

Understanding the Impact of Autism on Literacy

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Agenda

- Review literacy skills
- Review core deficits of autism
- Describe impacts of deficits on literacy skills
- What to do?

Literacy

Reading & Writing



Written Expression

- Fine motor skills
 - Handwriting
 - Typing
- Mechanics
 - Spelling
 - Punctuation
 - Grammar
- Thematics
 - Vocabulary
 - Plot
 - Character development
 - Flow of composition

Dysgraphia – some warning signs

Specific learning disability in written expression

- Tight, awkward pencil grip and body position
- Illegible handwriting
- Tiring quickly while writing
- Avoiding writing or drawing tasks
- Saying words out loud while writing
- Unfinished or omitted words in sentences
- Difficulty with syntax structure and grammar
- Difficulty organizing thoughts on paper
- Large gap between written ideas and understanding demonstrated through speech.

Testing for Problems with Written Expression

- *Test of Written Language – (TOWL)*
- *Woodcock–Johnson Tests of Achievement – (WJ)*
- *Wechsler Individual Achievement Test – (WIAT)*
- Fine motor skills
 - Grooved Pegboard
 - Purdue Pegboard
 - NEPSY-II Visuomotor Precision subtests
- Mechanics
 - TOWL subtests for spelling, punctuation, logical sentences, and sentence combining
 - WJ subtests assessing writing skills
 - WIAT subtests assessing writing skills
- Thematics
 - TOWL subtests for vocabulary, story composition and contextual conventions
 - WJ Writing Sample subtest
 - WIAT Essay Composition

Reading

- Visual impairment (tracking, convergence, double vision, etc.)
- Phonological awareness
- Decoding
- Fluency
- Rapid naming
- Comprehension

Dyslexia – some warning signs

Specific learning disability in reading

- Reads slowly and painfully
- Makes decoding errors, especially with vowels and the order of letters
- Finds it easier to decode real words than nonsense words
- Substitutes one small sight word for another: a, I, he, the, there, was
- Understands spoken language far better than writing
- Has trouble spelling
- Has trouble recalling known words
- May have difficulty with math computations

Testing for Problems with Reading

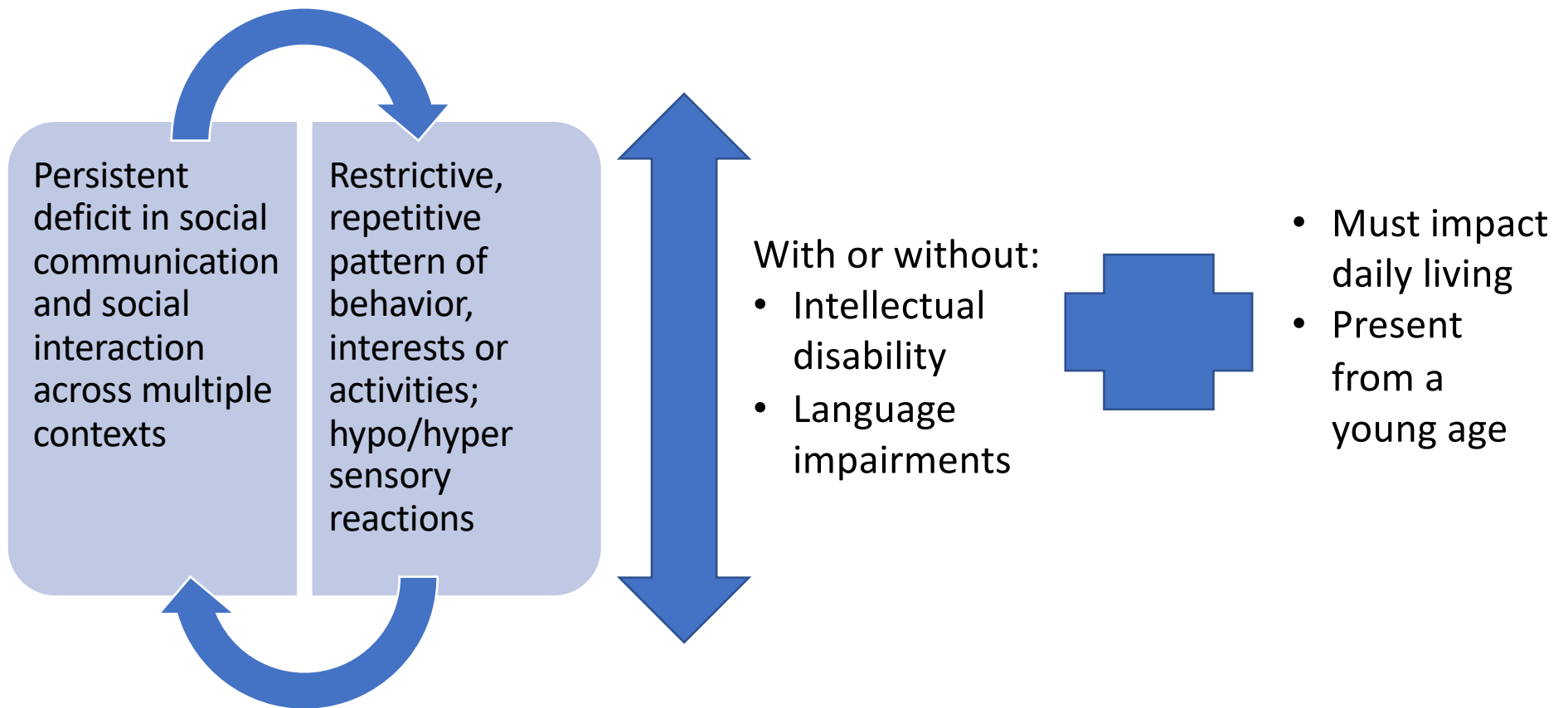
- *Test of Word Reading Efficiency (TOWRE)*
- *Woodcock–Johnson Test of Achievement (WJ)*
- *Wechsler Individual Achievement Test (WIAT)*
- *NEPSY-II*
- *Comprehensive Test of Phonological Processes (CTOPP)*
- *Gray Oral Reading Test (GORT)*
- *Rapid Automatized Naming (RAN)*

- Visual Processing
 - Tests usually done by ophthalmologist/developmental optometrist
- Phonological Awareness
 - Phonological Awareness test
 - WJ IV Sound Blending subtest
 - NEPSY-II Phonological Processing subtest
 - CTOPP

- Decoding
 - WJ - Word Identification and Word Attack subtests
 - WIAT - Word Reading and Pseudoword Decoding subtests
- Fluency
 - GORT
 - WIAT - Reading Fluency subtest
- Rapid Naming
 - Rapid Automatized Naming Test
 - NEPSY-II - Speeded Naming subtest
 - WJ - Rapid Picture Naming sub
- Comprehension
 - GORT
 - WJ - Passage Comprehension subtest
 - WIAT - Reading Comprehension subtest
 - TOWRE – Reading Comprehension subtest test

Autism

ASD as complex, pervasive developmental disorder



Executive Functions: Working memory, shifting/flexibility, focus, goal setting, organizing, planning, prioritizing, completion, self-monitoring, metacognition

Perspective Taking (Theory of Mind)

Social Cognition: Differences in what's interesting, knowing what is pertinent

Focus on Details: At the cost of seeing the big picture

Sensory Motor Differences: Difficulty with fine and gross motor tasks; over- or under-sensitive (in each sensory domain),

Language: Trouble with sequencing, word-retrieval, vocabulary, inferencing, abstractions, summarizing, social pragmatics

Literacy Challenges in Autism

Fine Motor Control

1. ~~geography~~ elevation to identify NC's regions which include coastal plain, piedmont, and mountains.

2. NC is in the sun belt that runs across the south of the United States. Like the rest of the United States, NC is in the tropic of cancer. It is warmer than Canada and the northern United States because it is closer to the equator.

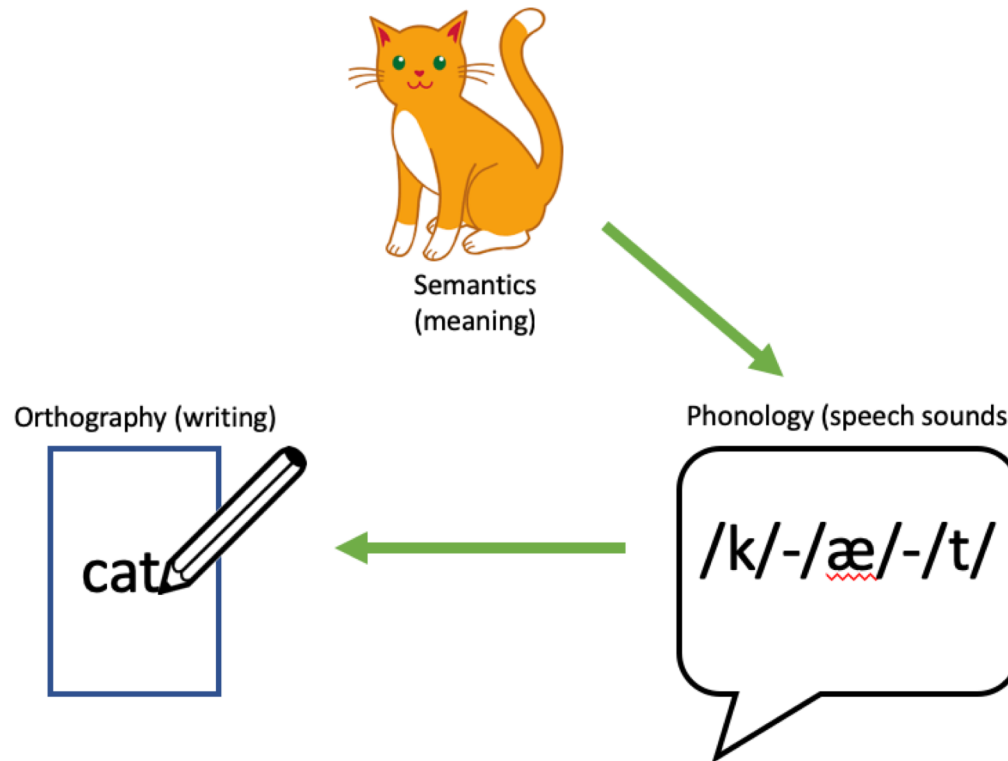
B. The mountains of NC are cooler than the other regions.

Spelling

A quick primer



Spelling



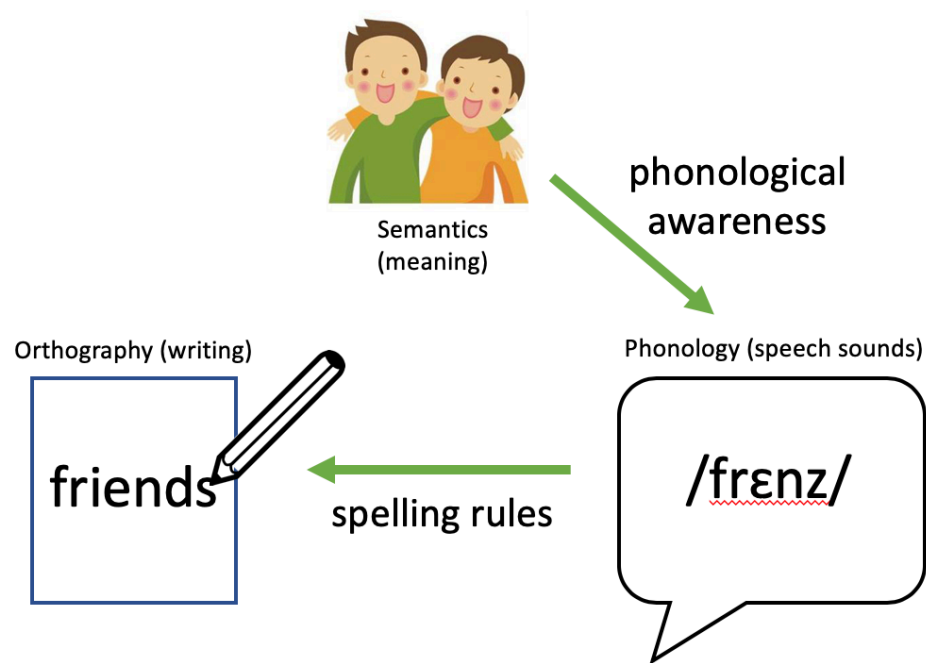
a → /æ/
cat → /kæt/

ai → /æ/
plaid → /plæd/

au → /æ/
laugh → /læf/

Spelling Rules
of American
English

Spelling Rules



Two common types of dyslexia

Phonological Dyslexia

- Poor phonemic awareness or a lack of understanding of the spelling-sound correspondence
 - “with” as *weth*
 - “desk” as *deks*

Orthographic Dyslexia

- Good phonemic awareness, but rely too much on the letter-sound correspondence.
 - “garbage” as *garbij*
 - “wiggle” as *wigul*.

CONTEXT BLINDNESS is the inability to spontaneously and subconsciously use context to determine meaning.



Difficulty learning context-dependent spelling rules

Reading

- “sallmon”
- “misled”

Writing

- Homophones (*deer* or *dear*)
- Misspellings (e.g., *garbij* or *wigul*)

Punctuation, spaces, and capitalization are also context-dependent

26 years old

Hi Rodyu asked me for a sample of my handwriting because I have dysgraphia. Dysgraphia is a term for learning disabilities that affect spelling and handwriting. I should probably point out that ~~in~~ despite how my handwriting looks I'm 26 and have a business degree from UPenn with a ~~minor in~~ minor in economics.

11 years old

Weekend!
Oh the weekends I like to play with friends.
It's fun because we can have off ⁽ⁱⁿ⁾ wars

Vocabulary: Word Retrieval



Vocabulary: Pronouns

REVERSALS

Brother: Let me know if you need help with that.

Sister: You need help with that.

Brother: What? I don't need help. I was asking about you.

Sister: You need help with that!

GENDER

She* is unhappy.

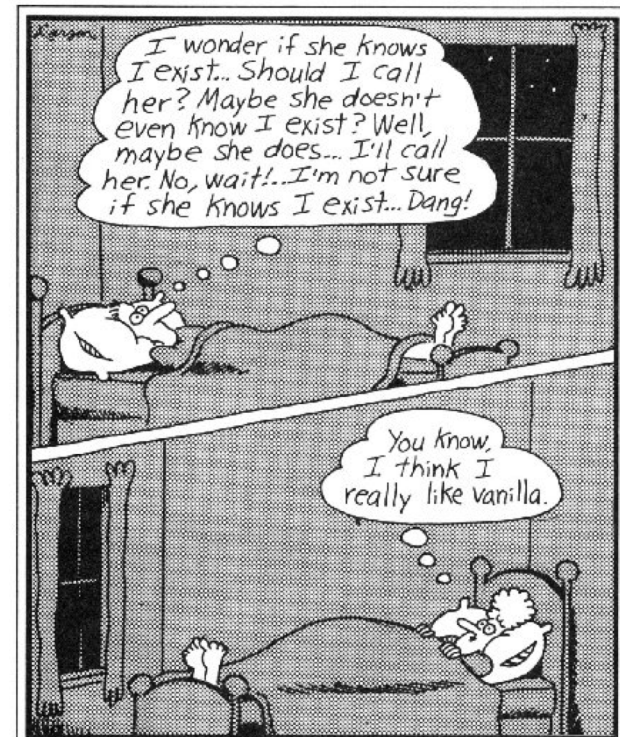
**Referring to a boy.*

Theory of Mind (ToM)

Other people have beliefs, desires, intentions, and perspectives that are different from one's own.

If no ToM, problems with:

- Character development
- Providing context for reader
- Understanding what teacher wants

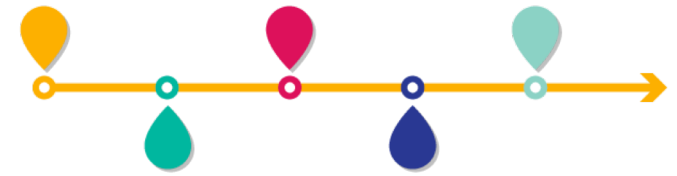


Same planet, different worlds

Grammar: Deixis (requires Theory of Mind)



Grammar: Time/Sequencing



“I'd say it's more as if experiences become stars in the sky, one by one by one. A blank canvas is two-dimensional, but my memories are arrayed here and there in 3D. Some stars I can reach out and touch, while others are hundreds of millions of light-years away.”

Naoki Higashida

The Reason I Jump

Details

Too much

“Sharks are a group of elasmobranch fish characterized by a cartilaginous skeleton, five to seven gill slits on the sides of the head, and pectoral fins that are not fused to the head.

Modern sharks are classified within the clade Selachimorpha (or Selachii) and are the sister group to the rays. The earliest known sharks date back to more than 420 million years ago.”

Too little

“A shark is a fish.”

Executive Functions

- Working memory
- Shifting/flexibility
- Focus
- Metacognition
- Goal setting, prioritizing
- Organizing, planning
- Self-monitoring, completion



Executive Function: Working Memory

Organizing your thoughts, and then holding them in mind while you:

- Choose the right words
- Figure out how to spell each one
- Write them out



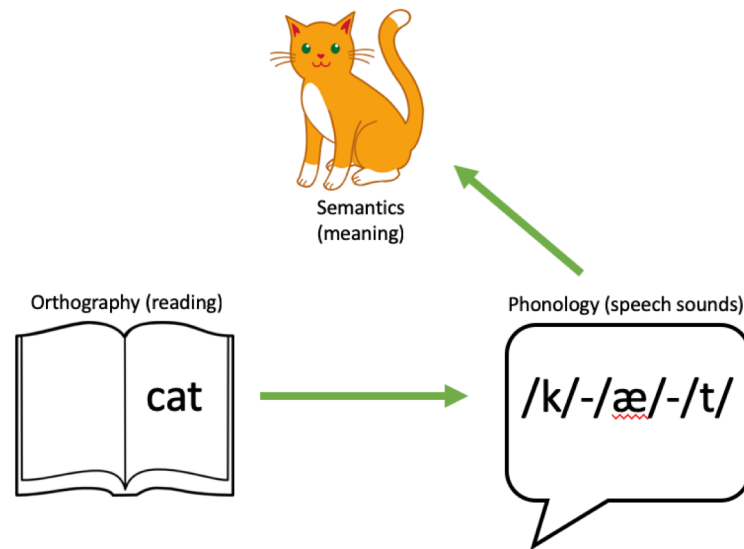
Executive Functions

- Shifting/flexibility = *Difficult to write about a topic that someone else chooses*
- Focus = *Hard to stay on topic, do work in timely manner*
- Metacognition = *Knowing when to ask for help, evaluating when to do more research*
- Goal setting, prioritizing = *What should final product look like?*
- Organizing, planning = *What needs to get done? In what order? How long to spend on each task?*
- Self-monitoring, completion = *Am I making progress? When have I done enough?*

Reading

- Phonological awareness
- Decoding
- Fluency
- Rapid naming
- Comprehension

Phonological awareness and decoding are often excellent (hyperlexia)



...unless **context** is required.

How do you pronounce *does*?

- John *does* (/dʌz/) not like hunting.
- John likes to walk in the forest so he can see the *does* (/doz/) caring for their fawns.
- John *does* (/dʌz/) not like hunting *does* (/doz/).

It depends on the *context*.

Learning vocabulary

“Your hands are going to be so cold! Go get the **flirpies** from the closet.”

Use *context* to learn new words.



Vocabulary: Words with >1 meaning



Comprehension: Black and White Thinking



Comprehension: Idioms/Literal Thinking

Don't beat yourself up.



It's raining cats & dogs.



Other comprehension difficulties

- Irony
- Sarcasm

Theory of Mind (ToM)

If no ToM, problems
understanding character
motivations & emotions



Written Expression – what to do?

- Fine motor skills
 - Text-to-speech
 - Keyboarding
 - Scribe
- Mechanics
 - Structured literacy instruction – with explicit teaching of context-dependent spelling rules
 - Explicit teaching of vocabulary
 - Teach editing skills
 - Teach sentence & paragraph structure
 - Work with a speech-language pathologist for language-based issues
- Thematics
 - Word banks
 - Preview topic ahead of time
 - Graphic organizers
 - Teach Theory of Mind
 - Define terms (e.g., fact. vs. opinion)
 - Limit choices
 - Teach how to elaborate (or summarize) and provide relevant details
 - Provide rubric detailing expectations for form and structure
 - Provide example of well done assignment from previous year
 - Break large assignments into subtasks
 - Provide schedule for subtask completion

Reading – what to do?

- Multisensory structured literacy instruction with explicit teaching of spelling rules in context
- Build vocabulary
- Check for comprehension
- Teach child how to use context to figure out new vocabulary and determine correct pronunciations.
- Create story maps
- Teach inferencing.
- Teach words for emotions.
- Explain different points of view.
- Provide access to idiom definitions; explicitly teach.
- Teach child to think in shades of gray.
- Enact stories through drama
- Pre-teach concepts to be covered

Examples

A Person to Admire: Revealing their Personality through Observations and Writings

The student personally selects an age-appropriate biography of an admired person, reads it and takes notes in order to create new insights into the subject's life.

Specific Objectives (Learning Outcomes):

- The student learns to discriminate between fact and opinion (conjecture).
- The student explores creative writing from a biographical point-of-view, acting as a news reporter who interviews a person of note in a constructive way, sharing new ways of observing the subject.
- The student writes a rough draft of observations (150-200 word newspaper article) using new vocabulary words noted in Writing Notebook and following basic capitalization and punctuation rules.
- The student shares their writings in an informal round-robin classroom session

Building on child's area of interest, limit the choices if necessary. Activate prior knowledge. Allow unconventional choices based on specific interests. Link conventional choices to their interests

Define facts: things that are verifiable and agreed upon by all. Opinions: lots of different ones and its ok: people can have different opinions and still be friends.

Provide concrete information on what types of questions: Who, what, where, when, why. Provide larger context for the person's life and therefore what to focus on in that "big picture."

Preview writing process, rubric. Reduce motor load. Support organization from beginning with planners, organizers. Speech to text

Reduce the size of group to preferred peer. Review structure for how to deliver criticism and how to receive it. Reinforce process and make it time bound

Task that may be hard	What to do?
<p>The student personally selects an age-appropriate biography of an admired person: <i>Open-ended task requiring goal-setting and flexibility.</i></p>	<p>Building on child's area of interest, limit the choices if necessary. Activate prior knowledge. Allow unconventional choices based on specific interests. Link conventional choices to their interests</p>
<p>The student learns to discriminate between fact and opinion: <i>Perspective taking essential.</i></p>	<p>Define facts: things that are verifiable and agreed upon by all. Opinions: lots of different ones and it's ok: people can have different opinions and still be friends.</p>
<p>The student explores creative writing from a biographical point-of-view, acting as a news reporter who interviews a person of note in a constructive way: <i>Perspective taking: thinking of audience. Requires social cognition: what is salient and relevant to ask about this person. Also big picture: context of why they are important.</i></p>	<p>Provide concrete information on what types of questions: Who, what, where, when, why. Provide larger context for the person's life and therefore what to focus on in that "big picture."</p>
<p>The student writes a rough draft of observations: <i>Multiple drafts require self monitoring, attention to non salient details. Motor demands.</i></p>	<p>Preview writing process, rubric. Reduce motor load. Support organization from beginning with planners, organizers. Speech to text.</p>
<p>The student shares their writings in an informal round-robin classroom session: <i>Requires ability to manage complex social situations.</i></p>	<p>Reduce the size of group to preferred peer. Review structure for how to deliver criticism and how to receive it. Reinforce process and make it time bound</p>

English/Language Arts (ELA)

What's happening

- Warm Up: Write about your weekend
- Station 1: Close read of biography
- Station 2: Outline of newspaper article
- Station 3: Editing review

What to do

- Specific parameters: limit the question through quick discussion; specify number of sentences
- Provide with visual organizer and explicit scaffolding
- Create a checklist and a specific, time bound end to each task

Social Studies

What is happening

- Arbitrary topic from history or geography
- Focus on concepts, rather than facts
- If in area of child's interest, they possess deep fund of knowledge
- Demands for analysis and abstract thinking
- Group projects

What the child experiences

- Either a sense of irrelevance or if in area of knowledge, boredom.
- May want to share knowledge—then “accused” of dominating discussion
- Difficulty understanding big picture of social context or perspective of different time in history
- Overwhelmed by magnitude of work required for long-term projects like papers

What to do

- Make the material relevant. (e.g., Temple Grandin's doors)
- Clear expectations around the rules of classroom participation & roles in group work
- Encourage to write in notebook, and give time to share thoughts with teacher outside of classroom discussion time.
- Enact the scenario.
- Break large projects down into manageable sub-parts.

Questions?

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