

The Implications of Executive Functioning on Curriculum Relevant Speech Language Intervention

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Learner Objectives

- At the conclusion of the presentation, participants will be able to:
 1. State functional working definition of what is meant by the term “executive function skills” as it pertains to curriculum relevant to speech language intervention.
 2. Be able to develop an intervention program to foster a student’s ability to form more independent executive function skills.

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Executive Functioning Self-Assessment

Executive Function and Life Outcomes

- Poor **EF** is associated with problems such as ADHD, conduct disorder, peer rejection, low academic performance, student dropout, crime, teenage pregnancy, drug abuse, etc.

So what are executive functions ?

- Directive capacities of the mind
- Multiple in nature, not a single capacity
- Cue the use of other mental abilities
- Direct and control perceptions, thoughts, actions and to some degree, emotions
- Part of neural circuits that are routed through the frontal lobes

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Executive Function and the Brain

Comorbidity of Executive Function

- A sampling of condition involving EF deficits
 - ASD, Asperger's Syndrome
 - ADD and ADHD
 - Conduct Disorder and oppositional Defiant Disorder
 - Depression, Anxiety, Obsessive – Compulsive Disorder
 - Fetal Alcohol Syndrome and Pre-natal drug exposure

Ideas about Intelligence

- **Fluid intelligence:** abstract reasoning, perceiving relationships and patterns, solving problems, independent of previous knowledge or situation; innate intelligence
- **Crystallized intelligence:** accumulation of experience; accessing prior knowledge to solve problems; becomes more developed with age; acquired intelligence

The Power of Mindset

- **Fixed Mindset.** People believe their basic qualities, like their intelligence or talent, are simply fixed traits. They spend their time documenting their intelligence or talent instead of developing them. They also believe that talent alone creates success, that effort is not necessary.
- **Growth Mindset.** People believe that their most basic abilities can be developed through dedication and hard work, that brains and talent are just the starting point. This view creates a love of learning and a resilience that is essential for great accomplishments.

Types of Executive Function

- 1. Organization.** Gathering information and structuring for evaluation
- 2. Regulation.** Taking stock of your surroundings and changing behavior in response to it

Executive Function Domains

- **Sensation**
- **Perception**
- **Emotion**
- **Cognition**
- **Language**
- **Action**

Executive Function Variability

- Executive functioning can vary greatly depending on the domain of functioning that is being directed
- Good executive control in one domain does not guarantee good executive control in other domains
- Poor executive control in one domain does not guarantee poor executive control in other domains

Executive Function Capacities

- Working memory and recall (holding facts in mind while manipulating information; accessing facts stored in long term memory)
- Activation, arousal, and effort (getting started; paying attention; finishing work)
- Controlling emotions (ability to tolerate frustration; thinking before acting or speaking)
- Internalizing language (using “self-talk” to controls one’s behavior and direct future actions)
- Taking an issue apart, analyzing the pieces, reconstituting and organizing it into new ideas (complex problem solving)

Working Memory

- The process of holding new visual or auditory information in mind as you retrieve older knowledge or procedures to apply to the new material
- The capacity of working memory is thought to be relatively fixed: you can only retain so much information at any one time. If a thought that is irrelevant to what you are working on suddenly intrudes on your thoughts, it may 'bump' important information from your working memory.
- Used for temporarily storing and manipulating information

Short Term Memory

- The capacity for holding, but not manipulating, a small amount of information in mind in an active, readily available state for a short period of time.
- The duration of short-term memory is believed to be in the order of seconds

Executive Function and Time

- **Affects sense of time:**
 - a) Difficulty holding events in mind
 - b) Difficult using their sense of time to prepare for upcoming events and the future
- **As a result, students:**
 - a) Have difficulty judging the passage of time accurately.
 - b) Do not accurately estimate how much time it will take to finish a task; consequently, they may not allow enough time to complete work.
- **Affects sense of self-awareness:**
 - a) Diminished sense of self-awareness
- **As a result, students:**
 - a) Do not easily examine or change their own behavior

Executive Function and Time

- **Affects sense of past events:**
 - a) Difficulty recalling the past
- **As a result, students:**
 - a) Do not learn easily from past behavior (limited hindsight)
 - b) Repeat misbehavior

Executive Function and Time

- **Social transition can serve to highlight EF developmental delay or significant deficiencies**
 - a) Educational transitions: preschool, kindergarten, first grade, middle school, high school, college, graduate school
 - b) Workplace entry
 - c) Career changes

Executive Function Challenges

- Forgot to look ahead, and have trouble planning and setting goals
- Difficulty sorting, organizing and prioritizing information
- Focus on either the details or the big picture at the expense of the other
- Difficulty shifting from one activity to another (especially when rules/task demand change)
- Hard time juggling multiple details in working memory
- Struggle with shifting between information that is literal vs. figurative, past vs. current, etc.
- Often overwhelmed by the increased and varied work load in the middle and upper grades
- “Get it” (e.g., the information being taught, the work tasks assigned but often “don’t know what to do with it” (e.g., how to complete the task in a way that demonstrated their knowledge)

Specific Executive Functions Challenges in Language Domain

- **Difficulty initiating ideas**
- **Difficulty limiting topic**
- **Disorganization and lack of planning**
- **Poor self-monitoring**
- **Inability to maintain topic**
- **Difficulty handling complex memory demands**
- **Poor recall and maintenance of ideas**

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Executive Function and School

Executive Function and School

- In preschool, kindergarten, and early elementary years, in many ways, teachers are their students' frontal lobes
- Providing executive prompts and cues are important to assure that students are appropriately engaged in the instructional process
- Modeling good executive functions helps students see how they can self-regulate their own perceptions, emotions, thoughts, and actions

Executive Function and School

- In late elementary, middle, high school, college and even graduate school, effective teachers provide executive function prompts and model good executive function use.
- Providing students with feedback about their performance enables them to engage executive capacities more effectively to learn from their mistakes and improve future performance.

Executive Function and School

- Academic success in content areas is dependent upon ability to
 - Plan
 - Setting realistic goals
 - Initiating task
 - Organize and prioritize information
 - Separate main ideas from details
 - Monitor progress
 - Reflect

Hill, Skill & Will

- Moran & Gardner's (2007) schema
 - **Hill:** establishing a clear goal, what the person wants to accomplish
 - **Skill:** abilities and techniques needed to attain the goal
 - **Will:** desire to begin and persevere until goal has been achieved



Hill

- Long Term
 - Successful goal setting (SMART goals)
- Short Term
 - Finish homework
 - Complete reading task
 - Complete writing task
 - Complete math task

Successful Goal Setting

- **SMART Goals**
 - Specific
 - Measurable
 - Achievable
 - Realistic
 - Time Specific

Executive Function Intervention Strategies

- Strategy instruction should be directly linked with the curriculum
- Metacognitive strategies should be taught explicitly
- Strategies should be taught in a structured, systematic way using scaffolding and modeling and providing time for practice
- Student motivation and self understanding should be addressed to ensure generalization of strategies

Executive Function Intervention Strategies

- **Teach students how when and why specific strategies should be used**
- **Embed strategy instruction into the curriculum**
- **Students should be encouraged to modify and personalize strategies to match their own learning preferences**
- **Practice using strategies with different tasks across content areas**
- **Keep motivation high (as being a strategic learner can be very hard work!)**

Executive Function Intervention Strategies

- Help students set realistic goals and use self-monitoring and self-management strategies to identify areas of weakness and self-correct behaviors and performance.
- Make sure that students experience success in using strategies and encourage their consistent use over time
- Count ‘strategy use’ as part of student’s grade (focus on the “how” of learning, not just the “what”)
- Help students understand the limitations of hard work without a strategic plan for learning; effective executive function tools and strategies can greatly improve learning efficiency

Executive Function Intervention Strategies

- Provide structure to support planning, organizing, problem solving and implementing oral or written communication (e.g. Webbing, conceptual mapping, inspiration software)
- Use mediated learning procedures with guided questioning, cognitive mediation, coaching and scaffolding
- Develop mental models (scripts and schemes) for interpreting and writing text
- Develop critical thinking strategies for analysis, categorization, comparison and contrast, synthesis, evaluation and application of concepts, expressions and test to develop in depth understanding

Executive Function Intervention Strategies

- Provide bridges for transition from concrete (e.g., hand) to abstract (e.g., handouts) and figurative uses (e.g., empty handed) of words and expression
- Develop automaticity for serial language, academic sequences, structural rules, and social pragmatic repertoires
- Develop self-awareness of barriers to performance and inefficient compensatory strategies, and develop effective compensatory strategies for life
- Develop strategies for appropriate self-advocacy

Executive Function Intervention Strategies

- Provide, receive, and use regular, timely and specific feedback
- Set purpose for instruction using advance organizers
- Engage students in active learning experiences
- Seek and present real-world applications

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Executive Function Intervention Strategies

- Explicitly state the goals of the learning process
- Stating goals enables executive capacities, either consciously or unconsciously, to engage the perceptions, emotions, thoughts, and actions, needed to achieve the goals.

Executive Function Intervention Strategies

- Use of verbal cues and questions to guide thinking processes
- Relating and discussing social stories to provide basis for models of appropriate behavior
- Providing a vocabulary for understanding of concepts that can be used to improve the control of emotions, thoughts behaviors