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

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Executive Functions

Executive functions are the higher-order cognitive skills that involve behavior regulation and goal directed activities of children and adults (McCloskey, Perkins, & Van Divner, 2009). Being self-directed, undistracted, adaptable to change, and making connections between different concepts and ideas are all related to executive functions. These skills are foundational to outcomes in virtually all aspects of life. Executive functions, and the behaviors they enable, begin to appear as early as infancy, but do not achieve full maturation until young adulthood (Diamond, 2011). The early demonstrations of executive functions tend to be predictive of executive function potential later in life (Eigsti et al., 2006; Friedman et al., 2007; Moffitt et al., 2011; Shoda, Mischel, & Peake, 1990).

Research suggests that it is important for adults to foster the development of executive function of children at an early age (Blair, 2010). This is because the development of the brain is most easily influenced by the environment during the early years of life (0-5) before the brain has fully matured. When adults work together to create environments and interactions that promote the development of executive skills, we see positive changes in the behavior and outcomes of young children in school, at home, and in life (Bryck & Fisher, 2012; Diamond & Lee, 2011; Greenberg & Harris, 2011; Klingberg, 2010; Kovacs & Mehler, 2009; McCloskey et al., 2009; Morrison , Conway, & Chein, 2011; Muraven, 2010; Wass, Porayska-Pomsta, & Johnson, 2011).

Research suggests that executive function may best be understood as the cognitive capacity to be effortful, and controlled in our thinking, while executive skills represent the behaviors that are triggered by our effortful, controlled thinking (Blair, 2010). According to McCloskey and colleagues (2009), individuals can focus on developing the executive skills (waiting, focusing, planning, starting tasks, persisting) linked to their own effortful thought in order to strengthen their capacity for even more effortful thought in the future. This means we can promote the development of executive functions by teaching and reinforcing specific executive skills in the environment. In Table 1, a sample of executive functions (Dawson & Gaure, 2009) and skills are provided with a description of how these skills are used by young children. Keep in mind, this list of executive skills isn't exhaustive or mutually exclusive. There are additional skills related to each executive function area and many skills might seem to overlap across different functions. What is most important is that early educators are aware that executive functions control behavior, and that by understanding those functions we can help young children strengthen those skills.

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	• Staying calm • Coping	• Verbally expresses wants and needs to adults • Allows adults to help them calm down when upset	• 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	• Creativity • Flexible	• Responds appropriately to changes in routines/structures with close adult support • Engages in novel activities	• 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	• Working through the hard part of a task or activity • Not quitting	• 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	• 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.	• Self-monitoring • Self-reflecting	• 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	• 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

Executive Function	Executive Skills	Older Toddlers (ages 2-3)	Preschoolers (ages 3-5)
Organization: The ability to create and maintain systems to keep track of information or materials	• Cleaning-up/ setting-up for later • Labeling • Sorting • Matching	• Participates in putting things in their proper place with adult support	• Puts things in appropriate places, with reminders • Creates own organization system if one is not obvious (e.g., sorting items, putting objects away)
Planning/prioritization: The ability to plan how to reach a goal or to complete a task. It also involves being able to make decisions about what's important to focus on and what's not important.	• Planning (visually and verbally) • Figuring out where to start and how to finish	• Participates in simple planning with adult guidance • Participates in completing steps of a task or project with adult support	• Makes simple plans with a beginning, middle, and ending with some independence • Can follow-through with plan with minimal adult guidance • Can identify the end-goal of the activity
Response inhibition: The capacity to think before engaging in an action—the ability to resist the urge to say or do something	• Waiting • Thinking first	• Can withhold responding for a few seconds if closely monitored by an adult • Responds to "first, then" presentation of tasks, when supported by an adult	• Asks before taking things • Waits for turn when in group activities
Sustained attention: The capacity to maintain attention to a situation or task in spite of distractibility, fatigue, or boredom	• Focusing • Listening	• Briefly attends to adult-directed activities or instructions	• Independently completes simple assignment, task, or chore • Attends to others in a short activity (e.g., small-group or circle) • Listens to adult or peer read a short book

Executive Function	Executive Skills	Older Toddlers (ages 2-3)	Preschoolers (ages 3-5)
Task initiation: The ability to begin projects without procrastination, in an efficient or timely fashion	• Getting started	• Begins simple task with close adult supervision	• Follows an adult direction immediately after being given, even during a preferred activity
Time management: The capacity to estimate how much time one has, how to allocate it, and how to stay within time limits and deadlines. It also involves a sense that time is important.	• Done on-time, • Remembering the schedule	• Responds to adult guidance to complete an action at the appropriate pace	• Completes daily routines (with cues) • Can complete tasks more quickly when prompted • Finishes a small chore within a time-limit
Working memory: The ability to hold information in memory while performing complex tasks. It incorporates the ability to draw on past learning or experience to apply to the situation at hand or to project into the future.	• Remember and use	• Follows the instruction just given by an adult	• Can follow the steps of a routine with only one prompt • Can complete a simple errand

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	• Cognitive flexibility • Emotional control • Working memory	• Being creative • Staying calm • Remembering and using information
Providing positive descriptive feedback to promote child engagement in classroom and social expectations	• Metacognition • Emotional control • Goal-directed persistence • Organization	• Self-reflection • Self-monitoring • Sticking with difficult activity
Providing engaging activities to promote child learning and reduce challenging behavior	• Sustained attention • Goal-directed persistence	• Focusing • Listening • Working through an activity or task
Providing a balanced schedule of activities to minimize the time children are not engaged in learning	• Sustained attention • Time management	• Focusing • Task completion • Following the schedule

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	• Organization • Planning/prioritization • Time management	• Cleaning up/setting-up for later • Planning • Following the schedule
Teaching children the rules and expectations of the classroom	• Metacognition • Response inhibition	• Self-reflection • Waiting
Structuring transitions to decrease the likelihood that challenging behavior might occur	• Task initiation • Response inhibition	• Getting started
Providing clear directions to help children understand and respond to adult direction and expectations	• Planning/prioritization • Task initiation • Working memory	• Planning • Figuring out where to start • Getting started • Remembering and using information
Teaching children to identify and express emotions	• Metacognition • Emotional control	• Self-reflection • Self-monitoring • Staying calm
Teaching children to use self-regulation skills	• Metacognition • Emotional control • Response inhibition	• Self-reflection • Staying calm • Waiting
Teaching children to engage in social problem solving when there are conflicts or challenges with others	• Metacognition • Emotional control • Response inhibition	• Self-reflection • Staying calm • Waiting

Pyramid Model Practices	Executive Functions that are Promoted	Executive Skills being Strengthened
Teaching children the social interaction skills needed to work and play with other children	• Cognitive flexibility • Metacognition, • Planning/prioritization	• Being creative • Self-reflection • Self-monitoring • Planning
Teaching children strategies for handling disappointment and anger	• Emotional control • Metacognition	• Staying calm • Self-reflection and self-monitoring

Teaching Executive Skills in the Pyramid Model Classroom

The preschool classroom teacher can explicitly promote executive skills as they implement the Pyramid Model. The promotion of executive skills in the early years will shape young children's future executive functioning. Below, we provide ideas of strategies that might be used by early educators to focus on executive function in their interactions and instruction with young children.

Table 3. Promoting Executive Skills in the Classroom

Explain: Describe the skill that you are asking children to learn and use (e.g., being done on-time). Give them the name of the skill and tell them why it is important, or even better, see if they can tell you.

Model: Demonstrate what an executive skill looks like using your own behaviors (e.g., "I am going to make a plan" or "I need to focus my attention on…"). Describe to children what you are doing help them see the contrast between what it looks like, and what it doesn't. Describe how important the skill is to your own life and how other familiar adults use the skill.

Support: Encourage your children to practice skills after they have been introduced. This could be during a group lesson, or it could be during a spontaneous teachable moment. Both are important. Structured experiences are great for introducing skills, but unexpected teachable moments are necessary for children to achieve mastery of the skill.

Reinforce: Reinforcement is anything that makes a behavior more likely to be used in the future. We want executive skills to be frequently used by young children in their lives. Positively describe the executive skill you've seen the child use. Use positive natural consequences to help make the point that these skills are very helpful, both to you and the children themselves.

Reflect: Create time for children to think about all the positive outcomes that they've seen from using their executive skills. You can connect executive skills to numerous individual and classrooms goals.

Label: Talk about the skills frequently. Use the vocabulary of executive skills frequently so that children hear the skills being discussed and valued. Classroom expectations and/or rules can be a great place to start. Expectations are a great way to think of *capacities*, and rules are an excellent way to think of what *skills* are needed to use the capacity.

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