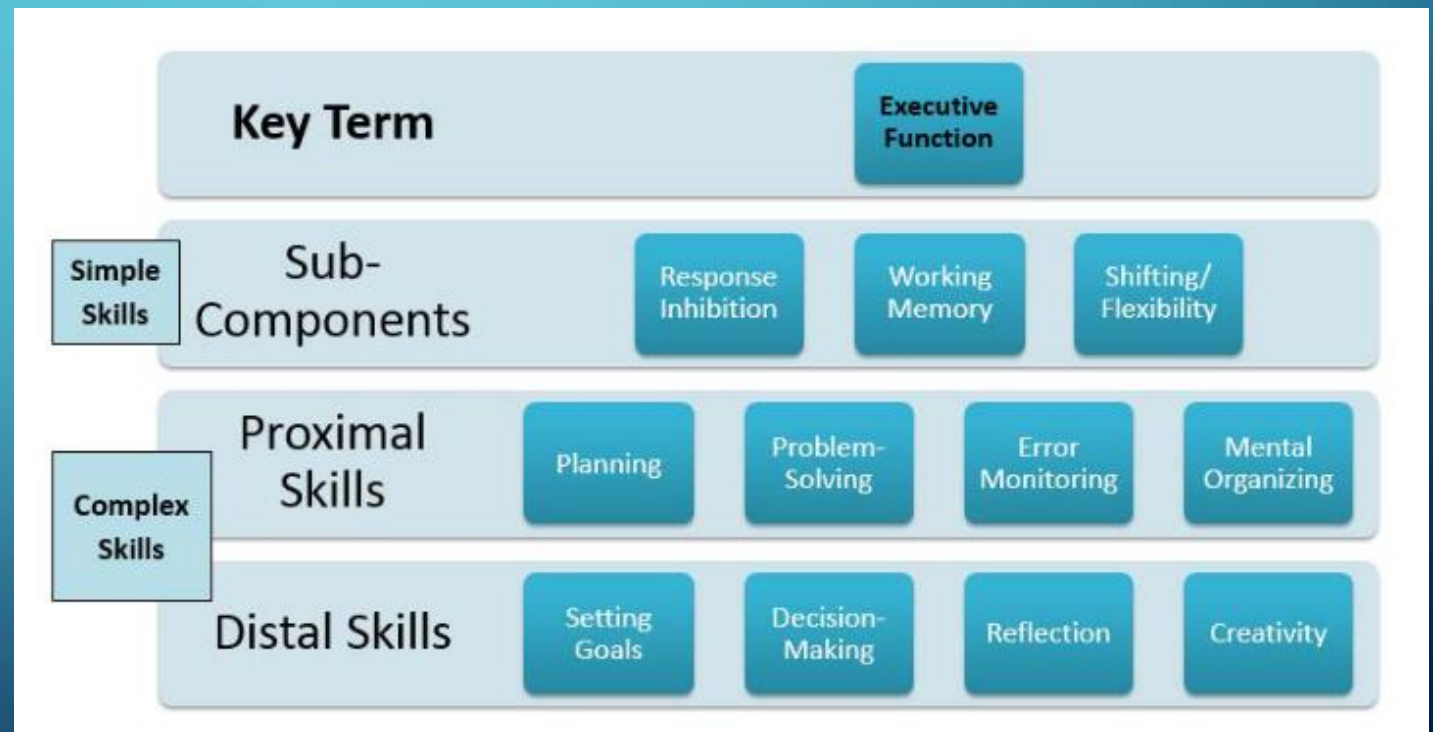
EF COMPONENTS

Traditional “3-component” model

- Working Memory
- Inhibition
- Shifting

3-component model: Miyake et al., 2000

Image: Jones et al., 2016



EF COMPONENTS: THE “SMART BUT SCATTERED” MODEL

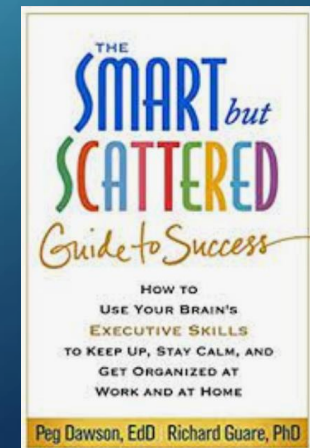
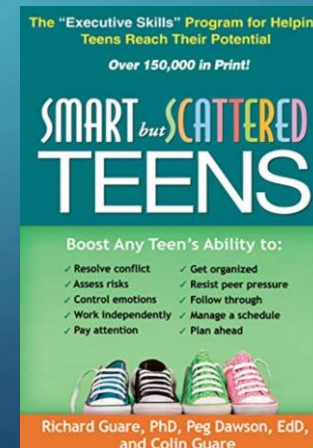
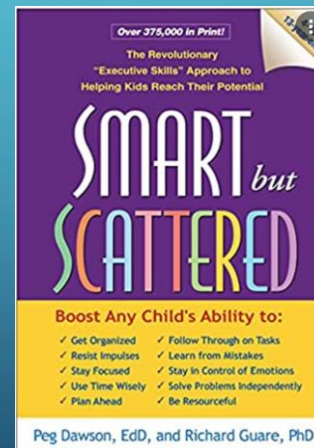
- Response Inhibition
- Working Memory
- Emotional Control
- Sustained Attention
- Task Initiation
- Planning / Prioritization
- Organization
- Time Management
- Goal-Directed Persistence
- Flexibility
- Metacognition

White text = “Cold” EFs

- “Cognitive,” logical, rational

Black text = “Hot” EFs

- Emotional



Smart but Scattered: Dawson & Guare, 2009

RESPONSE INHIBITION

- Resisting distractions, urges, temptations
- Thinking before you act
- Hot EF



WORKING MEMORY

- Holding information in your head while you perform a complex task
- Not to be confused with short- or long-term memory
- Cold EF



When anyone asks me to grab more than one thing from another room, expecting me to remember them all.



WORKING MEMORY: BONUS CONTENT

- Fun fact: Working Memory moderates language comprehension in children with language disorder, but *not* in their language-typical peers.

EMOTIONAL CONTROL

- Ability to manage emotions while working on tasks
- Hot EF



SUSTAINED ATTENTION

- Maintaining attention despite boredom, fatigue, distractibility
- Only relevant for non-preferred tasks
- Hot EF



TASK INITIATION

- Ability to begin projects without undue procrastination
- Hot EF



PLANNING / PRIORITIZATION

- Create a plan to reach a goal
- Determine what's important or not important
- Cold EF



ORGANIZATION

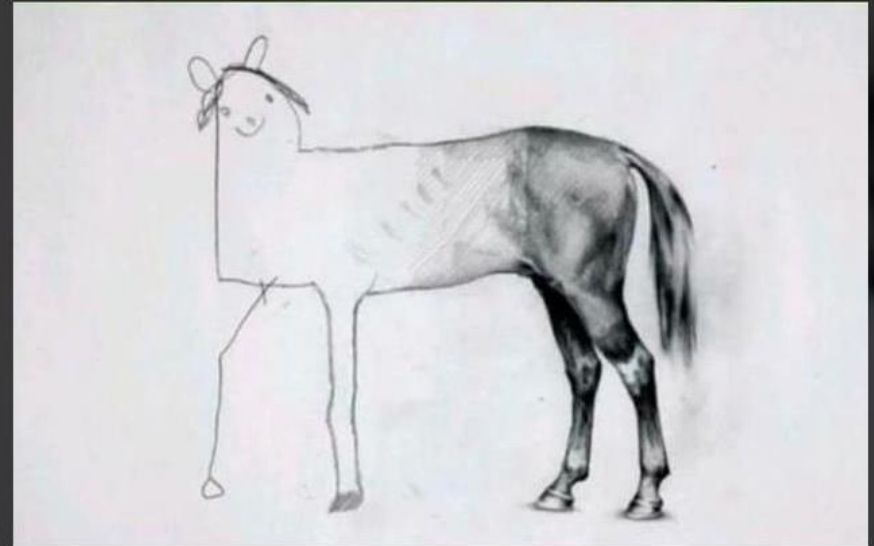
- Create and maintain systems to keep track of information or materials
- Cold EF



TIME MANAGEMENT

- Estimating how much time you have
- Estimating how long tasks will take
- Allocating time, staying within time limits and deadlines
- Cold EF

When there is 5 minutes remaining on your test



TIME MANAGEMENT (BONUS CONTENT)



GOAL-DIRECTED PERSISTENCE

- Having (or making) a goal
- Following through to completion, despite distractions or competing interests
- Hot EF



FLEXIBILITY

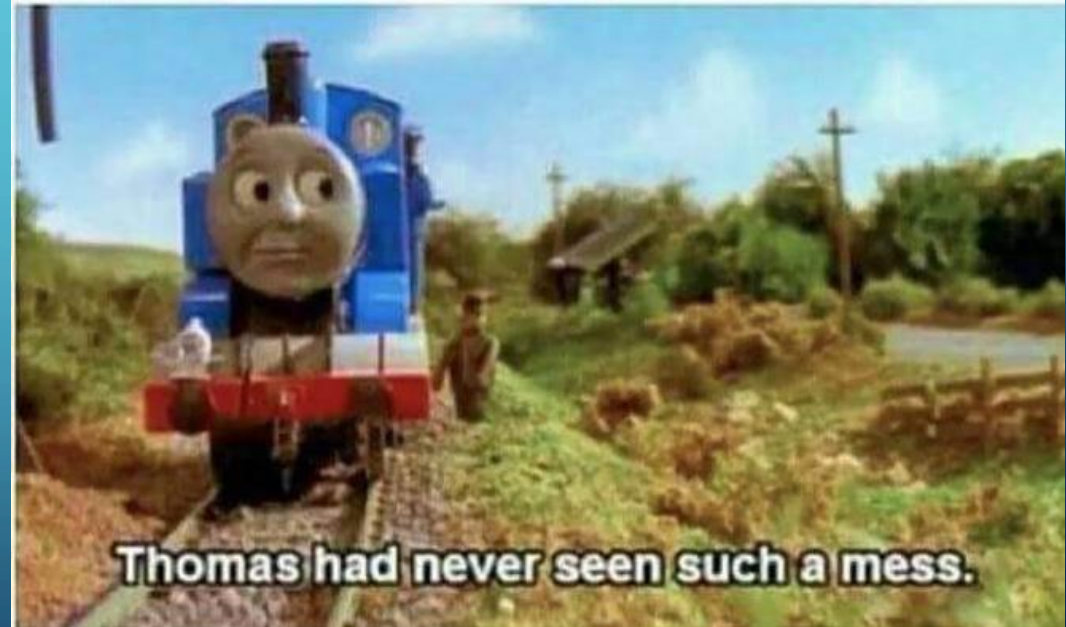
- Ability to revise plans in the face of obstacles, setbacks, new information, or mistakes
- Hot EF



METACOGNITION

- Self-monitoring and self-evaluating skills
- Observing your own problem-solving
- Cold EF

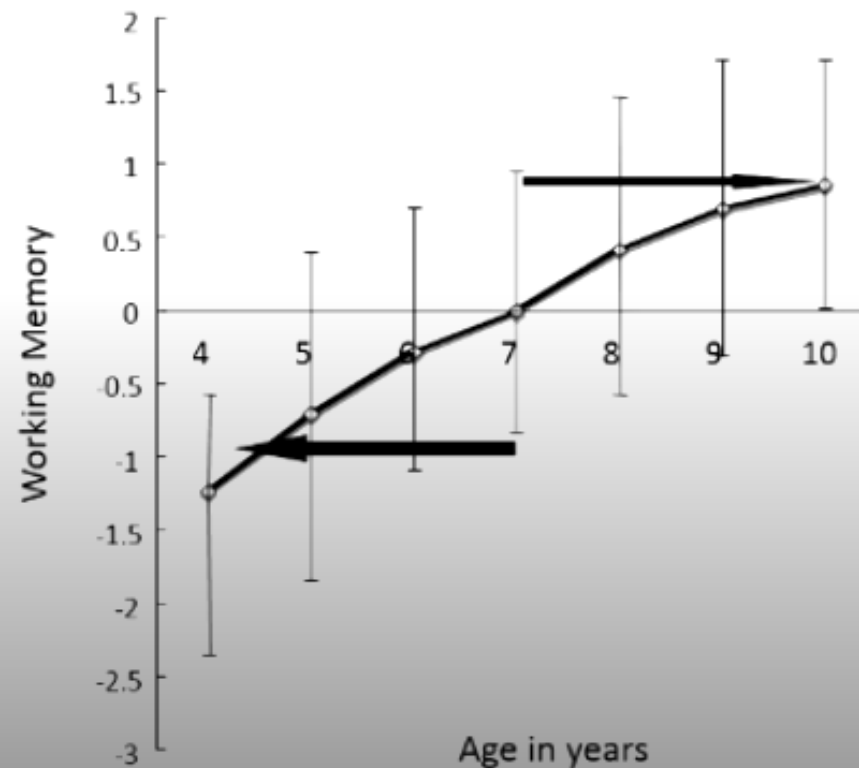
When I take a minute to focus on my own life



EF DEVELOPMENT

- Start developing in first few months of life, continue until mid-late twenties
- Roughly follow the order described, with reasonable overlap
- Development varies by individual

Rate of EF Development Varies



(Alloway et al., 2006)

WHICH POPULATIONS OF CHILDREN COULD BE EXPECTED TO DEMONSTRATE EXECUTIVE FUNCTION DEFICITS?

CHILDREN WITH:

- 1) ADHD
- 2) _____
- 3) _____
- 4) _____
- 5) _____
- 6) _____
- 7) _____

WHICH POPULATIONS OF CHILDREN COULD BE EXPECTED TO DEMONSTRATE EXECUTIVE FUNCTION DEFICITS?

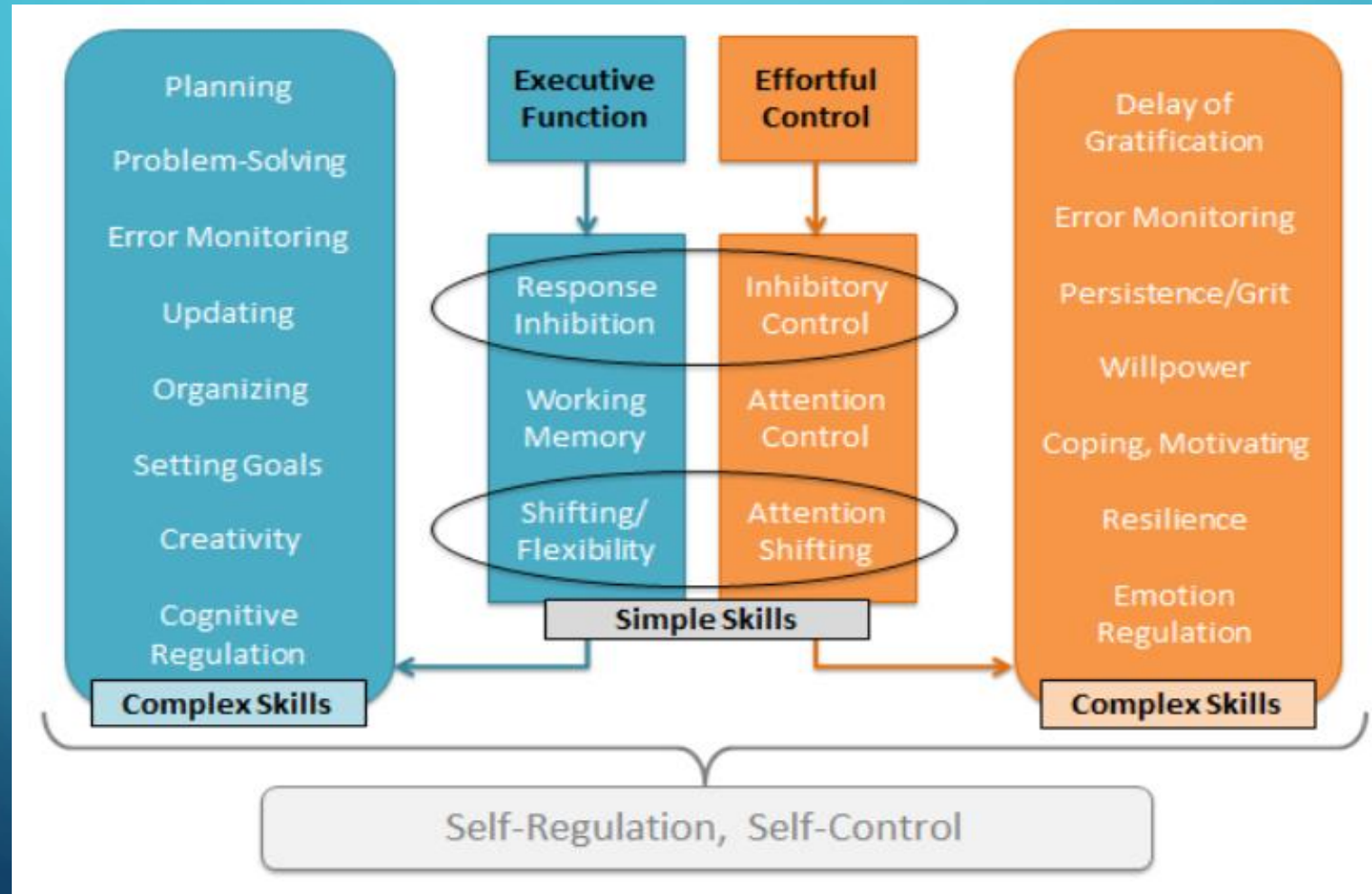
CHILDREN WITH:

- 1) ADHD
- 2) TBI/ABI
- 3) LANGUAGE DISORDERS
- 4) AUTISM SPECTRUM DISORDER
- 5) FETAL ALCOHOL SPECTRUM DISORDER
- 6) BORN PREMATURELY
- 7) OTHER NEURODEVELOPMENTAL DISORDERS
- 8) AND MORE...?

EXECUTIVE FUNCTION AND LANGUAGE

EF domain	Difference between SLI and language-typical	Source
Working Memory (phonological)	-1.27 SDs	Graf Estes et al., 2007
Working Memory (visuospatial)	-0.63 SDs	Vugs et al., 2013
Inhibitory control	-0.56 SDs	Pauls & Archibald, 2016
Flexibility	-0.27 SDs	Pauls & Archibald, 2016

EXECUTIVE FUNCTION AND EFFORTFUL CONTROL



The background is a blue gradient. In the corners, there are white line art elements resembling circuit boards or neural networks, with lines and small circles connecting them.

HOW CAN SLPS SUPPORT STUDENTS WITH EXECUTIVE FUNCTION DEFICITS?

INTERVENTION APPROACHES

Pharmacology	X - Effective, but out of our control
Computerized programs	X - Questionable effectiveness, generalization
Neurofeedback	X - Unrealistic equipment requirements
Metacognitive / Cognitive-behavioral	YES - Older children and adolescents benefit more, but young children can improve attention, working memory, flexibility
Combination approaches	May lead to superior outcomes

INTERVENTION APPROACHES

- Strong support for movement-based mindfulness (e.g., t'ai chi, taekwondo)
- Promising school programs
 - Attention Academy
 - Chicago School Readiness Program
 - MindUP
 - Montessori
 - PATHS
 - Tools of the Mind
- *All* interventions benefit from a few key components:
 - Rapport with trainer
 - Entertaining training activity
 - Meaningful and relevant activity

SLP INTERVENTIONS

- Direct intervention
 - Pull-out therapy
 - Push-in therapy (working with student)
- Indirect intervention
 - Consulting with teacher, parents
 - Implementing learning accommodations
 - Adjusting instructional practices

DIRECT INTERVENTION: KEY PRINCIPLES

- 1) Working memory training is not recommended
- 2) Improving language efficiency and knowledge will free up EF resources
- 3) Meet students at their level
- 4) Routines are important
- 5) Emphasize meaning and relevance

Drazinski, 2014; Singer & Bashir, 2019

DIRECT INTERVENTION: ACTION PLAN

1) Make sure you have a comprehensive understanding of student's strengths and weaknesses. Can use formal and informal assessments, teacher/parent reports, and interview with student.

DIRECT INTERVENTION: ACTION PLAN

2) Establish an intervention framework: Address metacognition, self-reflection, understanding of strategy rationale and implementation, and motivation.

Singer & Bashir, 1999

DIRECT INTERVENTION: ACTION PLAN

3) Consider intervention components:

- Domains to target
- Purpose of intervention (skill development or strategy use)
- Delivery
- Form (decontextualized, contextualized, activity-focused)
- Teaching techniques (prompting, linguistic, and regulatory techniques)

Denman et al., 2021; Singer & Bashir, 1999

DESIGN AN INTERVENTION

Identify *one* EF that would improve performance.

- 1) Teach
- 2) Modify
- 3) Monitor
- 4) Fade

SAMPLE INTERVENTION #1: SELF-ASSIST STRATEGIES

1) Teach and rehearse the use of self-talk scripts

Barkley, 2013 / Dawson & Guare, 2010

See the future / What's my problem?

Say the future / What's my plan?

Feel the future / Am I following the plan?

Make the future / How did it go?

2) Use language to support development

Have children repeat, paraphrase, tell a friend

Consider written prompts

Verbal rehearsal

SAMPLE INTERVENTION #2: GET READY, DO, DONE

<p>3. Get Ready: What do I need?</p>	<p>2. DO What steps do I need to take to be done? How long will each step take?</p>	<p>1. What will it look like when I am DONE? Future Sketch/Picture</p>
<p>4. What materials do I need to do the steps? Prepare my Space</p>	<p>5. Sketch the time, create time markers and $\frac{1}{2}$ way checkpoint. Set timer to alert $\frac{1}{2}$ way point. Do My Work! Check in at the $\frac{1}{2}$ way point and Determine if there are any time Robbers: Identify/Remove/Replan</p>	<p>6. Know when to STOP. Close out the Task. Review: What Worked? What did not Work?</p>

Ward &
Jacobsen, 2014

SAMPLE INTERVENTION #3: MEMORY STRATEGIES

1) Chunking allows more items to be stored in working memory by “encoding” them together

- Numbers: 193982831
- Words: Elephant purple bicycle tulip dance pizza truck

2) Easier to remember “like” items

- Phonology: Cheese, chicken, chalk
- Semantics: Cow, chicken, horse

3) Visualization

- Recruits nonverbal working memory (may be relative strength)
- Combine with gestures
- Combine with language self-talk “see the future, say the future...”

INDIRECT SERVICES: KEY PRINCIPLES

- Balance EF demands against curricular demands
- Offload cognitive demands
- Accommodations are “free,” there’s no advantage to stinginess
- Think about the leaky bucket analogy

INDIRECT SERVICES: ACTION PLAN

- 1) Determine the student's needs across settings
- 2) Consider modifications to the learning environment
- 3) Consider instructional modifications

SAMPLE ENVIRONMENTAL MODIFICATIONS

- Conduct a functional analysis
- Develop a language-supportive environment, rich in literacy
- Use external memory aids
- Use visual organizers, concept/knowledge maps, mental imagery, and graphic organizers
- Use small groups as an opportunity for re-teaching
- Use time visualization techniques
- Implement “Help” cards and other nonverbal signals

Damico & Armstrong, 1996; Dunaway, 2004; Gillam et al., 2018; Ward (n.d.)



SAMPLE INSTRUCTIONAL MODIFICATIONS









- Work with teachers to balance cognitive and curricular demands
- Break down tasks into manageable chunks
- Emphasize active learning, interaction, and participation (reading, writing, speaking, in various group structures)
- Implementing cooperative learning (small group) and peer tutoring
- Speak clearly and slowly; use prosody, repetition and other verbal cues for emphasis
- Select topics that are relevant to the learner, or explain *how* they are relevant

Boudreau & Costanza-Smith, 2010; Damico, 1999; Gillam, 1997; Jansen et al., 2010



RESOURCES

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In over 30 years of clinical practice, Drs. Peg Dawson and Richard Guare have worked with thousands of children who struggle at home and in school. At the center of their struggles are weak **executive skills**, and through our writing and now this website, we spotlight these skills...

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[Tips for Remote Schooling during the Coronavirus Pandemic](#)

Print Articles

Below is a list of PDF articles, research, and publications that Drs. Dawson and Guare have authored.

- [Tips for Caregivers on Schooling at Home – What Role Do Executive Skills Play?](#)
Written guide by Dr. Peg Dawson
- [Executive Skills Coaching Parent Handout](#)
Executive Skills Coaching – What Parents Should Know
- [Coaching Teenagers \(and Younger Children\)](#)
A coaching model to help teenagers with attention disorders and executive skill deficits be more successful in school and reach the career goals.
- [Homework: Problems and Solutions](#)
Of all the challenges parents face as they guide their children through school, homework is, for many, the most daunting. This handbook is written for parents who struggle with children who struggle with homework.
- [Daily Homework Planner](#)
Use this tool with your student to manage their workload.
- [Incentive Planning Sheet](#)
A homework contract and incentive planning tool.
- [Best Practices in Assessing and Improving Executive Skills](#)
Chapter written by Dr. Peg Dawson.
- [How to Set Up a Tier 1 Intervention for Promoting Executive Skill Development](#)
Embedding Executive Skills into Daily Classroom Routines and Instruction
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Interesting Articles

[Why: Why kids struggle and what to do about it \(Singer, 2017\) \(PDF\)](#)

[You are what you say to yourself \(Singer, 2017\) \(PDF\)](#)

[What are executive functions and self-regulation, and what do they have to do with Language Learning Disabilities? \(Singer & Bashir, 1999\) \(PDF\)](#)

[Assisting students with becoming self-regulated writers \(Bashir & Singer, 2006\) \(PDF\)](#)

[Wait...What??? Guiding intervention principles for students with verbal working memory limitations \(Singer & Bashir, 2018\) \(PDF\)](#)

[Measures of oral and silent reading fluency in children who stutter vs. controls: A case study. \(Scaler-Scott, K, Howland, K., Singer, B., et al., 2016\). \(PDF\)](#)

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Content in This Guide

Step 1: Executive Function 101

- Executive Function & Self-Regulation
- Executive Function: Skills for Life and Learning

Step 2: The Science of Executive Function

- Building the Brain's "Air Traffic Control" System
- Video: How to Build Core Capabilities for Life

Step 3: Building Executive Function Skills

- **You Are Here:** Activities Guides: Practicing Executive Function Skills
- Building the Core Skills Youth Need for Life
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QUESTIONS

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