

Build the Brain When it Counts Series: Cultivate Cognitive and Executive Function Skills

**AbleNet University
Webinar
June 7, 2016**

**Padmaja Sarathy
Author/Educational Consultant
www.infinitepossibilities-sped.com
psarathy@earthlink.net**

Focus of Session

- ❑ You will gain skills in using steps and strategies
 - ❑ To advance young learner's cognitive and executive function skills based on neuroscience findings.
- ❑ This session will illustrate:
 - ❑ A variety of math, science, literacy and movement activities to train children's executive function and promote cognitive development (critical thinking and problem solving skills)
 - ❑ A popular children's book will serve as the enabling tool.

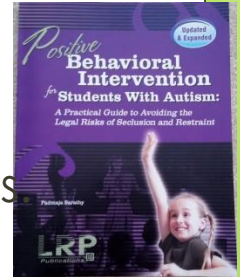


Author & Educational Consultant

Author of multiple books and products (Website: www.infinitepossibilities-sped.com)

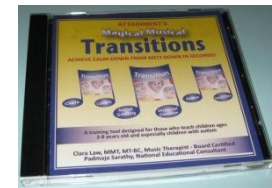
Positive Behavior Strategies for Students with ASD:

A Practical Guide to Avoiding the Legal Risks of Aversives
Publisher: LRP Publications, (www.shoplrp.com)



Autism Spectrum Disorders: Seven Steps of Support (A quick reference guide) Publisher: National Professional Resources, Inc. (www.nprinc.com)

Magical Musical Transitions – A Music CD for assisting children with Autism Spectrum Disorders
Marketed by www.nprinc.com)



Paraeducator Training DVD and Trainee Manual

Includes a training unit on autism spectrum disorders Publisher: Legal Digest (www.ed311.com)

- ❑ **Serving Students with Severe and Multiple Disabilities: A Guide to Strategies for Successful Learning** (Publisher: LRP Publications, www.shoplrp.com)
- ❑ **From Early Intervention... to Preschool Program... and School-Age Services: A Parent's Guide** (Publisher: LRP Publications, www.shoplrp.com)
- ❑ **Together We Succeed: Building a Better System for Transitioning Preschoolers with Disabilities** (Publisher: LRP Publications, www.shoplrp.com)
- ❑ A couple of books are to be released later in 2016.



Executive Function Skills

- ❑ What are Executive Function Skill ?
- ❑ Executive function skills allow us to retain and work with information in our brains, focus our attention during a particular activity, filter distractions, and switch mental gears.
- ❑ Executive function and self-regulation skills provide critical supports for learning and development – both cognitive and social capacities.
- ❑ Grows at a fast pace during the early childhood period, from 3-5 years of age.
- ❑ There is emerging evidence that executive function skills contribute to early reading and math achievement during the pre-kindergarten years and into kindergarten.

(Center on the Center on the Developing Child at Harvard University, 2011, 2014).

Executive Function Skills

(continued)

- ❑ There are three basic dimensions of these skills:
 - ❑ **Working memory** — The ability to hold information in mind and use it.
 - ❑ **Inhibitory control** — The ability to master thoughts and impulses so as to resist temptations, distractions, and habits, and to pause and think before acting.
 - ❑ **Cognitive flexibility** — The capacity to switch gears and adjust to changing demands, priorities, or perspectives.

Working Memory

- ❑ **Working Memory** is the capacity to hold and manipulate information in our heads over short periods of time.
- ❑ **Hold multiple pieces of information:**
 - ❑ “Go to the Book Corner, put away your books, line up at the door, ready to go to recess”.
- ❑ **Helps children with social interactions:**
 - ❑ Taking turns in group activities
 - ❑ Playing at the Housekeeping/Dramatic Play Center
Planning and acting out a skit
- ❑ **Stopping and restarting an activity:**
 - ❑ Easily rejoining a game after stepping away to go to the bathroom or get a drink of water.

Center on the Developing Child at Harvard University (2014).

Retrieved from www.developingchild.harvard.edu.

Inhibitory Control

- ❑ **Inhibitory Control** is the skill we use to master and filter our thoughts and impulses so we can resist temptations, distractions, and habits and to pause and think before we act.

- ❑ What are some ways children exhibit inhibitory control? Children rely on this skill...
 - ✓ **When they wait until they are called on (when they know the answer) or have to wait their turn in a game or to speak in a group**
 - ✓ **To stop themselves from yelling at or hitting a child who has inadvertently bumped into them**
 - ✓ **To ignore distractions and stay on task in school.**

Cognitive Flexibility

- ❑ **Cognitive or Mental Flexibility** is the capacity to nimbly switch gears and adjust to changed demands, priorities, or perspectives.
 - ✓ Enables us to apply different rules in different settings.
- ❑ Children use this skill of Cognitive or Mental Flexibility when:
 - ✓ We teach children about “outside voices” and “inside voices” and the different situations in which they should use each.
 - ✓ To learn exceptions to rules of grammar
 - ✓ Try different strategies when they are working out a conflict with another child.

A Toolkit of Ideas to Cultivate Executive Function and Cognitive Skills

Book of Choice for the Framework

Brown Bear, Brown Bear, What Do You See?

By Bill Martin, Jr. and Eric Carle, Jr.

A picture book is used as the focal point to design and offer a number of enriching activities to build executive function and cultivate cognitive skills.

Story Reading and Story-telling Strategies

- Use a **serve and return** model when reading a book to engage and sustain children's attention.
- **Use story-telling to build attention, imagination and vocabulary Skills.**
 - Select stories with simple themes, with rhymes and predictable phrases for a rich story-telling experience.
 - Story-telling enables children to draw the pictures in their minds, visualize, recall details and increase focus and attention.
- **Encourage children to tell stories** (practice holding and manipulating information in working memory).
- When they draw a picture that tells a story, write their stories down. Read it to them.

Books to Cultivate Critical Thinking

- ❑ Examples of some books to promote critical thinking skills for the 3-5 years age group:
 - ❑ Are you My Mother by P. D. Eastman
 - ❑ If You Give a Mouse a Cookie by Laura Numeroff
 - ❑ Seven Blind Mice by Ed Young
 - ❑ What Can You Do with a Paleta? by Carmen Tafolla
- ❑ The books help to promote critical thinking skills needed to develop executive function — cause and effect thinking, problem solving strategies, connecting with prior knowledge and experiences.
- ❑ Spanish editions for most of these books are available.
([www. mindinthemaking.org](http://www.mindinthemaking.org))

Questioning Strategies

Promote Critical Thinking asking multi-level questions (easy to complex). Examples:

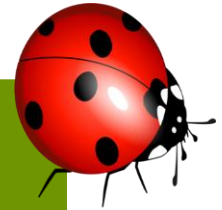
- ❑ Who has a dog (Cat, Bird or Horse) at home? (recall, attention)
- ❑ Does a dog make a good pet? Why? (critical thinking)
- ❑ Can you have a bear as a pet? Why or why not? (for critical thinking and making connections)
- ❑ Where would you see a red bird or a yellow duck? (recall, attention, working memory)
- ❑ Have you seen a blue horse or a purple cat? (recall, attention)
- ❑ Are blue horses and purple cats real or imaginary? (memory and making connections)
- ❑ Is a bear a mammal or a reptile? (a challenge question requiring higher concept knowledge, working memory)

A Brain-Storming Activity to Build Thinking, Recall and Categorization Skills

Use the concept map to brainstorm animal/insect names.



Butterfly



Lady Bug

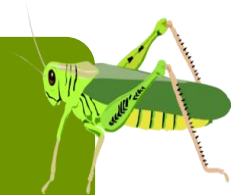
Insects



Mosquito



Beetle



Grasshopper

Make an Animal-Theme Book

- ❑ Use the pattern presented in Brown Bear, Brown Bear as a model, make an 'Insects' or 'Zoo Animals' or 'Pets' book.
 - ❑ Butterfly, Butterfly, What do you see?
 - ❑ I see a _____ looking at me.
- ❑ Involve the children (in Pre-K and K) in creating the book. Supply sentence frames and bank of words.
- ❑ Match corresponding animal photos to text.
- ❑ Display it in the book center for children to read again and again.
- ❑ Read the book, Dear Zoo by Rod Campbell to increase animal names vocabulary for younger children.

Play Verbal Games

- ❑ **Play verbal games:**
 - ❑ To build attention, working memory and inhibitory control
 - ❑ To strengthen thinking and language Skills.
- ❑ **Play “I am going to the zoo and I will see...”**
 - ❑ Start with the teacher (adult) modeling (saying), “I am going to the zoo and I will see a (name the animal) – e.g., **tiger**”.
 - ❑ Next, a student repeats the sentence and adds her/his animal name, “I am going to the zoo. I will see a tiger and a lion.”
 - ❑ See how long the list can go before someone forgets one of the animal names on the list.
 - ❑ The game can start over without anyone losing at this point.
 - ❑ Adaptation: Provide pictures for children experiencing difficulty in naming an animal – can point to one of the animal pictures.

Play Games

- ❑ **Play “I Spy An Animal” Game.**
 - ❑ Describe a couple of features of an animal and let the children guess the animal. “I am thinking of a large animal. It has big ears. You see it in the zoo (or lives in the jungle). What animal is it?”
- ❑ **Play “Twenty Questions” Games.**
- ❑ **Provide increasingly complex puzzles.**
 - ❑ **To exercise their visual working memory and planning skills.**
- ❑ **Construct, create and play an animal picture Bingo game.**

Math Magic

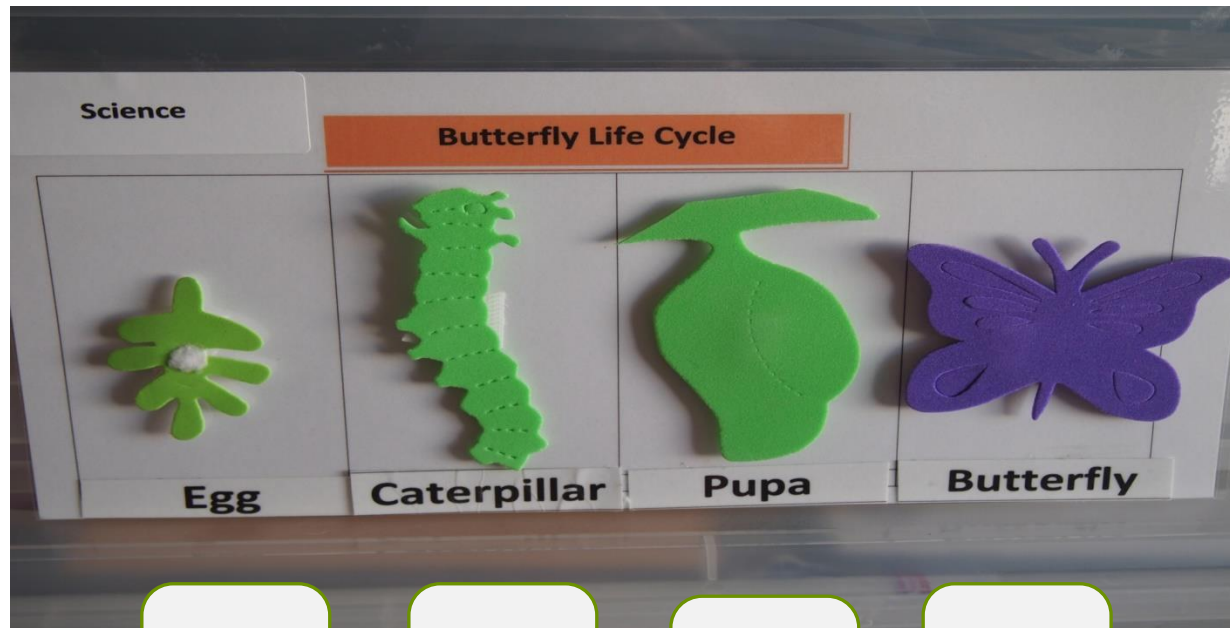
- **Build Attention, Working Memory and Inhibitory Control**
 - **Count and Assemble Sets**
 - Use plastic bear counters and foam dice.
 - Children take turns rolling the dice (large foam dice) and identify the number (count the number of dots) on the top.
 - Next, they match it to an equivalent set of (bear) counters.
 - **Make size/height comparison:**
 - Compare “Which animal is larger, a bear or a cat?”
 - Which animal is smaller, an elephant or a turtle?
 - Which is longer, a snake or a caterpillar?
 - Which one is taller, a horse or a giraffe?”
 - Make a chart of large/small and tall and short animals.

Science Inquiry

- ❑ **Set up a Science Challenge Discovery Center:**
Expose learners to inquiry-based science activities.
- ❑ **Animal habitats:** At the discovery table, showcase animal habitats with photos and real objects.
 - ❑ Have students match animals to their habitats.
- ❑ **Animal Classification:**
 - ❑ Set up a 2-part chart providing some examples to classify animals into 'Reptiles and Mammals' (Turtles and snakes are reptiles; Bears and dogs are mammals).
 - ❑ Provide photos of animals paired with their names. Students sort animal photos into the two categories using the chart at the center.

Science Inquiry (continued)

- ❑ Teach stages 'Life-Cycle': butterfly and frog. (Builds working memory, attention to detail)
- ❑ Post a pictorial chart of the life cycle.
- ❑ Involve students in sequencing the life cycle stages.



Creative Arts –Dramatic Play

□ Role-play movements of animals.

- Engage in a joyful movement activity focusing on how animals move.
- Have children role-play and move like the various animals from the Brown Bear story:
 - ✓ **Walk like a bear.**
 - ✓ **Swim like a fish.**
 - ✓ **Fly like a bird.**
 - ✓ **Gallop like a horse.**
- Through performing physical actions, children will be able to visualize and recall the animal features and movements, applying the knowledge gained during instruction. (Working Memory)

Music, Movement and Games

- ❑ Music, movement activities and games contributes to strengthening working memory and inhibitory control.
- ❑ **Play 'Simon Says'**. It is a great game to advance attention, inhibition, and cognitive flexibility.

"Simon says... Jump like a frog."; "... Hop like a rabbit."; "Simon says... Hop like a Kangaroo."
- ❑ **Sing and perform actions to popular nursery rhymes/songs about animals:**
 - ❑ Five Little Ducks Went Out One Day
 - ❑ Five Little Monkeys Jumping on the Bed
 - ❑ Five Speckled Frogs
 - ❑ Old McDonald Had A Farm
 - ❑ The Spider on the Floor

Child-specific Supports

- ❑ Use object representations or picture cues as supports to assist students with their responses.
- ❑ Ask questions ranging from higher to lower complexity levels to provide opportunities for children with diverse abilities to respond to questions and experience success.
- ❑ Provide invisible support.
- ❑ Build in transition activities (movement activities, games, songs, etc.) to sustain student motivation and attention.
- ❑ Offer additional opportunities to take short breaks for children who appear restless and fidgety.
- ❑ Make encouraging comments to provide positive strokes.

Resources

- ❑ Center on the Developing Child at Harvard University (2011). *Building the Brain's "Air Traffic Control" System: How Early Experiences Shape the Development of Executive Function: Working Paper No. 11*.
<http://www.developingchild.harvard.edu>

- ❑ Center on the Developing Child at Harvard University (2014). *Enhancing and Practicing Executive Function Skills with Children from Infancy to Adolescence*. Retrieved from www.developingchild.harvard.edu.

- ❑ ThinkFun: www.thinkfun.com
- ❑ Tools of the Mind: www.toolsofthemind.org

- ❑ Online games:
 - ❑ www.coolmath.com
 - ❑ pbskids.org/lab/games

Inhibitory Control and Resilience

The Marshmallow Test



https://www.youtube.com/watch?v=QX_oy9614HQ

The Forthcoming Webinars:

The next two webinars in
the **Build the Brain When it Counts Series**

Topic : Stimulate Literacy Development with Enriching Experiences

September 13th, 2016 (11 AM to 11:45 – CDT)

Topic : Nurture Social-emotional Domain with Positive Behavioral Approaches

October 17th, 2016 (11 AM to 11:45 – CDT)

Paraeducator Series:

Topic: Delivering Effective Paraeducator Support to Students with Disabilities: A Delicate Dance

June 16, 2016 (11 AM to 11:45 – CDT)



Thank You Everyone!
A special thanks to AbleNet University
for hosting the webinar.

Padmaja Sarathy
Author and Consultant
Infinite Possibilities
psarathy@earthlink.net
www.infinitepossibilities-sped.com