



EDUCATING THE STUDENT WITH WILLIAMS SYNDROME



willamssyndrome
ASSOCIATION

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Williams Syndrome Association

www.williams-syndrome.org

TODAY'S OBJECTIVES

- Familiarize ourselves with the Educational Profile of students with WS
- Discuss Best Practices
- Discuss Common Sense Accommodations

Williams Syndrome Educational Profile 2024



Students with Williams syndrome have a unique educational profile, with widely disparate strengths and weaknesses.

However, the effective utilization of their personal strengths and their ability to access technology can greatly improve success in more challenging areas and allow access to age-appropriate curricula with their same-age peers.

This profile was created to provide teachers and providers with a brief general overview of the relative strengths and weaknesses of students with Williams syndrome. Please recognize that individual children will present as individuals and may exhibit different strengths and weaknesses than those described here.



Reading

- Can generally learn to read well with intensive systematic phonics instruction
- Phonemic awareness including phonemic manipulation is a crucial teaching strategy
- Struggle to create a "mental movie" when reading; this impacts comprehension
- Reading comprehension may be impacted by language deficits



- Can generally learn to read well with intensive systematic phonics instruction



Writing

- Learning to spell and writing out words is a critical component of literacy development.
- Composition skills frequently surpass mechanical ability
- Utilization of graphic organizers supports increased written output
- Handwriting skills may progress slowly even with intervention; intervention should be continued regardless.



- Need early access to assistive technology including both high and low tech supports.

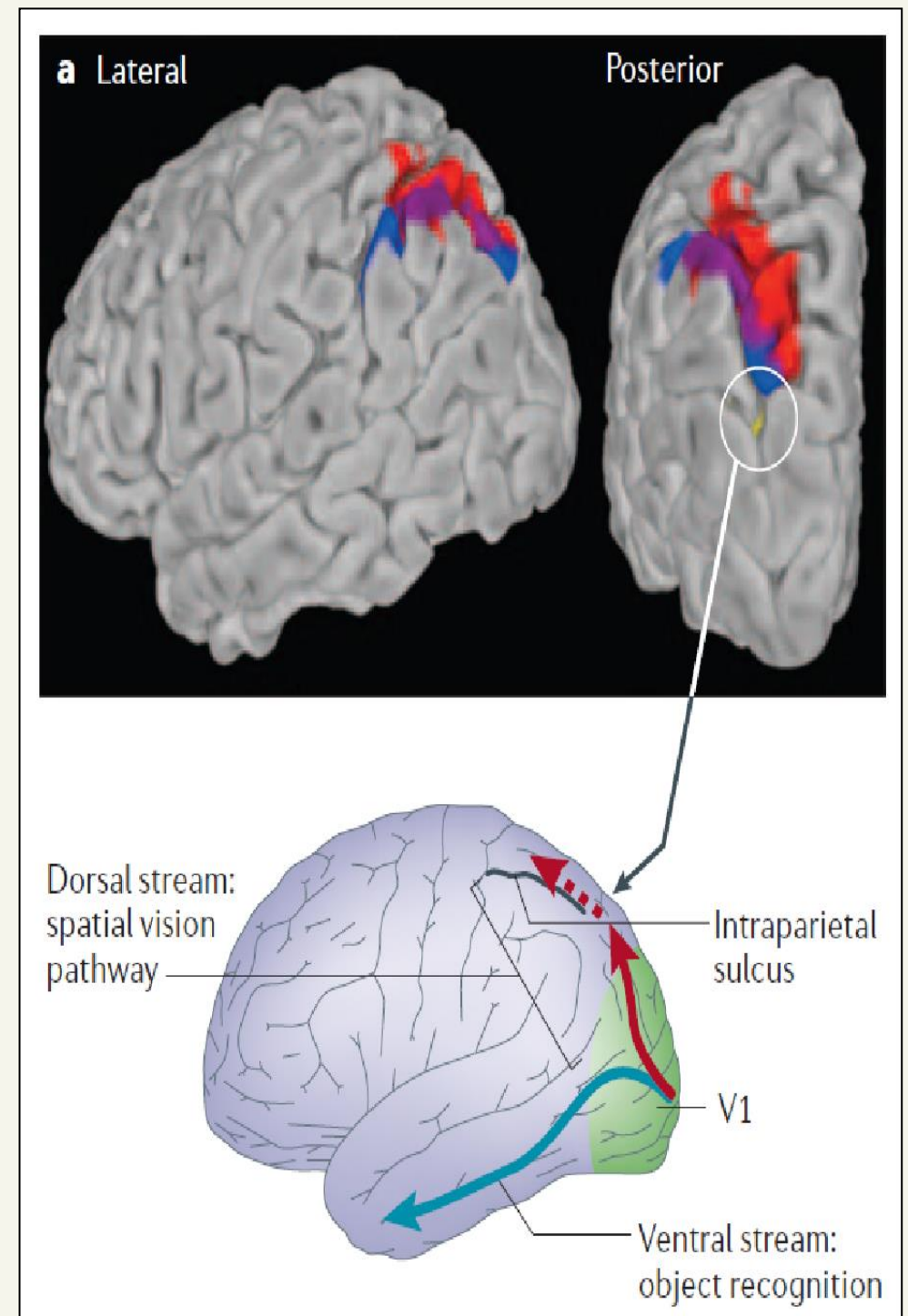
EDUCATIONAL PROFILE

Dorsal Stream Functional Deficits in Williams Syndrome

Reduced gray matter in the intraparietal sulcus, even for adults with WS who have “normal” IQ, leads to functional disconnection from regions dorsal to this point.

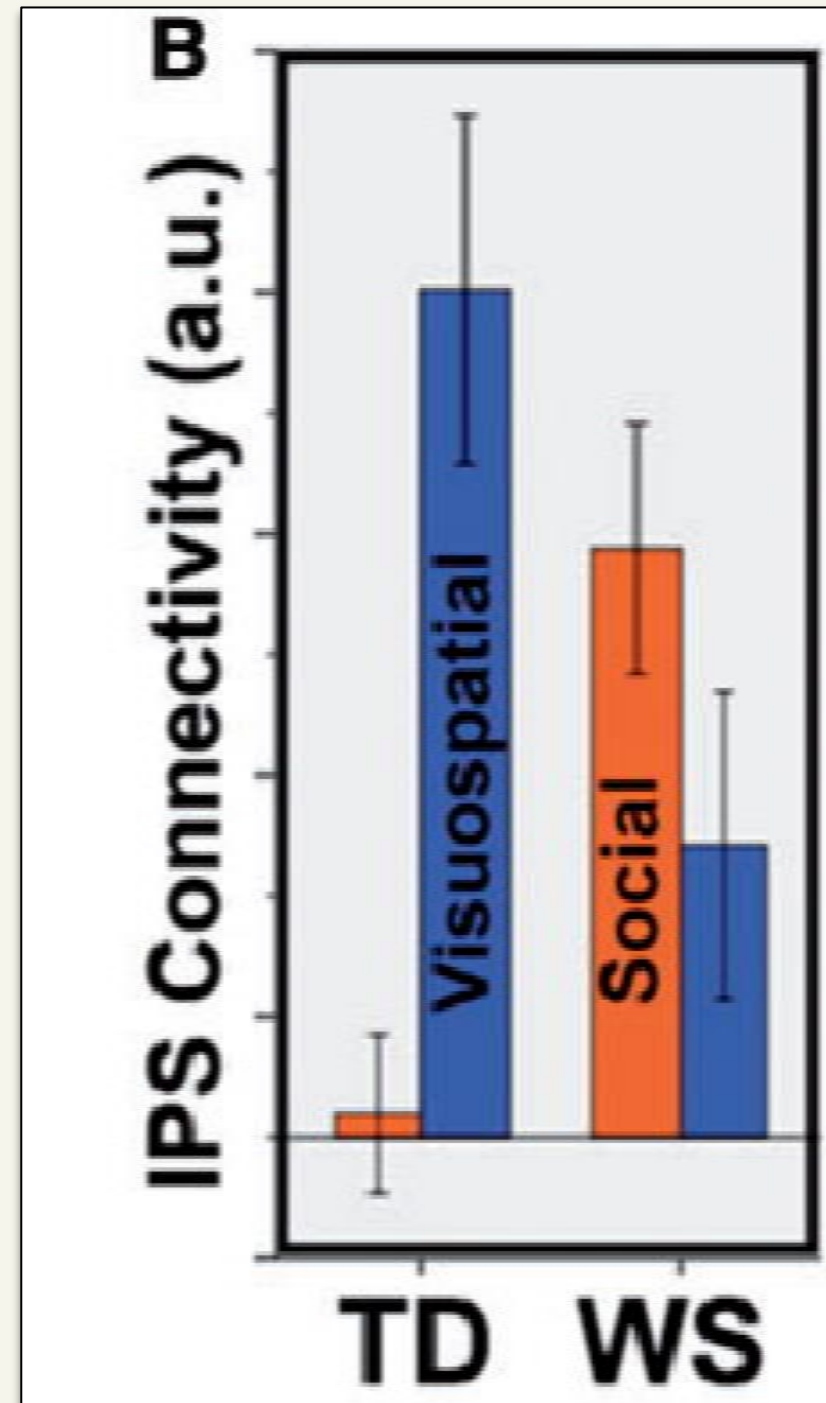
This is related to:

1. Difficulty with visuospatial construction, including handwriting and pattern construction
2. Difficulty with relational language (prepositions, complex conjunctions or disjunctions)
 - Impacts reading comprehension, social pragmatics
3. Difficulty with mathematics
 - Due to both visuospatial construction and relational language difficulties



Differences in Intraparietal Sulcus (IPS) Functional Connectivity between Typically Developing (TD) Children and Children with WS

- TD children: IPS is strongly connected to visuospatial regions.
- Children with WS: IPS is strongly connected to social regions.



More Advanced Relational Concepts

- Words that link two parts of a thought or two thoughts
- Examples:
 - and, or
 - unless
 - however
 - although
 - nevertheless
 - as a consequence
 - neither . . . nor

Although the girl hurt her leg she can still walk to school.



- These are more complex
- These concepts are not typically explicitly taught.
- Children with WS need explicit instruction in advanced relational concepts.

INSTRUCTIONAL STRATEGIES

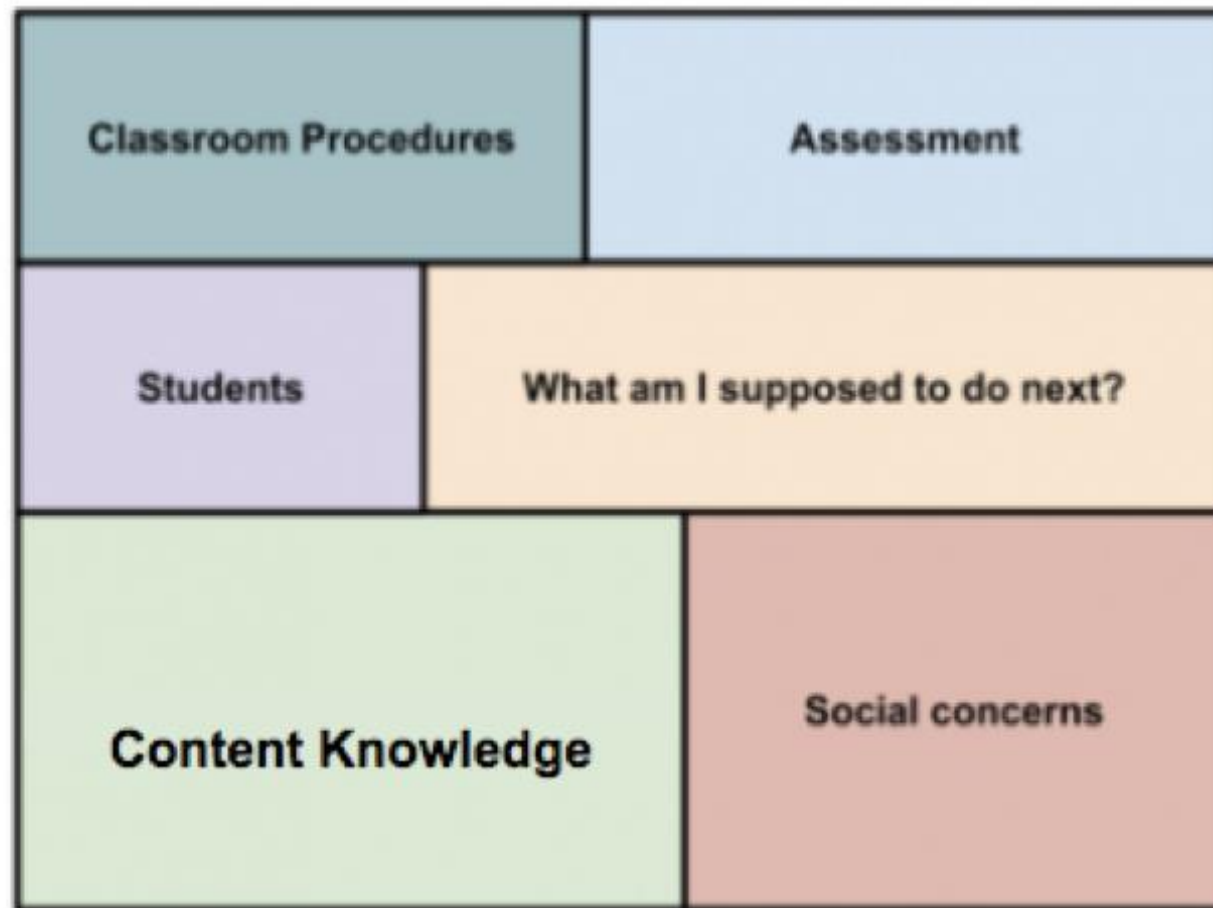


Important Tips

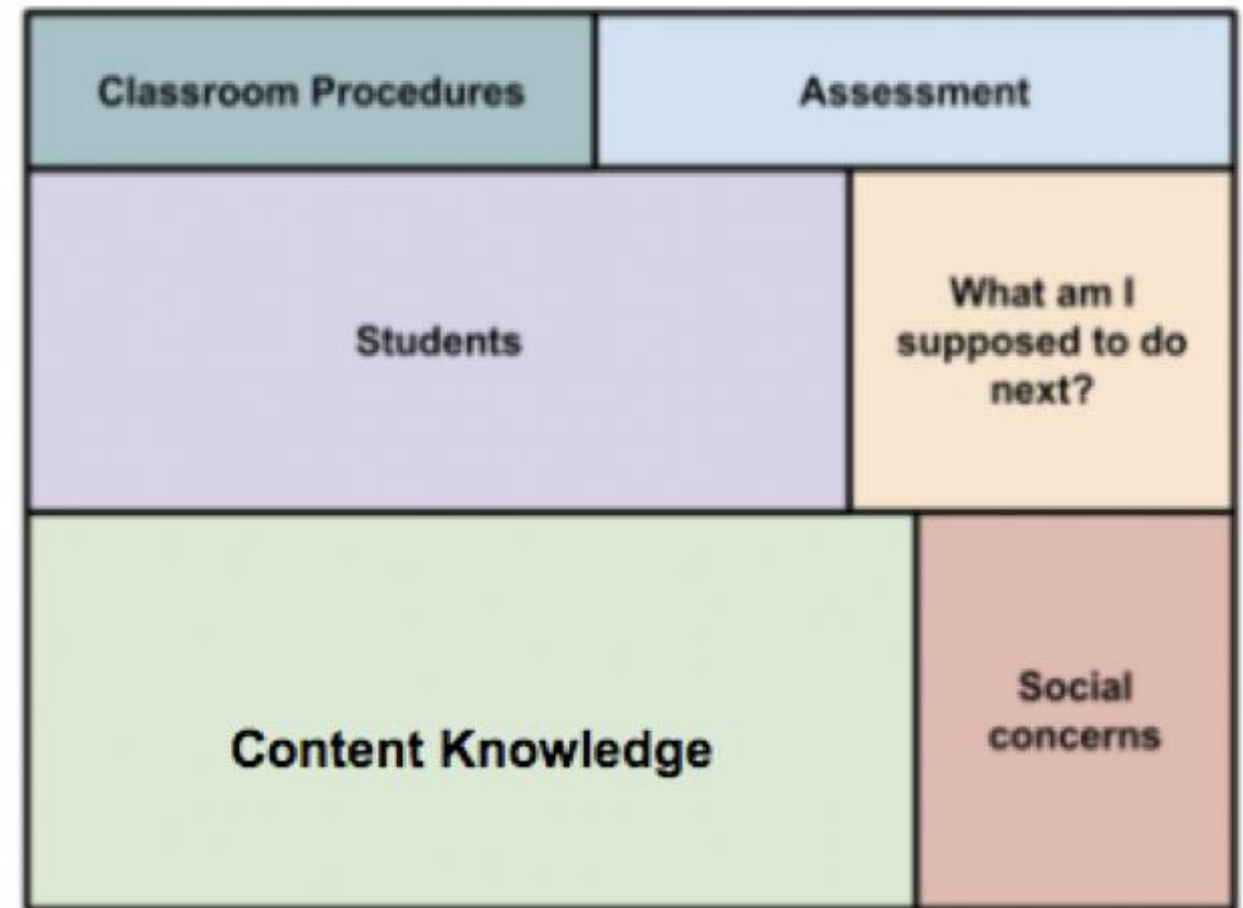
- There is wide variability in the abilities of individuals with WS
- Expectations should be set high as the children are often able to meet these expectations with support.
- Liberally use the Pre-teach/Teach/Re-Teach cycle. This supports working memory.
- Music and rhythm may be an effective tool to aid in overall learning and may be helpful with pre-teaching and re-teaching.

- Loose structure, poor classroom management, and/or lack of appropriate accommodations can be more of a challenge than the WS.

Without instructional routines...



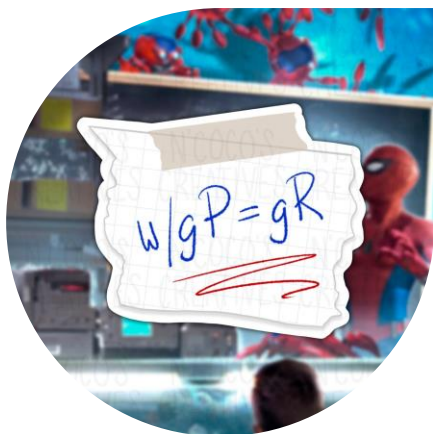
With instructional routines...



Instructional Routines have GREAT POWER!

The intentional use of instructional routines, decreases the need for behavioral interventions and increases a student's ability to function autonomously in the classroom.

We must be RESPONSIBLE and INTENTIONALLY TEACH them. Don't ASSUME the kids will learn them automatically.



PROMPT HIERARCHY

GREEN (LEAST RESTRICTIVE) → RED (MOST RESTRICTIVE)

Natural or Environmental	Example: Setting up the environment in a way that facilitates task completion (providing necessary tools, etc.).
Gesture	Example: Pointing (or using another gesture) to direct student towards an item or task.
Object	Example: Placing an object near a student to encourage student to complete the task.
Visual	Example: Student uses icons, symbols, or visual schedules to complete desired task.
Indirect Verbal	Example: Give hints to guide students toward an object or task; "What's next?" or "What should you do now?"
Direct Verbal	Example: Give direct verbal instruction; "Pick up your toothbrush" or "please take a shower now."
Physical	Example: hand over hand, hand under hand.

IMPORTANT!

Our tendency when working with children is to use the "Direct Verbal" prompt. For children with WS this is very distracting to what they are doing because it starts a conversation/connection. Children with WS are "hard-wired" for conversation/connection. Therefore, they stop what they are doing to engage in that conversation and what they were working on previously is forgotten.

Using **silent cues** such as **gestures** or **visual prompts** is far more effective for building task endurance and independent work skills. **Indirect prompts** also help build problem solving and decrease learned helplessness.



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From a parent: A good teacher match for someone with WS will:

- **Set high expectations** and see each student as capable of learning great things with the right supports.
- **Recognize** that students with WS are ready to participate, ready to learn; they sometimes just don't know where to begin.
- **Understand** that the language a child with WS uses may not accurately represent all going on in their minds.
- **Be ready to shift**--shift in tools, resources, or supports. There is always a way to make the learning accessible.
- **Get ready for joy!** Students with Williams with the right supports will find immense joy in learning and in their peers and will contribute greatly to classroom culture.

FIRM...
but kind



Reading is like breathing in and writing is like breathing out, and storytelling is what links both: it is the soul of literacy. The most powerful tool that we have to strengthen literacy is often the most underused and overlooked, and that is a child's own stories.

— Pam Allyn —

AZ QUOTES



Reading

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- Needs:
 - Phonics
 - Phonemic Manipulation
 - Balanced literacy, 3 cueing, sight words can UNDO the progress that is made

****HUGE impact of visual/perceptual deficits**

- Recommended Curriculum
 - [Orton-Gillingham](#) based...
 - Linda Mood-Bell – [Visualizing & Verbalizing](#)
 - [UFLI](#)

Writing

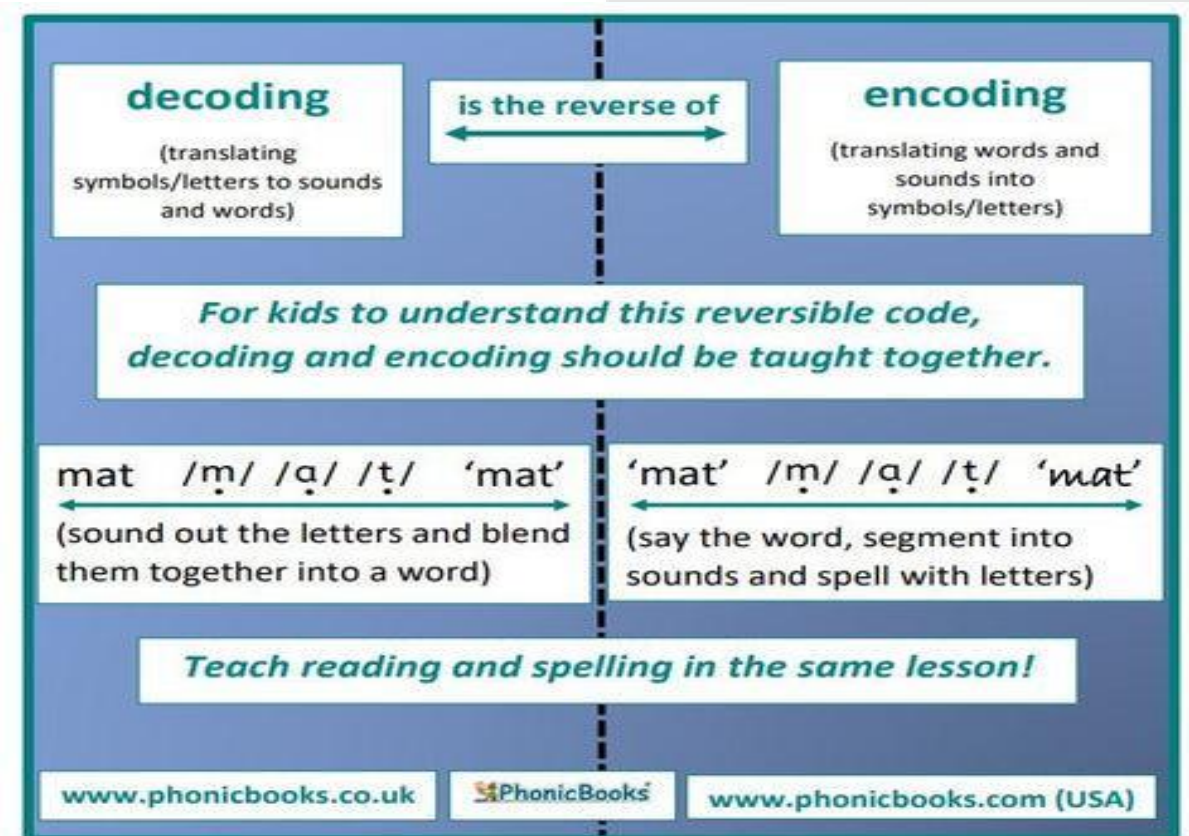


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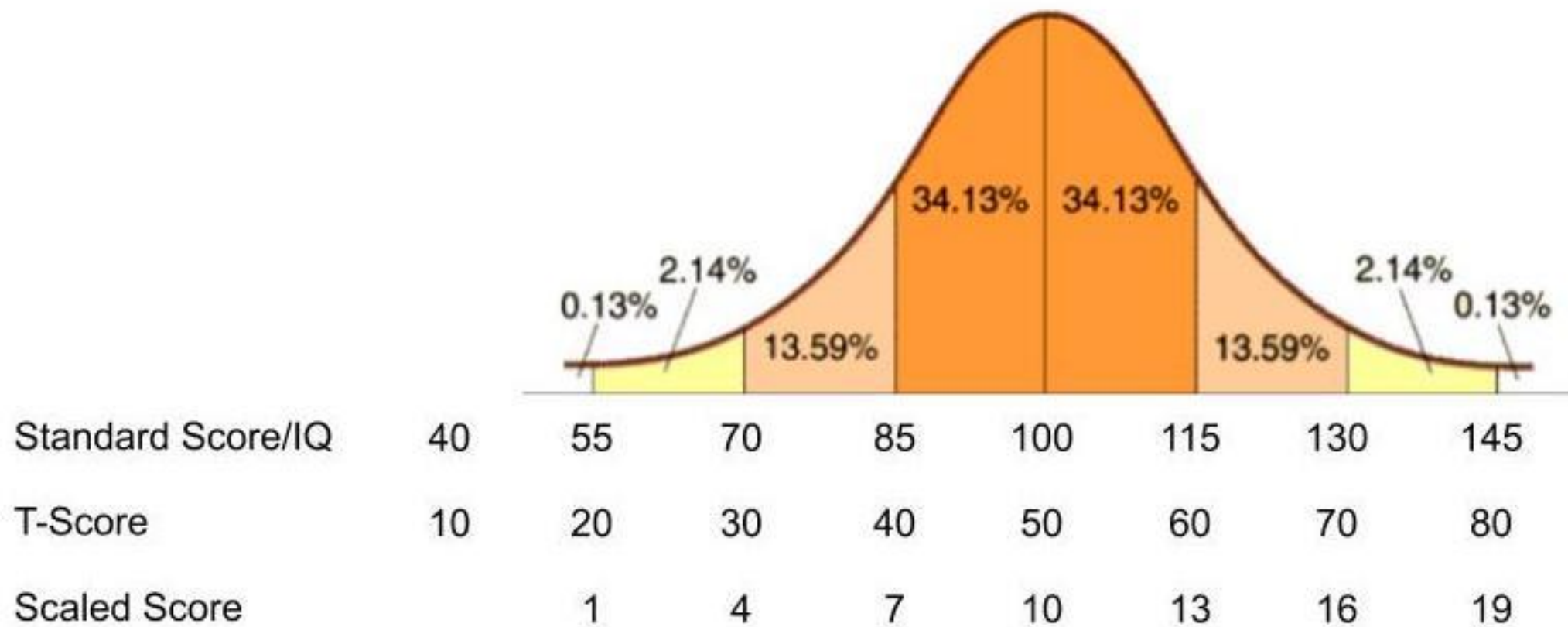


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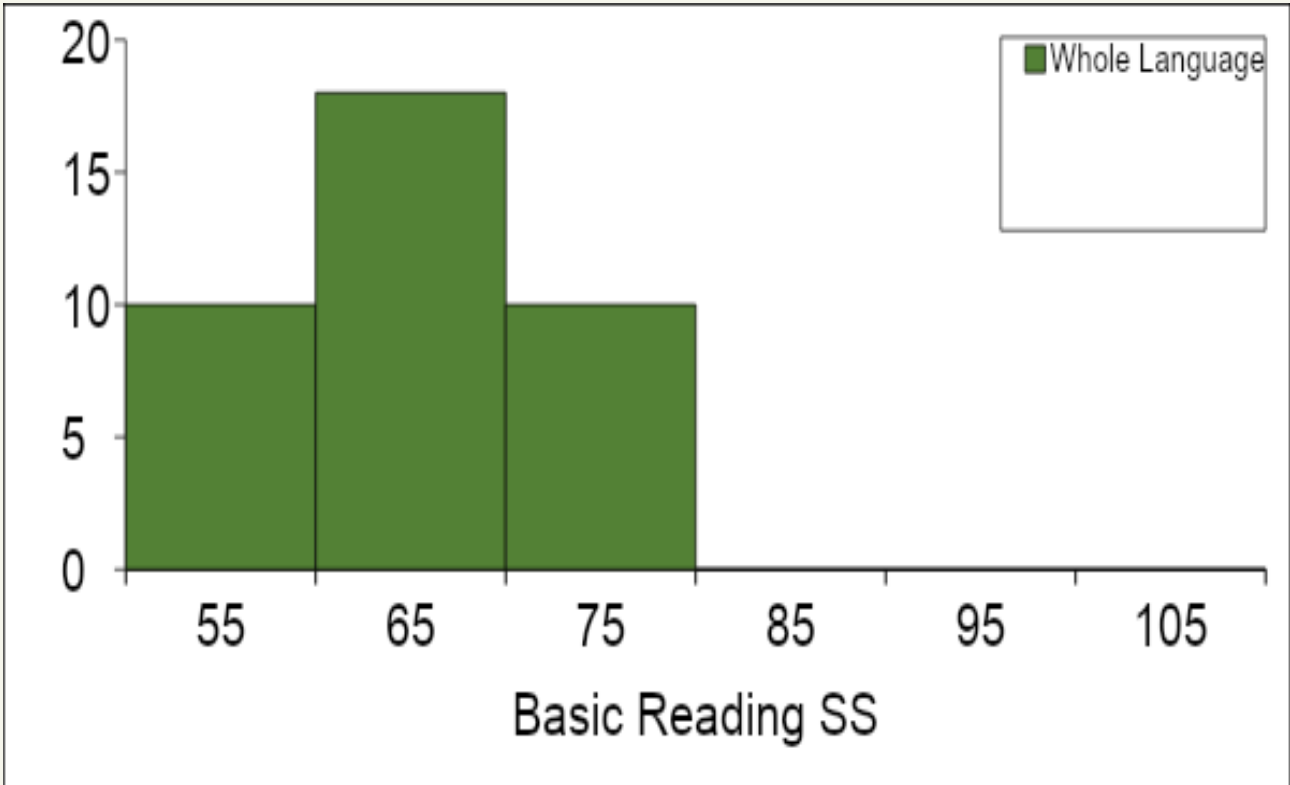
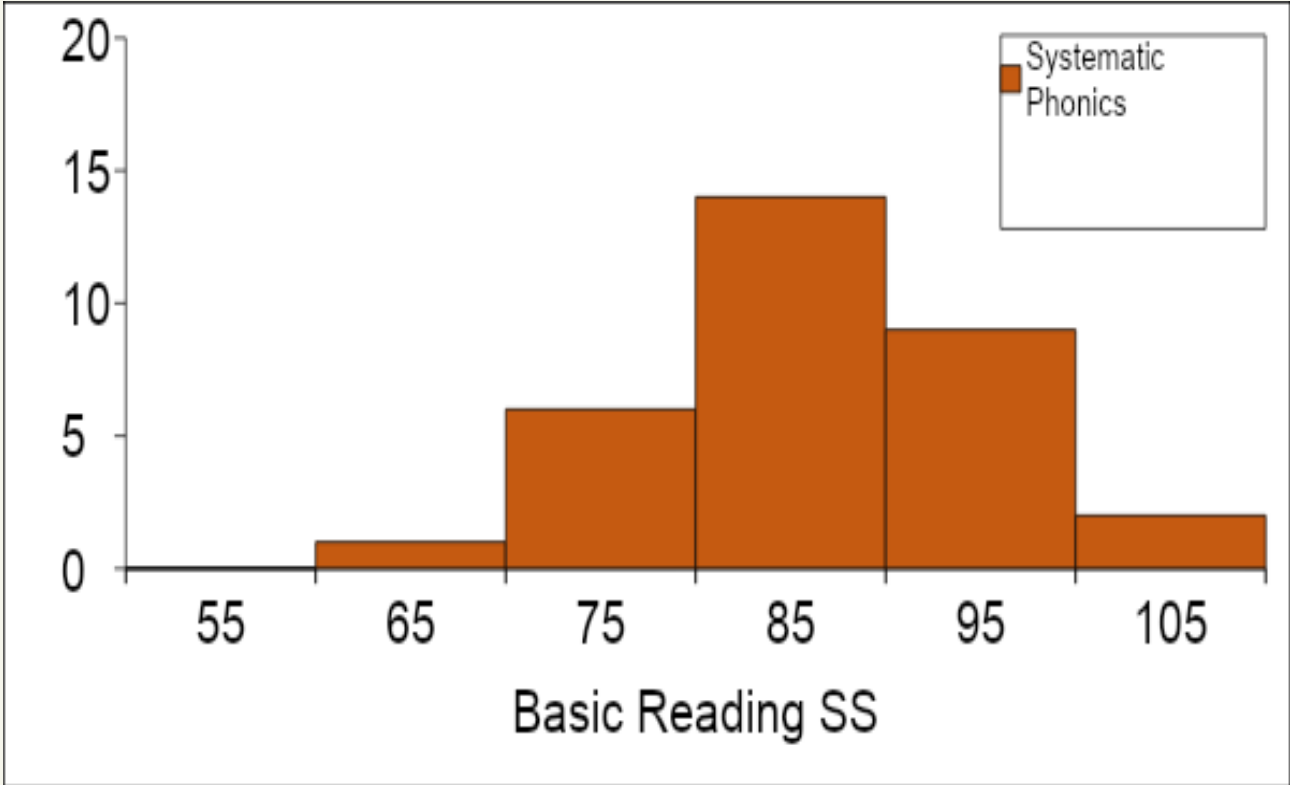
- Writing
 - Provide an “alternate pencil” RIGHT AWAY
 - Instruct in composition
 - Separate drafting and editing
 - Tell me more vs. WH questions



Normal Curve



WIAT-III Basic Reading Standard Score as a Function of Reading Instruction Method
(Age 9 Years, N = 70)



	Systematic Phonics	Whole Language
N	32	38
Mean	84.97	64.29
SD	8.17	6.65
Range	64 – 106	52 – 76

Simple View of Reading



Gough & Tunmer, 1986; Hoover & Gough, 1990

That is, successful reading comprehension requires BOTH good (fluent) decoding skills AND good listening (language) comprehension skills

The Expanded Simple View of Reading

**Language
Comprehension**



Decoding
(word recognition)



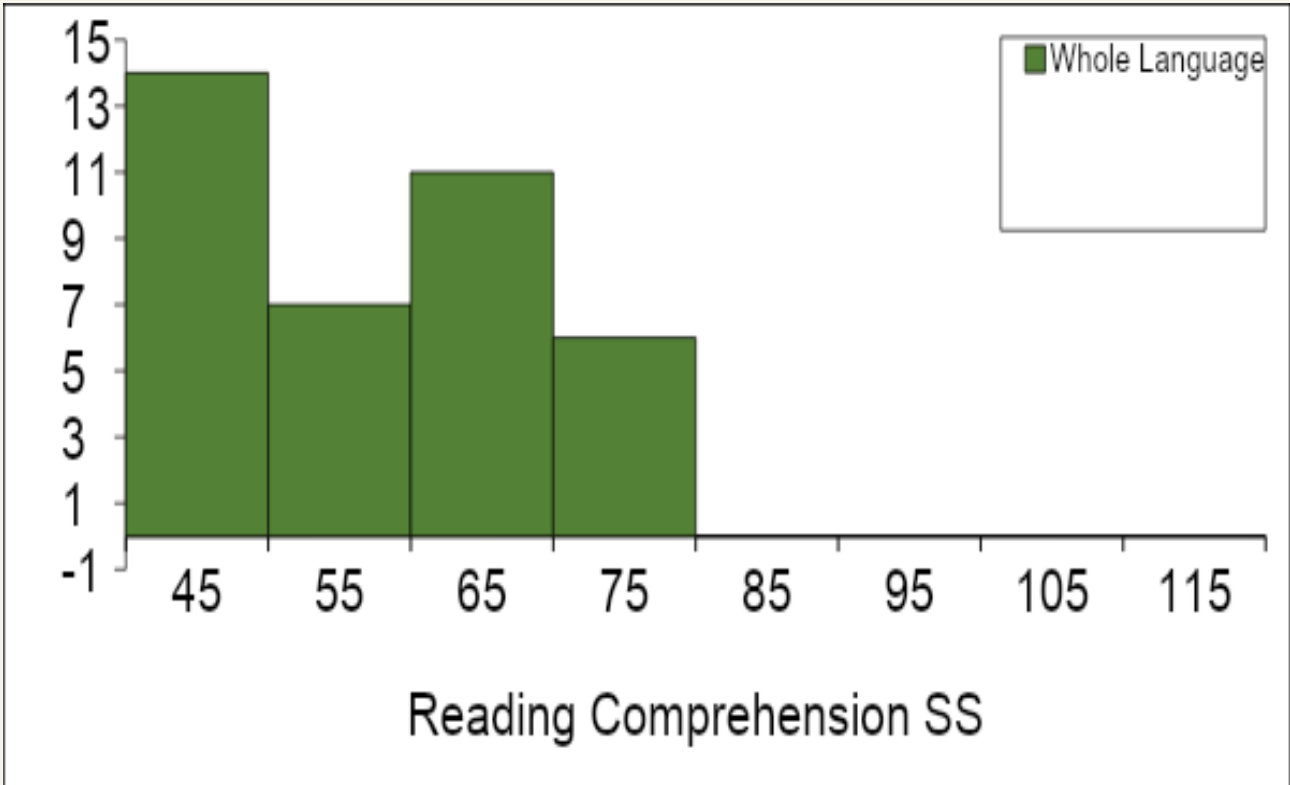
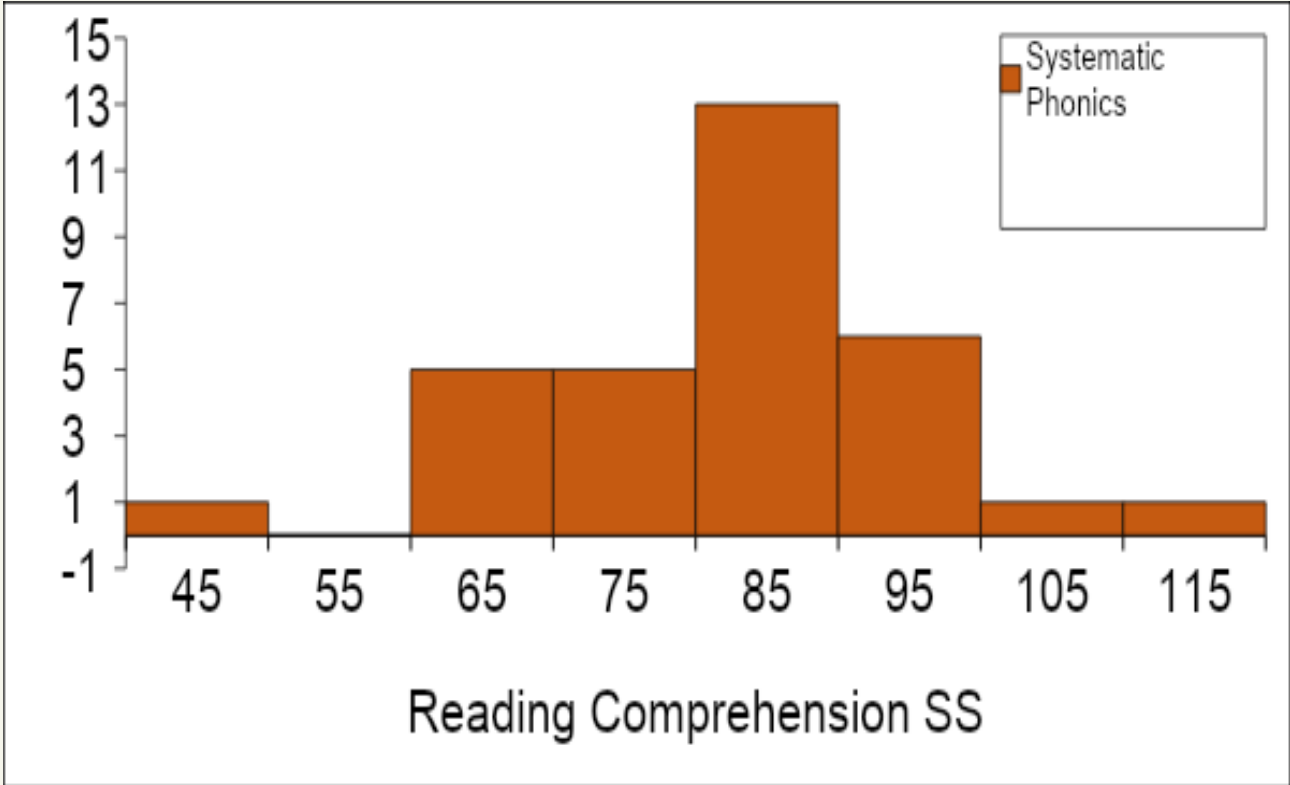
**Reading
Comprehension**

- Comprehension monitoring
- Inferencing skills
- Background and topical knowledge
- Genre and text structure knowledge
- Syntactic awareness and grammatical understanding
- Vocabulary
- Reading with prosody (expression, intonation, phrasing)

Fluency

- Print concepts
- Letter-sound knowledge
- Phonological awareness
- Phonics
- Morphological awareness
- Orthographic mapping

WIAT-III Reading Comprehension Standard Score as a Function of Reading Instruction Method
(Age 9 Years, N = 70)



	Systematic Phonics	Whole Language
N	32	38
Mean	82.00	56.63
SD	13.67	12.31
Range	40 – 110	40 – 79

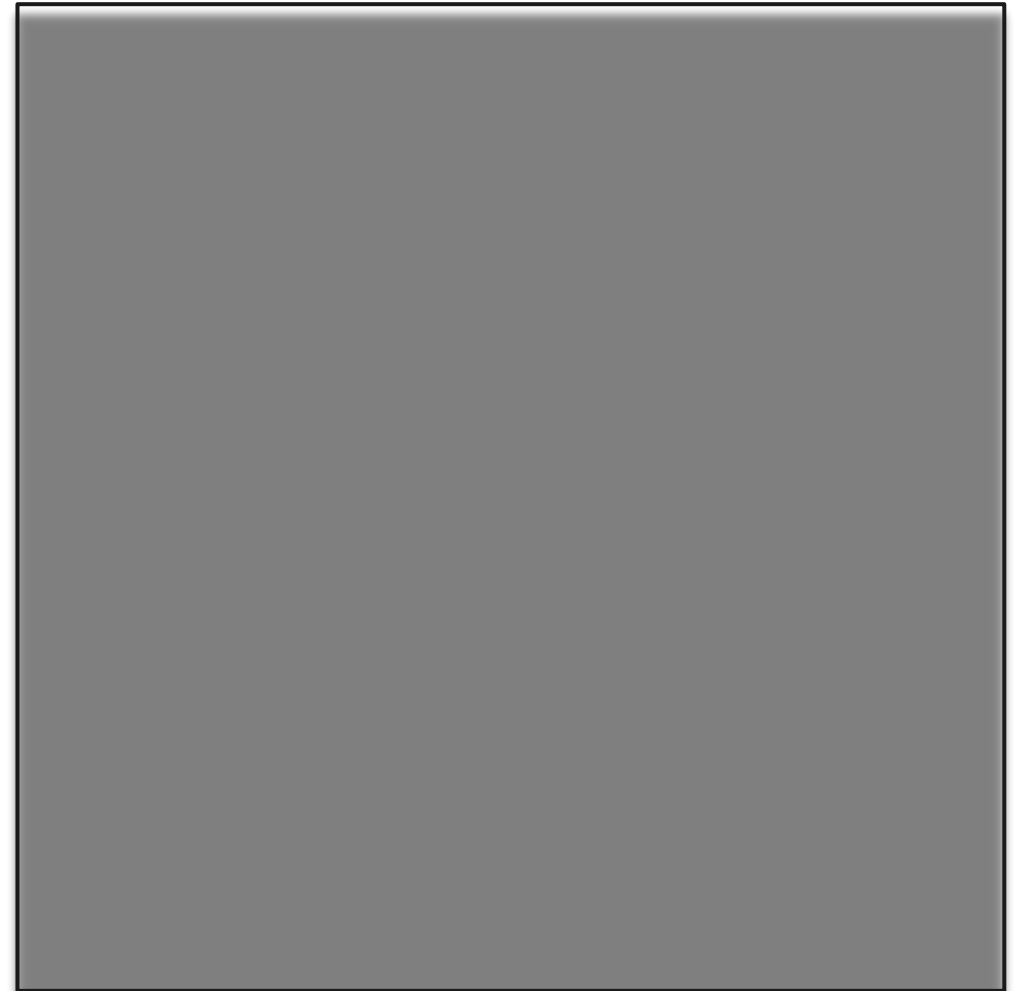
Percentage of 14 – 17-year-olds with WS who have Functional-Level Word Reading Abilities, as a Function of Reading Instruction Method

Reading Instruction Method	<u>No</u> Word Reading Age Equivalent < 10.0 Years	<u>Yes</u> Word Reading Age Equivalent ≥ 10.0 Years
Systematic Phonics	5 (13.2%)	33 (86.8%)
Whole Language	15 (100%)	0 (0%)
Systematic Phonics Group: Median Word Reading AE = 12.0 years (IQR: 10.9 – 16.0)		
Whole Language Group: Median Word Reading AE = 7.0 years (IQR: 6.3 – 7.7)		

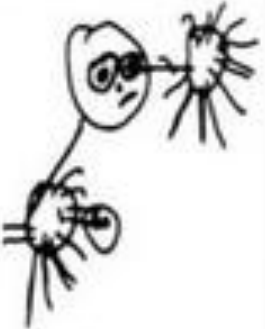
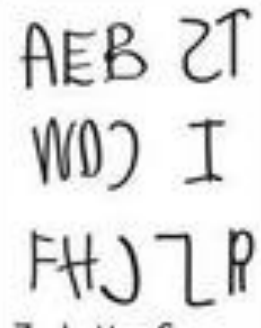
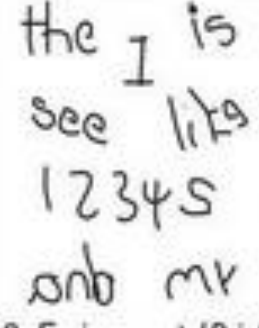
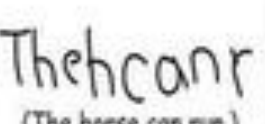
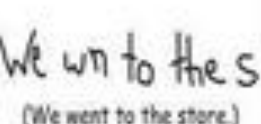
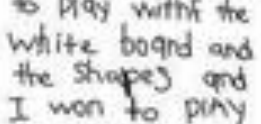
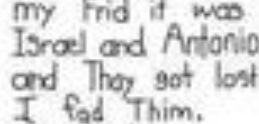
Research Takeaways...



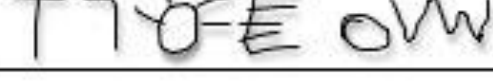
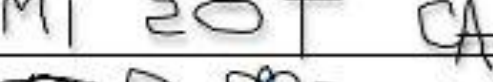
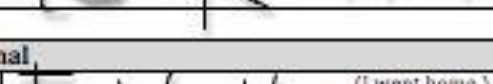
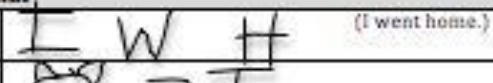
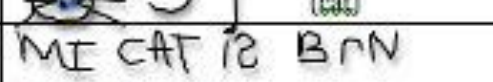
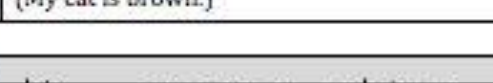
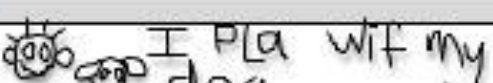
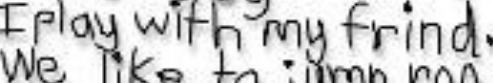
- Children with WS **CAN** learn to read.
- Proficiency with reading is **DIRECTLY** tied to instructional methods.
- Children need systematic phonics instruction that includes phoneme manipulation.
- Listening comprehension is crucial to overall understanding.
 - Conversations
 - Instructions
 - Reading



HeidiSongs' Chart of the Developmental Progression of A Child's Writing

 1. Pictures	 2. Random Scribbling	 3. Scribble Writing (Written in linear fashion to mimic real writing.)	 4. Symbols That Represent Letters
 5. Random Letters (No relationship between sounds of letters and what the child is trying to say.)	 6. Letter Strings (Progresses from left to right and top to bottom when the child "reads" his writing.)	 7. Letter Groups (The groups have spaces in between to resemble words.)	 8. Environmental Print (Child copies print found in the room, often without knowing what the words are.)
 9. Beginning Sounds (Child begins to write simple sentences using sight words and just the beginning sounds of words.)	 10. Early Inventive Spelling (Includes the same elements as the previous level, but with more consonant sounds represented and spaces between words.)	 11. Inventive Spelling (Has the same elements as the previous level, but with more sounds per word written, including the vowels. Some conventional spelling patterns may appear.)	 12. Transitional Writing (Includes all of the previous elements, plus some real spellings of words with silent letters and other spelling patterns. Punctuation is beginning to appear.)

Developmental Stages of Writing

Pre-Literate	
Stage Description	Sample
Scribble Stage - starting point any place on page, resembles drawing large circular strokes and random marks that do not resemble print or communicate a message	
Symbolic Stage - starting point any place on page, pictures or random strokes/marks with an intended message	
Directional Scribble - scribble left to right direction, linear, intended as writing that communicates a meaningful message/idea	
Symbolic/Mock Letters - letter-like formations, may resemble letters but it isn't intentional, interspersed w/ numbers, spacing rarely present	
Emergent	
Strings of Letters - long strings of various letters in random order, may go left to right, uses letter sequence perhaps from name, usually uses capital letters, may write same letters in many ways,	
Groups of letters - groupings of letters with spaces in between to resemble words	
Labeling pictures - matching beginning sounds with the letter to label a picture	
Environmental Print - copies letters/words from environmental/classroom print, reversals common, uses a variety of resources to facilitate writing	
Transitional	
Letter/Word Representation - uses first letter sound of word to represent entire word, uses letter sound relationship.	
First/Last Letter Representation - word represented by first and last letter sound	
Medial Letter Sounds - words spelled phonetically using BME sounds, attempts medial vowels, uses some known words, more conventionally spelled words, one letter may represent one syllable, attempts to use word spacing, writing is readable	
Fluent	
Beginning Phrase Writing - using all of the above skills to construct phrases that convey a message connected to their illustration	
Sentence Writing - Construction of words into sentence formation, maybe multiple sentences, writing is readable, may use punctuation, known words spelled correctly, topic focused, BME with detail.	
Six Traits of Writing - Students use Six Traits of Writing (Conventions, Organization, Voice, Mechanics, Word Choice, Sentence Fluency)	

ALL children need to progress through the developmental stages of writing - REGARDLESS of the type of "pencil" they use.

About Writing...

When teaching **WRITING** to individuals with **WS...**



Structure & Scaffold

- Build the system so that the child can complete as independently as possible
- Avoid verbal prompting; Use indirect or environmental prompting



Anchor in Prior Knowledge

- The child is the expert on the topic
- Facilitate, don't legislate, topic choice



Name Audience

- Who are you writing for? This is especially important for the child with Williams syndrome
- Support the child's ability to think about a variety of audiences: self, single others, groups



Mitigate Motor Needs

to investigate and resolve any issues you face



Integrate Types of Writing

- Lists, narrative, expository (compare and contrast, timelines, directions), poetry, letters (friendly and business), journals and diaries, texts, email, social media posting



Affirm & Encourage

- Be a "curious partner"
- Ask student to read back what they wrote. Affirm their idea; "that sounds great"
- "Tell me more" about...; what else?; oooh interesting... tell me more...;
- NO "WH" Questions!



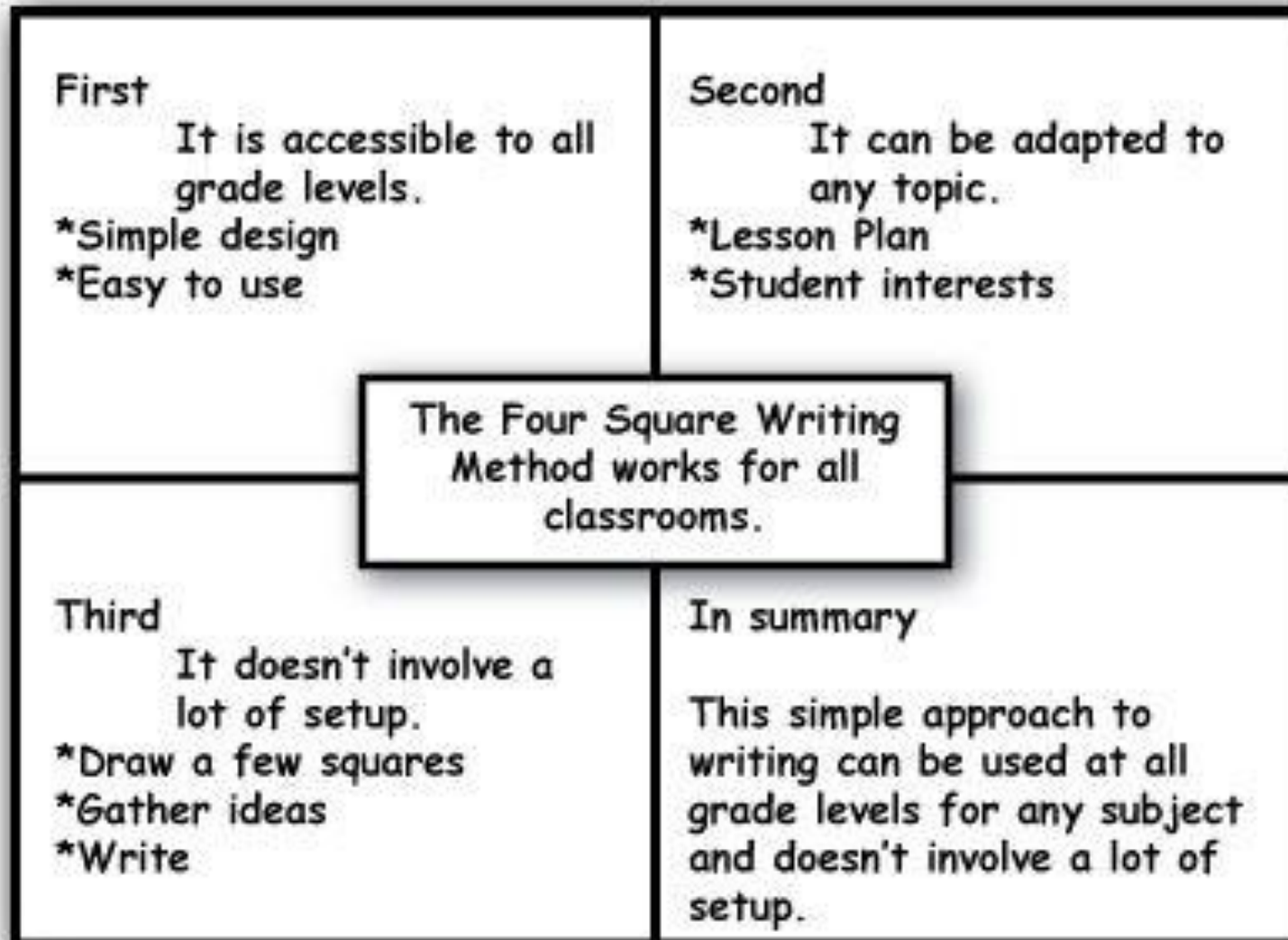
Your Goals are...

- clear communication NOT perfect spelling, grammar, punctuation, beautiful handwriting...
- Independence in all aspects (choice of topic, choice of audience, genre, revision, editing...)



Use Mentor Texts

- These are great examples of different types of writing



Example:

I-2 Grade	
Brave _____	
Directions: Use the Four Square boxes below to plan your paragraph.	
Connecting Word: Last week Beginning: I visited the doctor's office for my checkup.	Connecting Word: First Middle: The doctor listened to my heart and lungs and checked out my reflexes.
Topic sentence: Getting shots is just the worst!	
Connecting Word: After that Middle: The nurse came in for the shots. I screamed bloody murder.	Connecting Word: Finally Closing: She gave me the poke, and guess what? It didn't hurt!
© Comprehension Connection 2017	

Four Square Writing Method

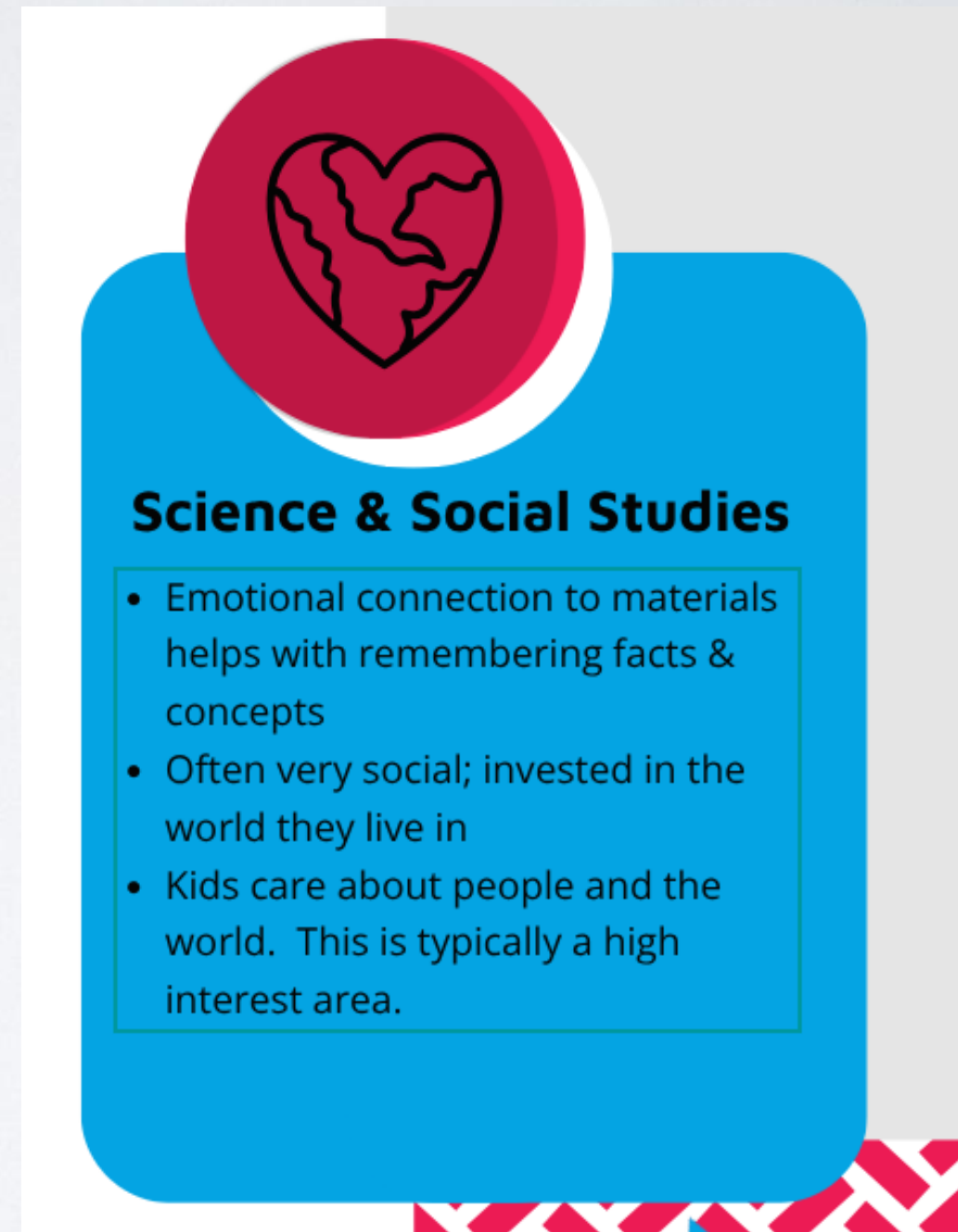
Instructional Guidelines



1. Double dip of language arts instruction
 - a. Children receive the same reading instruction as their grade level peers.
 - i. This is imperative as it supports the child's broad range of knowledge
 - ii. Also supports social needs by supporting the child's ability to be relevant
 - b. Reading instruction is augmented by direct instruction in systematic phonics which includes phoneme manipulation
2. Recommended Curriculum
 - a. [Lindamood - LiPS program](#) - preferred over all others because it systematically incorporates both basic & advanced phoneme awareness tasks, including phoneme manipulation.
 - i. This is the ONLY program in this list with peer-reviewed research demonstrating large gains in standard scores.
 - b. [UFLI: University of Florida Literacy Institute](#)
 - c. [Phonics They Use by Patricia Cunningham](#)
 - i. [Making Words by Patricia Cunningham](#)
 - d. [Orton-Gillingham](#) supplemented with advanced phoneme awareness training (phoneme manipulation)
 - e. [Wilson Reading: Phonics Module](#) supplemented with advanced phoneme awareness training (phoneme manipulation)
3. For children who have word-reading difficulties - augment reading with audio
 - a. DO NOT use this as a replacement for reading instruction
 - b. This also does not replace [SHARED READING](#) which requires a proficient human partner to read to a child and discuss what is being read.

SOCIAL STUDIES/SCIENCE

- IMPORTANT to teach them for social relevancy/social capital
- Need prior knowledge
- Needs instruction in vocabulary



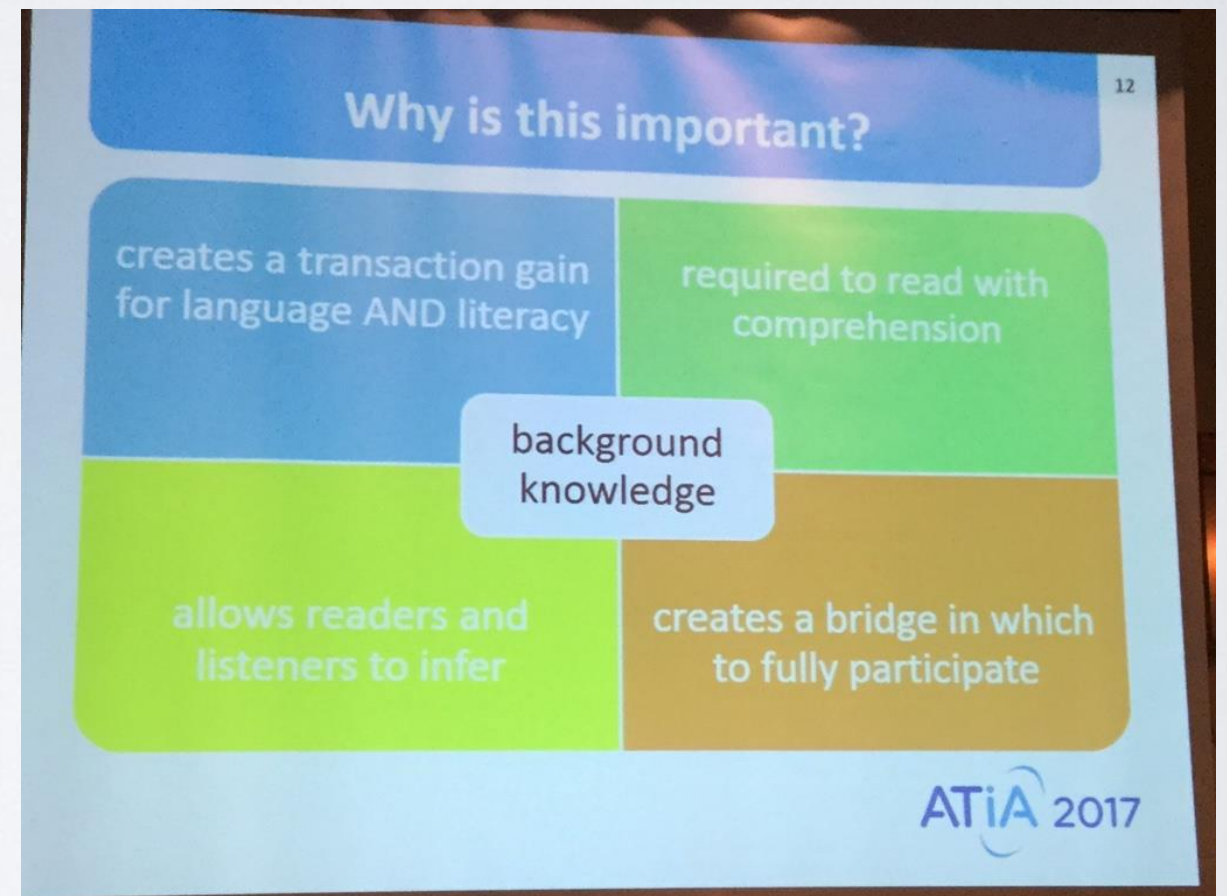
The graphic features a red circle at the top containing a white outline of a heart with a globe inside it. Below this is a large blue rounded rectangle. Inside the blue rectangle, the text "Science & Social Studies" is written in bold black font. Below this title, there is a list of three bullet points. The bottom right corner of the blue rectangle has a red and white chevron pattern.

Science & Social Studies

- Emotional connection to materials helps with remembering facts & concepts
- Often very social; invested in the world they live in
- Kids care about people and the world. This is typically a high interest area.

PRIOR KNOWLEDGE & VOCABULARY

- [Robert Marzano](#)
 - .97 effect size for vocabulary instruction
- [John Hattie](#)
 - Deep Learning
- David Koppenhaver & Karen Erickson



MATH

Kids CAN learn WITH deliberate & explicit instruction

- [Touch Math Curriculum](#)
- Simple strategies:
 - Number lines & Standard Algorithm
 - Hundreds Charts & Multiplication Charts



Math

- Kids with WS can learn math
- Direct instruction with simple methodologies and sequential delivery is most effective
- Number lines, manipulatives, and Touch Math are highly effective
- Provide worked examples with sequential instructions

 **Working memory, nonverbal reasoning, and visuospatial skills likely will need to be accommodated to increase success in math.**

SOCIAL SUPPORTS

- Social Thinking Curriculum
- Everyday Speech
- Circles Curriculum
- Zones of Regulation

ZONES OF REGULATION!			
Blue	Green	Yellow	Red
			
Sick Sad Tired Bored Moving Slowly	Happy Calm Good to Go Focused Ready to Learn	Frustrated Worried Silly/Wiggly Anxious Excited	Mad/Angry Mean Yelling/Hitting Out of Control I Need Time and Space

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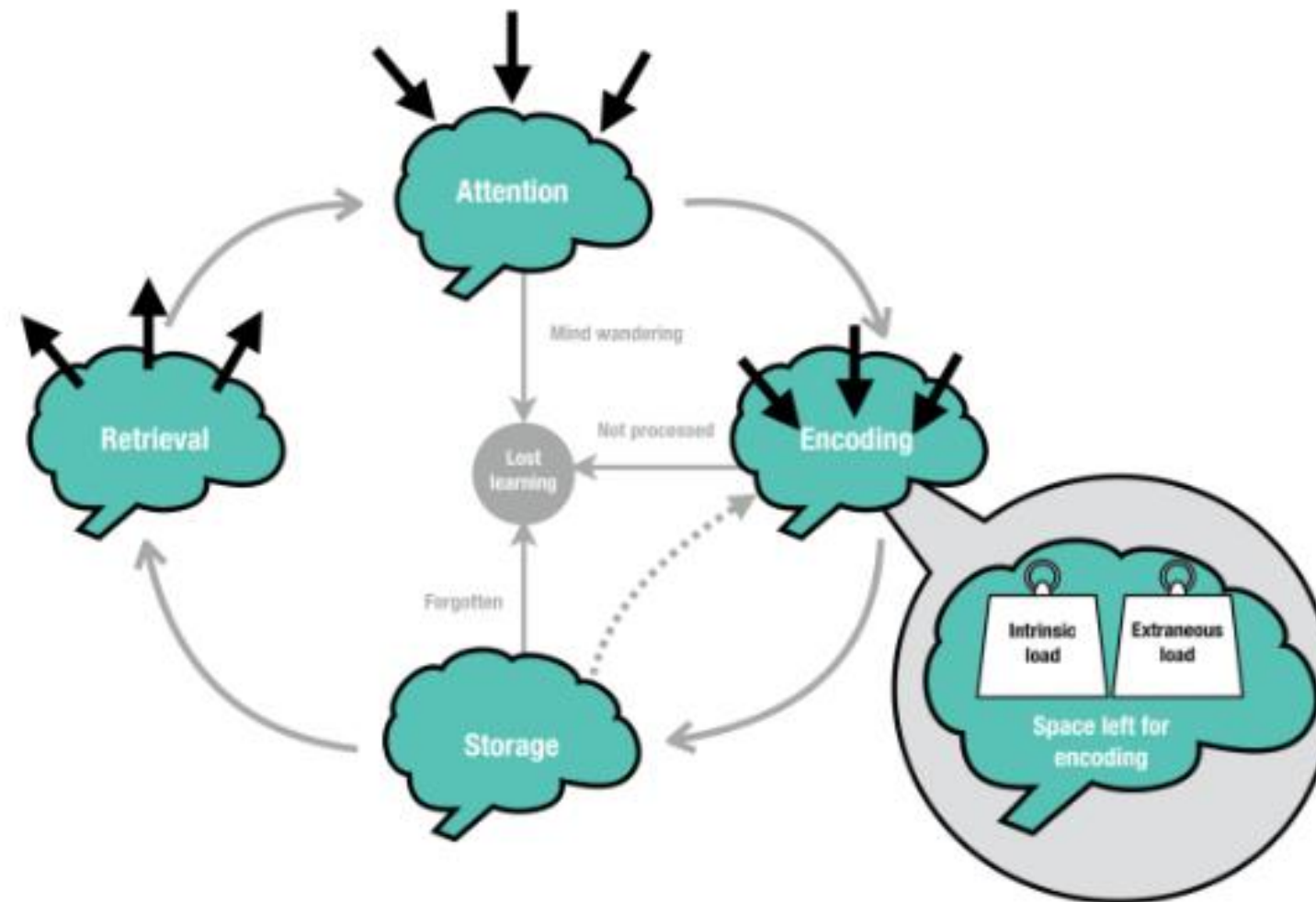
Social Relationships

- Kids with WS deserve legitimate friendships with their peers but lack the skills to build them
- Kids with WS have difficulty understanding sarcasm, irony, metaphor etc. and with social pragmatic language skills
- Their desire to please may lead them to follow poor examples from other students
- Direct instruction in self-regulation and pro-social behaviors is crucial.
- Zones of Regulation & Social Thinking are often effective curricula.

Secret Sauce...

Dual Coding Theory

A simple memory model



Simplified Memory Model

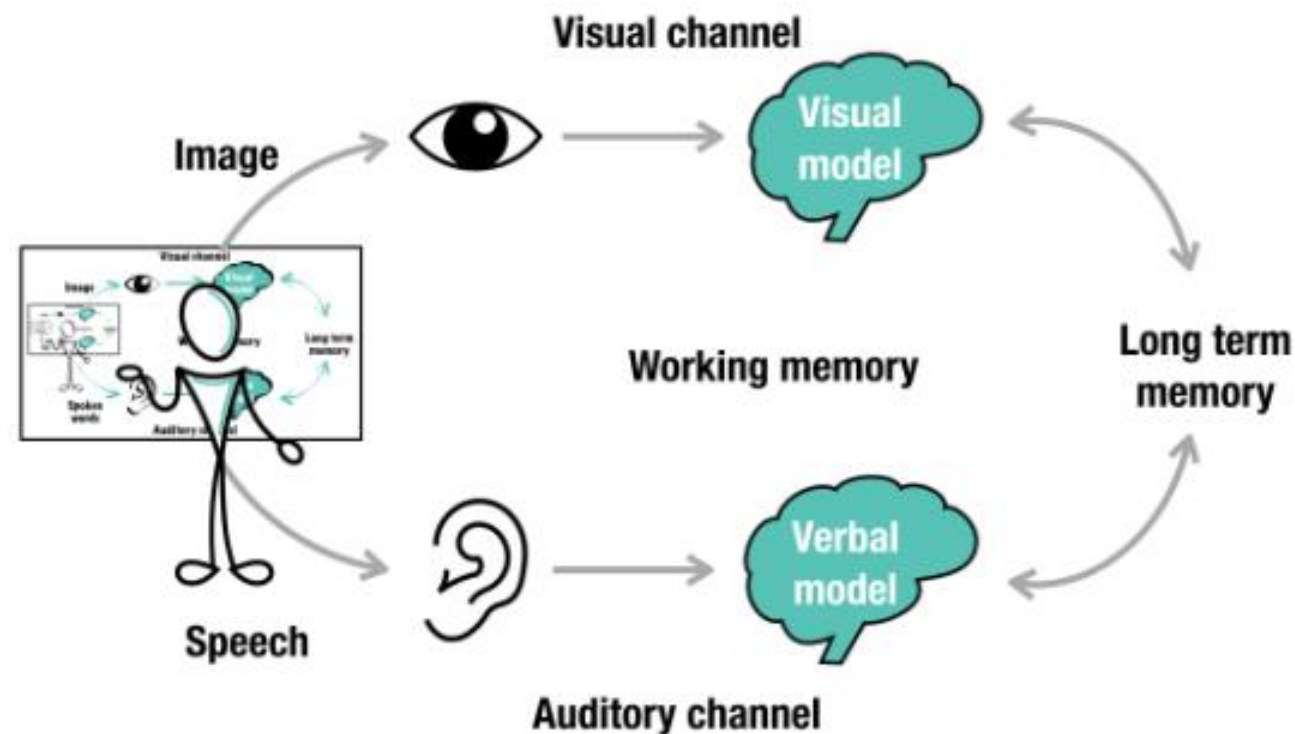
Secret Sauce...

Dual Coding Theory

Working memory capacity can be effectively increased, and learning improved, by using a dual mode presentation

John Sweller: Cognitive Load Theory

In simplified terms it works like this:



What does this mean?



Executive Functioning

- Use task lists and visual schedules to support working memory
- Provide worked models or pictures of completed work as examples.
- Allow extra time to complete a task
- Break a larger task into manageable parts
- Ask child to repeat instructions to ensure thoroughness and comprehension
- Consider pairing the student with a capable peer

Strategies for Supporting Executive Functioning Needs

©Pathway 2 Success · www.thepathway2success.com

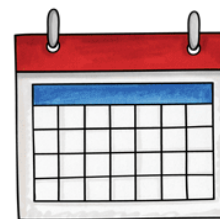
Have homework written down in the same spot every day



Explicitly teach executive functioning & study skills



Give an extra 3-5 minutes to organize before transitions



Schedule a weekly organization time



Create routines and practice them often



Incorporate movement during instruction

Create an end-of-the-day checklist to remember materials



Provide brain breaks during and after instruction



Clearly explain academic & social expectations



Keep an extra set of books at home and in the classroom



Use countdowns & time checks during work periods



Have students set up homework binders

Find more tips at:

www.thepathway2success.com

Clipart by Kate Hadfield

In a nutshell...



AUTONOMY



- **We have to TEACH it...**
 - [Webb's Depth of Knowledge](#)
- **Executive Functioning**
 - Decision Making
 - Problem Solving

Essential Questions

- ▷ What is the difference between autonomy and independence?
- ▷ Why is important to understand the difference between them?

Example of a more complex written list for a college student (puts a cross in each box as completes task). This example includes aspects of a schedule. The schedule and 'to do' list can be combined for more advanced individuals:

1. Read history of art article and write down 5 main points to say if called on in class. ☒
2. Pack bag for class (include notebook and glasses). ☐
3. Use internet and books to begin research for project. Make notes on key points to include according to your project map. ☐
4. Eat lunch ☐
5. Set timer to 2pm to remind you to leave for class. ☐
6. Take a break ☐

Definitions...

Independence

- ▷ Self-sufficiency
 - Ability to complete a task without the physical/verbal assistance of another person



<https://pediaa.com/what-is-the-difference-between-autonomous-and-independent/>



Autonomy

- ▷ Self-determination - self-governance
 - making your own choices
 - make decisions based on known or deduced information

What Makes Them Different?

Independent Life Skills (Skill)

“Activities of Daily Living (ADLS)”

- Hygiene Tasks
- Room Maintenance/Laundry
- Cooking
- Banking
- Budgeting

Autonomous Life Skills (Decision)

“Decisions of Daily Living (ADLS)”

- “I” should take a shower
- “I” should do the laundry
- “I” should clean my room
- “I” should make some lunch
- “I” should go to the bank
- “I” should balance my budget

To be completely INDEPENDENT you need to be able to do a skill on your own AND you need to be able to know if/when to do the skill.

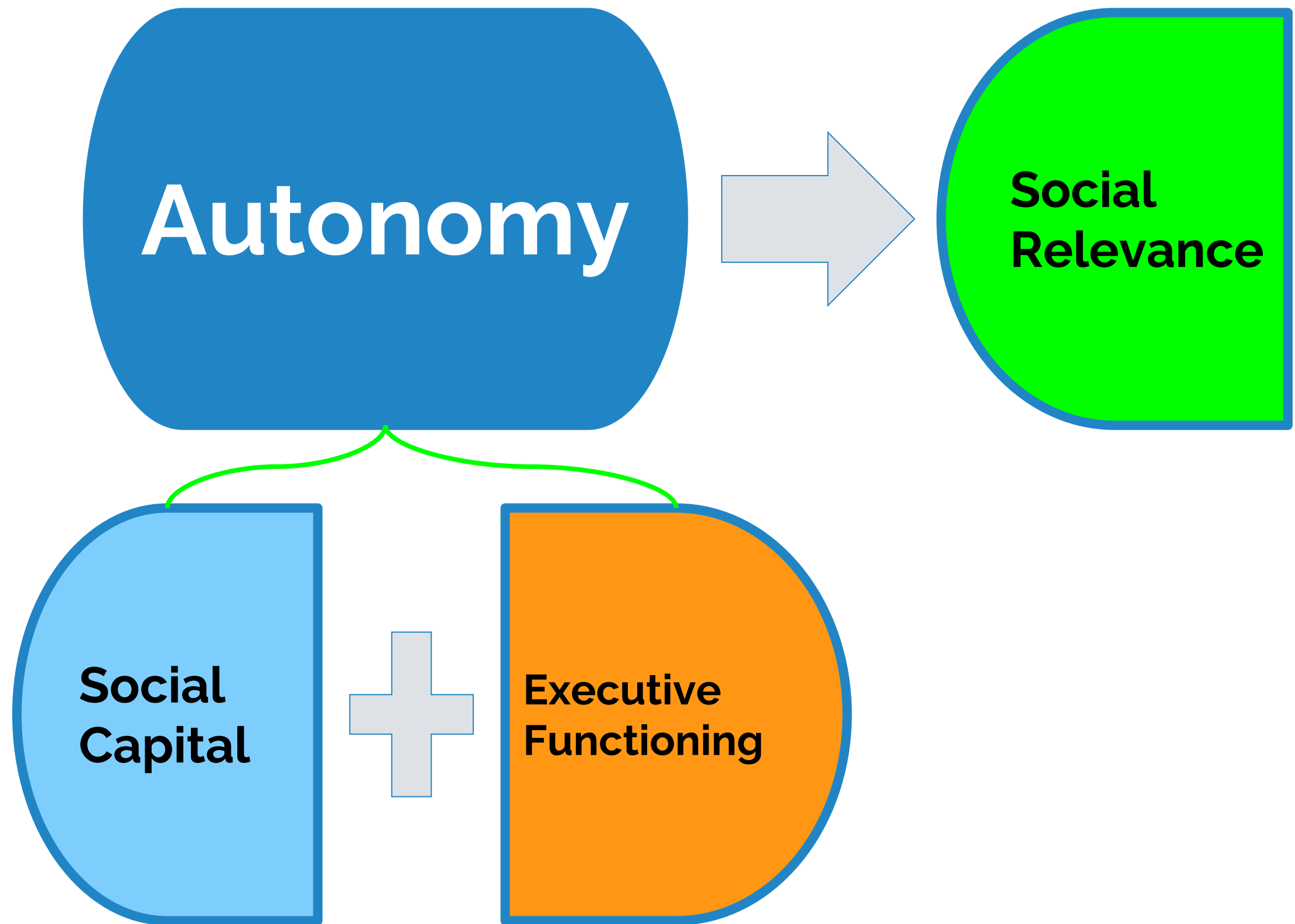
Think about...

Independent Skills without Autonomy = An individual who knows how to do the skill but who rarely (never) acts on their own

- Have you gotten dressed yet? Better do it! “Oh, OK”
- Have you taken a shower? Better do it! “Oh, OK”
- Is your room clean? Please clean it now. “Oh, OK.”
- Have you done your banking yet? Better do it! “Oh, OK”

Autonomy without Independent Skills = An individual who knows what he/she wants but can't complete the task

- I want to look great for school/work/activity, can you help me?
- I need to wash my hair, can you help me?
- I need to balance my budget, can you help me?



- Autonomy requires executive functioning skills & social capital
- Autonomy increases social relevance.

AUTONOMY MEANS
PRESUMING THE COMPETENCE
OF OUR DIVERGENT CHILDREN
WHILE ACKNOWLEDGING THEIR
DISABILITY & PROVIDING
SUPPORTS & ACCOMMODATIONS.

KERIMA ÇEVİK



DR. ANITA ARCHER'S EXPLICIT INSTRUCTION

Explicit Instruction

How well you teach = How well they learn

I do it. We do it. You do it.

Learning is not a spectator sport.

Perky not pokey.

Don't commit "assumicide."

Walk around. Look around. Talk around.

Anticipate and remove.

Avoid the void—for they will fill it.

What you expect = What you get

Teach with passion.

Manage with compassion.



Ask about what they do at home
ALL BY THEMSELVES...

GENERAL AWARENESS

Be aware that students with WS...

- Generally have very weak visual spatial skills (especially visuospatial construction)
 - > impacts drawing/art/maps, as well as fine & visual motor areas
- Poor handwriting – often require use of an “alternate” pencil (computer, label maker etc)
- May be very participatory - want to please
- May be hypersensitive to certain sounds
 - > Can lead to obsessions and/or fears
- Often have expressive and receptive language challenges
 - > “delayed” processing/needs wait time
 - > Struggles with multi-step directions
- Often appear to understand more than they actually do
- May struggle with attention and focus, but are not necessarily hyperactive
- Often have difficulty modulating emotion
- May have high anxiety (often related to loud sounds (fire drills, alarms, whistles, power tools, balloons)

- Set expectation ground rules early
- No matter what the kids “look like” at a young age plan for the future; they will look very different at 4 – 7- 10 -14

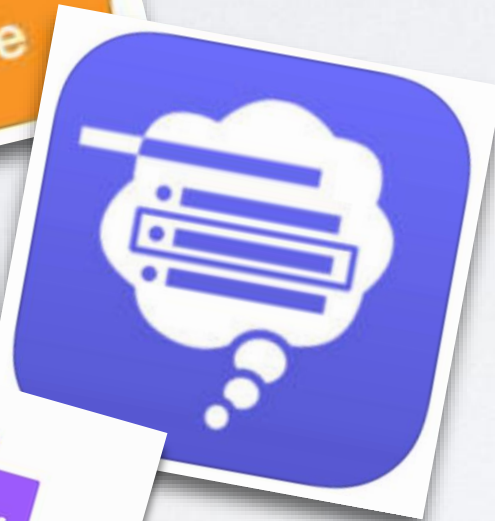
COMMON SENSE ACCOMMODATIONS

- Tied to GE Curriculum
- Quick & Efficient
- Follow the path of least resistance



TYPICAL ACCOMMODATIONS - IPAD

- Less “real estate”
- Can accommodate for vision needs
- simple, familiar
- [Guided Access](#)
- Speak Text Feature
- Can use external keyboard with high contrast keyboard stickers



TYPICAL ACCOMMODATIONS - CHROMEBOOK



- [DocHub](#) or [Kami](#)
- [Read & Write for Google](#)
- [Bookshare Web Reader](#)

LOW-TECH ACCOMMODATIONS

- Stickers
- Mailing Labels
- Labelmaker
- Highlighters
- Shared Assignment

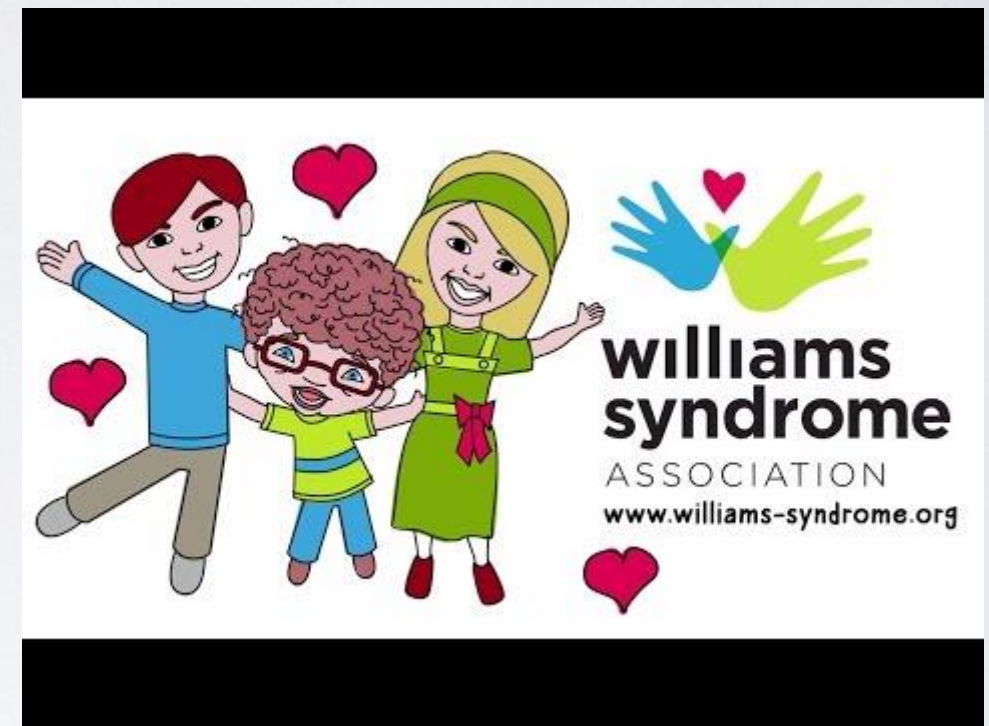


KEY POINTS

- Phonics
- Visual Perceptual Skills
 - comprehension
 - math
- Social Skills
 - prior knowledge
 - vocabulary
- Adaptive Behavior



Videos about Williams syndrome for Schools



PERCEPTION drives **EXPECTATION**

EXPECTATION drives **OPPORTUNITY**

OPPORTUNITY drives **ACHIEVEMENT**

ACHIEVEMENT drives **PERCEPTION**

**WHEN KIDS KNOW
YOU CARE, THERE'S
NOTHING THAT
CAN'T BE
ACCOMPLISHED.**

**CARE FIRST &
EVERYTHING ELSE
WILL FOLLOW.
VIA @JUSTINTARTE**

Wanna see more???



[Embraceable Video by Jon Kent](#)

[Camp Video by Keith Maitland](#)

