



Finding executive function in the Pyramid Model: The secret ingredient you didn't know you already had!

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**Pyramid Model
INNOVATIONS**
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Agenda

- Overview of Executive Functions (EFs)
- Emergence of Executive Skills (ESs)
- How the brain does it
- Embedding ESs into the Pyramid Model



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Overview of Executive Functions

- Executive functions (EFs):
 - The directive capacities of the human brain that allow purposeful, self-regulated, goal-directed behaviors (Goldberg, 2001, McCloskey, Perkins, & Van Divner, 2009)
 - Not just one thing – Not the “conductor”
 - Multiple processes that organize our thoughts and behaviors
 - Inter-related and interdependent
 - Complicated in early childhood development
 - EF’s are already present in the child from birth, but require experience and guidance to fully develop

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Overview of Executive Functions

- Response inhibition
- Working memory
- Emotional control
- Sustained attention
- Task initiation
- Planning
- Organization
- Time Management
- Persistence
- Flexibility
- Metacognition

These are some commonly discussed EF's found in the research literature (Dawson & Guare, 2010).



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Emergence of Executive Skills

- Executive skills- the strategies that are activated and cued by the EFs.
 - ES = What EF looks like in real life
- ES are connected to EF, but not the same
 - Huge amount of variability (unpredictability) regarding ES development.
 - Unique development of each childhood impacts ES appearance



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Which came first?

- An ES may, or may not, develop alongside of the EF
 - Which came first; the function or the skill?
 - EFs and ESs influence each other
 - They're bi-directional; especially in early childhood



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The Pathway Systems

- In adults, executive capacity is found in the prefrontal cortex (aka the frontal lobe)
 - EFs live in the frontal lobe
- In children, however, the frontal lobe isn't fully developed.
 - In fact, for pre-school children, none of the lobes are entirely mature.
 - Brain function in young children relies on several functional networks scattered throughout the brain - we call them "pathways".
 - There is a pathway for every major function of our brains!
 - ESs are scattered throughout the brain in many area - similar to the pathways.



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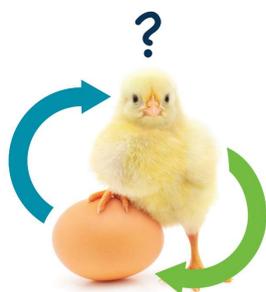
The Journey is about the “Path”

- Active pathways feeding into the frontal lobe encourage robust EF potential throughout development and into adulthood
 - Learning environments stimulate pathways (where ESs are found)
 - Pathways stimulate lobe development, including the frontal lobe (where EFs are housed)
 - Well-developed frontal lobes have stronger EF potential, triggering more efficient ES activation (faster, more efficient cueing of ES)

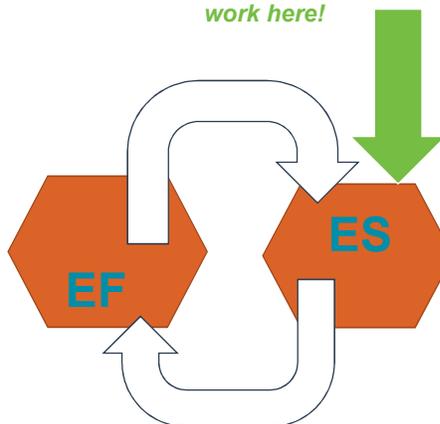


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The Journey is about the “Path”



*Pre-K Teachers
work here!*



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Executive Functions and their Skill Labels

- Response Inhibition = Waiting
- Planning = Planning (visually and verbally)
- Organization = Clean-up/setting up for later
- Time Management = Done on-time
- Working memory = Working/building in your mind
- Meta-cognition = Checking yourself
- Sustained attention = Focusing
- Flexibility = Cleverness, resourcefulness
- Goal-directed persistence = Not giving up
- Task initiation = Starting
- Emotional control = Staying calm



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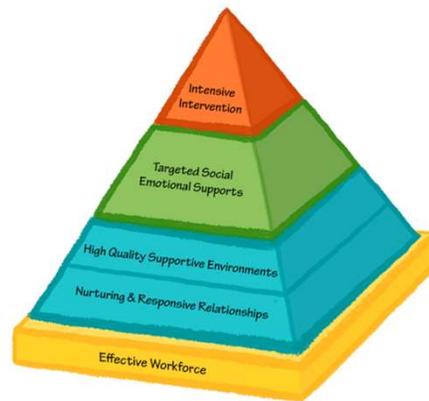
Current Research on Early EF Intervention

- Four major areas identified in the research for supporting early EF development:
 - direct training of EF skills
 - improving teacher-child interactions and classroom climates,
 - using play as a central context for development
 - social-emotional learning
- Sound familiar?



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Pyramid Model for Promoting Social and Emotional Competence in Infants and Young Children



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What happens...

- When teachers get really good at the Pyramid...
- Here's a story....



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How can teachers grow in the Pyramid?

- Four noticeable areas identified in the research to support early EF development:
 - direct training of EF skills
 - improving teacher-child interactions and classroom climates,
 - using play as a central context for development
 - social-emotional learning



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On direct training of EF

- Research in this area mostly used computerized and/or heavily structured curriculum/products
 - Very specific to narrow EF constructs
 - Hyper-specialized staff
 - Not ecologically valid
 - Outcomes frequently expressed in EF terms alone
- Despite this, positive EF outcomes are worth pursuing for young children
- The Pyramid Model already provides substantial support for these outcomes...



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Questions



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A Practice Guide for Teaching Executive Skills to Preschoolers through the Pyramid Model

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Table 1. Executive Function in Early Development

Executive Function	Executive Skills	Older Toddlers (ages 2-3)	Preschoolers (ages 3-5)
Emotional Control: Managing emotions in order to achieve goals, complete tasks, or control and direct behavior	<ul style="list-style-type: none"> Staying calm Coping 	<ul style="list-style-type: none"> Verbally expresses wants and needs to adults Allows adults to help them calm down when upset 	<ul style="list-style-type: none"> Accepts and responds to "no" from the teacher Accepts disappointment in a short time Uses non-aggressive solutions when faced with conflict in group of children without becoming overly excited
Cognitive Flexibility: The mental ability to switch between different concepts; to think about multiple concepts simultaneously	<ul style="list-style-type: none"> Creativity Flexible 	<ul style="list-style-type: none"> Responds appropriately to changes in routines/structures with close adult support Engages in novel activities 	<ul style="list-style-type: none"> Adjusts to changes in plans or routines with some warning Begins to connect concepts that are not directly related based on personal experience
Goal-directed persistence: The capacity to have a goal, follow through to the completion of the goal, and not be put off by or distracted by competing interests	<ul style="list-style-type: none"> Working through the hard part of a task or activity Not quitting 	<ul style="list-style-type: none"> Allows adults to guide them in activities from start to finish without resistance Tries to achieve a goal at least once without frustration Asks for help from others 	<ul style="list-style-type: none"> Tries independently to solve a problem or achieve a goal more than once, with minimal frustration Asks for help from others
Metacognition: The ability to stand back and take a birds-eye view of oneself in a situation. It is an ability of an individual to observe their own use of problem solving. It also includes self-monitoring and self-evaluative skills.	<ul style="list-style-type: none"> Self-monitoring Self-reflecting 	<ul style="list-style-type: none"> Will have brief conversations (1-2 turns) with adults about what is happening in the present moment Listens to adults as they briefly describe their own behaviors and emotional states 	<ul style="list-style-type: none"> Makes minor adjustments to the strategy being used to solve a problem Engages in some self-talk about their own actions Can briefly describe to others how they are solving a problem Can briefly describe their emotional states

A Practice Guide for Teaching Executive Skills to Preschoolers through the Pyramid Model 3




Pyramid Model Practices and Executive Skills

The Pyramid Model is a comprehensive framework of evidence-based practices that teachers and caregivers of young children can use to promote the social and emotional competence of young children (Hemmeter, Ostrosky, & Fox, 2006). Research has demonstrated that implementation of the Pyramid Model is related to improvements in young children's social skills and problem behavior (Hemmeter, Snyder, Fox, & Algina, 2016). The practices that are used by teachers in their implementation of the Pyramid Model can also promote children's development of executive functions (Blair, 2010; Bierman, Nix, Greenberg, Blair, Domitrovich, 2008). Below, we offer a crosswalk with examples that illustrates how this might occur by linking Pyramid Model preschool practices with executive skill areas.

Table 2. Promoting Executive Function through Pyramid Practices

Pyramid Model Practices	Executive Functions that are Promoted	Executive Skills being Strengthened
Engaging in supportive conversations with children to acknowledge and expand on children's communication and interactions	<ul style="list-style-type: none"> Cognitive flexibility Emotional control Working memory 	<ul style="list-style-type: none"> Being creative Staying calm Remembering and using information
Providing positive descriptive feedback to promote child engagement in classroom and social expectations	<ul style="list-style-type: none"> Metacognition Emotional control Goal-directed persistence Organization 	<ul style="list-style-type: none"> Self-reflection Self-monitoring Sticking with difficult activity
Providing engaging activities to promote child learning and reduce challenging behavior	<ul style="list-style-type: none"> Sustained attention Goal-directed persistence 	<ul style="list-style-type: none"> Focusing Listening Working through an activity or task
Providing a balanced schedule of activities to minimize the time children are not engaged in learning	<ul style="list-style-type: none"> Sustained attention Time management 	<ul style="list-style-type: none"> Focusing Task completion Following the schedule

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Pyramid Model Practices	Executive Functions that are Promoted	Executive Skills being Strengthened
Teaching children to use and follow a schedule so that they anticipate activities	<ul style="list-style-type: none"> • Organization • Planning/prioritization • Time management 	<ul style="list-style-type: none"> • Cleaning up/setting-up for later • Planning • Following the schedule
Teaching children the rules and expectations of the classroom	<ul style="list-style-type: none"> • Metacognition • Response inhibition 	<ul style="list-style-type: none"> • Self-reflection • Waiting
Structuring transitions to decrease the likelihood that challenging behavior might occur	<ul style="list-style-type: none"> • Task initiation • Response inhibition 	<ul style="list-style-type: none"> • Getting started
Providing clear directions to help children understand and respond to adult direction and expectations	<ul style="list-style-type: none"> • Planning/prioritization • Task initiation • Working memory 	<ul style="list-style-type: none"> • Planning • Figuring out where to start • Getting started • Remembering and using information
Teaching children to identify and express emotions	<ul style="list-style-type: none"> • Metacognition • Emotional control 	<ul style="list-style-type: none"> • Self-reflection • Self-monitoring • Staying calm
Teaching children to use self-regulation skills	<ul style="list-style-type: none"> • Metacognition • Emotional control • Response inhibition 	<ul style="list-style-type: none"> • Self-reflection • Staying calm • Waiting
Teaching children to engage in social problem solving when there are conflicts or challenges with others	<ul style="list-style-type: none"> • Metacognition • Emotional control • Response inhibition 	<ul style="list-style-type: none"> • Self-reflection • Staying calm • Waiting

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Direct Teaching of EF in the Pyramid

- Explain - talk to them about it in detail.
- Model - Model its use during the explanation.
- Support - Support children in their use of the skill in both structured and unstructured settings. Create antecedents that trigger the need for an executive skill.
- Reinforce - Use naturally-occurring consequences to motivate skill-use in the future.
- Reflect - Help them reflect on their use of the skill.
- Label - Give it a name and call it that! Treat it like something you truly expect your children to do when you ask them.

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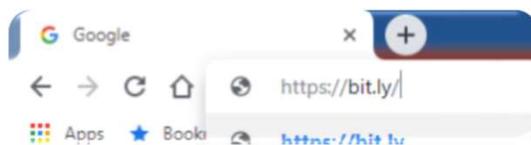
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