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The AT Toolkit for Invisible Disabilities

Learner Outcomes

- Describe the cognitive profile of at least one "invisible disability"

- Identify two variables that interact and influence successful AT implementation in learners with executive functioning challenges

- Detail how one AT tool can be used variably to support a range of cognitive needs

- Develop a list of AT tools and strategies to support implementation

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So, who are we?

So, who are we?

The AT Toolkit for Invisible Disabilities

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What are we going to learn together?

- That at the very foundation of many of the disabilities we cannot see, are a series of core cognitive skills.

- In order to better understand what we need to do and why, we need to see the challenges as they relate to these cognitive skills (rather than as related to a diagnosis).

- Once we see the "skeleton" we can see what we need to do, what we don't need to do, and what tool we might need to use.

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How are we going to do this?

- In 3 parts:
  1. Diagnoses
     - Their stats and superpowers
  2. Tasks
     - What is the goal of the task?
     - How are the stats and superpowers affected?
  3. Technology
     - What task goal is being address?
     - How are we leveraging technology to address the goal?
     - How are we avoiding taxing the cognitive processes?

- Talk with you
- Show you
- Tell you stories
- Ask you questions
- Have you experience it
- Have you watch it
- Have you read it
- Have you write it
- Give you part of what you need
- Leave you with questions

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Part 1
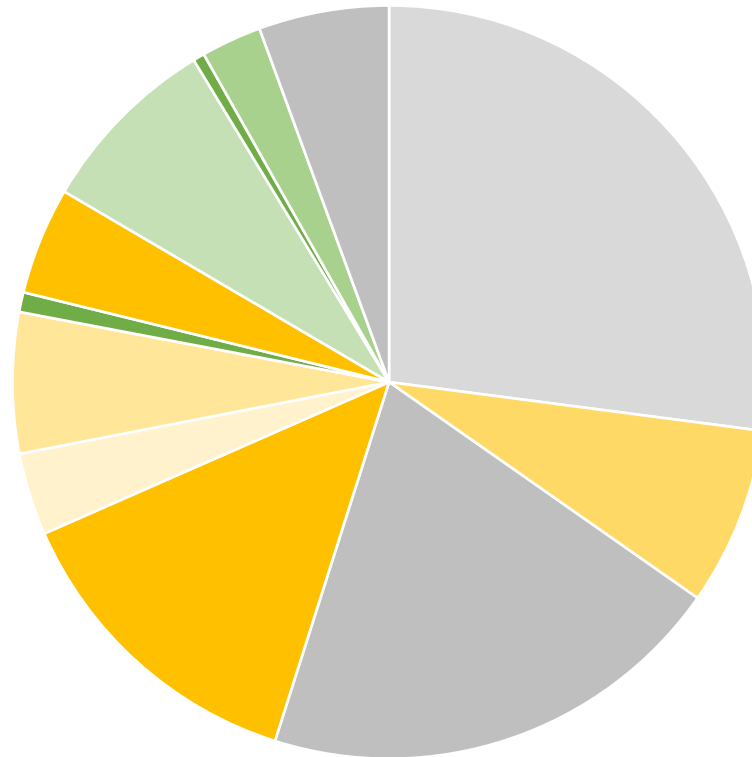
The Diagnoses

What is an "invisible disability"?

SOME DISABILITIES LOOK LIKE THIS

SOME LOOK LIKE THIS

Prevalence of Condition in The United States

Allergies ■ Anxiety ■ Asthma and Headaches ■ ADD/ADHD ■ ASD ■ Behavior/Conduct ■

Cerebral Palsy and MD ■ Depression ■ Developmental Delay ■ Down Syndrome ■ Intellectual Disability ■ Other ■

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ADHD
⇄ relationships
⬇ emotion regulation
⬇ self-regulation
⬇ motivation
⬇ memory
⬇ spatial abilities
⬇ language
⬆ anxiety

TBI/Concussion
⬆ nausea, fatigue
⇄ balance, sleep
⇄ vision, hearing
⇄ memory/WM
⇄ attention
⇄ planning/prob solving
⬇ language, speech
⬇ mood

Developmental Trauma/PTSD
⇄ attachment
⬇ sense of safety
⬇ frontal lobe w/ ⬆ stress
⇄ memory/WM
⇄ attention
⇄ planning/prob solving
⬇ emotion regulation
⬇ inhibition
⬇ language

High Functioning ASD
⇄ processing efficiency
⇄ emotion regulation
⬇ inhibition
⬇ cognitive flexibility
⬇ theory of mind

Anxiety
⇄ sleep, fatigue, mood
⇄ attention
⬇ memory/WM
⬆ processing/prob-solving
⇄ arousal (hyperarousal)

Mood/Depression
⇄ sleep, fatigue, mood
⇄ attention and memory
⇄ processing/prob-solving
⬇ cognitive flexibility
⬇ inhibition

Executive Functioning

- Executive dysfunction common in invisible disabilities

- EF begins to come online in infancy

- EF development happens over very long stretch of time

- EF maturation is occurring later
    - Historically ~21
    - Now +25

- Interweaving EF with memory, emotion and motor skills in increasingly complex ways leads to increasingly sophisticated behaviors, like:

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Higher Order Executive Functions

- Sustained attention
- Perspective taking
- Self-awareness
- Error detection
- Repair
- Meta-cognition
- Planning
- Decision making
- Goal setting
- Multi-taking
- Coping
- Negotiation
- Organization (materials, thoughts)

# Core Executive Functions (The Incredibles)

- EF = goal directed behavior

- All goal directed behavior requires:

    Pause ➤ reflect ➤ act

    o Working memory
    o Attention
    o Cognitive inhibition
    o Flexibility (set shifting)
    o Emotion inhibition/regulation

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Core Cognition

- Innate concepts, understanding and representations
    - o Object
    - o Intentional agent
    - o Cause
    - o Numerosity (analog magnitude, parallel individuation/small sets)
    - o Matter, weight, density

- Immature EF means learners cannot reliably act on core (or any) knowledge

Carey (2009), *Origin of Concepts*

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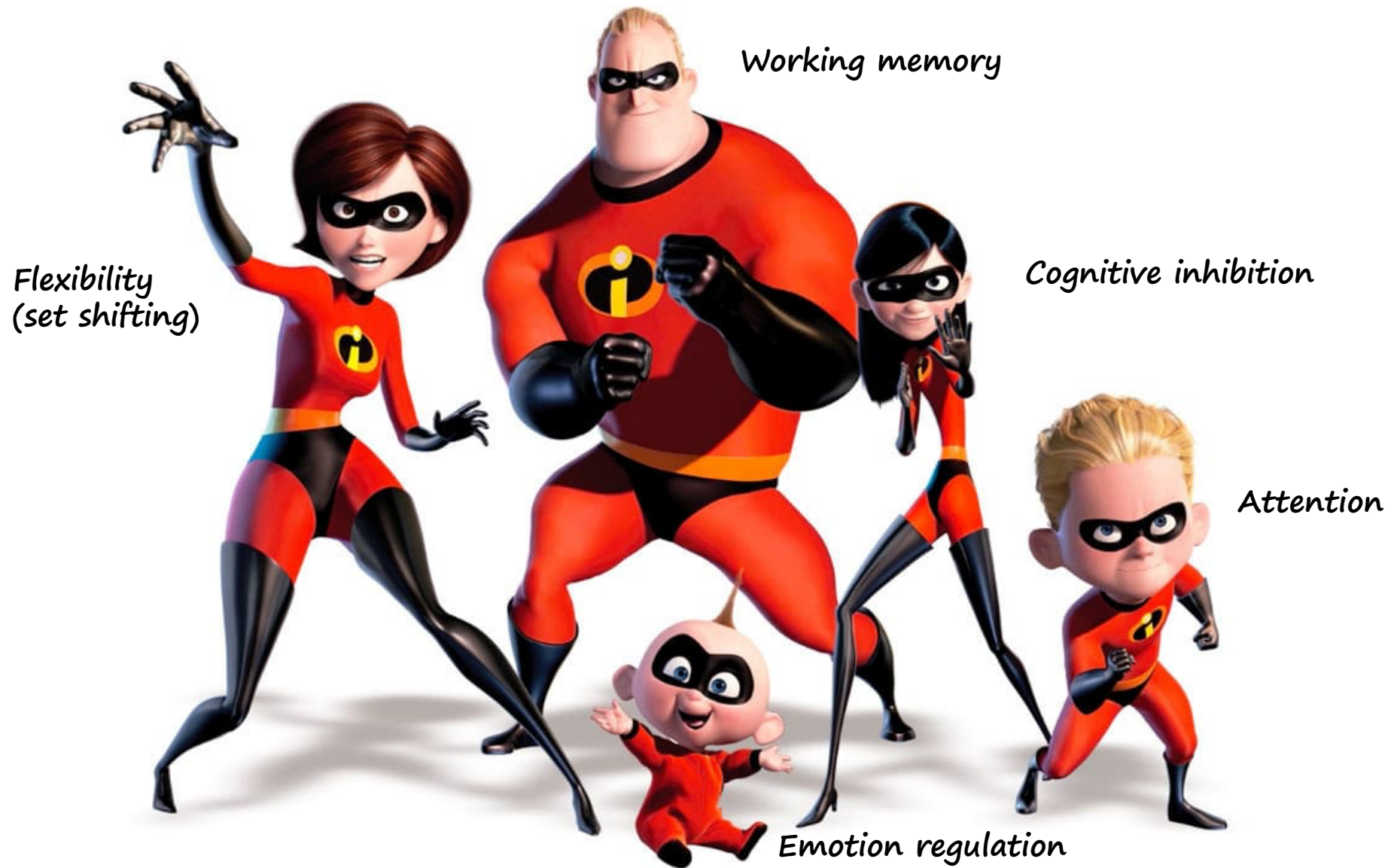
Flexibility (set shifting)

Working memory

Cognitive inhibition

Attention

Emotion regulation

Attention

- The focusing on and processing of information in our environment.
- Four general categories:
  - Selective (block out/inhibit features to focus on another)
  - Divided (focusing on at least two things at once)
  - Sustained (concentrating on a feature for a long period of time)
  - Executive (attention we use to make steps towards a goal)
- Attention varies across context, environment, age, time, etc.
- Can focus on internal and external elements

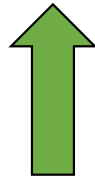Communicare, LLC

Attention --> Processing --> Storage

- Sensation
- Perception (making coherent sensory whole)

Maintained for msec – sec

- Working memory (workspace for integrating past and present to respond optimally in new situation)
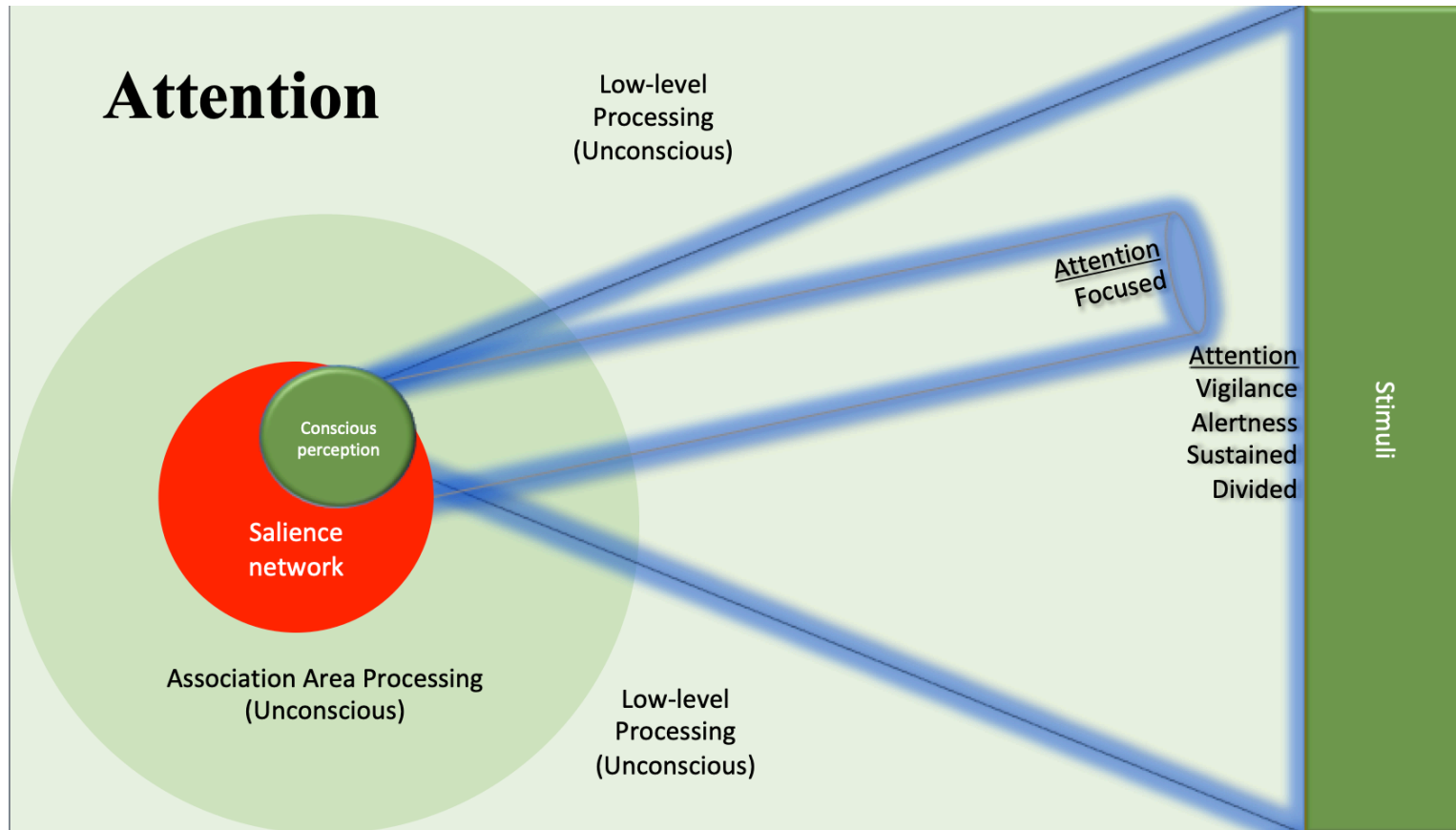 - Maintenance rehearsal

Maintained for secs – hrs with rehearsal

Maintained indefinitely

- Long-term storage
  - Deep processing (conscious manipulation, connecting to prior knowledge)
  - OR High emotion

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What does attention look like?

Attention & Working Memory

- Closely linked
- Physiological correlates
    - Pupil dilation
    - Increased heart rate
    - Increased BP
    - Neurochemical changes
    - Electrical (EEG) changes

Working Memory

- The ability to hold onto internally represented information that will be used in an ensuing response.
- The ability to hold a sequence of events in one's mind forms the basis of understanding time and order, and can impact:
  - numeracy (Barkley, Murphy, & Kwasnik, 1996), and
  - spatial reasoning (Grodzinsky & Diamond, 1992)
- Process of breaking down (analyzing) the information being held, and recombining and reconstructing the parts (synthesizing) to meaning and understanding.

Cognitive Inhibition

- Behavioral inhibition

- Walter Mischel, 1972 "Marshmallow Test"
  o Ability to delay gratification at age 4-5 predicted success across a range of categories as an adult (better than IQ)

- Subsequent research has shown ability to delay gratification is not a fixed trait
  o Predictability of environment plays a big role (it's easier to wait if you're confident a reward will be there)
  o Culture is influential
  o Delayed gratification is a skill that can be learned
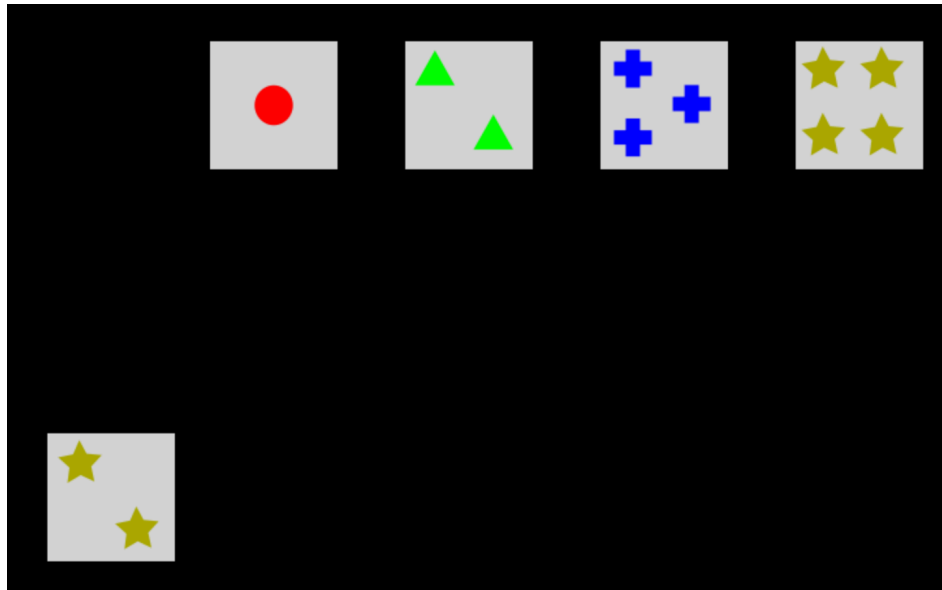
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Cognitive Inhibition

- Brain is 80% inhibitory

- In order to do a specific thing you need to not do lots of other things

- GABA is main inhibitory neurotransmitter
    - Raises action potential of downstream neurons so they will not fire

Cognitive Inhibition

Wisconsin Card Sort task   https://www.psytoolkit.org/experiment-library/wcst.html#_run_the_demo

Flexibility (Set Shifting)

- The ability to adjust one's behavior or switch between mental processes while inhibiting the initial behavior, identify the needed behavior for the task at hand based on the environment.
- Greater cognitive flexibility is associated with:
  - Better reading abilities in childhood
  - Higher resilience to negative life events

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Hands-on Turn and Talk Time

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Emotional Regulation

- A failure to modify an emotional state resulting in maladaptive behavior.
- Emotional impulsivity
- Difficulty eliciting appropriate emotions, moods and states.
- Activation of amygdala, to identify emotion in facial expression, gestures, and speech (specifically prosody)
- Making sense of emotions and determining how to respond or react.

Core Affect

- Interoception
    - Summary of what's going on inside body (barometer)

- Based on physiological responses (calmness, agitation, comfort, discomfort)

- Interactive dimensions (2)
    - State arousal (high – low)
    - Valence (positive – negative)

- Emotion is the meaning we give interoception in a specific context
    - churning stomach in bakery = hunger
    - churning stomach prior to surgery = dread

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State Arousal & Task Complexity

- Interact
- Drive and mediate learning
- Yerkes-Dodson Law
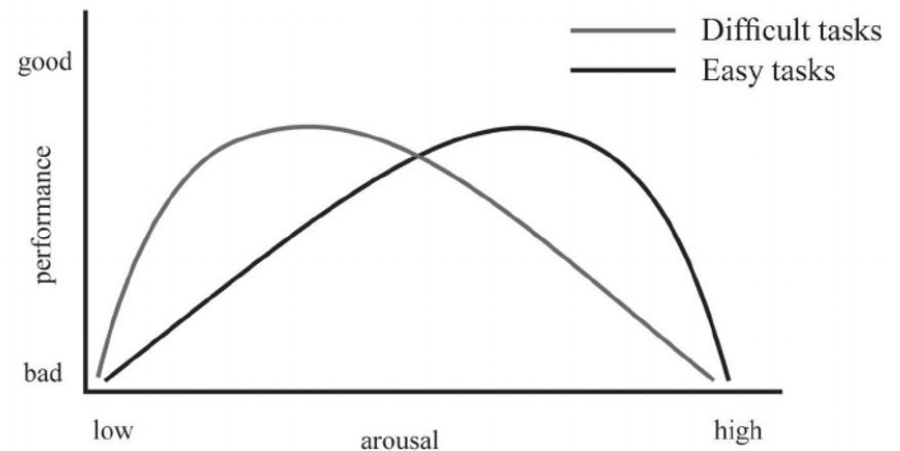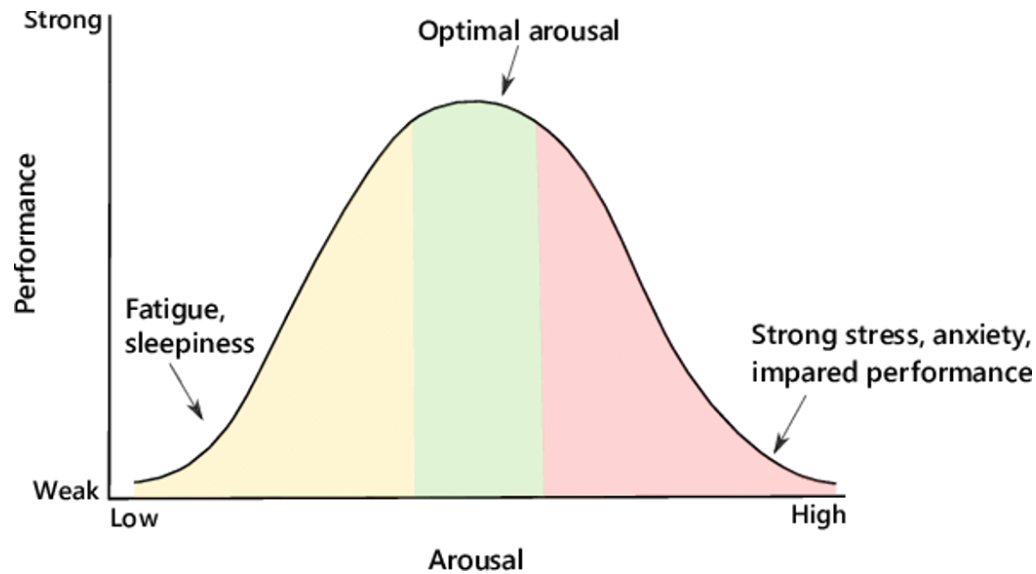
Yerkes-Dodson Law

- Why is it a law?
    - Applies to all learners, across all learning situations

- What does it tell us?
    - Performance varies as a function of arousal and task complexity
        - Lower level of arousal for complex tasks
        - Higher level of arousal for simple tasks, BUT
    - Environment + person interactions
        - Variability in what is "arousing" to learners
        - Must consider interaction environment + learner

- How does it relate to AT?
    - Why AT has to consider the individual, within a context, at a certain point in time

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Case Example: Alee

- 10 year old girl
- Dx: ADHD (3rd grade), Childhood Traumatic Separation
- 4th grade
- Cognitive Profile:
  - "lazy child"
  - Impulsivity
  - Reduced language comprehension
  - Difficulty with reading (reading comprehension), writing, and math
  - Difficulty with friendships
  - Limited independence in ADLs in the home environment

Writing Sample

3rd grade (end)

Making a Wetu

A wetu is a round house where the Wampanoag lived. For this project I chose a hat Because it is shaped like a wetu. I got moss because it is green like grass. I used a bird for the top because they live in the forest. I made a fire out of clay because fires kept them warm. I made a bed out of clay and hay too. They had blankets made out of animal skin and pillows mad out of hay. I used a stick and some pipe cleaners for sticks because they are both brown like sisticks and because they used sticks to build a wetu.

Writing Sample

4th grade (early)

Dress codes are no fun!

By Alessandra

Imagine wearing a long sleeve shirt that is so itchy on a hot summer day! Ahh! I don't think Holyoke kids should have to wear uniforms to school! I don't think anyone should wear a uniform! Uniforms are uncomfortable. Kids should be able to express themselves with their cloths and a few kids would like to wear uniforms.

Wearing Whatever you Think is Good to You

First, I don't think that we should wear uniforms because they are uncomfortable. They can become itchy because you might be very hot. I would feel so itchy I would not want to be so itchy. I would want to wear whatever I want because you would not be so itchy at school. A button up shirt could be restrictive because they can pinch you. You can't roll up your sleeves with a button up shirt, either. In the spring or summer, it's too hot to wear long pants, and lots of uniforms make you do that. For exsample you could be way to hot and way to itchy.

Getting in trouble

Second, I just wouldn't want to wear a uniform. You might get in trouble if you did not wear your uniform cloths. you can get in big trouble. I would like to wear whatever I want. For instance, I would like to wear a style that shows me expressing myself at school. I have my own style that shows me being me. I like wearing stripes, harts and even plane black pants in winter and blue or grey and colorful pants. I like my hair in a bun, ponytail, or having my hair down. I even dye my hair blue or purple or red. Those are my styles. I would wear a colorful shirt, a shirt that had words like go girl or things like plane shirts. I would not like to be in hard shoes because if you ran, they might not be the right shoes for you or right for gym. If you had to be in cloths like that like just having one pair of shoes or

Writing Sample

4th grade (early)

having to wash every morning or every night that would be boring. Have your parents weared a uniform. I would want my own style. I would show people that I like Halloween by wearing a shirt because that shows people that I like Halloween. Say if people like valentine's day, they can't show that. If you want to dye your hair for thanksgiving or Christmas, you would not be able because you would get in a lot of trouble. I don't know if my parents would like me wearing a uniform to school, I bet they would want me to express myself as the way I am. Some people out there might love uniforms and are just enjoying being in a uniform. They might say it's perfect. I think that that's ok they are really expressing their self to who they really are besides I would not like to not express. Again we have our own upinon

In conclusion, They might feel joyful they might feel happy or even good. We don't have to like uniforms but that's are opinion. I only agree with three of them like first we can spend less money. Second we will have less time than just choosing. Three we will express our self to the world and show them who we really are and show them we love our country and holidays because we are strong like that and that's how we show pride. Have you ever been in a dress code before? Uniforms are not comfortable. You will feel too hot to wear them. Like a button shirt is too hot to wear in the summer.

Part 2

The Task

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Writing
➡️ Attention
➡️ Working memory
➡️ Cognitive inhibition
➡️ Self-regulation
➡️ Self-monitoring
➡️ Perspective taking
➡️ Mental imagery
➡️ Retrieval

Reading
➡️ Attention
➡️ Self-monitoring
(do I understand this?)
➡️ Affect
➡️ Perception
➡️ Emotional regulation

Organization
➡️ Attention
➡️ Working memory
➡️ Cognitive inhibition
➡️ Self-regulation
➡️ Self-monitoring
➡️ Perspective taking
➡️ Retrieval
➡️ Recall

Math
➡️ Attention
➡️ Working memory
➡️ Cognitive inhibition
➡️ Mental imagery
➡️ Retrieval

Oral Expression
➡️ Attention
➡️ Working memory
➡️ Cognitive inhibition
➡️ Self-regulation
➡️ Self-monitoring
➡️ Perspective taking/TOM
➡️ Mental imagery

Participation/Interaction
➡️ Attention
➡️ Working Memory
➡️ Cognitive inhibition
➡️ Self-regulation
➡️ Self-monitoring
➡️ Perspective taking
➡️ Recall

Writing

Task Breakdown	Cognitive Processes
• Brainstorm main and supporting ideas • Plan and organize their ideas • Logically order • Structure sentences syntactically to clearly convey ideas • Vocabulary • Monitor their writing to ensure sentences are grammatically correct • Evaluate their sentences in terms of grammatical accuracy, and in relation to the initial plan • Revised the writing draft to ensure an optimal error-free final product, something seldom accomplished by children with writing disabilities	• Attention • Working memory • Cognitive inhibition • Self-regulation • Self-monitoring • Perspective taking

AT Writing Tools

Tech Tool	Cognitive Tool Demand on Working Memory
Word bank	
Spell check	
Word prediction	
Dictation	
Text-to-speech	
Voice memo	
Sentence starter	
Graphic organizer	
Editing checklist	

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AT Writing Tools

Tech Tool	Cognitive Tool Demand on Inhibition
Word bank	
Spell check	
Word prediction	
Dictation	
Text-to-speech	
Voice memo	
Sentence starter	
Graphic organizer	
Editing checklist	

AT Writing Tools

Tech Tool	Cognitive Tool Demand on Flexibility
Word bank	
Spell check	
Word prediction	
Dictation	
Text-to-speech	
Voice memo	
Sentence starter	
Graphic organizer	
Editing checklist	

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AT Writing Tools

Tech Tool	Cognitive Tool Demand on Emotion Regulation
Word bank	
Spell check	
Word prediction	
Dictation	
Text-to-speech	
Voice memo	
Sentence starter	
Graphic organizer	
Editing checklist	

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Reading

Task Breakdown	Cognitive Processes
• Task Initiation • Visual Processing of text • Decode the text/Symbolic understanding • Understanding vocabulary • Symbolic imagery • comprehension of text (gist vs. rote)	• attention • Self-monitoring (do I understand this) • focus • Affect • Perception • Emotional regulation

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Math

Task Breakdown	Cognitive Processes
• Task initiation • Number concepts • Computation knowledge • Vocabulary • Comprehension of what the question is asking • Recall of strategies and tools • Physical handwriting of numbers/lining them up • Problem-solving • Visual representation of work • Writing out/Showing work • Editing work	• Attention • Working memory • Cognitive inhibition • Self-regulation • Self-monitoring

Organization

Task Breakdown	Cognitive Processes
• Task initiation • Having the tools present • Using tools (folders, agenda, calendar, etc.) • Organizing the tools (color coding folders or file naming) • Identify when to use which organization tool • Planning and breaking down larger tasks	• Attention • Working memory • Cognitive inhibition • Self-regulation • Self-monitoring • Perspective taking

Oral vs. Written

"The myth that if you can handwrite, spell, and use expressive language you will write well has now been dismissed. Direct instruction in written expression is critical, especially for children with executive function problems (e.g., ADHD, depression, anxiety), who are likely to have significant written expression LDs (Mayes & Calhoun, 2006). These children may have excellent ideas, but translating them into writing is a struggle. Interventions that foster metacognitive (i.e., thinking about thinking) competency (Harris, Graham, Brindle, & Sandmel, 2009) may be quite helpful."

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Neurophysiology of Writing

- Brainstorm main and supporting ideas
- Plan and organize their ideas
- Logically order
- Structure sentences syntactically to clearly convey ideas
- Vocabulary
- Monitor their writing to ensure sentences are grammatically correct
- Evaluate their sentences in terms of grammatical accuracy, and in relation to the initial plan
- Revised the writing draft to ensure an optimal error-free final product, something seldom accomplished by children with writing disabilities

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Writing	
Brain Area	**Function**
Anterior Cingulate Circuit	•Self-monitoring •Cognitive switching •Decision making and error monitoring
Dorsolateral Prefrontal Circuit	•Planning, flexibility, and organizing ideas •Retrieving words and content from memory •Implementing and monitoring the writing
Exner's Area	•Handwriting and spelling •Written expression – similar to Broca's
Broca's Area	•Grammar and syntax, oral expression •Sequencing in sentences and writing sample
Supplementary Motor Cortex	•Motor act of writing (routinized hand movement and coordinating posterior visual and somatosensory or touch processes)
Left Parietal Lobe	•Somatosensory feedback (pencil grip/pressure) and letter orientation
Right Parietal Lobe	•Spatial feedback for letter quality
Left temporal Lobe	•Explicit sentence structure and vocabulary meaning
Right Temporal Lobe	•Implicit vocabulary and sentence structure
Cerebellum	•Fine motor control and coordination

Task Environments & Cognitive Core Processes

- Testing (timed)
- 1:1
- Small group
- Large group
- Inclusion
- Sub-separate
- Familiar/trusted instructor/educator
- Home
- Different classrooms
- Self-chosen topic versus adult directed

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Environment Needs to Include Parents/Caregivers

- It often has been hypothesized that the effect of ACES on health is mediated by the impact on parent-child relationship.
  - consequently improving parent- child relationship can reduce the impact of ACEs. (Mitchell , Kostolanki , 2019).
- Parent / family involvement can affect student success.
- Highest performing schools are the ones that place value on family's and community's involvement and invest more time and resources in promoting and facilitating such involvement.
  - Conversely, when school practitioners work in isolation of parents, the students' performance declines. (Martin, 2009)

Part 3

The Tools

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What are the tools?

- What's in your "toolkit" now?

  - Use the pads of paper to list the AT tools we know and we use?

  - Organize your tools by level of complexity?

- What is working? What is not?

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AT Appliance vs. Tool

- Appliance vs. Tool

- Appliance use = put on, does the job, minimal-to-no cognitive effort required

- Tool use = complex behavior, requires learning, practice, time

Tools – what a learner needs to learn

- Physiological needs
- Safety
- Stimulation (arousal modulation – time to seek out stimuli + time to rest and digest)
- Strategies to engage and direct attention to the right level
- Emotion Regulation
- Flexibility & Inhibition
- Way to offload WM
- Schema (context)
- Motivation/Reinforcement (external and internal)
- Social relatedness and belonging (middle school)
- Ways to make learning stick in long-term memory (personalization, manipulation, many opportunities to retrieve skill from memory and practice)
- Time
- Stimulation
- Autonomy
- Sense of growth, competence, mastery
- Immediate feedback
- Growth mindset
- Way to organize information
- Strategies to retrieve information
- Connect new learning to prior learning
- Strategies to transfer learning in one setting to another
    - Meaningful
    - Thorough, practice
   - Similarities between one setting and another

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# Tools:
Learning Needs, Tech Tools, Cognitive Tools

- Cognitive tools are strategies and skills you bring to the learning situation
- Tech tool – appliance (a tool outside of you)
- Learning need – the needs that all learners need to be able to take in and make sense of information

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Is AT effective?

- How do we know when it is? When it's not?

- Why is it or isn't it effective?

- How do we monitor effectiveness?

- Can we determine whether it's going to work before hand? What are the variables?

- What do we do when it's not effective?
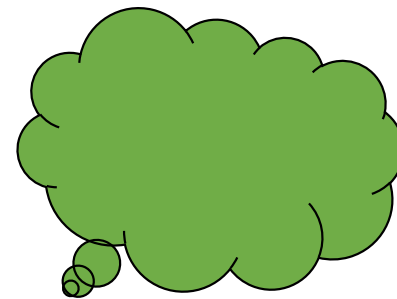
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What is AT?
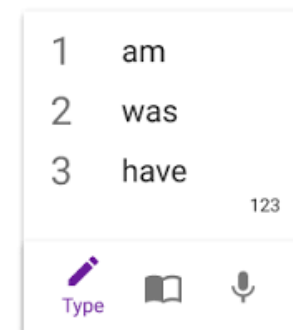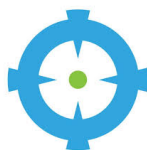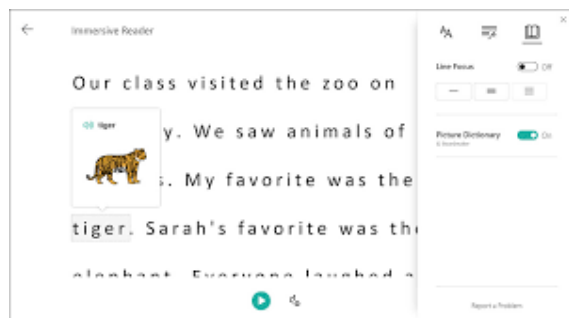
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AT device vs. AT service (IDEA, 2004)?

- **DEVICE:** "any item, piece of equipment, or product system, whether acquired commercially off the shelf, modified, or customized, that is used to increase, maintain, or improve functional capabilities of a child with a disability. Exception. - The term does not include a medical device that is surgically implanted, or the replacement of such device."

- **SERVICE:** "any service that directly assists a child with a disability in the selection, acquisition, or use of an assistive technology device."
  - Evaluation
  - Purchasing, leasing, or otherwise providing
  - Selecting, designing, fitting, customizing, adapting, applying...
  - Coordinating/using other therapies/services with AT
  - Training or technical assistance for individual
  - Training or technical assistance for the team

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Tech Abandonment

- 8-75% (Lauer, Longenecker Rust, & Smith, 2015)
- 29.3% of all devices were completely abandoned (Phillips & Zhoa, 1993)
- 30% of AT abandoned after the first year (Federici, Meloni, & Borsci, 2016)

- Has to do with:
  - Effectiveness,
  - Operability,
  - Durability
  - Being able to trial for a significant period of time
  - Availability of support

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When Does AT Work?

When we include:
- Hardware/Access
- Software/Interface
- Tech proficiency
- Task demands
- Environment

And keep in mind the "Incredibles"

Environment Task demands + Tech proficiency + Software/interface + Hardware/access +			X
Task demands Tech proficiency + Software/interface + Hardware/access +	X	X	✓
Tech proficiency Software/interface + Hardware/access +	✓	✓	✓
Software/interface Hardware/access +	✓	✓	✓
Hardware/access	✓	✓	✓
	- Demands on working memory/ +Attention	+Emotional regulation	+ Self-efficacy

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AT including Learning Needs

- **Tools** and **strategies** that increase a learner's access and success with reading, writing, math, organization, and communication
- Review individual's cognitive core profile
- Considering the **environments** influence on success
- Incorporating **family/parent communication** into the plan

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Let's look at some typical AT for Written Expression and Identify:

- The **goal** of the tool.
- The **cognitive demands** required to access and use the tool
- And some **strategies** that would be paired with the tool or needed instruction prior to the tool being used

Before we do let's review our Core Cognitive Processes

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The language of attention

- Shift your attention over here
- If you shift your eyes, your brain will follow
- Let's think about that
- This is our focus time
- What do you see? (literal, detail)
- What do you notice? (abstract, pattern)
- Look inside your mind
- Can you think about me?
- Check in with me, please
- Where is your mind now?
- What are you thinking?
- I see you thinking about it
- Thank you for focusing on that
- Wow, you were focusing for ___! (amount of time)

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The language of working memory

- Let's picture that
- What do you see? (literal, detail) What do you notice? (pattern, abstraction)
- Use your words to help me picture that
- We're going to hold that in our minds
- That's picturing it!
- What comes to mind?
- We're going to hold on to that. We'll need it later
- Where did you put that in your mind? What is it near in your mind?
- Zoom into/out of (that picture in your mind)
- How did you put those together in your mind?
- What comes after/before that?
- How do you make sense of that?
  How could you move it around to make someting different?
- How can you explain this in your own words?
- Let's start with what you know for sure...

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The language of inhibition

- We're going to work on inhibiting ___
- What does inhibiting feel like?
- Can you inhibit that?
- Thank you for inhibiting that
- How long do you think you can inhibit ___?
- That's hard to inhibit, isn't it?!
- I really want to ___, but I should inhibit that so we can focus

The language of flexibility

- Can you shift your attention over here?
- If you shift your eyes, your brain will follow
- We're working on being flexible
- Can you be flexible about that?
- How can we be flexible about that?
- We can do it in more than one way
- There's lots of ways we could do that
- We're going to think about it like this, and then we're going to think about it in a different way
- That's being flexible!

The language of emotion regulation

- What does that feel like?
- Thank you for inhibiting that big reaction. That's hard to do
- Let's make that feeling bigger. How big is it? Can you show me? What happens when it's that big?
- Let's make that feeling smaller. How small is it? Show me. What happens when it's that small?
- What color is that feeling? Let's change the color. Can you make it ___?
- What does it look like? Can you draw it?
- Let's give it stripes (spots, feet, boogers)
- Can you hand it to me? What will happen if you give me that feeling? What will I feel? What will I do?
- Can you find that feeling again? Where is it in your body?
- Should we try to distract ourselves from that feeling?
- Can we put it down for a bit and we can pick it back up later?

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Word Banks

What is the tool intended for?	Cognitive demands required	What the person might need to do to make it useful?
Decrease word recall	Shifting attention	Auditorily preview of words
Highlight/focus on target words	Working memory	Break the list into small lists
Decrease spelling demands on high-level vocabulary		Add images
		Model use of the tool

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Voice Memos

What is the tool intended for?	Cognitive demands required	What the person might need to do to make it useful?
Decrease phonological demand of writing/spelling.	organization	Provide prompting questions, sentence frames
Decrease the fine motor demand of writing	Shift focus	Model use of the tool in instruction.
	Sustain attention	

Word Prediction

What is the tool intended for?	Cognitive demands required	What the person might need to do to make it useful?
Decrease phonological demand of writing/spelling.	organization	Think outloud through inner thoughts-strategies.
Decrease the fine motor demand of writing	Shift focus	Model use of the tool, identify when to use the tool
Provide choices/options based on beginning spelling	Sustain attention	
	Problem solving-know to look up at options after typing a few letters	

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Dictation/Speech-to-Text

What is the tool intended for?	Cognitive demands required	What the person might need to do to make it useful?
Decrease phonological demand of writing/spelling.	organization	Model use of the tool and problem -solving strategies
Decrease the fine motor demand of writing	Shift focus	
Provide choices/options based on beginning spelling	Sustain attention	
	Problem solving-know to look up at options after typing a few letters	
	Inhibition if text isn't matching what was spoken	

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Text-to-Speech

What is the tool intended for?	Cognitive demands required	What the person might need to do to make it useful?
Reading text for info/editing	Sustained attention	Turn highlighting on
Support the learners information/detail related to thought	Cognitive inhibition	Model use of tool for editing
break down a larger task		For reading tasks- adapt to recorded speech versus synthesized

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Graphic Organizer

What is the tool intended for?	Cognitive demands required	What the person might need to do to make it useful?
Support the learner's organization of thought	organization	Provide leading question/talking points.
Support the learners information/detail related to thought	Shift focus	Consistent presentation across subjects
break down a larger task	Sustain attention	Build the rationale for the organization
	Working memory	Model use of the tool

Sentence Starters

What is the tool intended for?	Cognitive demands required	What the person might need to do to make it useful?
Support the learner's initiation of task	Cognitive inhibition	Consistent sentence frames
Decrease written expression complexity	Shift focus	Consistent presentation across subjects
break down a larger task	Sustain attention	Model use of the tool
	Working memory	

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Writing
Graphic Organizers
(Concepts/Thoughts)

Writing

Graphic Organizers
(Language)

writers share their
OPINIONS
- I think...
- I feel...
- I like...
- I believe...
- I don't like...
- My favorite...
- The best...
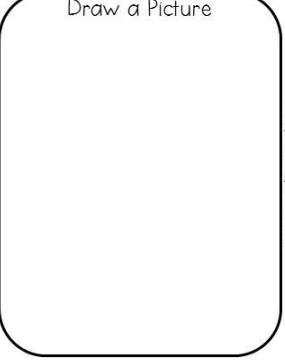
Name: _____ Date: _____

Today is: Monday | Tuesday | Wednesday | Thursday
Friday | Saturday | Sunday

If you could get one animal, what would you get?

rabbit	bird	Draw a Picture
tiger	penguin	

If I could get one animal, I

would get _____

_____

_____

_____

⭐ I used capital letters. ⭐ I used spaces. ⭐ I used punctuation.

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teaching Billfizzcend

After	school	I	
After	school	I	
After	school	I	
After	school	I	
After	school	I	

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Writing
Scaffolding

Process as Scaffold

Hi,	Hello,	Hey,
What's up?	How are you?	What's new?
Answer a question	Ask a question	Add a thought
Answer a question	Ask a question	Add a thought
Answer a question	Ask a question	Add a thought
Bye,	See you soon,	Talk to you later,
Stef	Stefanie	(no name)

Hi, How are you? I'm great. I'm a little bit hungry thought. I wish I could have some chocolate ice cream. Do you like ice cream? Bye, Ms. Lesley	Hi Stef, What's up? Are you going to do anything fun this weekend? I'm going to a birthday party. I love the weekend! Talk to you later, Ms. Lesley

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Writing

Scaffolding

Hello Ms. Lesley.
How are you? I will invite Kyle ST AND other FRIENDS TO MY PARTY. I am going
to be 13 YEARS OLD. My birthday is on November 21st

My birthday is in the fall.
Talk to you later,
Stefanie

On Mon, Oct 22, 2018 at 7:29 PM Lesley Quinn <quinn@aaccommunicare.com>
wrote:

> A sleepover! That's so fun! Who will you invite to your party? How old will
>
> you be on your birthday? 🤔 Is your birthday in the summer? I forgot when
>
> it is!
>
> Bye
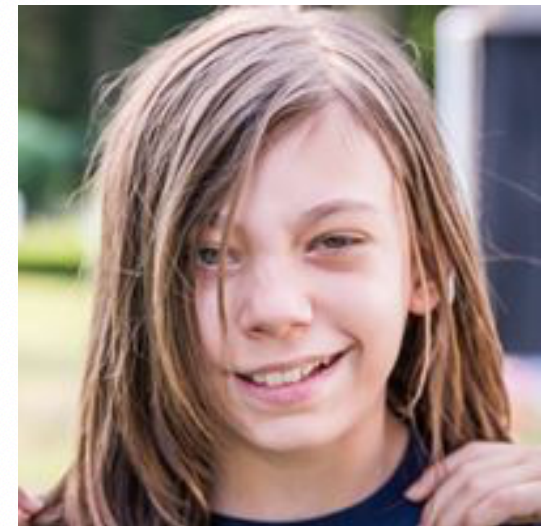
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Writing

Scaffolding

Process as Scaffold

Class: _____   Due date: _____

Assignment: _____

What does finished look like? (*Picture it*)

What are the steps to get to finished?

☐ _____
☐ _____
☐ _____
☐ _____
☐ _____
☐ _____
☐ _____
☐ _____
☐ _____
☐ _____
☐ _____
☐ _____

Date: _____10/01/18_____

Big Topic: ___Plants (of New England)___

Little Topic: ___Invasive species___

Words I don't know yet:

What does it look like?

many seeds
_____

Which step are you working on? _____

What does done look like **for this step**? (*Picture it*)

What are the steps to get to done?

☐ _____
☐ _____
☐ _____
☐ _____
☐ _____
☐ _____

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Writing

Scaffolding

Space as Scaffold

1. **Step 1:**

589 more 3685

		1	**1**	**1**
		5	8	9
+	3	6	8	5
	4	2	7	4

Answer:

4274 more tikets

There are ⑫ spiders and ⑧ beetles in the garden. How many bugs are in the garden altogether?

Model   altogether

?

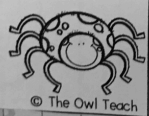| 12 | 8 |

spiders   beetles

Number Sentence(s)

12 + 8 = ☐

12   20

20 bugs

Statement

There are __20__ bugs in the garden.

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Chase had ⑲ balloons. He gave ⑫ to Will. How many balloons does Chase have left?

Model   had

19

| 12 | ? |

gave   left

Number Sentence(s)

19 - 12 = ☐
  10 2

19 - 10 = 9 - 2 = 7 balloons
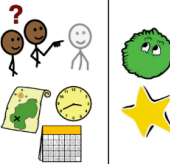
Statement

Chase has __7__ balloons.

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Writing

Scaffolding

Visual Contrast/Color as Scaffold

	in Minecraft someone was walking down the
	He was also in the survival where there was
	He finally spot a desert Eden he spots a zom
	E dance in mind some trees to make a sword
	Then he signed the pig to kill it
	He goes towards the zombie take care of him it's night time
	She danced she finally gets this bloated by th

Alex likes going fast he also likes following the rules. Quiet Coyote likes Cars And jeeps. My Head My head is a stormtrooper. He is very tiny. That he love making toast My Head makes ginormous toast bigger than them. Nexus wolf coyote boo. They are in the ocean. it's a calm sunny day they are at the beach right nowBefore they made the world they added and Cindy mod Quiet coyote and my head make some new world with no zombie apocalypse mod but there still zombies as soon as I spawn in the world quiet coyote find the Jeep my headphones are motorcycle Alex goes down into the mine then Alex spots some zombies and one creeper Eden 16 skeletons on top of a wooden scare staircase at

"Lava"

		Dege is a smart man. He is a fisherman. He's on a huge ship with a lot of crew members that have no clue how to drive the boat. But Mr. Nobody the captain does. Mr. Nobody is a baby dragon. Dege is happy he's drifting to volcano island because he didn't know it was about to erupt. The island has two volcanos and six cities. Every single week one volcano erupts, but this week two will erupt. The cities have a stone wall to protect them from the lava. That's how the cities get obsidian to upgrade their armor. There's bears and a lot of stuff in the island that can kill you.
		The boat is sailing toward Volcano Island. When they landed they came across a city.
		And they traded with the people in the city and brought loot.

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Tools to Support Home Involvement

- Technology can be used to facilitate and promote family involvement in a way that can benefit ALL students. Students are often expected to perform a task consistently across multiple environments.

- Technology can facilitate communication between parents and practitioners which can help to coordinate some consistency between the school environment and home environment.

- This communication between parents and practitioner can also promote better communication between parents and students and improve parent-child relationships.

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For Example:

- "Last year Alee's 3rd grade teacher used ClassDojo, an app that facilitated her communication with her class' parents. She was able to send reminders about homework and/or projects. This was great as Alee struggles following directions and usually has a hard time remembering deadlines. Alee is not a great reporter. These reminders allow us to follow up with Alee about projects she had to complete and allow us to plan how to support Alee complete her work. Alee was able to submit her work and felt part of the class, something she had struggled with in the past. This helped with her perception of herself. Furthermore, Alee's teacher would send pictures of the students preforming an activity thoughout the day, this served as great conversation starters at home and improved the communication Alee was having with us. ClassDojo also allowed us to ask questions when we weren't sure about specific homework, or a task."

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Some Tools:

- Class Dojo

- Remind App

- Talkingpoints

- SchoolCNXT
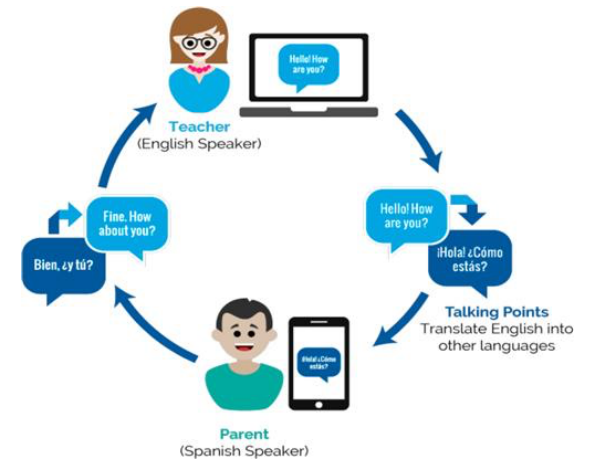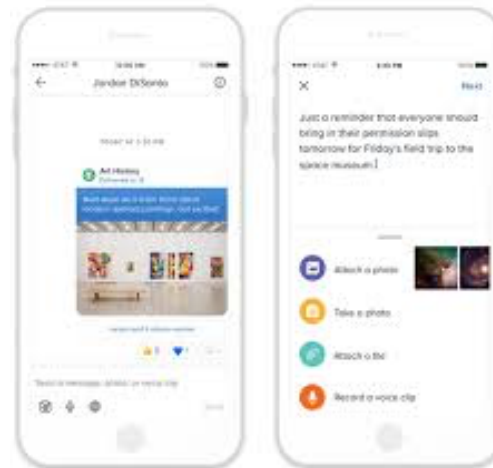
What you learned

- There are fundamental core cognitive processes at the foundation of the invisible disabilities we see.
- There is a lot of overlap across in core cognitive processes across diagnoses.
- When given a task, multiple cognitive processes are called into play.
- By recognizing the cognitive demographics of a task, we are better able to understand how it can be a challenge to an individual with an invisible disability.
- By asking what is the specific goal we can assess whether or not an individual can attack the goal individually or with carefully tailored strategies or an assistive technology tool.
- Understanding the core cognitive processes of a task empowers practitioners to mindfully select an appropriate AT tool/solution.
- AT solutions are just as much about strategies and the environment as they are about the actual tool.

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