

EXECUTIVE FUNCTION
BUILDING MEMORY AND FOCUS
FOR STUDENTS WITH AUTISM AND INTELLECTUAL DISABILITIES

PADMAJA SARATHY
Educational Consultant and Author

www.infinitepossibilities-sped.com
psarathy@earthlink.net

AbleNet University Webinar
FEBRUARY 22, 2017



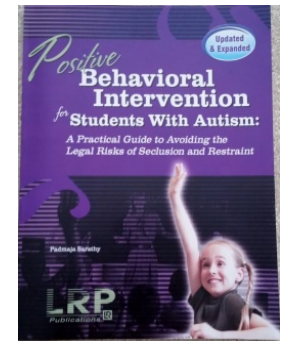
EXECUTIVE FUNCTIONING SESSION FOCUS

- **What are Executive Functions (EF) ?**
- **EF Components**
 - The role of EFs for academic, school and life success
- **EF - Working Memory – Issues in the classroom**
- **Learn specific strategies to address working memory – Attention, Focus & Memory – difficulties**



Author & Educational Consultant

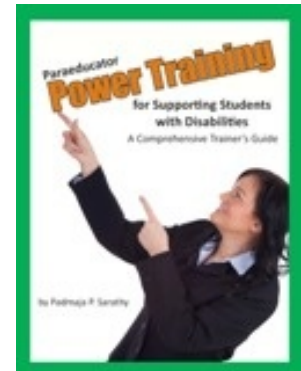
www.infinitepossibilities-sped.com



- **Positive Behavior Strategies for Students with ASD: A Practical Guide to Avoiding the Legal Risks of Aversives, 2013.** Publisher: LRP Publications, (www.shoplrp.com)
- **Autism Spectrum Disorders: Seven Steps of Support, 2015.**
A quick reference laminated guide; Publisher: National Professional Resources, Inc. (www.nprinc.com)
- **Serving Students with Severe and Multiple Disabilities (Second Edition), 2014:** A Guide to Strategies for Successful Learning (Publisher: LRP, www.shoplrp.com)
- **Sarathy, P., 2017. Students with Significant Disabilities: At the Crossroads of IDEA and ESSA.** LRP Publications. Recently released.

BOOKS AND PRODUCTS

- **Paraeducator Training DVD and Trainee Manual, 2013.** (Park Place Publications - www.ed311.com)
 - A 'Trainer of Trainers ' DVD with multiple training units and Paraeducator Trainee Manual
- **From Early Intervention... to Preschool Program... and School-Age Services: A Parent's Guide, 2006.** (LRP Publications, www.shoplrp.com)
- **Together We Succeed: Building a Better System for Transitioning Preschoolers with Disabilities , 2004.** (LRP Publications).
- **STEM Teaching Strategies for Young Learners.(2016).** A quick reference laminated guide. Legal Digest - www.ed311.com
- **Magical Musical Transitions (2009).** A Music CD for assisting children with Autism Spectrum Disorders. Marketed by [www. nprinc.com](http://www.nprinc.com)



EXECUTIVE FUNCTION SKILLS

- **Executive function skills are crucial building blocks for the early development of both cognitive and social capacities.**
 - These are not skills that children are born with but developed over time, shaped by experiences.
- **Having executive function in the brain is like having an air traffic control system at a busy airport.**

EXECUTIVE FUNCTIONS (EFs)

EFs are the cognitive functions needed...

- To be able to focus, hold, and work with information in mind, filter distractions, control impulses, and switch gears
- There are 3 core functions needed to build **EFs**:
 - Working Memory
 - Self Control/Inhibitory Control
 - Cognitive or Mental Flexibility.
- Each type of EF skill draws on the elements of the other.

Adapted from Harvard's Developing Child Project

WHY IS IT IMPORTANT TO FOCUS ON EFS?

- Executive functioning sets the stage for subsequent learning and successful adult outcomes.
 - These skills support **the process, the how of learning** — focusing, remembering, planning, and problem solving — that enables children to effectively and efficiently master **the content – the what of learning** — reading, writing, computation. (Center on the Developing Child, Harvard University, 2015)
- EFs are critical for success in school, in friendships, in jobs, and for mental and physical health and for quality of life. (Moffitt et al, 2011)
- Children with poorer EFs benefit the most from training. Diamond, 2012

EXECUTIVE FUNCTION VIDEO

<http://developingchild.harvard.edu/resources/inbrief-executive-function-skills-for-life-and-learning/>

WORKING MEMORY

- WORKING MEMORY is the capacity to hold and manipulate information in our heads.
 - **Hold multiple pieces of information and working with it**
 - Mentally relating pieces of information to derive a general principle
 - Understanding cause and effect
 - Necessary for children with social interactions
 - Making sense of any linguistic information
 - Performing mental math
 - Stopping and restarting an activity

Adapted from Harvard's Developing Child Project

EF CHALLENGES IN STUDENTS WITH SPECIAL NEEDS

- Students with intellectual disabilities may experience difficulty recalling information and applying it to complete a task.
- Students with ASD have executive function differences, impaired cognitive flexibility and self-regulation difficulties (Aspy, 2012).
 - Adjusting to changes in strategies, shifting focus from one task to another, transitioning to different environments and personnel, changes in routine, etc. is challenging for them.

EF CHALLENGES: WORKING MEMORY SUSTAINED ATTENTION, RECALL AND APPLICATION

- Memory and forgetfulness (storage and retrieval)
 - Remembering instructions
 - Poor recall of information taught previously
 - Connecting new information with what has been learned
 - Failing to bring materials needed for the activity
- Planning, prioritizing and following through all of the steps
- Cognitive overload due to processing speed issues –jamming of too many ideas and concepts

A Resource for Assessing Working Memory

Flanagan, Ortiz and Alfonso (2013) – Essentials of Cross-battery Assessment provide a comprehensive list of standardized measures to assess working memory.

EF CHALLENGES: WORKING MEMORY SUSTAINED ATTENTION, RECALL AND APPLICATION

- Academic skill difficulties related to working memory
 - Reading comprehension issues
 - Abstract math concepts and mental math challenges
 - Learning and processing new vocabulary
 - Difficulty organizing thoughts when comparing and contrasting information.
 - Organizing thoughts and ideas for writing

What kind of Working Memory challenges have you observed in your students?



EF CHALLENGES: PLANNING, ORGANIZATION AND PROBLEM SOLVING

Does the student:

- Experience difficulty completing long term projects?
- Experience challenges organizing self/work and getting started?
- Fail to turn in homework?
- Resist seeking help?

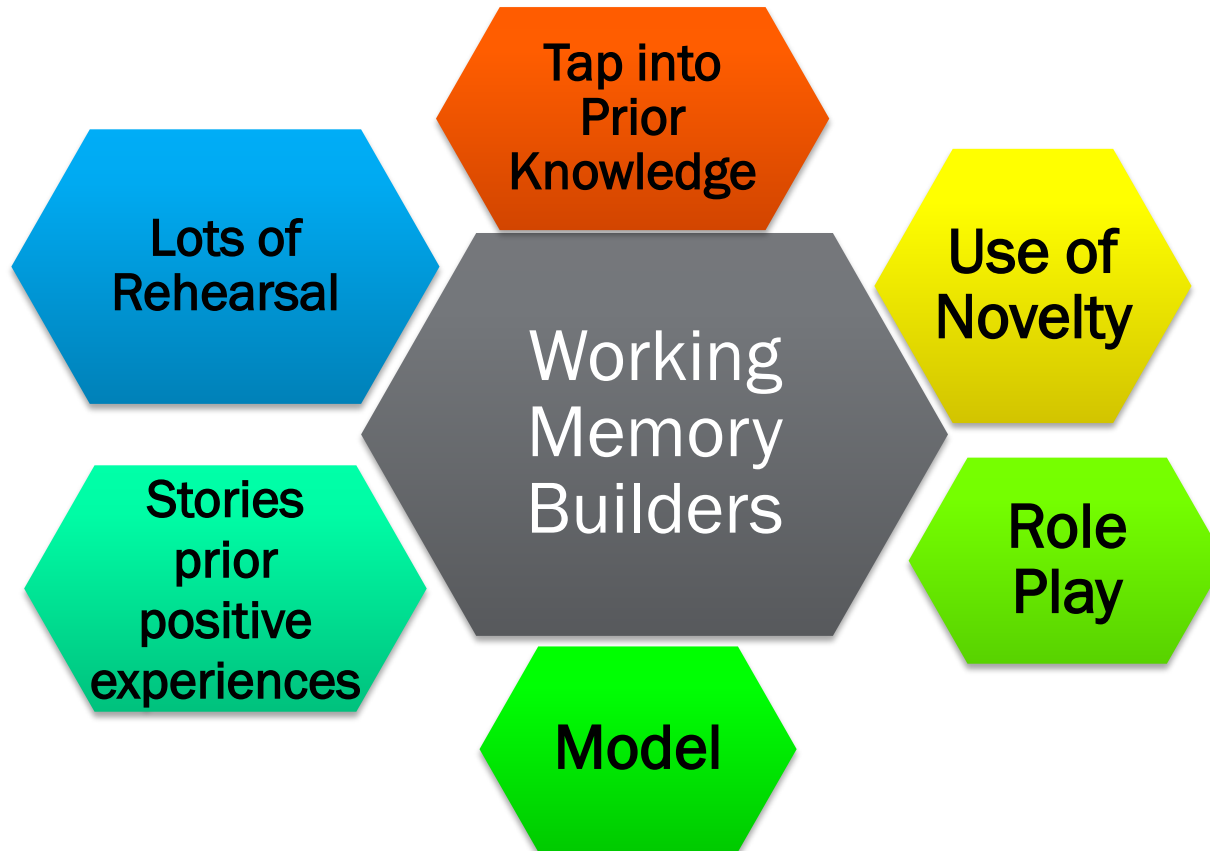
What kind of Working Memory challenges have you observed in your students?



Participant Survey

Identify a Working Memory difficulty that is most problematic for your students:

- Recalling information from prior lessons
- Following multi-step directions
- Remember to bring materials to class
- Applying skills to new situations
- Get materials organized to start work



WORKING MEMORY: WHAT WILL HELP?

- Activating prior knowledge to connect new with old.
- Combining verbal presentation with visual elements to facilitate remembering and for easier recall.
- Providing personalized real-life examples to make it more meaningful and assist with recall.
- Engaging students in a hands-on activity immediately following direct instruction.
- Providing visual tools – graphic organizers, concept maps, Venn Diagrams, T-Charts, timelines, etc. as to stimulate memory about the pertinent topic.

SUSTAINING ATTENTION AND FOCUS SUPPORT STRATEGIES

- Motivating materials and novelty to present lessons to seize student attention and sustain it
- Incorporating multi-sensory elements – interactive demonstrations, story-telling, role play and drama to engage learners
- Presenting lessons that require higher levels of engagement from all of the students
- Seating students with attentional difficulties in a quieter section of the room.





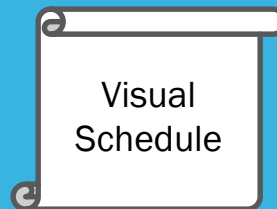
WORKING MEMORY SUPPORT STRATEGIES



Building and strengthening working memory

- Teaching and using mnemonics
- Providing memory aids, such as anchor charts/posters, word walls (paired with visuals)
- Using sticky notes to jot down thoughts
- Offering note-taking assistance
- Finding ways to remind student to hand in homework
- Keeping thoughts in thought bubble
- Reminder cards

Word Wall (paired
with photos)



HOMES
acronyms



WORKING MEMORY SUPPORT STRATEGIES (Continued)

- **Playing games exercises working memory - increases motivation for learning and rehearse what they have learned.**
 - Mental math games, recalling and repeating a number or a word pattern, recalling a sequence in order, etc.
 - Vocabulary games
 - Card games and board games
 - Games that require monitoring and fast responses are great for challenging attention and quick decision-making in children.
 - Strategy Games (e.g., Chess) and games involving physical movement

EVALUATE YOUR ENVIRONMENTAL AND INSTRUCTIONAL SCAFFOLDING TO ASSIST WITH EF - Working Memory

Tap into Prior Knowledge?

Novelty?

PEER SUPPORTS?

HANDS-ON ACTIVITIES?

Incorporate Multi-sensory Routinely?

Brainstorming Helpers?

Problem-solving Activities?

PROJECT-BASED LEARNING?

Joyful Teaching and Learning?

WORKING MEMORY, FOCUS AND ATTENTION

Problem:

John has difficulty paying and sustaining attention

Solutions to Consider:

- Preferential desk placement away from distractions
- Reduce total time frame (initially) John has to sit and attend. Have a built-in break. Increase time as he builds tolerance.
- Incorporate multi-sensory elements into the lesson.
- Use role play and story-telling to motivate and sustain interest
- Offer multi-media presentations.
- Provide visual cue/support to gain attention.
- Use motivation and engagement strategies using preferred items during the lesson.

WORKING MEMORY, FOCUS AND ATTENTION

Problem:

Anna has difficulty with recall.

Solutions to Consider:

- Begin instruction using brainstorming techniques to connect with prior knowledge.
- Have Anna use a graphic organizer tool to help recall facts and details about concept/lesson.
- Use 'Pair-Share' techniques. Have student reflect on and share with a peer what she has learned.
- Incorporate multi-sensory elements into the lesson.
- Use role play to motivate and engage student to help with later recall

WORKING MEMORY, FOCUS AND ATTENTION

Problem:

Jose struggles with holding information in mind while solving math problems.

Solutions to Consider:

- Address skill deficits. Provide systematic instruction with a step-by step teaching approach to overcome any skill deficits.
- Model, lots of repetition and practice. Use concrete representations.
- Provide mathematical problem solving plans: What information do I have? What do I need to know?
- Use 'Pair-Share' techniques. Have student reflect on and share with a peer what he has learned.

GAMES FOR WORKING MEMORY AND COGNITIVE FLEXIBILITY

Puzzles that require information to be held and manipulated in working memory can be terrific challenges.

Crossword puzzles are available for all skill levels and draw on manipulation of letters and words in working memory as well as cognitive flexibility.

Sudoku provides a similar challenge but works with numbers and equations rather than letters and words.

APPS FOR STRENGTHENING EFs

Working Memory: Apps

Memory! (.99) Memory! is a memory matches game with different colorful and vivid pair cards. This game will help engage children and to train their memory and concentration ability. With three levels of difficulty the complexity of the game can be adjusted accordingly to the age and skills of the child.

Cogmed Working Memory Training. (Free) Cogmed Working Memory Training is an evidence-based intervention for improved attention. Based on the concept of neuroplasticity and with more published research behind it than any other cognitive training program.

Plan and Organize: Apps

Idea Sketch. (Free) Idea Sketch lets you easily draw a diagram - mind map, concept map, or flow chart - and convert it to a text outline, and vice versa. You can use Idea Sketch for anything, such as brainstorming new ideas, illustrating concepts, making lists and outlines, planning presentations, creating organizational charts, and more!

REFERENCES AND RESOURCES FOR EXECUTIVE FUNCTIONING

- Aspy, R. (2012). Cognitive differences: Online training module (Plano, TX: The Ziggurat Group). In Ohio Center for Autism and Low Incidence (OCALI), *Autism Internet Modules*, Columbus, OH: OCALI www.autisminternetmodules.org.
- Center on the Developing Child, Harvard University (2015). Key concepts: Executive Function. Retrieved from http://developingchild.harvard.edu/key_concepts/executive_function/
- Diamond, A. (2012). Activities and Programs that Improve Children's Executive Functions. *Current Directions In Psychological Science*. 21(5) 335-341.

REFERENCES AND RESOURCES

Flanagan, Ortiz and Alfonso (2013). Essentials of Cross-battery Assessment (provides a comprehensive list of standardized measures to assess working memory).

Galinsky, E. (2010). *Mind in the making*. Harper Collins Publishers, New York, NY.

Gregory, G., & Kaufeldt, M., (2015). *The Motivated Brain*. ASCD. Alexandria VA.

Moffitt et al., (2011). A Gradient of Childhood self-control predicts health, wealth and public safety. *Proceedings of the National Academy of sciences.* , 2693-2698.

Sarathy, P. (2017). *Students with Significant Disabilities: At the Crossroads of IDEA and ESSA*, LRP Publications (www.lrp.com).

REFERENCES AND RESOURCES

Sarathy, P. (2016). STEM Teaching Strategies: For Young Learners. Ed311 (www.ed311.com)

Sarathy, P. (2013). (First edition, 2009). Positive Behavioral Intervention for Students With Autism: A Practical Guide to Avoiding the Legal Risks of Seclusion and Restraint. LRP Publications.

Sarathy, P. (2013). Seven Steps for Supporting Children with Autism Spectrum Disorders (ASD): A Quick Reference Guide (www.NPRinc.com)

Wilkins, S. & Burmeister, C. (2013). Flipp the Switch: Strengthen Executive Function Skills. Autism Asperger Publishing Company.



THANKS.

**A special thanks to AbleNet university for
hosting the webinar**

Padmaja Sarathy

Author and Consultant

Infinite Possibilities

psarathy@earthlink.net

www.infinitepossibilities-sped.com

The Next Executive Function Webinar

will be on March 15th, 2017.