REFLECTION SCIENCES™

Intervention Preview Booklet:

Opportunities for Supporting Executive Function Development in Childhood & Adolescence

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The Purpose of this Guide

This guide will review effective, evidence-based intervention offerings to support the healthy development of children's Executive Function skills.

Executive Function (EF) skills are the brain-based skills required for the top-down, goal-directed control of attention, thought, emotion, motivation, and action. Unlike intelligence, as measured by IQ tests, EF skills are less about knowing what to do than they are about actually using one's knowledge to achieve one's goals.

Reflection and EF Skills

EF skills are generally invoked when we notice a problem (e.g., an obstacle in our path), go off "autopilot," and take control. We adopt an intentional, goal-directed approach and we consciously reflect on the situation.

Reflection involves pausing, putting things in perspective, and considering options before responding.

What is the nature of the problem?
What do I know that is relevant to solving the problem?

When we reflect, we use our EF skills to manage our attention as we try to work things out and solve a problem.

Three EF skills allow us to manage our attention:

- ***Cognitive Flexibility*** involves the ability to shift perspectives, adopt new ways of thinking about something (e.g., shift from adding numbers to subtracting them or understanding someone else's point of view)

- **Working Memory** involves the ability to hold information in mind and work with it to guide behavior, as when keeping a plan in mind while acting upon it (e.g., keep the teacher's instructions in mind when following them)

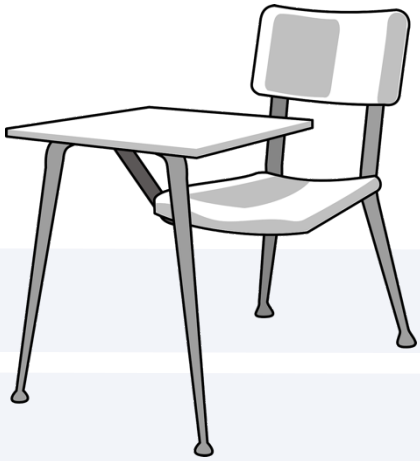
- **Inhibitory Control** involves the ability to ignore distractions and suppress impulsive or inappropriate responses (e.g., paying attention to the teacher and ignoring disruptive classmates)

Children's EF skills predict key developmental outcomes later in life, often better than IQ. EF in preschool is an excellent predictor of school readiness (early math

and reading ability), as well as other important life outcomes, like SAT scores in high school, rates of college graduation, physical & mental health, and financial wealth in adulthood.

Executive Function in the Classroom

EF skills provide an important and necessary foundation for effective learning and adaptation across a wide range of situations. In school, EF skills are necessary for:



- *Paying attention and avoiding distractions*
- *Remembering rules*
- *Resisting impulsive responses*
- *Managing emotional reactions, including motivation and boredom*

Reflective Learning

In addition, EF skills allow for a more intentional, engaged, active, and reflective form of learning.

New material can then be actively considered in relation to what is already known – it can be reflected upon, and as a result, will be more likely to be remembered in the future.

Assessing EF in the Classroom

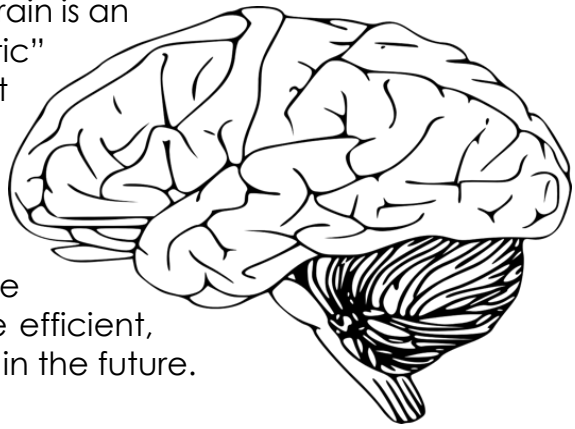
In order to help children develop their EF skills, it is necessary first to assess these skills, and determine objectively where each child is in the process of skill acquisition. Measuring EF is also important for:

- *Identifying delays or deficits that call for extra support*
- *Monitoring the development of EF skills*
- *Measuring how effective a program or curriculum is at promoting EF*
- *Adapting learning strategies for individual children*
- *Adding value for enrolled families and retaining them*

The Minnesota Executive Function Scale (MEFS App™) is the state-of-the-art assessment of EF in childhood, based on the latest research in developmental neuroscience. In less than 5 minutes, the MEFS App™ provides a direct behavioral assessment that compares each child's score to national norms.

For more information about the MEFS App™, visit www.reflectionsciences.com.

Neuroplasticity: Modifiability of the Brain



Training EF skills depends on the fact that the brain is an inherently adaptive, malleable, and "plastic" organ. The brain evolved to allow us to adapt to a continually changing environment.

EF skills, like any other skills, are modified by experience. We develop these skills by using, or "exercising" them. When we use EF skills, the relevant brain networks adapt, become more efficient, more reliable, and more likely to be activated in the future.

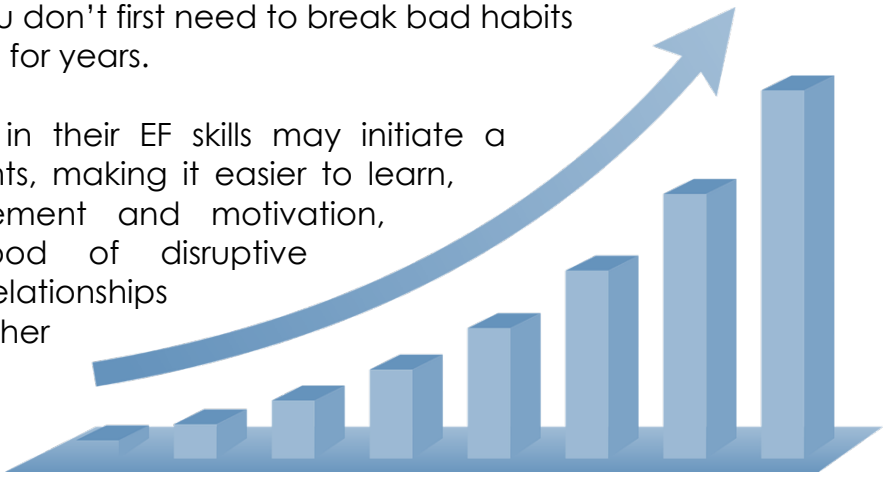
Periods of Relative Plasticity

Although the brain is always plastic to some degree, there are periods of relatively more plasticity, when specific neural networks are adapting particularly rapidly to environment influences.

Evidence shows that EF develops most rapidly during the preschool years (2 to 6 years), which suggests that this is a window of opportunity for educators to help children develop their EF skills.

More Reasons to Promote EF Skills Early On

Of course, it is also much easier to build good habits around reflection and EF skills if you don't first need to break bad habits that have been practiced for years.



Giving children a boost in their EF skills may initiate a cascade of positive events, making it easier to learn, increasing their engagement and motivation, decreasing the likelihood of disruptive behavior, and improving relationships with teachers and other children.

Children with immature EF skills, who are most at risk for problems, often show the biggest improvements from EF interventions.

Effective EF Interventions

In general, research suggests that the most effective EF interventions encourage children to reflect on what they are doing: detecting the need for EF, pausing, considering options and goals, and interrupting automatic reactions to things. Provide children with opportunities to practice EF skills directly, to learn by doing:

- *To practice paying attention, thinking flexibly, keeping information in mind.*
- *Continually challenge children's skills.*

Best Practices for EF Intervention: Background

Start by creating a classroom environment that is safe, calm, and respectful, without too many distractions. These conditions support the development and use of EF skills. Stress interferes with EF and impairs its development.

Create and maintain predictable routines (with cues), so children can anticipate and plan.

Routinely discuss plans and activities so that children can reflect on them.

Teaching Children about EF Skills

Even young children can understand basics about EF skills, including:

- **What they are** (brain skills for paying attention; we use them when we are trying to do something)
- **When to use them** (when there's a problem to solve, or something important to be done, and we focus on what we are doing)
- **How they grow** (they grow by using them; at first we may struggle with EF skills, but they get better with practice)

Interventions by Reflection Sciences

Knowing what's best for kids when it comes to supporting Executive Function development can be difficult. In this booklet, we provide a basic introduction to interventions and descriptions of more involved products we offer, providing the perfect EF introduction and support for the proactive and self-motivated educator!

Unlike intelligence, as measured by IQ tests, Executive Function skills are less about knowing what to do than they are about actually using one's knowledge to achieve one's goals. With Reflection Sciences' support, educators (even if newcomers to the Executive Function scene!) can expect to understand and

effortlessly navigate the fundamentals of Executive Function: how it manifests throughout development, impacts well-being, and may be strategically improved.

"The EF Way to P.L.A.Y." Intervention Activities

Looking for a simple way to boost Executive Function skills in the classroom? Both practical and PLAY-ful, these activities will be an instant favorite for both teachers and students alike!

A level up from the tried-and-true Intervention Guides, *"The EF Way to PLAY" Intervention Activities* were developed for use by educators and parents in classroom settings. These 12 step-by-step games are appropriate for K - 3rd grade and target the earliest stages of Executive Function development, ensuring an effortless and enjoyable integration of Executive Function into classroom curriculum in a critical period.

Curious? Check out a sneak peak of ***Bear/Dragon***, one of our favorite intervention activities, below!

Bear/Dragon

Overview:
Two puppets will be presented. Children will be asked to follow the "nice" puppet, but not the "mean" puppet. The game ends after 10 minutes or until the game has reached a good stopping point as determined by the teacher.

Instructions:
Game Level 1 | Follow Bear Not Dragon:

Have the children sit in a group, facing you, with some room to move. Next, show the children eight actions (or more of your choosing!) and ask them to imitate each action:

> *"Touch your ears; cover your eyes; clap your hands; touch your feet; touch your tummy; wave your hand; cross your arms; jump; stick out your tongue!"*

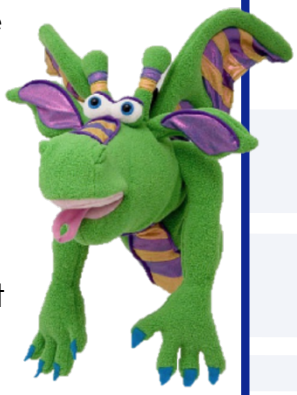
Once the children are familiar each action, bring out the puppets, one on each hand. Introduce the children to the ***Nice Bear*** and ***Mean Dragon***. Tell them:

> *"Now, we are only going to play with the **Nice Bear**. The **Nice Bear** is nice so we will do what he tells us to do. The **Mean Dragon** is mean so we don't listen to him. We do not do what he tells us to do. No way!"*

Ensure they understand what to do when the ***Nice Bear*** or Mean Dragon talks. Ask them:

*"Which one is the **Nice Bear**?" (Group points to bear)*
*"Which one is the **Mean Dragon**?" (Group points to dragon)*
*"When the **Nice Bear** talks, do we do what he says?" (Yes!)*
*"When the **Mean Dragon** talks, do we do what he says?" (No way!)*

If the group answers incorrectly, restate the rules and questions. Model a series of correct responses prior to conducting the level. Once they understand, keep them seated (option to sit on their hands). Conduct three or more rounds with the nice bear and mean dragon giving directions of the actions you had them practice. If the children have difficulty, stay on this section.



Game Level 2 | Follow Dragon and NOT Bear:

Repeat Level 1 but instead of instructing the children to do what the ***Nice Bear*** says and not what the ***Mean Dragon*** says, instruct them listen to what the ***Mean Dragon*** says but not the ***Nice Bear***. Tell them:

*"Now we're going to be silly. When the **Nice Bear** talks, we are not going to do what he tells us to do. And when the **Mean Dragon** talks, we will do what he tells us to do!"*

Ensure they understand what to do when each puppet talks. Ask them:

*"When the **Mean Dragon** talks, do we do what he says?" (Yes!)*
*"When the **Nice Bear** talks, do we do what he says?" (No way!)*

If the group answers incorrectly, restate the rule and question. Once they understand, conduct three or more rounds – or continue the game until you feel children have demonstrated an understanding of the rules.

Game Level 3 | Simon Says (no puppets, no modeling):

Have the children stand up and repeat Level 1 but remove the visual cues of the bear and dragon puppets and replace the rules with Simon Says. Tell them:

"Okay, now we're going to play this game without the puppets helping us. This is called Simon Says. If I say, 'Simon says' then you will do what I ask you to do. If I don't say 'Simon Says' you will not do what I ask you to do."

Ensure they understand what to do when you give them directions. Ask them:

"When I say, 'Simon Says' do we do what I ask?" (Yes!)
"When I DON'T say 'Simon Says', do we do what I ask?" (No way!)

If the group answers incorrectly, restate the rule and question. Once they understand, conduct three or more rounds – or continue the game until you feel children have demonstrated an understanding of the rules.

Game Level 4 | Simon Says (With Correct Responses Modeled by Adult):
Repeat Level 3 but model all the actions. This way the children have to resist imitating your actions.

"Okay, now we're going to play Simon Says again and I am going to do all the movements. Remember, you're not imitating me, you only do what I ask when I say, 'Simon Says.'"

Ensure they understand the new rules as you did in Level 3. Once they understand, conduct three or more rounds – or continue the game until you feel children have demonstrated an understanding of the rules.

Game Level 5 | Simon Says Reverse Rules (Optional):

Professional Development

Understanding why kids do what they do is imperative for teachers looking to make the biggest daily impact in their classrooms. Reflection Sciences' online Professional Development courses, rolling out in mid-July, provide up-to-date and easy-to-understood guidance using the latest information on Executive Function and the role it plays in developing the Whole Child.

Designed and developed by renowned classroom teachers and leading experts in the field of brain-based learning, our self-paced courses will help you understand how Executive Function skills develop across the lifespan; effective ways to support its healthy development; and how to seamlessly integrate proven intervention strategies into any learning environment.

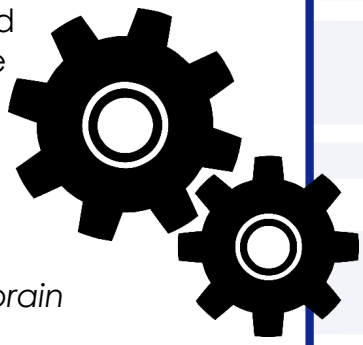
Curious? Check out our preview of Reflection Sciences' first two Professional Development courses below!

Executive Function Skills: A Foundation for Learning and Adaptation

Intended Audience: Early Childhood Professionals and Partners, Educators, and Parents

Other pertinent information or participant requirements:
Using interactive tutorials and organized discussions, learners will have the opportunity to dig deep into executive function and how to best encourage its development in their current educational environment.

Session Description:
This session will review what is known about Executive Function (EF) and why there is currently so much interest in EF among educators, parents, and mental health professionals; how executive function is tied to the brain, and how both develop as function of experience; how to measure EF in childhood and across the lifespan; and, effective ways to support its healthy development in the early childhood classroom.



Key ideas:

- *Understand and discuss the influence of experience on brain development and behavior.*
- *Define and discuss executive function (EF) and its development in childhood.*
- *Understand why EF is important for learning and school success.*
- *Understand how EF is measured in early childhood.*
- *Identify ways to promote the healthy development of EF.*

Executive Function Skills: Interventions for Success

Intended Audience: Early Childhood Professionals and Partners, Educators, and Parents

Session Description: This workshop on executive function intervention will draw upon existing scientific literature, illustrative videos, and interactive discussions to help participants gain a deeper understanding of executive function skills – what they are, why they're important, and how they develop – and how to support them in young children. The material will highlight general principles for EF intervention and specific ideas for merging EF support with existing curricular and programmatic goals.

Continued on next page…

Resources:
Our Intervention Guidebook Instructor will draw from the Reflection Sciences' Intervention Guide for Promotion of Reflection and Executive Function Skills: Foundations for Learning and Adaptation. The guide is a practical tool to help teachers build children's EF capabilities through proven methodologies. It includes multiple activities shown to enhance EF skills, tips to engage parents, and tools to measure outcomes.

Key ideas:

- Outline and understand the background on executive function (EF).
- Understand general take-aways from existing research on EF intervention.
- Identify topics to reflect on and incorporate into your EF support efforts.

EF Games Powered by Kiko Labs

We are proud to partner with Kiko Labs, who worked with neuroscientists from the University of California Berkeley and Harvard to develop Kiko's Thinking Time Games, an adaptive training program for early learners, aged 3 to 7. Kiko's Thinking Time Games uses a suite of activities to target skills foundational to cognitive learning: Executive Function, reasoning, and spatial skills.

We currently offer twenty (20) of their web-based games in an HTML5 version. Access to the entire suite of games is provided via an annual licensing option, so users can have their learners access the games as often as they would like. The games primarily target skills such as:

- *Working memory;*
- *Reasoning;*
- *Inhibitory control;*
- *Flexibility;*
- *Spatial skills;*
- *Focus; and*
- *Basic math competencies.*

Conscious Discipline®

We are partnered with Conscious Discipline, a leading provider of social-emotional learning for the Pre-K audience in the U.S. and throughout the world. Beginning in mid-2019, visitors to the Conscious Discipline website will have access to the MEFS App™, training, and examiner training manuals. Conscious Discipline users who begin to integrate the MEFS App™ into their instruction will soon receive specific Conscious Discipline intervention activities tied to their child's Executive Function development and performance on the MEFS App™.

Together, Reflection Sciences' tools foster **understanding (Reflection Sciences, Professional Development)**, **measurement (the MEFS App™)**, and **improvement (*The EF way to PLAY!* Intervention Activities, EF Games Powered by Kiko Labs, Conscious Discipline®)** of Executive Function skills. This suite of tools and resources, created by leading experts for pioneering educators (and others contributing to children's development), provide a unique opportunity for a change in circumstance. They also ensure the best opportunity for children without implementing drastic systemic or curricular change.

Questions?

Contact us at info@reflectionsciences.com