How Executive Function Skills Play a Role During Social Interaction

November 12, 2015
Session 1009
ASHA
Laurie Jacobs Bukala MA CCC-SLP
Social Skill Builder
Waking Up the Brain!

- Riddle...ice cream cone
Video from Center on the Developing Child
Harvard University
What is included within Executive Functions?

Brain Based Self Management Skills
Lower Order-Higher Order Thinking Skills

- Task Initiation
- Inhibitory Control
- Self Awareness
- Sustained Attention
- Task Persistence
- Cognitive Flexibility
- Working Memory
- Organization
- Planning
- Time Management
**Task Initiation/Inhibitory Control/Self/Social Awareness**

**Task Initiation**-Begin and complete a goal directed task.
   Often these kids will get so wrapped up in the decision-making process that they never even start the task. Or, if they do begin, they're constantly starting and restarting because they've thought of a better way to do it. In the end they're exhausted when the time comes to actually follow through.

**Social Initiation/Inhibitory Control**-think before you act (it's not my turn yet-allows us to evaluate situation and how our behavior might impact it/

**Self Awareness**-recognition of one's feelings and skills

**Social Awareness**-recognition of others feeling and thoughts

What it looks like in an IEP:

- By (date) during social gathering student will **initiate** a social interaction with an familiar peer with conversational starter and **refrain** from asocial behavior (e.g. **off topic behavior**, **interrupting others**, or **invading personal space**).
Sustained Attention/Task Persistence

- Sustained (One Task); Selective (One Task while others are going on-Not Getting Distracted); Divided Attention (Multi-Tasking)

- Especially see struggles when things are boring or not intrinsically motivating or when fatigue sets in

- Taps into building in their own internal rewards systems
Tools of the Mind
a Vygotskian (play-based) Early Years Program

Program Developed by:
Dr. Bodrova & Dr. Leong

Using sustained attention, inhibitory control, working memory of rule of listening,

Targets:
• Regulation by others
• Regulation of others
• Regulation of self

Helps lay neuro ground work for preschools to practice EF skills
Even Typical Children’s Programs See the Importance!

- See Sesame Street YouTube
Working Memory

- Working Memory-Mental white board-Ability to hold information in memory while you are performing a complex task

You’ll Remember the mop, but you will have to go back down for the pail, the the pail, the pail…
Cognitive Flexibility

- Ability to Revise your Plan—Have a plan “B” Something is not working I need to switch my strategy
- This happens during problem solving, when one is facing set-backs, receiving more information, or in conversations
Planning, Organization & Time Management

- Planning - Create a roadmap to reach a goal - Prioritize what is relevant and irrelevant information - Puzzle

- Organization - Create and Maintain Systems to Keep Track of Information

- Time Management - Ability to estimate and allocate enough time to complete task "see into the future" "use past memories"
Higher Order Executive Functioning

- Goal Directed Persistence - Follow through to reach a goal.
- Meta-cognition - Birds-Eye view of how you are doing. Asking yourself - Is this going well? Develops last...late teens and young adults.
Executive Functions Develop through the life span-
by BJ Casey, 1999

- Developing through age 25-30
- Strategies throughout a lifetime
- Neuro-plasticity
When Executive Functioning Skills Typically Emerge

Milestones: Zelazo, Muller, Frye, Marchovitch (2011); Pennington & Ozonoff (1996)

Trajectory of EF Development: When do the different EF skills typically emerge?

- Infancy
- Preschool & Early Childhood
- Late Childhood/Early Adolescence
- Adolescence & Young Adulthood

- Emotional Control
- Development of self-talk
- Representational flexibility, response inhibition
- Cognitive flexibility, goal setting
- Working Memory
- Processing Speed
- Planning
- Self-Monitoring
- Problem solving

Zelazo, Muller, Frye, Marcovitch (2011); Pennington & Ozonoff (1996)
Executive Functioning in ASD

Rigidity and Cognitive Inflexibility are part of the diagnostic criteria of ASD.
1. Making Transitions
2. Coping with changes in routine
3. Tolerating changes with schedule
4. Generating new ways to approach to problem
5. Accepting flexibility of rules
6. Accepting different points of view
7. Responding to the needs and interests of others
8. Use of Past Memories & Apply to Present Situations
What EF Skills are related to Social Emotional Learning Skills “SEL”

- Ability to understand emotions & behavior, to set & achieve positive goals & care and connect with others. Learning how to manage themselves to work better with others

- Competencies:
  1. Self Awareness
  2. Social Awareness of Others
  3. Self Management
  4. Relationship Skills
  5. Responsible Decision Skills
  6. Episodic Memory-Prior Knowledge
How EF Effects Social Skills in a Student with Asperger’s

- See YouTube
How am I supposed to think about consequences before they happen?
Outward signs of EF Weaknesses

- Acting without thinking
- Interrupting others
- Overreacting to small problems
- Overwhelmed by large assignments
- Does not notice impact of behavior on others
- Difficulty calming down
- Difficulty coming up with alternative solutions
- Low frustration tolerance
Example in Conversation
Example of EF in Conversation

- The Simple Activity of Listening: As you are Listening…you are thinking “What do I think about what they are saying?” Then as you are thinking that, you are thinking,

  Do I want to say something/do something next?

Then you are thinking how do I think they are going to respond based upon what they are saying to me…all while you are still listening to what they are saying…

THIS IS HARD AND EXHAUSTING TO DESCRIBE LET ALONE DO OVER AND OVER IN A CONVERSATION!
If Executive Skills are focused on studies show increase in...

- Positive Social Relationships-inhibitory control, self awareness, use of past memories to mold performance in future activities
- Math Skills-organization, planning
- Adaptive Functions-independent functioning, self help skills, navigating community resources
Approaches to address EF Skills

- Directly Teach and Improve EF Skills-Change Child (6 wks/6 months)
  1. PATH Model (Promoting Alternative Thinking Strategies)
  2. Computerized/Non-computerized Learning
  3. Self Monitoring
  4. Modeling-Visual, Verbal

- Use Strategies-Child is taught compensation (external support)
  1. Self Talk
  2. Calendar
  3. Worksheets

- Adapt Environment-
  1. Separate Room
  2. Blinders
  3. Simplify

- Selected Environments are avoided due to executive functioning overload
Review of Research Based Interventions

- Computerized Training-Usually shows success on that specific training efforts but difficult to generalize

- Non-Computerized Training

- Martial Arts & Mindfulness-must continue

- Aerobic Exercise-Jumping Jacks before/after task

- Add-On Classroom Activities
  - Path Model Promoting thinking Strategies (Kusche & Greenberg, 2004)
  - increases Cognitive Flexibility
  - Tools of the Mind
Video Games & Technology Research that Supports Improvements in EF & SEL

- Improving Processing Speed (Green & Bavelier 2009)
- Increased Working Memory (Klingberg et al., 2007)
- Increase Pro-Social Behaviors in Children et al., (Gentile 2009)
- Improve Social Involvement (Ferguson, 2010)
- Improve Brain Flexibility with StarCraft
- Rayman and Raving Rabbids and Reading Fluency
Some Leading Experts in EF & SEL

- Randy Kulman, Psychologist & Author
- Judy Willis, Neurologist, Educator, Author
- Sarah Ward, SLP, Author & Spouse
- Peg Dawson, Ed D, NCSP Researcher & Author
Randy Kulman, PhD
Founder of Learning Works for Kids
Using Video Games & Technology for Learning

- Playing Smarter in a Digital World by Randy Kulman-guide for parents on how to use technology to help learn EF skills
Learning Works for Kids

Playbooks for Approx 800 Games & Apps-

learningworksforkids.com/playbooks/

- How it Helps
- How to Play Together
- Make it Work
- Mathematics
- Autism
- ADHD
Video Resources for Professionals and Students

- Interesting video on YouTube about video game research
  
  https://www.youtube.com/watch?v=OOsqkOytHOs

- Nice video to start dialog with kids about their EF (Because of no sound can apply to all age groups young and old)
  Have the child narrate/keeps them engaged/Good visuals
  
  https://www.youtube.com/watch?v=REo3fzja5xs
How can technology support SEL?

- Self Awareness-Examine strengths and weakness
- Social Awareness-Depend on others to succeed and advance
  1. Knowledge of others strengths & skills
  2. What they have collected
- Connect/Relationship Skills-Creation of clans or teams
- Manage Emotions-Handling frustrations
- Decision Making
How is technology improving EF

- Practice EF-Game skill i.e. flexibility, used repeatedly in order to achieve a goal
- Support of EF-Skill is scaffold by the games functionality
- Mastery of EF-If game has a built in system to generalize the practiced skills
Minecraft Xbox

- EF and SEL skills used
- Flexibility-Recipe for making different objects different every time improvise
- Organization-How to keep materials safe
- Time Management-Things have to get done before night fall
- Planning/Decision Making-coordinating, teamwork, talking-group decision making
- Connect Relationships-Quest to Learn School-Kids talk about games
Angry Birds Go! App

Flexibility
Focus
Time Management
Memory
Manage Emotions

Angry Birds Go! is a racing game from Rovio’s popular Angry Birds series. Quite different from the traditional sling-shot style of play employed by the familiar gaming series, this racing game tasks players with collecting coins to purchase upgrades for their vehicles. As gameplay continues, opponents become more difficult to beat, requiring players to collect a surplus of coins and gems so they can purchase the necessary upgrades to win. Each series of levels has a unique terrain, for which players will have to buy new styles of cars in order to gain access. Players are allowed two types of play: tilt screen, in which players rotate the mobile device to turn the car, or touch screen, wherein players simply tap right or left to steer. Gameplay is easy to learn with no inappropriate content, and no academic skills are needed to play, making Angry Birds Go! suitable for children 6 and older.
Talks to players about certain skills they could use to handle certain situations-compensations

YouDog (Mentor)- Breathing, Manage Emotions, Friendship, Understand feeling of other around them
CogMed App
Working Memory Exercises
JM-Preschool
RM-School Age
QM-Teens/Adults

- Strictly working on working memory
- 5 week training program
- Free trial of application
- Cogmed.uk.com

*Pearson, 2011
Back to Bed App

Time Management

Working Memory

Back to Bed is an art-show real-time puzzle game set in the surreal 3-D dreamworld of sleepwalking protagonist, Bob. Bob’s office job is so boring he can’t help but fall asleep, dropping into a treacherous surreal city. Players must take control of Bob’s subconscious, Subob, to run ahead of the somnambulist and place giant apples in his path to ensure that he does not drop off the edge of his dreamscape and makes it safely to his bed. Children who are becoming acquainted with surrealist painters will take particular delight in the game’s design, which calls to mind the works of Salvador Dalí, Henri Magritte, and MC Escher. Though cartoonish and benign, the game embodies an intense noir aesthetic that may be disturbing to younger children, making it more suitable for kids 8-years-old and up.
Caribbean Quest
University of Victoria
Neuro Development Net

ASD/FASD

Attention
Working Memory
EF

Neurons that fire together-Wire together
Brain systems that form that skill, after repeated trials we begin to gain that skill and use on their own in the game and then into the classroom

Kerns, Macoun,
Sosh Mobile App

Designed for Parents/
Professional/Teens & Adults

Exercises/Strategies/Info to
Improve Social Skills

Mysosh.com
Zones of Regulation
Book and Mobile App

Anger-Red Zone
Frustration-Yellow Zone
Happiness-Green Zone
Sadness-Blue Zone
4.99/9.99
You are a Social Detective Beginner App

Social Skill Builder: My School Day App

Social Skill Builder Programs
Multi-leveled program - Increases complexity

Can be customized to player

Allows students to make predictions

Shows graphing progress

Program advances as child meets demands

Allows students to see how others use their EF skills

Allows facilitator to pause and address planning, past experiences, strategies etc. that are being applied in social situations
Social Detective Example
www.youtube.com/watch?v=2GSRrxCLe-Q

See YouTube You Are a Social Detective by Social Skill Builder

Created by Social Skill Builder & Social Thinking

iTunes 24.99

Multi-User
Use of Mediation During SEL Building into Tech Tools

- Watching someone else play the game, how to get to the next level or successfully complete the social interaction

- Many YouTube videos-Let’s Play Videos

- Teaching children about the skills that are being used to accomplish the task

- Associating how these skills in the “game” can also apply to the real world… i.e. Building a House like in Minecraft-Planning out materials needed is like Planning out materials to go to school each morning

- Best would be where real world meets game world where the “coaches” would be in the embedded into the game itself.
Technology Games are Great Tools to Increase:

Games and Technology really make kids brains work!

- Engagement or Engagement
- Cognitively Immersed
- Interest- Catch them with what they are already doing
- Willingness to talk about & Practice & Socialize during and after game
- Playing=Learning…kinds are playing
- Attention
- Persistence
- Possibilities of Inclusion of Children of Special Needs
The key to success is effective mediation teaching from the game (Can be done in the game)

Additional learning requires teachers to make connections between “game” skills and application to “real life” skills

i.e. Building a House-Planning out materials needed is like planning out materials to go to school each morning

Actual learning requires knowledge skill, an understanding of how and when to use it and practice it across many situations

Game is the vehicle to practice skill
Generalization of GB skills to RW skills—Must be intentional to address a specific skill

The Sharper Brain Model for brain training

- Train a specific brain based skill—i.e., self-awareness
- Target area of weakness with specific tool/tech; Preview skill/Finding Teachable moments/customize process for each child
- Make tools adaptive—levels of complexity—challenge of mastery...harder as one makes progress
- Insure intentionally and duration
- Long term maintenance—Practice after mastery of skill
- Generalization Training—Outside of the game

*GB—Game Based

*RW—Real World
LW4Kids Model

- Integrated Strategic teaching principles
- Explicit goals, partnership with child, previewing engagement, individualize, teachable moments, customize process

Kids should be able to:

- Detect-Id or detect skill in game
- Reflect-Explain how it would help in RW situations
- Connect-Connect and do something in RW
Imagine you are placed in the following scenarios:

- You are dropped off at the top of a ski resort's steepest run when you've only had experience on the beginner slopes.
- You have to spend your day on the bunny hill when you're an expert skier.
- You play a game of darts with the target two feet away.
- You play a game of darts with the target 200 feet away.
- You are a 3rd grade student trying to do a crossword puzzle designed for experts.
- You are an adult trying to do a crossword puzzle designed for children.
Why the Video Model Works Even with 80% Failure Rate

- Timely and Frequent Feedback
- Incremental Goal Progress-Effort to Progress Graphs-Rubrics
- Customized Progress/Scaffolding
- Intrinsic Satisfaction Cycle-

  Release of Dopamine = Pleasure that is released as a reward for accurate predictions = which increases intrinsic satisfaction = increases motivation = increases performance = willingness to make another prediction, note strategy, note time constraints, or take note of episodic memories that were successful or not etc…
The Center for Executive Function Skill Development

cognitiveconnectionstherapy.com

Pinterest Board

Products-Planner, Timers, Worksheets

Seminars
Great Practical Ideas from Sarah Ward

- Task Execution Begins in the Mind—What does it look like when I am done. (Mime in the mind) Mission Statement

- Create Non-Verbal Working Memory before Verbal Working Memory (Self Talk)

- STOP—Space, Time, Object, People (Helps students to evaluate, compare and read the situation)

- Future Glasses, Get Ready—Slow Down, Gather Materials/Info, Do—What we do to get it done—Steps, Done—What does it look like when I am done

- Cooking, Crafts, Phone Conversations, Setting Up Social Events
Get Ready, Do, Done

• Note Planning First
• Note Colors Yellow, Green Red
• Note “stop”
Holding Strategy Codes

A “Holding Strategy” is a way to code, or make pictures to remember your thoughts when you are reading, watching something that you need to be quiet during, or during a group sharing time.

Here are the codes:
- a Connection I have
- a Question I have
- New, interesting and Cool!
- IMPORTANT – key point!

Great ideas like this one

Sign up for her newsletter
Resources for Creating Strategies

- For additional resources email me directly at laurie@socialskillbuilder.com
Final Thoughts & Questions

Which ever approach you choose to address the EF skills be sure to include the following:

1. Provide Opportunities to Apply Learning
2. Introduce Activities to Support Developing EF Skills
3. Model Higher Level Thinking Skills

Laurie Jacobs Bukala, MA CCC-SLP, Co-Founder of Social Skill Builder; Author of SSB Curriculum & Apps **ASHA Booth #847**

[Laurie@socialskillbuilder.com](mailto:Laurie@socialskillbuilder.com) Questions

socialskillbuilder.com-Software Curriculum & Apps/Presentation