Disclosure Statement

I have no financial or nonfinancial interest in any organizaiton whose products or services are described, reviewed, evaluated or compared in the presentation.

Learning Outcomes

At the end of this presentation, attendees will be able to:

- 1. State the functional working definition of what is meant by the term "executive function skills"as it pertains to therapeutic interventions
- Define how situational awareness, forethought and hindsight are the foundational skills for successful task executions
- Be able to develop an intervention program to foster a patient's ability to form more independent executive function skills by describing therapeutic activities to improve:
  - Situational awareness and forethought
  - Active self management of the factors related to the passage of time
  - Organization and planning skills for both information and tasks

Executive Function Skills

Presented by

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The Center for Executive Function Skill Development www.executivefunctiontherapy.com

'EXECUTIVE FUNCTIONS' FLOWCHART:

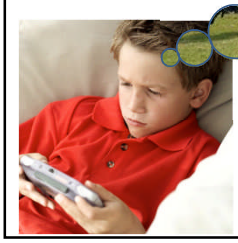
Relaxed State of Mental Alertness → **STOP** And Have **Awareness** →

STOP and Read the Room

Space	Time	Organization	People
Read the Room	**Get on the Timeline**	**Sense the Organization**	**Read the Person**
What's going on?	Time of day (routine vs. non-routine) What is happening at this Moment in Time What is coming up? *Predictable sequence Pace	How are things Organized? We Consider the basis for Organization: **Objects** Location Purpose Whole-->Part	Face Body Appearance Mood Pace Saying

'Executive Functions' Flowchart:

Relaxed State of Mental Alertness → **STOP** And Have **Awareness** →



If _____
Then _____

Space	Time	Objects	People
Read the Room	**Get on the Timeline**	**Read the Object**	**Read the Person**
•What's going on?	•Pace •Time of day •**What is happening at this Moment** in Time •What is coming up? Predictable sequence	Parts Location Purpose	Face Body Appearance Mood Pace Saying

ATTENTION

1. State of Alertness or Readiness for Action
   (somewhere between a trance and panic)
2. Focused or Selective attention
   (reading a detail: "zeroing in", detailed concentration **at the expense of overview**)
3. Divided or distributed attention
   (compensates for focused and lets us **shift our focus to the gestalt based priority** target)
4. Covert attention
   (Watching out of the corner of your eye- peripheral attention – higher level of attention and expertise: which target and for **how long should you attend**?)*time based
5. Internal attention
   (Look inside yourself – metacognition? How is it going? Am I on Track?)
6. External attention
   (External focus on Others- How are they doing a task? Who are my resources? Do I need to keep pace?)

STOP and Read the Room

Space

- Where is it?
- What are the parts to that space?

Time

- What time is it now?
- What usually happens at this time?
    - What is coming up?
    - About what time?
- The task/activity I am doing now…..when does it need to be done by?
- How much time do I have?
    - Long time or a short time?
- How long will it take?
    - What can be reasonably accomplished in this amount of time?
- What is the usual sequence that I do in that amount of time?
- What is the pace of activity?
    - Can I dilly-dally?
    - Can I rush?
        - What happens if I do?
- What do I see myself doing when it is all done? This is the Crystal Ball Image

Objects

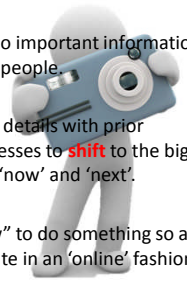
- What materials are in front of me?
- What materials do I need to gather?
- Anything I need to practice?

People

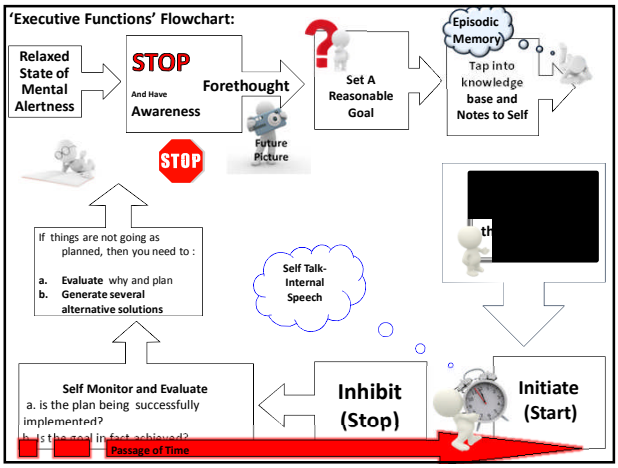
- Who is around?
- Who do I need?
    - What are they doing?
    - What is their pace?
    - What is their mood?
    - What is coming up for them?

Summary:

- Awareness is the ability to respond to important informational cues about space, time, objects and people.
- Enables a student to integrate these details with prior knowledge and use attentional processes to **shift** to the big picture to understand the gestalt of 'now' and 'next'.
- Creates a mental screenplay of 'How" to do something so a student can then self direct or execute in an 'online' fashion.



Anticipate the Outcome!



Working definition of EF skills

Executive Function is the ability to
integrate a present **awareness**
with a **future anticipation** and **prior experiences**
to achieve a reasonable **goal & plan**
(while still accounting for and
flexibly managing and organizing
the **space, time, objects** and **people around you**)
.

Time and the Executive Function Skills

Executive functions (EF) are central processes that are most intimately involved in giving organization and order to our actions and behavior and involve:

- planning for the **future** and strategic thinking
- the ability to **inhibit** or delay responding
- **initiating** behavior, and **shifting** between activities flexibly

Leslie E. Packer, PhD

Principles of Executive Function Skills

- Relaxed Alertness
- Awareness: "If….then" Future Picture Thinking
- Show the Sweep of Time
- Same but Different
- Do Students Know the "How to"
- Teach Organization:
  - Big Picture--> **Features** --> Details

The Hierarchy of Task Execution

Is the Student Aware? Are they Reading the Room?
Do they have a Future Picture?
Do they Know and Sense the Passage of Time?
Are the Key Features Organized in their Mind? (Big Picture Features Details)
Have they accessed any Notes to Self? Do they recall last Time how Things Worked Out?
Do they have a Plan for managing the steps, the time and the materials?
How do they initiate best?

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TEACHING STUDENTS EF SKILLS

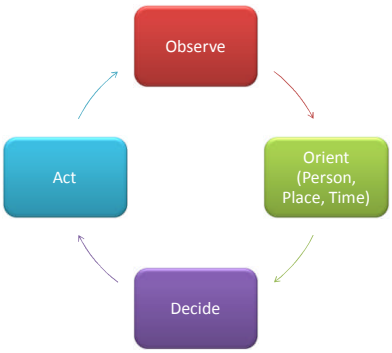
- Adopt a coaching model and give students the support they need to succeed.
- Teach new skills systematically and explicitly
- Systematically teach how they should be applied in real life contexts
- Minimize demands on working memory and processing speed by improving organized thinking (coffee aisle therapy)
- Provide many opportunities for guided and extended practice

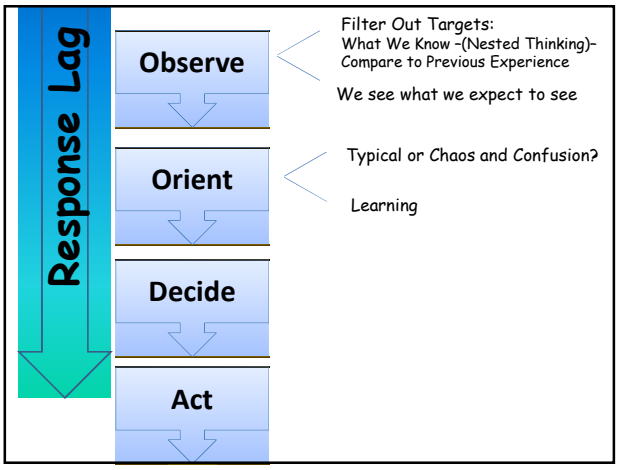
Task Initiation

Situational Awareness

- Level 1: We look and perceive basic information
- Level 2: We think about and understand the meaning of that information
- Level 3: We use the meaning to anticipate what will happen in time and space

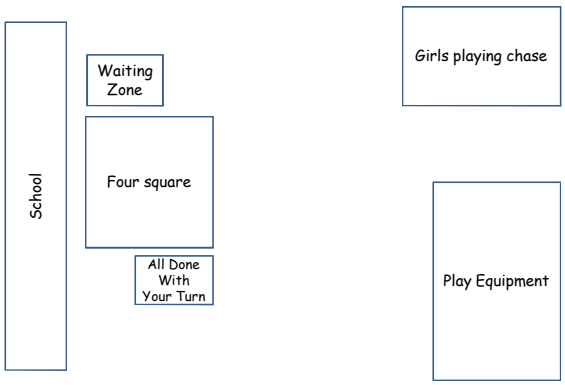
OODA Loop



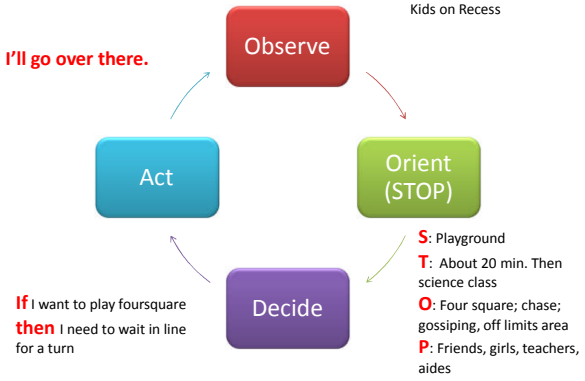


Dynamic Process

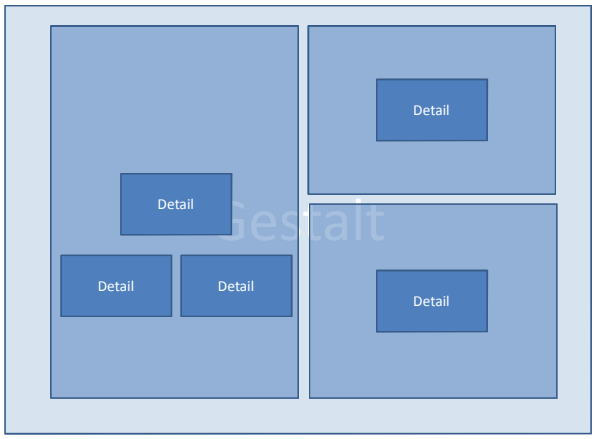
- "Targets" are nested because they contain other targets.
  - An expert can dig deeper, faster and extract more meaning from the same scene because ideas are embedded
- Hierarchical:
  - Get rid of what is not priority and go for the high priority target



OODA Loop



The Faster the Decision Cycle,
The Better we Initiate and Adapt to
Changing Dynamic Situations.

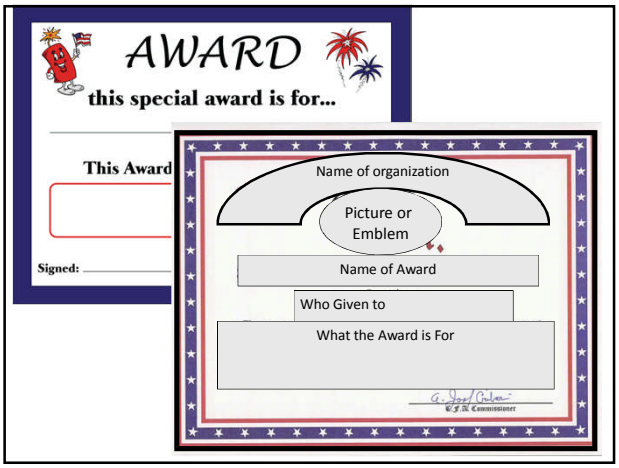


Applied to Executive Function Therapy

- Forethought – Know the Goal and the Future Picture
- Know Your Time
- Nested Concentration: Focus On Whole To The Features To The Details
- Shift To Thinking About The "System/Situation"
- Shift To Probability And Forethought: What should happen and am I doing that?

Example: Task Initiation on an English Assignment

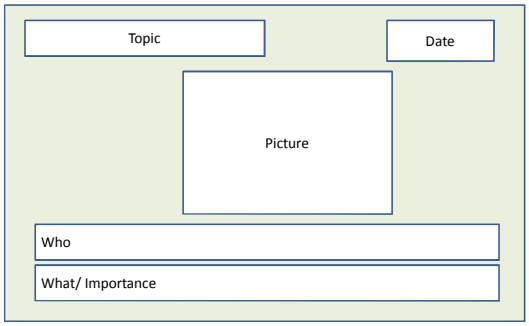
- Next, you will **create a special award** to honor the most noteworthy accomplishment of your chosen character.
- You can create a trophy, ribbon, certificate, or plaque to award your character.
- Your award must have a written paragraph describing the reason your character deserves the recognition.



Ancient Egypt Time Line Landmarks

- On an index card carefully draw a colorful picture representing your topic. At the top of the card write the "topic" and date. Below the picture write two or three sentences explaining your topic. Your sentence should state who or what the card is about and describe what's most important to know about this person, place or event.

What is the Future Picture of this Egypt Assignment?



Therapy Interventions

- Start with Pictures
- Identify the Emotion: Positive or Negative
- STOP and Zoom in
- Then Zoom Out to the level of Probability
- Then Practice in "real time" everyday situations

Stop and Get the Facts:

Emotion (Positive or Negative):

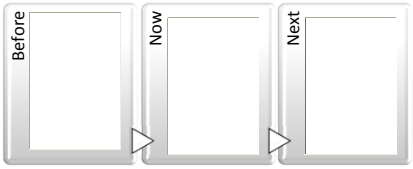
Space:

Time:

Objects:

People:

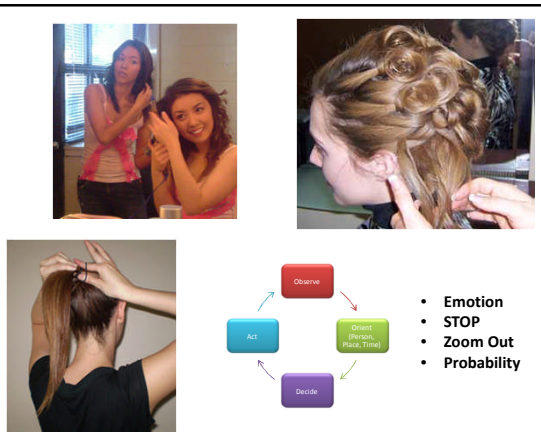
System:



- Immediately
- Within the next 10 minutes
- After an hour
- Tomorrow

Probability: Use a Same but Different Personal Experience:

- **Emotion**
- **STOP**
- **Zoom Out**
- **Probability**



- **Emotion**
- **STOP**
- **Zoom Out**
- **Probability**

Perspective Taking and Orientation

- Use a camera to take photos of the 'same' but 'different'
- From the waiting room into your office, from your office into the waiting room
- From the student's desk; from the teacher's desk
- From the inside of the bus looking out; at the bus

Non Personal Photos and Perspective Taking

Personal Experiences

Space:

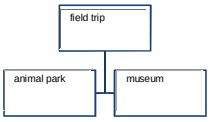
Time:

Objects:

People:

Same but Different Context?

Emotions?



Space:

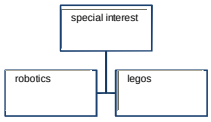
Time:

Objects:

People:

Same but Different Context?

Emotions?

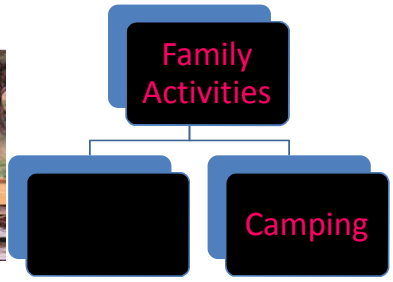


Episodic Memory for Small Talk

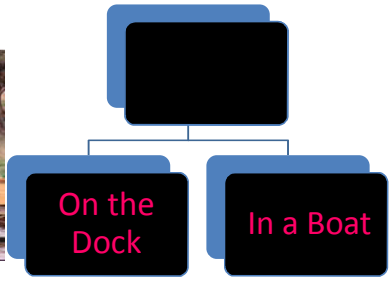
"I went fishing this weekend on Lake George"

Same but Different

Same but Different



Same but Different



Work on Speed of Processing to Identify "Nested' Features Using Media

- How stuff works on YouTube
- Myth Busters
- Say Yes to the Dress
- National Geographic website videos
- "How it is made" series
- History channel: Modern Marvels
- www.brainiac.com
- Lots of interesting expository episodes to watch:
  - http://watch.discoverychannel.ca/daily-planet/

Untamed and Uncut: Teaches same but different

http://animal.discovery.com/search/results.html?query=untamed+and+uncut

Introduction
Reason for the Problem
Explanation of Animals
Computer Animation
•Parts
•Size
•Appearance
•Special Features or Skills
•Behavior
Interviews
•Observers
•Experts in the Field
•Victim

Problem/Solution
•Solution
•Obstacles/Dangers
•Resolution
Emotional Reaction of the Viewer
Show
•Narration
•Amateur Video Footage
•Film Production

What is the Challenge? What Myth are they Busting?
What are their gut predictions?

MythBusters Episodes

1. Possible Solutions
   a. Single Solution?
   b. Multiple Solutions?
      a. Are the solutions simple or complex?
      b. Required Materials
         a. Amount of materials?
         b. Ease of getting materials?
         c. Special Tips
      c. Actual Steps of the Solution
2. Obstacles to the Solutions
   a. Plan B?
   b. Plan C?
3. Success of the Bust?
4. Reaction to the Bust?
5. Reason/Rationale for the success or failure of the bust
   a. Scientific
   b. Unexplained?
6. Conclusion
   a. Is it realistic or plausible?

Time/Task Execution

6 Senses

Future Picture Thinking

Starting, Stopping, Finishing
Goal vs. Future Picture

Goal

Future Picture: This is How I Picture My Accomplishment!

Obstacles

Future Picture Thinking and the Sweep of Time

"Tell Me Your Plan. If Everything Goes Your Way How Do You See Yourself?"

Goal	Future Picture (At a set time what do you see?)
Work on writing my Research Report	At 10:00 I see the Introductory Paragraph written. About 6 sentences.
Do research	At 2:30 I see 3 articles printed from the internet.
Clean my Desk	In 5 minutes I see all the trash gone, the books in a pile and the pencils and pens in their case.
Do my math.	In 30 minutes I should see 6 problems completed and I've shown my work.
Work on my poster	In 40 minutes I see 3 pictures pasted on, each with a title and a caption underneath.

Create Time Markers

1. **Visualize and state the endpoint:**

   "What does a good stop spot look like?"

2. Make sure to state over and over:
   "Factor in time for _____" (gathering materials, the computer to boot, to find your equipment, etc.)

3. Set up "time checks" at the **½ way point**.

   "What should be completed at this point?"

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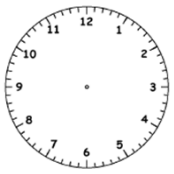
Jack needs to do Research for his Greek Mythology Project

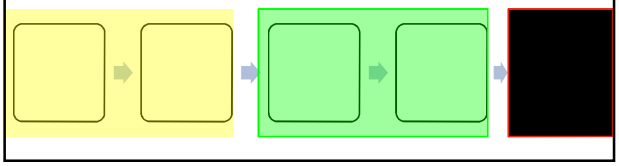


Prep Time: _____

Doing Time: _____

½ way check: _____

Clean up/Wrap up: _____



"Get Your Game On" Strategy

Pre – Game
(before the task):

Get you **Materials** and **Space** ready!

Practice:
- **Visualize**
- **Review the Steps**
- **Picture the Result!**

300
200
X
X
X
XX
OOO O

Assignment: _____

Break assignment into parts: Estimate how long each part will take:

1._____ _____
2._____ _____
3._____ _____
4._____ _____
5._____ _____

Total time task will take you: _____

***Allow time to gather materials and put materials for the assignment away

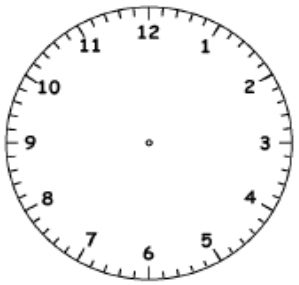
Start Time: [ ]

Time at the ½ way point: [ ]

Stop Time: [ ]

If you are ½ way done at this time, this amount of work should be completed: [ ]

Mark the sweep of time from start to the ½ way point on the clock:



At the ½ way check point and check in with yourself at that time:
Are you ½ way done?

If not re-estimate your time or make adjustments to your focus, alertness, etc.
How will you approach the task differently to be more efficient?

_____ : _____

"Get Your Game On" Strategy

Game

- Know How Long You Have to Play
- Have a Strategy
- Know the Steps and the Rules
- Plan for "Half Time"

"Get Your Game On" Strategy

Post – Game

(After the task):

- **Know when the 'game' ends**
  - **When is it time to Stop?**
- **Clean up and put away the materials**
- **Do a Post Game Wrap Up:**

Figure out what worked and what did not work!

Celebrate!

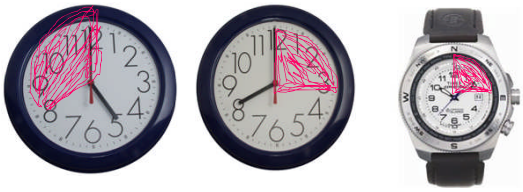
Sequencing Cards

- Ask the student to identify which is the "future picture"
- Ask them to pair the pictures by the 3 phases of tasks : get ready, do, clean up/review
  - If these cards are not here ask the student to draw or describe them
- Identify the same but different between cards
- Ask student how their experience is the same but different

I Like the book "Let's Talk About Planning" by Marilyn Toomey

Clock Time

Sense, See and Feel Time



Use Wipe OFF markers in kid section at Staples or Overhead Markers.

Dry erase will not work

Time has Passed…Has the Pace Changed?

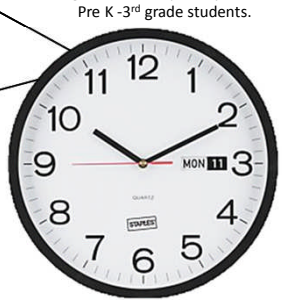
Coaching: Review How Time was Used and Identify Time Robbers

Clock Time

- Have Analog Clocks in the House – Make sure they are not Roman Numeral!
- Make sure they are at eye level of the child!
- Have an analog and a digital clock in the child's room
- Have a wall clock and a working clock

Wondertime Clock: Wondertime.com; in the search query for the website type: clock and download the pdf file and instructions to make the clock

This clock can be created and used as a pre-cursor to learning how to read an analog clock. It is especially terrific for Pre K -3rd grade students.



Young Children are Literal

- "In a minute.."
- "In 5 minutes…."
- "In 10 minutes we will…"

Be exact so children really learn how to sense time. Clarify when needed.

"I said I minute…but I needed 5"
"I said 5 minutes…but really 15 passed"

Play time games: "I'm thinking of …….

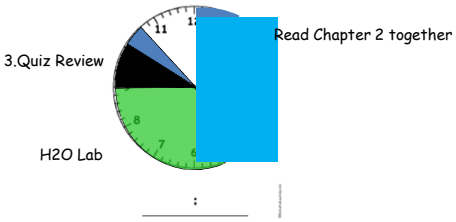
…a place we went to that took 45 minutes to drive to."

…a 30 minute quiet activity you do in the living room."

…something you do in the bathroom for a minute but that I nag you to do longer."

"Tell Me Your Time Markers"

1. Read Chapter 2 together: Review Electrons and Protons
2. H2O Lab
3. Quiz Review



At the Halfway Check Point Ask Your Student or Yourself:

- Am I half way done?
  - Am I still focused on the goal?
  - Has my priority changed?
  - Am I still answering the question?
- What are my time robbers?
- Do I have any slow time leaks?
- How are the strategies working?
- Do I need a new strategy?

Manage Time Robbers

Subcortex
- De-hydrated
- Hungry
- Tired

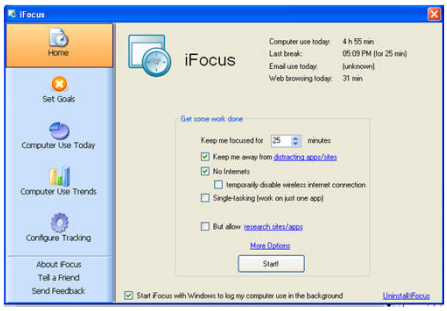
Organization
- Personal Dis-organization
- Paper shuffling
- Trying to Find Supplies
- Poor Planning

Lost My Scope
- Perfectionism
- Indecision
- Attempting too much
- Inability to Say No
- Unclear Goals
- Could Be a Better Website!

Absentminded
- Socializing/drop in visitors
- Lack of Self Discipline
- Leaving Tasks Unfinished
- Telephone Interruption
- Internet is SO fun!

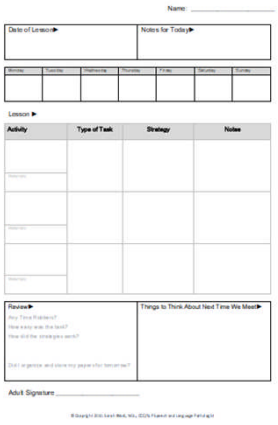
Time Leaks vs Time robbers

- ifocusonwork.com



Tutor/Resource Room/Speech Session

- Have the student write out a plan of *HOW* they will use their hour with you
- When they get distracted bring them back to the plan
- It teaches students to think proactively



Name: _____

Date of Lesson▶	Notes for Today▶

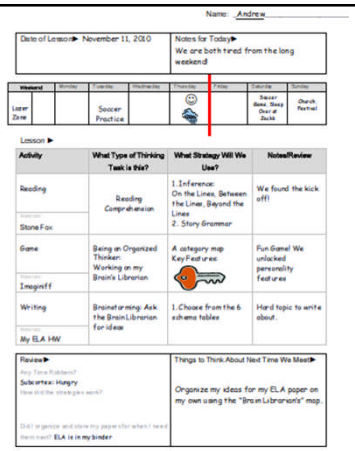
Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday

Lesson ▶

Activity	Type of Task	Strategy	Notes

Review▶	Things to Think About Next Time We Meet▶
Any Time Robbers? How easy was the task? How did the strategies work? Did I organize and store my paper for tomorrow?	

Adult Signature _____



Name: Andrew

Date of Lesson▶ November 11, 2010	Notes for Today▶ We are both tired from the long weekend!

Weekend	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
Laser Zone		Soccer Practice		☺		Soccer Game, Sleep Over at Jacks	Church, Football

Lesson ▶

Activity	What Type of Thinking Task is this?	What Strategy Will We Use?	Notes/Review
Reading Stone Fox	Reading Comprehension	1. Inference: On the Lines, Between the Lines, Beyond the Lines 2. Story Grammar	We found the kick off!
Game Imaginiff	Being an Organized Thinker: Working on my Brain's Librarian	A category map Key Features:	Fun Game! We unlocked personality features
Writing My ELA HW	Brainstorming: Ask the Brain Librarian for ideas	1. Choose from the 6 schema tables	Hard topic to write about.

Review▶	Things to Think About Next Time We Meet▶
Any Time Robbers? Subcortex: Hungry How did the strategies work? Did I organize and store my paper for when I need it next? ELA is in my binder	Organize my ideas for my ELA paper on my own using the "Brain Librarian's" map.

Pulling it All Together

Name: _____

Date of Lesson►	Notes for Today►

Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday

Lesson ►

Activity	What Type of Thinking Task is this?	What Strategy Will We Use?	Notes/Review
Materials:			
Materials:			
Materials:			

Review►	Things to Think About Next Time We Meet►
Any Time Robbers? How did the strategies work? Did I organize and store my papers for when I need them next?	

Adult Signature _____

Name: Andrew

Date of Lesson► November 11, 2010	Notes for Today► We are both tired from the long weekend!

Weekend		Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
Lazer Zone			Soccer Practice				Soccer Game, Sleep Over at Jack's	Church, Festival

Lesson ►

Activity	What Type of Thinking Task is this?	What Strategy Will We Use?	Notes/Review
Reading Materials: Stone Fox	Reading Comprehension	1. Inference: On the Lines, Between the Lines, Beyond the Lines 2. Story Grammar	We found the kick off!
Game Materials: Imaginiff	Being an Organized Thinker: Working on my Brain's Librarian	A category map Key Features: 	Fun Game! We unlocked personality features
Writing Materials: My ELA HW	Brainstorming: Ask the Brain Librarian for ideas	1. Choose from the 6 schema tables	Hard topic to write about.

Review►	Things to Think About Next Time We Meet►
Any Time Robbers? Subcortex: Hungry How did the strategies work? Did I organize and store my papers for when I need them next? ELA is in my binder	Organize my ideas for my ELA paper on my own using the "Brain Librarian's" map.

Adult Signature _____

Goal

Future Picture: This is how I picture my accomplishment!

Obstacles

Time:

Plan

Do

Review: Note To Self

What worked? **What did not Work?**

Mission Planning

- **Determine the Objective**

1. What is the future picture? (How do you picture what you have accomplished?)
2. Make sure the objective is clear and achievable
   - **a. Picture the amount of time you have**
     - **What is the half way point? At that point where do you need to be?**

- **Identify the Obstacles**
  What might detour you?
- **Identify Your Resources**
  Who's on your team?
  What are your strengths?
- **Evaluate Lessons Learned**
  Benefit from your or other's past experiences
  What has worked before
  Do not repeat what did not work before

- **Develop a Course of Action / Tactics**
- **Expect the Unexpected: Have a Back Up Plan**

Plan A: Alternative

Plan B: Be Tweener

Plan C: Completely Different

GOAL	
Future Picture: How you picture your Accomplishment (where are you? What are you doing? When is it? Are you relaxed? Exhausted? Calm? What do the materials look like?	
Any Obstacles? What will distract you? What time robbers can you anticipate? How can you prevent them?	
Look Back: Have you done this task or a similar task before? **What worked?**	
What did not work?	
Plan/Do	Use Clocks and ½ Way checks
Review	NOTE TO SELF

Create a Script of the Steps – or select a pre-created Script	☐ **1.** ☐ **2.** ☐ **3.**	
Materials I need to gather		
I need to purchase		
Set up a Timeline		
Prep time		Use this time to get ready to do the task
Start Time		What time will I begin the work?
Time at the ½ way point		By this time check I should have completed these tasks:_____
Stop Time		I know I am done at this time because I will see:
Set up Time Checks		Check in with myself. How is my attention? Am I focused on the task? What do I need to do to sustain my focus and productivity?

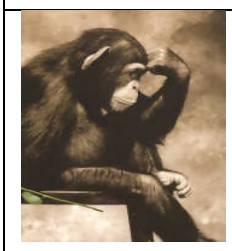
Work It Out

Look Forward	Look Back	Set the Time	Stay on Track	Reward!
I see:	Last Time?	When Will I be done?	½ point?	

Caveman Principle: What's your Motivation?

Choosing EF Therapy Tasks

- Must be Motivating (relaxed state of alertness)
- Must have Multiple Materials to Organize and Manage – Include Irrelevant Materials
  - Depending on skill level of the child – I require the student to find the materials and to allow enough time to do so.
- Multiple Choices of Outcomes –So the individual must choose a reasonable goal for the given amount of time
- Carry over to a "Same but Different Task"
  - Each successive task should become increasingly open ended
  - Review "Notes to Self" from previous task to build episodic memory
- Time demands
  - Limit time to teach pacing
- Requires Student to "get a feel for it" by just starting – teaches self regulation and delayed gratification
- Carry Over the Planning Skills to Academic Tasks

 **My Goal**		**This is what you need to do. Why are you Motivated to do this task?**
 **Future Picture**		**Picture your task as completed. What do you see if your goal is achieved? Some things to think about:** • **How much have you done?** • **What time is it?** • **Do you see yourself as stressed or relaxed?** • **Once this goal is achieved what do you see yourself doing?** • **How will you reward yourself for accomplishing your goal?**
 **Time**		☐ **What time is it now? Mark the clock** ☐ **How much time do you have to work on this goal? Show the sweep of time on the clock.** ☐ **When time is up what do you picture yourself doing? What is coming up next? _____** ☐ **Do you need to factor in time for gathering materials? For the computer to 'boot up', to get a snack, to find the assignment? Mark this time on the clock** ☐ **Do you need to factor in time for cleaning up and putting away materials?** ☐ **Do you need to factor in some time to put on the "final touches" and do that extra effort?** ☐ **How much time do you have left to work?** ☐ **Mark the ½ way point of this time.** ☐ **If you were half way done at this point what you have achieved?** **_____**
 **Obstacles**		**What might detour or distract you from completing this task? Consider:** • **Internal factors (hunger, headache, tired, emotions, confused)** • **External Factors (noise, disorganization, lack of materials, interruptions, distractions (computer))** • **Anticipate that tasks can multiply themselves**
 **Plan**		**What is your plan?** **Look back: Have you done a similar task before?** **Yes?** **What worked? Repeat these actions** **What did not work? Plan ahead to avoid repeating these mistakes** **Is it a new task? Have you done something that is the same but different?**
		**Do it!** ☐ **Keep checking the time** ☐ **Avoid distractions** ☐ **Know your time robbers** ☐ **Keep using your strategies and 'notes to self'**
		**Review:** **What worked?** **What did not work?** **Consider Planned vs Actual Time required for the task. How were your time estimates? Were you Over or Under Time?**

Mission Planning

1. Determine the Objective
    a. What is the future picture? (How do you picture what you have accomplished?)
    b. Make sure the objective is clear and achievable
        i. Picture the amount of time you have
        ii. What is the half way point? At that point where do you need to be?

2. Identify the Obstacles
    a. What might detour you?

3. Identify Your Resources
    a. Who's on your team?
    b. What are your strengths?

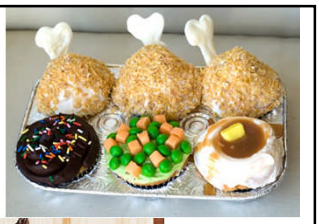
4. Evaluate Lessons Learned
    a. Benefit from your or other's past experiences
        i. What has worked before
        ii. Do not repeat what did not work before

5. Develop a Course of Action / Tactics

6. Expect the Unexpected: Have a Back Up Plan
    - Plan A: AlternativePlan
    - Plan B: Be Tweener
    - Plan C: Completely Different

Tip: The Amazon Website has "how to" videos on the web page for the book!

Hello Cupcake



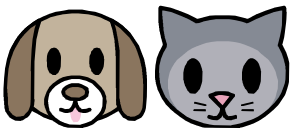
Hello Cupcake

- Butterfly

Change It Next Time to Use Experience to Guide Planning and Behavior

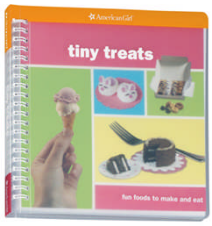
- New Butterfly Shape:

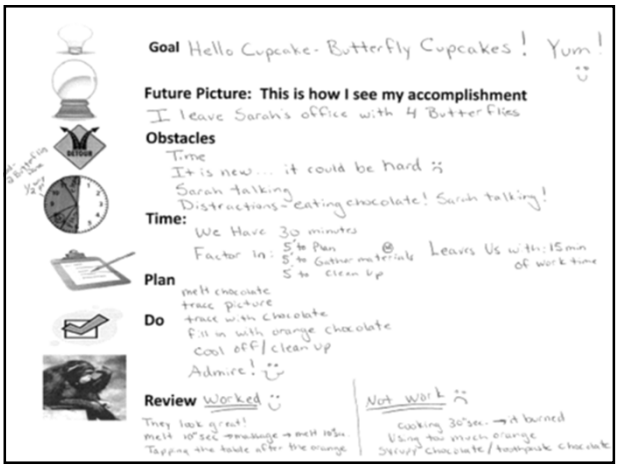
- Random Design

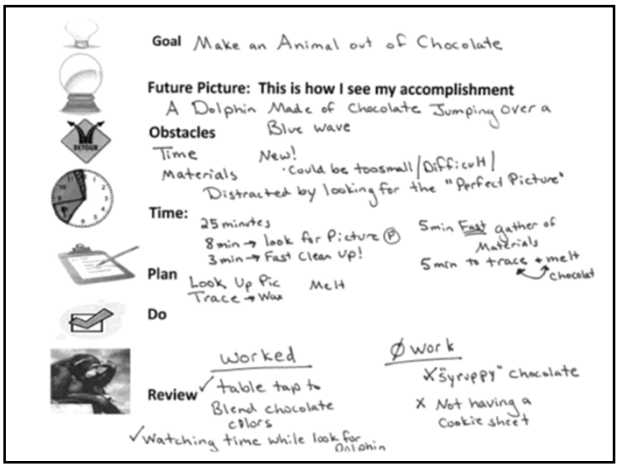


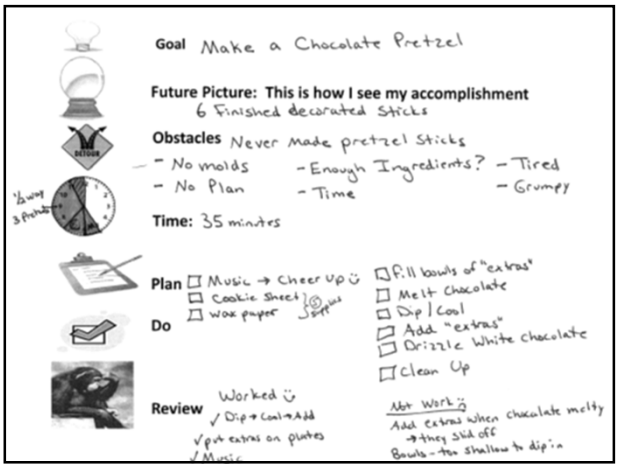
American Girl

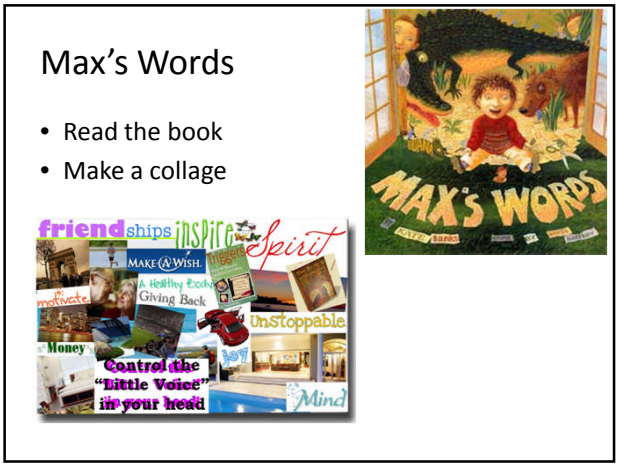
- Tiny Treats

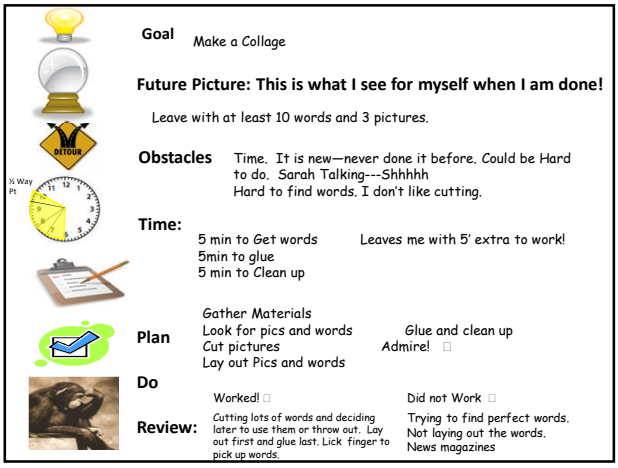


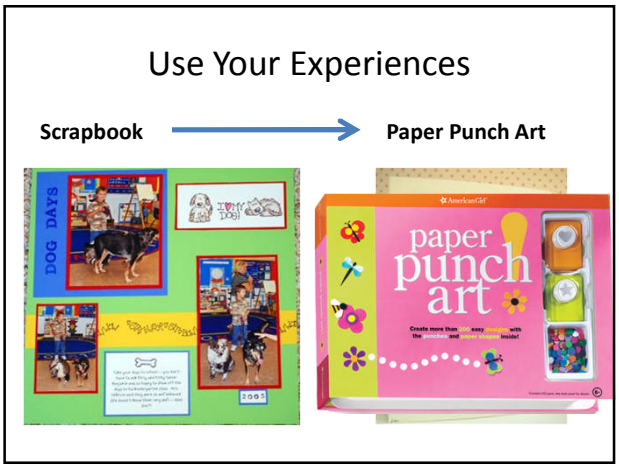












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Episodic memory and children with ASD - part 1

Linda Murphy - Boston Autism & Parenting Examiner

Memory is important for everyone in terms of learning, growing and managing more complex social and emotional situations in life. We use our memories to build and strengthen relationships, to reflect on what we've done in order to make plans for the future, and to problem solve based on past experiences. If we didn't have memories to draw from, we would hardly move forward in life. Developing meaningful memories is a critical skill for all people, including children with autism.

Imagine this: you spend the day in Boston with a friend. You take the T there, walk around Faneuil Hall, do a little shopping on Newbury Street, have lunch in the North End and visit the Swan Boats in the Public Garden. In that one day, the memories formed and memories used span a variety of topics. You probably remember the things that you talked about with your friend, or the laughter that you shared, more than you remember any particular item that you looked at while shopping. Or you probably remember how good your meal tasted, but maybe not the other items that were listed on the menu. Maybe when you got to the Swan Boats there was a line and you used your memories of waiting in other lines to appraise how long you might need to wait in this line. Each of these memories is an example of episodic memory.

Episodic memory refers to one's autobiographical memory. As we move and do things throughout our life, we are creating a story about ourselves. We use this self narrative to share our experiences with others and to negotiate new situations in the future. Without memories to pull from, the world would be a scary place; any new situation would leave us feeling lost. With episodic memory, we can enter a new situation and figure out what to do because we remember a similar situation from our past.

Now imagine you took that same trip to Boston with a child who has ASD. His memories may instead be the names of the T stops you rode through, how loud the restaurant was, and the anxiety he felt waiting in line to go on the Swan boats because he didn't know how long he was going to have to wait. What is meaningful moment to moment to a child with ASD may be different from what is meaningful to another person. Instead of forming memories that will later help with problem solving and planning, a child with ASD may be forming memories that lead to fear of the unknown. Developing episodic memory is difficult for people with autism, yet it is a critical skill needed for living an independent, happy and stress free life.

Episodic memory and children with ASD - part 2

Linda Murphy - Boston Autism & Parenting Examiner

In a previous article, the critical role that episodic memory plays in life and in developing social relationships was discussed. This second part in the series will discuss how to help your child develop and use episodic memories for the purpose of experience sharing.

One of the biggest shifts that social partners need to make in order to support a child with ASD to develop and access episodic memories is in their own communication. Often times when we

are trying to help children access memories, we ask a lot of questions or use imperative statements: Who did you play with at school today? What did you have for snack? Tell Daddy what movie we saw. It goes on and on. We try so hard to get information from kids with ASD. Sometimes we get it, sometimes we don't, and even when we do get an answer to our question, we are not getting at what we truly want to know. Don't we instead want to know how that child felt throughout the day? What made that child smile or laugh? About connections the child shared with her friends? We want more than a one word answer, but don't know how to get it. One thing is clear though: imperative questions and statements do not get at the heart of what we all use memories to do: *share who we are!*

Because we don't always know what a child with ASD is remembering about an event - he may remember the ceiling fan that he watched, or the numbers he noticed on the outside of a house - we have to mindfully spend time helping socially meaningful memories go in. We can do this using declarative language to observe, reflect and share subjective appraisals alongside the child. We can do this by becoming generous with information. This means we are sharing and not expecting anything in return. We are moving from getting to giving so that the child can truly learn to give back.

Once we have done this - once we are sure we have spent time giving - we can engage children in specific activities that support them to share what they remember. Here is one such activity:

Share memories in partnership with the child. This means, you are collaborators in the task of weaving a story. It is important to do this within a context where you were present so that you can truly support the child to succeed. Let's go back to our trip to Boston to illustrate this idea. As you are on that trip, offer information along the way that not only recaps what you are doing, but communicates a subjective appraisal: "Wow! I can tell you really liked riding on the T. I think Park St. is your favorite stop"… "Oh look! There's a line for the Swan Boats, but it isn't that long. Let's wait because I think it will move quickly" … "You really like pizza! We should go to the North End because that's where the best pizza in Boston is." While on this trip, you could also easily take snapshots with your phone or PDA, capturing moments of the child in action, moments that are socially meaningful. Once your trip is complete, you remember and recap as a team. Maybe you look at the pictures together while riding home on the T, or do it as a bedtime activity. You continue to share what *you* remember using components that make storytelling more interesting and fun for everyone: animated facial expressions, rich intonation, gestures, and dramatic pauses. Here and there give space for your child to chime in, or even to just communicate that she remembers too. This is how sharing of memories begins.

As a team, you could later tell a family member or friend about your day. You share some memories, and pause to see if your child wants to add a related memory. Your memories are triggering hers, and she may add a thought when you invite her to do so. You may even scaffold an idea for her: "We went on the T and stopped at your faaaaaavorite stop …." Or maybe you say, "We decided to eat in the North End *because*…." and your child chimes in: "I love pizza!"

These kinds of memories are so much more meaningful than simply stating the details. By sharing in this way, we are teaching children to share what each detail means to them on a very personal level. We are teaching them to share who they are.

Episodic memory and children with ASD - part 3

Linda Murphy - Boston Autism & Parenting Examiner

Any time we are faced with a difficult situation, or if something keeps us from doing what we are planning to do, we come to a crossroads. We think: What should I do next? What are my choices? How does one option compare to another? This can include big problems, such as what to do after losing a job, but it also comes into play in the small decisions we make day to day. For example, when driving to work, what route do we take? If there is a traffic jam, do we take a different route? How do we decide? Or, if an item breaks, how do we decide whether to fix it or throw it away? If we decide to fix it, how do we do it? New batteries? Scotch tape? Glue? There are so many decisions we make moment to moment based on what we know about possible outcomes. Furthermore, we make most of these seemingly small decisions in a calm, deliberate manner, and don't expect perfection. We know that often, good enough is okay. So much of what we do depends on our subjective appraisal, and our subjective appraisal is based on our previous experiences, or episodic memory.

Now, let's think about children with autism. Often, problems are addressed when they are at crisis level. If we go back to our trip to Boston: maybe the child is screaming because he was planning to take the T and it has broken down. Or, maybe he is expecting to go to a particular restaurant in the North End, but it is closed for renovations. Maybe he lost his souvenir from the Swan Boats. In these moments, when expectations are not met, a child with ASD has trouble coping and emotions escalate. We may then address the particular problem by writing a social story, creating a behavior plan, or explaining to the child why it is not a big deal. These strategies can certainly help, but they are reacting to a particular problem rather than proactively teaching kids how to cope with the unexpected in life.

We can help our kids with ASD become on-line problem solvers by including them in our own problem solving opportunities day to day, when there is no crisis, around events that are not emotionally charged. Using declarative language, we can invite children to understand how we are thinking as we approach a problem. We can model how we are not looking for the perfect solution, but are satisfied with good enough. As we include children in these moments, we are building their episodic memory around managing challenging situations. We are mindfully helping them form memories by including them in moments they may have otherwise missed. Then, when a similar but different problem comes their way in the future, we can help them pull memories from our shared experiences: "Oh! Your toy isn't working. Hmmm… I remember when my watch stopped working. We figured out it just needed new batteries. Let's see if your toy needs new batteries." Or, "Oh – you can't find your doll. Hmmm … I remember last week when I lost my wallet. That was scary! But after we retraced my steps, we found it in the car. Let's see if we can retrace your steps."

It is important to remember that building episodic memory is a process that unfolds. It does not happen overnight, but as we see children with ASD use their episodic memories to problem solve, there is no doubt it was worth the wait.

Episodic memory and children with ASD - part 4

As discussed in previous articles, episodic memory is the story we create about ourselves over time. We may use this story to share ourselves with others, or we may use this story to form a plan of action when faced with a problem. We need our memories to assign meaning to events in our lives, and to negotiate new situations in the future.

As children form relationships with their peers, they use their episodic memory to create stories of developing friendships, as well as narratives of themselves as desirable play partners. This is a process that unfolds over time, as children have repeated opportunities to play with others in increasingly dynamic situations. Early on in peer interactions, all children are concerned with the immediate gratification that comes from events such as going first, playing what they want to play, winning a game, and using a toy when they want to use it. However, as children get practice in the realm of peer dynamics, they come to observe unwritten rules and subtle yet ever present patterns: Sometimes I win, sometimes my friend wins. Sometimes I go first, but sometimes my friend does. Sometimes we play what I want to play, but sometimes we play what my friend wants to play. I can use a toy that I want to use, but it is also important to take turns and share. Parents and teachers help to teach these lessons both directly and indirectly, and over time children come to trust that, even though they did not get to go first this time, they will probably get to go first another time. Or even though their game was not chosen this time, it will most likely be chosen in the near future.

Because children with ASD may not easily notice the unwritten patterns of turn taking over the course of time, these lessons are much harder to learn. They may be quite good at noticing and understanding turn taking within a structured game in the here and now, but patterns over a longer period of time are more elusive. What children with ASD do notice, however, is when their preference is not honored because this has strong personal meaning to them in the moment. When this happens, we may see a big, negative reaction that leads all involved to form unpleasant memories. Subsequently, no one wants to rock the boat again and we may tread lightly or even avoid teaching those vital friendship skills of flexibility and fairness simply for the sake of keeping the peace.

So, how do we teach these vital peer interaction skills in a way that is not so unpleasant for everyone? For those of you following this series, the answer will be a familiar one: Use declarative language to mindfully make explicit memories that are easily perceived by most, demonstrate how we can use these memories to inform our decision at hand, and engage our kids with ASD in this decision making process.

Here are some examples from our trip to Boston:
• Hmmmm… Freddie got to sit by the window on our last ride on the T, so I think it would be fair if we let Annie have the window for this ride.
• I know that Trixie was first in line for the Swan Boats, so I'm thinking that it would probably be fair to let Lucy be first in this line.
• I remember yesterday Christopher got to choose which dessert we would share, so hmmm… I'm wondering what might be fair today...

Once these patterns are spotlighted, children learn to self narrate and notice more implicit turn taking opportunities over time. They learn to talk themselves through turn taking that is outside of a particular game, the type of turn taking that is woven throughout life and friendships. They can and do rise to the occasion and become fair decision makers because they now understand and trust the process.

But, if we don't make a point of helping them notice and subsequently form these memories along the way, they become stuck in the moment at hand, the moment of crisis, the moment when they panic because the thing they want to do is not going to happen. We have to give them information as it happens and mindfully help them recap so that they can learn how to give back as a true friend.

Linda Murphy M.S., CCC-SLP, CEIS
pediatric speech language pathologist
RDI® Program Certified Consultant

Declarative Communication, or **Experience Sharing Communication,** is language that offers opportunity to share experience. When a person is using declarative communication, the goal is to share ideas, perspectives, thoughts, and predictions with another person. The non-verbal communication that goes along with declarative communication is information rich in meaning. The person who uses declarative communication is inviting the other person's insights, and adding them to what they already know. It is cumulative in nature. Responses to declarative communication are not rote, and cannot be scripted by the person who initiates. Declarative communication can also be "self-directed". When a person is using self-directed declarative communication, they are using declaratives to help regulate their own thoughts and actions. When we plan for the future, reflect on the past, think through a difficult problem, or anticipate the future, we use self-directed declaratives.

Imperative communication, in contrast, is a means-to-an-end. Imperative communication has responses that are right and wrong. Responses to imperative communication can be scripted, and already are predicted. Non-verbal communication is not important with imperative communication. Emotional information and sharing are not important with imperative communication. Imperative communication is instrumental in nature. Imperative communication includes commands, questions with "scriptable" answers, prompts, and requests.

Using **declarative communication** can make a dramatic difference. Declarative communication removes the pressure off of the child to perform and provide the right answer. Declaratives are invitations to interact, while questions are typically cues to provide a right answer. Declarative communication is more than just a way of talking. It is a way of interacting and being with another person. It is taking a side by side position with another person, where you look out at the world together.

Declarative communication also uses language forms that involve relative thinking processes -- they imply that between two speakers there can be different views of reality. Examples of declarative language include invitations ("Let's play with cars"), declamations ("I'm tired of playing with cars!"), self-narratives ("I'm walking over to the table to pick up some cars.), indirect prompts ("Now is a good time to decide which car you want to play with"), celebrations (We did it!), etc.

I have also found using **inferential language** or **indirect cues** really successful with our kids**.** What we do, in essence is… instead of telling them *what to do*, we encourage them to read the environment, read their peer's behavior and body language, etc. and then make a decision on their own (i.e., social problem solving!) regarding what to do next. I find it to be a much more empowering and confidence building strategy than prompting continuously! I have also found using this language to be much more fun for everyone involved. Some examples relevant to a group setting might be:

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100 Cummings Center Suite 341D Beverly, MA 01915
tel: (617) 930-3735 • fax: (866) 258-7586

- “Hmmmm… it looks like everyone is going to the table…I wonder what that could mean?” (indirect cue to attend to and follow through with transition)
- “I’m not sure your friend can reach that” (indirect cue to help child attend to their friend, and then pass item)
- “My favorite animal is a cow!” (indirect cue to encourage participation in a group conversation)
- “Huh!” + a point (indirect cue to have child pick something up off the floor that they dropped)

Here are some other examples of experience sharing communication and inferential language (borrowed again from other RDI consultants):

COMMENTS
I really like playing with cars.
We went to McDonald’s for lunch.
I like the way the water splashes when we throw in the rocks.
That was a really loud noise.
He got hurt when he fell.

DECLARATIONS
Today is my birthday.
I am going to try and win.
I don’t like when he yells.
We won!
I want to play cowboys.

PREDICTIONS
I bet the red car wins.
The rabbit is not paying attention, so probably the turtle will get there first.
Today is Tuesday, so I bet there is pizza for lunch.
I think Daddy is really going to like this!

REFLECTIONS
It was really nice of Ms. Smith to give us a treat.
You made a colorful picture.
He is a super fast runner.
I liked when we clapped at the same time.
That was a really good one!
I remember when we went to the beach and found some shells. It was such a nice day.

INVITATIONS
What should we do next?
We could play cars next…
I can make mine go super fast!
Would you like to play with my race cars? (declarative if it is ok for the answer to be no)

ATTEMPTS AT REGULATION
Hey, that one was too fast for me.
You forgot about me!
I would like a turn.

Jack looks like he wants to try.

SELF REGULATION
I can do it!
I need to slow down and try again.
If he gives me a turn, I will try it.
Oops! I forgot to give that to her.

SHARED NARRATIVE
That's so funny! I wonder what will happen next.
First you went down the hill, now here comes the cars!
If the monster is in there, what should we do?
How could we surprise Daddy for his birthday?

SELF NARRATIVE
When the monster popped out from the bean bags, I threw a ball at him!
After we went to church, we had eggs for breakfast. I liked them.
Before I come inside, I will take off my shoes and hang up my jacket.

ENTHUSIASM
Woo! We did it!
We are awesome!
Ouch! That hurt!
Oh, I am so scared!

SUPPORT
You can do it!
She is a really good basketball player!
You'll get it next time!
Can I help you with that?

ANNOUNCEMENTS
We are going to the park today.
You did a great job on your spelling test.
I would like some ice cream.
My favorite color is green.

PERSPECTIVE SHARING
I don't like Scooby Doo.
Going on the swings makes my tummy feel funny.
That book was hard to read.
It scares me when the dog barks.

DECLARATIVE QUESTIONS
If you already know the answer, the question is not declarative.
Do you know what I think?
Why don't we try that together?
I wonder what will happen if we mix these two things together?

Which one is your favorite?
What do you think about…?

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My Top 5 Reasons to Use Declarative Language

1. Model self-narrative to help your child develop his or her own inner voice.

Early on infants and toddlers develop and learn language when they hear it from others. When children are just learning to talk, parents are reminded to label objects, narrate simple actions and comment on their child's focus of attention so that the child will learn and then use those words accordingly. After the initial language spark is ignited, most of us then go on to develop our own voice that we use to share our thoughts, recap experiences, talk about what we are doing, and talk about what we are thinking.

Most of us also then go on to create our own inner voice. This is a hugely important by-product of our language learning. We use our inner voice to problem solve and plan. We remember what we have learned or noticed in the past, and apply it to the here and now. For example, imagine you are getting ready to go to work and you can't find your keys. Your inner voice may say something like, 'Hmmm…. Now when did I last see my keys? Where do I usually put them down? What jacket did I have on yesterday?... Maybe they're in the pocket." Your inner voice helps you think through the problem and gets you started on a plan of action to solve it.

Children with ASD or Executive Functioning difficulties do not usually develop this inner voice to regulate their thoughts and actions on their own. Just as modeling was important when your child was learning to talk, thoughtful modeling now, in this regard, is equally important. So – talk out loud, think out loud, work through a problem, make predictions, ponder opportunities, consider possibilities, and reflect on past experiences when you are with your child. They will learn from your models, internalize the ideas, and begin to form their own inner voice.

2. Provide a window into another person's perspective.

Most of us know that children with ASD have difficulty taking perspective. Using declarative language to share your thoughts and feelings provides your child a regular window into these things in an inviting, nonthreatening way. We are providing them information that is critical in a social interaction that we know they may not pick up on their own. When we present declarative language in this way, we are not asking them to provide an answer that may be right or wrong. Rather, we are clueing them into social information and then allowing them to decide what to do with the information.

By regularly using declarative language in this way, we are also slowly building memories and awareness that different people have different thoughts, opinions, perspectives and emotions. For example, you say something to your child but he is facing the other way, appearing not to listen. Rather than say to him "turn around!" or "look at me" (both imperatives) share your feelings and perspective with declarative language: "It would make me happy if you would face me when I'm talking to you" or "I feel like you are not listening to me." Or, if you arrive home and your child does not say hello, instead of saying "say hello to me" we could say, "I really like it when you say hi" or "I feel disappointed because you haven't said hello to me yet." In my experience, kids with ASD usually make choices that are good for the relationship once they are provided this information. It's not that

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our kids don't want to say hi! It may just be that they don't realize how happy it will make you when they do.

3. Help your child zoom out to see the big picture and generate multiple solutions to a problem.

Often times when we get caught up trying to get our kids to do specific things, we all lose sight of the big picture. Because children with ASD are strong when it comes to details, but weak when it comes to seeing the big picture, it is important to think about the big picture when we present information. Giving very specific directions or questions that have one right answer promotes that focus on details. For example, if we tell a child to "put the toy in the box" or "say goodbye to Grandma" we are zooming into the details and creating a situation where there's one and only one right answer. However, if we use language instead to comment on what we see in the big picture: "I see a toy on the floor" or "Grandma is leaving" - we are instead encouraging our children to take a step back, notice the context and situation around them, and subsequently form a plan of action that makes sense to them. We are also leaving open the possibility that there may in fact be more than one solution – i.e., maybe the toy could go on a shelf or in the toy box, maybe the child could say "goodbye," wave, give Grandma a hug or walk her to the door. Generating multiple or alternate solutions to a problem can be hard for kids with ASD. Declarative language naturally creates opportunities to practice this skill.

4. Empower your child to be a <u>problem solver</u> rather than <u>direction follower</u>.

Anytime we tell children what to do, ask them to follow a direction, or ask them to answer a question that has a right/wrong answer, we are honing their receptive language skills. This is not a bad thing, but it may not be what your child needs most. In contrast, if we use declarative language to present information about the environment or situation at hand, we are instead inviting her to notice this information and develop a plan of action. We are inviting her to have an "aha!" moment where she figures out on her own what to do with presented information. We are giving her an opportunity to think! Problem solving moments are huge for all children as they learn to view themselves as competent human beings in the world. Kids with ASD usually have been asked right/wrong questions and given directions from a very young age. More practice in this area is not what they need most! Rather, they need practice problem solving, and identifying themselves as competent problem solvers. It is important to become comfortable presenting information to your child, and then waiting. The waiting time allows your child time and space to consider his next step. Here are some examples of direction following vs. problem solving opportunities – can you feel the difference?

"Throw that away" vs. "There is a piece of trash on the floor."
"Wash your hands" vs. "Your hands look dirty."
"Open the door" vs. "I heard someone knocking on the door."
"Give that to your sister" vs. "I sure bet your sister would like to use that now."
"Pass me that" vs. "I can't reach that."

5. Help your child read what's going on in his environment.

We know that it can be difficult for our kids with ASD to tune into the social information that is going on around them. Rather than telling them exactly what to do and when to do it, use declarative language to help them notice what is important! For example, if it is time for a transition, instead of telling your child "go to the table for snack" or "put on your coat," direct his attention toward the changes in the environment: "I notice all the kids are at the table" or "I notice all the kids are putting on their coats." This will help internalize the importance of periodically checking in on one's environment; there are visual clues available all the time, and they are important to pay attention to! We want our kids to learn that information is not always going to come to them - they have to become active information gatherers. In contrast, if we are using imperatives all the time with our kids, information *is* coming to them on a regular basis, and they don't have the same need to look around or read the behaviors of others.

Learning & Memory by Marilee Sprenger

Excerpt Chapter 7. The Lanes Less Traveled: Instructional Strategies for Episodic, Procedural, Automatic, and Emotional Memory

Throughout the school year my students work together on teams. I like this brain-compatible strategy because it helps in classroom management and bookkeeping and adds to students' feelings of security.

As I change units of study, I usually change teams. This provides variety for both the students and me. It also guards against the inevitable hierarchy that develops on all teams (Sylwester, 1997b). If a student feels uncomfortable about a position in the hierarchy, I try to keep that position as short-term and as painless as possible.

After a particularly tough nonfiction unit in literature, I decide the kids need a change, and I form new teams. They enjoy the teams so much that I decide to use these same teams in their language arts classes. The students do not object when they come to this class, and I assign teams to their new seating arrangements. We are studying indirect objects. I am trying to prepare them for a unit test, so I begin the class with a review. The sentences on the board are ready for the students to classify in our usual way. Many of my students look at the sentences on the board as though they were written in another language. They do not know how to classify the sentences. I am outraged! How could they have forgotten? Have they left their brains at home? We have been working on this idea for three days! What is wrong with these students?

The answer, of course, is nothing. It is my mistake. I have stripped my students of their episodic memory of the sentence patterns. Just by changing their placement in the classroom, I was preventing them from accessing certain memories.

I now had a choice. I could either move them back to their original seats or reteach them in their new ones. I chose to reteach the subject matter because I wanted to find out how much time the reteaching would take. It took three days before the students were back at their original skill levels.

The Paths of Least Resistance

Deliberate strategies can access the episodic, procedural, automatic, and emotional memory lanes. Using these strategies when planning a unit can make the information more enjoyable and easier to learn. Keeping in mind that all lanes should be accessed, let's go through each one separately.

Episodic Memory Strategies

Episodic memory is location driven. Studies have shown that if people receive information in a specific location they will more easily remember it in that same location. To use episodic memory effectively may take a little thought, energy, and some creativity.

Bulletin boards may be the easiest place to begin. For each unit covered, create a bulletin board that is unique enough to stand out from all of the others that you have used. Include pictures, posters, and symbols. Examples of how a problem or solution should look may impress your students. Even if you take the bulletin board down before a test, that information may still appear in your students' minds. Several weeks of looking at the board should leave an impression. Although the information becomes “invisible,” the learning is stored in the episodic memory.

Changing the arrangement of the desks in your room, including your own, will help you and your students better use the episodic memory lane. Students who sit in the same spot week after week could begin to confuse information. In addition to changing the seating chart, change the arrangement of the students. Perhaps you can change the number of students on a team or put students in pairs. Change the desks or tables from rows to a circle or some other geometric shape. This will help make the material unique to the new look of your classroom.

Accessorize! Wear hats, scarves, belts, shoes, masks, or full costumes to enhance the learning experience. If you are studying the Civil War, find an old Yankee or Confederate cap to wear throughout the unit. Better yet, have each student make a hat to wear. This will make the information memorable and real.

Move out of your room. Perhaps you can use the library or go outside to learn some material. Take field trips. Anything you can do to make the learning unique may make the learning permanent. This may be possible for only very short units.

Use one color of paper for all the handouts related to a unit. This will help your students remember information that was on that color of paper. They will not need to recall anything on the reams of white paper they usually receive. In my English classes I prepare definition sheets using different colors for each unit. I simply remind my students to think about the “yellow” sheets or the “blue” sheets as I ask them to recall.

Teach from a specific area of the room. For each area of study change the location from which you teach. Recalling your location will help students recall the information more readily. They will associate your location with the information you shared.

Episodic memory techniques can do more than help students remember. They can also add to the enjoyment of learning. The brain likes novelty. It is intrigued by it, and it pays attention to it (Jensen, 1996). You will not be overstimulating your students with these changes. Instead, you'll be offering them a better opportunity to remember.

Procedural Memory Strategies

There are two ways to help students access their procedural memory lane. One is to have students perform the material often enough that it becomes a procedure. The other is to set up procedures in your classroom that will create strong memories. Let's look at each way.

When a procedure is repeated frequently, the brain stores it in the cerebellum for easy access. In the past, science was one of the only subject areas that was conducive to this way of storing information. Laboratory procedures were common, and these methods created strong learning experiences. Sometimes, however, even in the science lab, work is not repeated enough to become a procedure. Today, hands-on techniques can be used in many subject areas to provide procedural memories. Math students use manipulatives to develop their conceptual understanding and to solve problems. The problems change, but the procedure for doing them does not. With enough repetition, the students remember the procedure. English students use magnetized labels and follow a process to label each part of speech in a sentence on a magnetized board. Repetition allows them to store this process. This technique is not really any different from fire or earthquake drills. The purpose of such drills is to cement a safety procedure in children's brains—a procedure that may save lives.

You—or your students—can also invent procedures, so that the students will, through repetition, place subject matter into procedural memory (Hannaford, 1995). Try anything that provides movement—for example, role-playing, debate, dance, marches, monologues, and games. Making shadow boxes can enhance procedural memory. Sock-puppet shows can reinforce many concepts in any content area. These procedures not only reinforce semantic knowledge, but they also represent memories that can be stored through those procedural memory “muscles.” If you have trouble applying your content to any of these, use your imagination. Have students stand up as you cover specific material. Ask them to walk as you review it, jump when they think they understand a particular point, and clap when they know it all. All of that movement and fun will make a big impression on their brains.

Automatic Memory Strategies

The automatic memory lane stores multiplication tables, the alphabet, the ability to decode words, and dozens of other memories triggered by simple associations. Strategies for accessing this memory lane are simple and fun.

The strategy I highly recommend is music. Putting information to music is simple for students of all ages. They usually find songs easy to remember, and they can then practice the information daily. For years I have had students learn the 48 prepositions, 23 helping verbs, and 18 linking verbs by writing their own songs. They use old, tried-and-true melodies, but they make up the lyrics. It can be as simple as taking “Mary Had a Little Lamb” and replacing all of the words with the list of words the students need to remember. Raps and poems can work as well. It becomes a reflex to fill in the newly learned words when the music begins (Jensen, 1998). I have had students return after high school and tell me they still know their songs.

Other automatic strategies include the use of flash cards, repetition through daily oral work (in math, geography, language, vocabulary, and so on), and oral conditioning (for example, I say “Lincoln,” you say “Gettysburg Address”). Each of these strategies has its own benefits. Students will tire of the same strategy, so provide variety. Quiz shows may be a great way to get responses to the automatic level; many students love this technique.

Emotional Memory Strategies

Without a doubt, emotional memory strategies are the most powerful. Many of these strategies also activate other memory storage areas that make them even more powerful. Both positive and negative emotions cause the brain to release certain neurotransmitters that aid in memory retention (LeDoux, 1996). That is not to say you should encourage negative emotions in your classroom, but simply to point out that strong feelings about content can add to emotional memory.

Music can be powerful in emotional memory. Using dramatic music as background while you read or discuss material can make the information meaningful. Playing the theme from “Mission Impossible” or “Dragnet” before you discuss the Battle of Gettysburg will get your students' attention and elicit feelings about the material.

Celebrations are emotional. These can be done with or without music. Plan special celebrations as students learn the material. Have the students present the material to the class through role-playing or a dramatic performance. Give them an emotion that they must try to convey and ask the class to try to recognize it. Find material that contradicts what is said in the text and that calls for debate. This technique can be very effective as students choose sides. Play devil's advocate and speak against the points you cover. Students love the opportunity to prove their teacher is wrong. Either way, it becomes an emotional experience.

Make your room the scene of the crime. If you are studying the Civil War, create the emotions felt in the era. Divide your room in half with a Mason-Dixon line. Separate the students and tell them what possessions they can keep. Allow the emotions to build as some lose their belongings and others receive them.

Most important of all is that you show your enthusiasm for your subject. Model your love of the content, and your students may find it contagious. If you share feelings about what you are teaching, your students may find that they can feel the same way about it.

Accessing Multiple Memory Lanes

The more memory lanes you can reach and teach to, the more successful your students will be in their learning. As this chapter indicates, some strategies can access more than one memory lane. This only makes your job easier. Like anything else dealing with brain-compatible learning, the more aware you are of this information, the easier it will be to use it on a conscious level.

Storytelling is a dynamic way of using multiple lanes. The brain processes parts and wholes simultaneously. Putting semantic information into a story format gives the students the whole idea and the details (Caine & Caine, 1994). Besides the semantic information, emotional memory can be tapped through the conflict or plot of the story. Episodic memory may be reached through the location in which you tell the story and how you dress.

As you plan a unit of instruction, evaluate how much of the material is aimed at the semantic lane. Are there ways you can teach that information through the other lanes? If not, review the semantic strategies described in the previous chapter and choose those that will work well with the content you are teaching.

Next decide how you can create an environment that will engage the episodic memory. What kind of bulletin boards and posters can you use? Do you need to make something? Better yet, can your students make the items to decorate for this “episode”? Are there things that you can wear that will enhance learning? Will your students be able to bring, carry, or wear anything that will make this experience more memorable?

Analyze the material to determine which procedures are built in or which ones you can create. Will the students learn better standing, sitting, or moving in some way? Are there manipulatives for this unit? Can you or your students create a dance or ritual to accompany the learning? One procedure that combines episodic memory with procedural involves making a bulletin board and decorations, and then having the students put them up. This will add information to both lanes.

Think about how you can make some learning automatic. Are flash cards a possibility? What information can be put to music? Repetition is a plus; try to find a way to use it.

Can you make this material emotional? Are there popular songs that might be associated with this material? Ask the students what they know about this new information. This may add to their feelings about it. How will you celebrate the beginning of the unit? How will you celebrate the end? What kind of role-playing or debates can you use to elicit strong feelings?

A novel that I sometimes read with my class is *The Rifle* by Gary Paulsen. This incredible book covers the "life" of a rifle from its creation to the present. The technical parts are difficult to follow; yet those sections are surrounded by a moving story of life and death. When I use this powerful book, I engage my students in the entire production of the unit.

I begin by asking them how they feel about guns and gun control. The answers vary among students, some of whom are beginning to hunt with their fathers. The emotional responses that I receive are steps in the right direction. We discuss drive-by shootings, hijackings, sky jackings, and the latest mass murders at schools. The students are ready to do battle over the issue. I ask the students to bring in any newspaper or magazine clippings that deal with guns. I also ask for pictures of guns.

The students bring in the needed materials to decorate the room. As they enter, I have the song "I Fought the Law, and the Law Won" playing on the boom box. The students smile or chuckle as they listen to the song. They share their information or pictures. Then they place the items around the room. By the end of the class period, the room is decorated, and the students have a basic knowledge of gun control and legislation in the United States. They have also heard some horror stories about accidental deaths and rampages by people with guns.

The next day the students choose a slip of paper from one of two piles. Half the slips say "Guns kill people." The other half say "People kill people." The students who choose "Guns kill people" sit on one side of the room. The others take the other side. I hand out the novels, and the reading begins.

So far the episodic, procedural, and emotional lanes have been activated. Playing the song each day as the students enter will trigger memories of this information.

As we read, we encounter the technical information and terms involved in building a rifle. To make this more meaningful for the students, I must discover a way for them to understand the process. We cannot build a gun ourselves because weapons or replicas are not allowed in school. We can draw. I provide paper, dictionaries, and encyclopedias. Informative Web sites on the Internet can be helpful here, too. As the novel describes the building of the rifle, we draw our own pictures in stages. We talk about the procedures used, laugh about some of them, and act out a few.

As the reading continues, we discover that the rifle passes through the hands of many people in the story. We begin to create a story map on the board. Each section has a picture of the new owner, along with a description of the person and an explanation of how he received the rifle.

Some days I ask students to come to the front of the room. I give each of them a sign to wear with the name of one of the rifle owners or another character in the story. The students discuss the order in which the owners should stand, and then one or several students retell the story. They pass a picture of the rifle from owner to owner. Other days I hand the picture to a student and say, "You are the builder of the rifle. Who are you?" Then the student gives the rifle to another student and says, "I sold the rifle to you. Who are you?" This continues until we come to the current owner. I give written quizzes occasionally to test the learning.

By now I have activated emotional, procedural, episodic, and semantic memories. With repetition of things like the names of the owners of the guns, students have some information in automatic memory.

At this point, I ask the students to create a song about the story. They can use the tune from "I Fought the Law" or compose one of their own. I assign this to each group, so that we will have only two songs when we finish. The songs should be very different, and they are. The students begin to sing their songs each day after class begins. The songs are full of information from the story.

When we reach the end of the story, most students are very emotional about the events leading up to the ending and the ending itself. Again, we have reached a technical area of the story. I need a way to help them understand. We reenact the scene. Students volunteer to be characters from the story. We create signs with names on them. One student becomes the rifle itself, and another becomes the bullet. The rifle shoots, and the bullet follows the path described in the book. The role-play is not perfect, but it appears to work. Many students are fascinated by the physics involved in the bullet's path.

As the unit culminates, I ask the students if they are still comfortable in their chosen groups. Many stay where they are. Some switch sides. They ask for debates. They spend the next several days preparing. We hold the debates, and the students discover the importance of preparation and evidence.

The final activity is a persuasive essay using the group titles as the argument. The unit ends. The students return to their previous seats. The posters, pictures, and articles are returned. Most students appear to have enjoyed the experience.

I had to use conscious effort to access all of those memory lanes. The unit became more interesting as I did so. The students were involved and happy. Each year I must add some units and change others to access all of the memory lanes. It can be a challenge, but the rewards are worth it.

Many of you have been creating units for years that access the various memory lanes. Brain research encourages us to enrich our teaching strategies. Knowing this information may enlarge your bank of teaching strategies. Use the strategies that fit your style.

When I started teaching in 1971, I didn't have a style. Even though I had fun teaching and my students were learning, I did not have a clue about what I should be doing. Through the years I have taken classes, attended workshops, and read hundreds of books as I searched for a style that would fit me. It took a long time to find a style that allowed me to feel satisfied that I was doing the job I wanted to do. There are days when I want to tear my hair out and throw in the towel. When I give myself the chance to step back and look at what I am doing, I usually see that I have slipped back into my old patterns—you know, the ones that I used repeatedly and expected different results from. I find that when I return to my brain-compatible methods, both my students and I feel successful.

Relationship Development Intervention (RDI)

This paper was written by: Amy Cameron, MA, CCC-Sp
From notes taken at Dr. Gutstein's 2-day workshop August 2003

Typical Development

Typically developing people follow a pattern of learning that allows for a sophisticated ability to relate to others. Typical children learn to process information in two different ways: **Absolute and Relative**.

Absolute Processing

1. Solutions are either right or wrong. Correct solutions never change. Example: 2+2=4 2+2 never = 5
2. Events take place in the same manner, day after day. Example: The sun always rises in the east and sets in the west.
3. Information always has the same meaning. Example: A red light means stop. A green light means go.

Relative Processing

1. The meaningfulness of information depends on the context in which it is imbedded (ex. Person, place, time). Example: It is ok to tickle a baby if it is your brother, but not if it is a stranger.
2. Many problems require a "good enough" solution. We arrive at the solution based on whether or not it feels right, not because of objective criteria. Example: Determining how close to stand to a person when talking with them.
3. Problems may not have a single right or wrong solution. Example: Which shirt should I wear? Which airline should I fly? Which road should I drive to work? How should I play with my blocks?

Relative processing is required in order to relate socially. It is required for flexibility in problem solving, understanding meaning based upon context, adapting actions based upon feedback, and conversation, as well as many other functions to survive on a daily basis. Relative processing skills are weak in those with Autism, creating constant dilemmas in their daily lives. Many "social skills" programs emphasize capitalizing on Absolute processing in order to help improve social ability. These skills may be helpful in certain situations at certain times, but are not fluid enough to fit into the real world. (Ex. Eye contact, scripted greetings, etc.)

Typical Memory

Typically developing memory involves different mechanisms served by separate brain circuits. Two types of memory are: **Procedural memory and Episodic memory**. These two types of memory activate two different neural pathways.

Procedural Memory

- encodes details leading to specific goals
- procedures, scripts, and formulas
- emotional information is not stored

Examples of procedural memory

- memorizing facts for a test
- scripts for specific scenarios (ordering at McDonald's)
- saying "please" and "thank you"

Episodic Memory

- encodes information as a whole
- remembers the big picture, only certain details that are meaningful to us
- information stored as "episodes" with specific emotions attached to organize different categories

Examples of episodic memory

- recalling a trip
- remembering a visit to Grandma's house
- remembering a holiday

Instrumental Interaction and Experience Sharing

People with Autism tend to rely much more strongly upon procedural memory. The reason may lie in the way their brains are organized. We are born with many more brain connections than we can use. In childhood our brains selectively "prune" connections that are not stimulated. Specific neural pathways are stimulated based on different ways that we interact with our environment. Two different ways we interact with our environment are: **Instrumental Interaction and Experience Sharing**. These two different types of interaction activate two different neural pathways.

Instrumental Interaction

- social contact is a means to an end
- we expect scripted actions will lead to specific outcomes
- emotional reactions are not important
- novelty and creativity are disruptive

Examples of Instrumental Interactions

- pointing to a toy that is out of reach
- standing in line at a supermarket to pay for your stuff
- going to visit a "friend" so you can play with his new playstation game

Experience Sharing

- the interaction is an end in itself
- we prefer to interact not knowing the outcome
- emotions are the critical information
- we interact to share novel and creative ideas

Examples of Experience Sharing:

- going fishing with a friend not caring whether or not you actually catch any fish
- riding bikes side by side with a friend going no place in particular
- while out shopping noticing something you daughter would like and buying it for her

People on the Autism spectrum tend to be really good at instrumental interactions, but not with experience sharing.

Two Different Pathways

1. Absolute Thinking => Procedural Memory => Instrumental Interaction
2. Relative Thinking => Episodic Memory => Experience Sharing

People with Autism tend to be very good at pathway #1 and tend to have extreme deficits with pathway #2. RDI specifically addresses pathway #2 beginning with experience sharing, and then creating episodic memories to improve relative thinking.

Principles of RDI

1. Carefully and systematically build motivations. Motivations are the same as functions, the "why". Experience sharing can become addictive for people with Autism. RDI emphasizes the teaching of functions before skills.
    - functions are the "why bother" of doing experience sharing
    - functions must be mastered before skills
    - functions are developed through Episodic Memories

    Skills:

    - skills are the "how to" of experience sharing
    - skills never determine the starting place for intervention
    - skills are attached to episodic memories developed through functions
2. Carefully evaluate developmental readiness before teaching skills. The foundation must be solid before you add skills.
3. Learn to be an Experience Sharing Coach by balancing guiding and pacing. Follow the child's lead not in what to do, but in how fast to do it.
4. Invite and amplify using prompts and spotlighting. Use you face, voice and body to insure that critical information stands out clearly.
5. Make sure to build Episodic Memories of enjoyable shared experiences.
    - celebrations (instead of praise)
    - stop the action
    - videotape review
    - photographs
    - memory books
    - emotional comparisons
    - journaling
6. Use expandable, evolving Frameworks, not rigid activities, to develop Experience Sharing. FRAMEWORKS are activity structures designed to be gradually modified and expanded. The framework is never the central focus, it is only scaffolding for interaction.
7. Expect to make many mistakes leading to new discoveries. RDI is a continuous process of hypothesis testing.
8. Make sure to develop Experience Sharing language. (ex. We can do it! Did you see that? Is that better? Do you like it?)
9. Incorporate RDI communication and referencing and regulation into your daily life.
10. Start with Adults, to dyads, then groups. Typical children learn to be competent with adult partners before desiring time with peers. Children's first peer encounters are with one peer at a time. Groups are much more difficult that dyads.

Recommended Reading on Executive Function Skills and Related Disorders

by Sarah Ward, M.S., CCC/SLP

No Mind Left Behind: Understanding and Fostering Executive Control--The Eight Essential Brain Skills Every Child Needs to Thrive by Adam J. Cox

- *One of my favorite books about the Executive Function Skills. Well written, comprehensive and full of practical strategies. His website is amazing too: www.dradamcox.com*

Executive Skills in Children and Adolescents: A Practical Guide to Assessment and Intervention **2nd Edition** (Practical Interventions in the Schools) by Peg Dawson and Richard Guare

- *A good introductory book on Executive Function Skills. Particularly excellent for teachers and parents who need foundational understandings on what the Executive Function Skills are. The Second Edition has lots of additional information and updates. These authors have also written the book Smart but Scattered which has many practical ideas to improve executive function routines in the home setting.*

Tools of the Mind: The Vygotskian Approach to Early Childhood Education (2nd Edition) by Elena Bodrova and Deborah Leong

- *This book is my absolute favorite for understanding how executive function skills develop in young children. Several chapters are dedicated to an outstanding approach to teaching writing to young children. Writing can be a real struggle for kids with executive function based deficits and this technique is extremely helpful. This book also addresses the value of teaching play skills as a means of learning self regulation, delayed gratification and tolerance for frustration. The companion website toolsofthemind.org has unbelievable resources and lists of research on the EF skills.*

7 Things Your Teenager Won't Tell You and How to Talk About Them Anyway by Jennifer Lippincott and Robin Deutsch

- *I consider this mandatory reading for parents of teenagers. Don't let the title of the book prevent you from buying this book. It is not about how to talk to your teen about drugs, etc. The concrete advice provided for talking with and parenting teenagers are simple and highly effective. More importantly the approaches work towards developing the teenager's ability to be a strong independent, smart thinker while still keeping themselves safe and respectful. This book has a goldmine of information and has a strong executive function based approach to parenting teens.*

Raising a Thinking Preteen: The "I Can Problem Solve" Program for 8- to 12- Year-Olds by Myrna B. Shure and Roberta Israeloff

- *This book focuses heavily on teaching students how to develop flexible problem solving skills. This is one of the few books I have read that does not merely say 'problem solving is an important skill' but rather truly teaches the reader "how to" teach children the steps to being independent problem solvers. If you work with younger students, her workbooks have terrific premade group lessons to teach problem solving and thinking skills to elementary aged children.*

Recommended Reading on Executive Function Skills and Related Disorders

by Sarah Ward, M.S., CCC/SLP

Lost in School and The Explosive Child by Ross Green.

- *Both are excellent books for communicating to school professionals about the underlying EF difficulties children with behavioral challenges experience and why they act the way they do. A must read for teachers and parents alike. If you have an explosive child at home this is a must read resource, but I do not recommend you skim the book. Read it cover to cover to really understand collaborative problem solving to work with children who struggle with flexibility. Related resources include the websites:*
    - *thinkkids.org*
    - *www.greatschools.org/special-education/health/executive-function-lens-to-view-your-child.gs?content=1017*
    - *http://www.livesinthebalance.org/*

Fostering Independent Learning: Practical Strategies to Promote Student Success by Virginia Smith Harvey and Louise Chickie-Wolfe

- This has many practical strategies to improve study habits, time management, organization, writing and reading comprehension skills. An excellent book for teachers and tutors alike, the strategies are very metacognitive in nature and demonstrate how to move the student from dependence to independence.

Strategies for Organization: Preparing for Homework and the Real World by Michelle Garcia Winner

This 3.5 hour DVD and handout booklet features the highlights of Michelle's popular all day workshop on this same topic. The information on this DVD is applicable to teaching and treating ALL students, not just those with learning disabilities, and is best for those in 4th through 12th grade. It is an excellent resource!

Study Skills: Research Based Teaching Strategies by Patricia Newhall. Landmark Outreach Program.

Promoting Executive Function in the Classroom by Lynn Meltzer

- A must for all teachers interested in improving executive function skills in the classroom. Has many practical strategies to improve classroom organization, note taking, studying, emotional self-regulation and task management.

Why Don't Students Like School? By Daniel Willingham

- This book does a wonderful job of clearly explaining how working memory operates and how to teach academic content which will be retained in working memory to then be transferred and used by long term memory.

Recommended Reading on Executive Function Skills and Related Disorders

by Sarah Ward, M.S., CCC/SLP

Thinking About You Thinking About Me 2nd Edition by Michelle Garcia Winner

- Provides a strong foundational understanding for how to evaluate and treat students who struggle with social thinking skills.
- This is a must have book to understand social interaction and social awareness. Many students, including those with high-functioning autism, Asperger syndrome, ADHD and similar social and communication challenges, have difficulties understanding that other people have perspectives that are different from their own. Michelle's model of perspective-taking makes research into Theory of Mind practical for teaching these students and even students who may be considered "neurotypical." Specific lessons, and how to apply them in different settings, are explored. The assessment chapter now includes the Social Thinking Dynamic Assessment Protocol®, with more detailed assessment techniques.

Organizing the Disorganized Child: Simple Strategies to Succeed in School - by Martin L. Kutscher and Marcella Moran

- A superb book. The author's explain the roots of children's organizational problems, and the parents' role in fixing them. They outline different organizational styles used by different students. (Not all kids organize the same way!) They provide a step-by-step plan for an organizational system including: Refining morning and nighttime routines, Getting the correct work home, Planning the work, and getting it back to where it belongs, Tips for reading and note taking, Study and test taking skills, Learning how to ask the right questions.

Therapy Materials

- Generalizing by Marilyn Toomey (Paperback - 2002)
- Talk About Planning by Marilyn Toomey
- Developing Language Comprehension Using Multisensory Activities by Marilyn Toomey
- Teaching the Language of Time by Marilyn M. Toomey and Susan Christy-Pallo
- From Sentence to Narrative by Marilyn Toomey
- The Language of Perspective Taking by Marilyn Toomey and Will Harney
- 101 categories by Marilyn Mantifel Toomey
- Sequence plus by Marilyn M Toomey
- Teaching kids of all ages to ask questions by Marilyn M Toomey
- Between the Lines: Saying One Thing, Meaning Another: Activities for Clarifying Ambiguous Language - by Cecile Cyrul Spector
- Enhancing Inferencing Skills by Cecile Cyrul Spector

Recommended Reading on Executive Function Skills and Related Disorders

by Sarah Ward, M.S., CCC/SLP

- As Far As Words Go: Activities for Understanding Ambiguous Language and Humor - by Cecile Spector Ph.D.
- As Far As Words Go: Unraveling the Complexities of Ambiguous Language and Humor - by Cecile Spector
- The Expressionary and the Expression Connection, Mark Schmidek. Great for developing figurative language.

Great Games for Therapy

- A Bit of Banter Jr. – I use for conversation skills
- Taboo – to develop vocabulary, schematic thinking and expressive language
- Outburst Junior - to develop vocabulary, schematic thinking and expressive language
- Imaginiff Jr.- great for developing episodic memory and abstract, inferential thinking skills
- American Girl 300 Wishes – great for social skills, forming opinions and making decisions
- Break the Safe- amazing collaborative social skills game: you will need to find on ebay
- Oodles of Doodles- to develop vocabulary, schematic thinking and visual imagery skills
- Stare Junior – for episodic memory, attention and schematic thinking
- Whoonu - great for social skills, forming opinions and making decisions
- Sync Up- great for social skills, schematic thinking and expressive language
- Remote Control Impulse Control, Franklin Learning Systems, a great game for teaching impulse control and self regulation.

Other Resources:

- Story Grammar: mindwingconcepts.com
- Beyond Story Grammar: http://www.caroleedean.com/index2.htm She has amazing ideas for teaching story grammar to adolescents and college level students who are reading complex literature. Check out her handouts from the 2009 ASHA conference on the ASHA website.